OECD Employment Outlook 2026

Geographic Disparities in Jobs and Incomes



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GEOGRAPHIC DISPARITIES IN JOBS AND INCOMES

OECD
BETTER POLICIES FOR BETTER LIVES

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Foreword

The *OECD Employment Outlook* provides an annual assessment of key labour market developments and prospects in OECD Member countries. Each edition also includes several chapters that focus on specific aspects of the functioning of labour markets and the implications for policies to promote more and better jobs. The 2026 edition of the *OECD Employment Outlook* examines regional disparities in employment, unemployment and disposable incomes and their dynamics, as well as the policy challenges to address them. The Outlook also assesses recent labour market and wage developments and investigates changes in how skills translate into pay and job prospects, as well as aspects of labour regulation such as employment protection legislation and non-compete agreements.

The *OECD Employment Outlook* 2026 is the joint work of staff of the Directorate for Employment, Labour and Social Affairs (ELS). Parts of the Outlook are the result of collaborations with the Centre for Entrepreneurship, SMEs, Regions and Cities (CFE) – the Editorial and Chapters 2 and 3 – and the Economics Department (ECO) – Chapter 5. Chapter 2 draws on the outputs of different streams of OECD work on geographic inequalities in labour market outcomes, disposable household incomes, and the accessibility of essential services that were co-funded by the European Commission under the grant agreements INEQ III to INEQ VI. The Outlook has also greatly benefitted from comments from other OECD Directorates and contributions from national government delegates and national institutions. However, the Outlook's assessment of the labour market prospects for each country does not necessarily correspond to those made by the national authorities and institutions concerned.

This report was edited by Andrea Bassanini. The authors of individual chapters were Alexandre Georgieff and Sébastien Martin (Chapter 1); Sebastian Königs, Sérgio Pinto, Javier Terrero-Dávila and Juan Andrés Álvarez Mejía (Chapter 2); César Barreto, Alexander Hijzen, Carlo Menon and Antonela Miho (Chapter 3); Julie Lassebie, Patricia Navarro-Palau and Roland Tusz (Chapter 4); Dan Andrews, Andrea Garnero and Sara Holttinen (Chapter 5) and Alexandre Georgieff (Chapter 6).

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Editorial: People to jobs and jobs to people: Reducing regional disparities in the labour market

So far this year, labour markets in OECD Member countries have continued to perform well, with employment rates at record levels in many, despite the multiple shocks to the global economy in recent years. However, with a backdrop of uncertainty and high geopolitical tensions, the risks remain elevated and policies will need to be able to anticipate and be ready to quickly respond if labour markets begin to reverse.

As it does every year, the data underpinning these messages in this *Employment Outlook* are at the national level but there is another layer of employment data (and data analysis) that also requires close attention to understand labour markets, namely the local and regional levels.

The value in these data quickly becomes clear when noting that disparities in employment rates between regions within OECD countries exceed differences between the countries themselves, exceeding 20 percentage points (p.p.) in more than half of OECD economies. But understanding those disparities is more important than ever in a world of increasingly more frequent economic shocks and quickening megatrends, as they typically impact asymmetrically within countries, often exacerbating geographic labour market disparities, and, in turn, well-being, with consequential impacts on social cohesion and economic growth. Thus, zooming in on local employment data becomes a vital instrument in shaping policy.

This year, the OECD's Centre for Entrepreneurship, SMEs, Regions and Cities – which has long tracked place-based employment and other societal indicators – has lent its expertise to a first-ever *Employment Outlook* dedicated to analysing regional labour market performance. This is the kind of OECD measurement, which is both granular and global, which can help guide economic and social policy through worldwide comparisons over time and across diverse contexts.

Local effects of global shocks and megatrends

Regional employment disparities have long existed, shaped by geography, natural resources and political and economic history. And whilst they have always been high on the policy agenda, the attention on them has been sharpened in recent years by a succession of major macroeconomic shocks – the pandemic, reverberating cost-of-living crises, sharp energy price hikes, geopolitical tensions, and disruptions to international trade.

Consider how the crucial factor of energy prices plays out in rural areas, for example, where households are proportionally more fuel-dependent than those in cities. In European countries where data are available and Japan, the direct financial impact of the 2022 energy price shock on household budgets was at least 30% higher in rural areas than in urban centres, with corresponding impacts on local businesses.

These repeated unexpected events of recent years are unfolding alongside slower-moving, but often accelerating, megatrends that are reshaping local labour markets in profoundly uneven ways. Digitalisation and artificial intelligence, globalisation, climate change, the energy transition, as well as ageing populations, all affect regions differently depending on their production structure, infrastructure and connectivity, governance and regulatory frameworks, workforce composition and geography.

For example:

- **Negative trade shocks** have typically been concentrated in manufacturing regions already facing economic difficulties. For example, this *Employment Outlook* estimates that German regions (*Landkreise*) most exposed to import competition from low-wage economies during the 2000s saw job losses in the manufacturing sector (as a percentage of working-age population) up to 5.5 p.p. higher than those in the least exposed region.
- **Technological disruption** leaves some regions more exposed because of their concentration in routine occupations (such as low-skilled blue collars), or because of more limited access to enabling tools, such as high-speed internet, while others benefit disproportionately from agglomeration economies that can drive innovation and high-skilled job creation.
- **The emergence of low-carbon economies** is also having asymmetric impacts within countries, with regions hosting carbon-intensive activities highly exposed, and widespread gaps across the OECD between urban and rural regions in the potential for new jobs.
- **Demographics matter**, as many rural and remote regions are ageing and shrinking faster than metropolitan areas, creating growing challenges for labour supply, service provision and local economic dynamism. Shrinking workforces could raise labour shortages by 15% within the next 15 years in the 20% of regions with the highest old-age dependency ratio.

The causes of regional differences run deep, linked to the above-mentioned history and geography. Although regional disparities in employment rates relative to the national average have declined by over 12% on average across OECD countries since the financial crisis – a welcome development – on-going megatrends and unanticipated systemic shocks risk reversing those trends.

Global problems, local solutions

To reduce these persistent disparities, policy approaches often rely on national skills policies that help people shift to sectors that offer more job opportunities. However, such a one-size-fits-all solution for mobility and re-training tends not to produce encouraging results, in part because they assume that all workers want, or are able, to move to regions where there are labour shortages or that the re-training programmes can meet the needs of all local labour markets. In practice, of course, neither of these conditions typically exists, which is why more targeted, place-based programmes that respond to specific circumstances in the regional labour market have been shown to perform better.

This matters enormously because a place-blind market-driven sorting of workers can create a vicious cycle that further drags down struggling areas. Workers who choose to leave declining regions are generally younger, better educated and more open-minded about change. In the countries with available data for example, the probability of leaving a low-employment region in a given year is at least 5 p.p. higher for those with education beyond high school than for those with lower levels of schooling. This makes the places they leave even less attractive to new investments and businesses, exacerbating existing labour

market disparities and inequalities. People living in low-income regions have lower chances of finding better-paid jobs and face a higher likelihood of remaining stuck at the bottom of the distribution.

Persistent regional inequalities in employment carry significant economic and societal costs. They reflect untapped growth potential. They can also erode social cohesion and undermine trust in democratic and economic institutions, and in turn weigh down on long-term growth. Policy must therefore be proactive and in place *before* shocks occur.

Two distinct but related lines of action should be envisaged: *moving people to jobs* and *moving jobs to people*.

Moving people to jobs

When shocks hit workers in one region, labour mobility provides a mechanism to find jobs elsewhere, but evidence in this *Employment Outlook* shows that this is rarely the case in most countries – instead, they remain unemployed or inactive in the region where they live.

To make geographic mobility a viable option for disadvantaged workers, robust action is required to remove the barriers that may limit movement for people that would like to move but struggle to do so. Crucial factors such as housing, childcare, portability of rights, and access to local services often limit mobility, especially for disadvantaged families. More co-ordination across all actors, in all regions, is essential in reducing these barriers.

For example, in very few countries are priority rankings for social housing portable across locations. The Australian state of Victoria is among the few exceptions in this regard: existing social housing renters may apply to transfer to another social housing property if their employment changes and they need to move far from where they currently live. Encouraging geographic mobility of job seekers to access better employment opportunities is another example – this is set as a specific goal in some public employment service (PES) systems, such as in Sweden.

Moving jobs to people

At the same time, local job opportunities matter. Facing the inevitable limits to any policy trying to nudge people to move to new places, place-based industrial policy is another potential solution. By aligning national sectoral priorities with local capabilities, policymakers can mobilise underused assets across regions to create new sources of economic dynamism.

In Canada, for example, place-based policies support artificial intelligence development and diffusion by concentrating investments in regions with an existing research, talent, and industrial ecosystem. At the same time, provincial governments support local AI adoption by firms through innovation vouchers, applied research partnerships and cluster initiatives.

Another example is the European Union's strategy for securing a stable supply of critical minerals: while national governments across the EU oversee mineral policies and regulations, regional authorities play a key role in enabling competitive and environmentally responsible mineral projects by aligning skills, infrastructure, and innovation with industry needs. They also support local development, social dialogue and transparency, helping to address social polarisation against mining.

It is important, however, that place-based industrial policies also promote sectoral diversification to limit local vulnerabilities and strengthen resilience to sector-specific shocks. Diversification reduces dependence on a single industry and limits the impact of potential future downturns in specific sectors.

Giving people the skills they need where they live

Even when regions do recover from shocks or adapt to structural changes and transition, and most do, the new jobs created are typically in different activities benefitting recent and new entrants to the local labour market and not the workers that had earlier lost their jobs because the new opportunities are not always aligned to the skills of displaced workers or existing residents.

More tailored and forward-looking regional skills strategies should be designed to help workers develop the necessary skills to transition towards jobs that are likely to expand locally. A proven method is the use of place-based skills assessment and anticipation (SAA) exercises, such as that used by the Dutch Research Centre for Education and the Labour Market (ROA).

With regional SAAs, PES and other actors who accompany workers through job transitions are able to identify feasible training pathways from sectors that are shrinking toward jobs that will be in demand locally in the future.

Public and private employment services also have a key role to play in connecting people with local jobs. Some countries have put in place one-stop shops that provide detailed information on local demand by occupation, as well as offer direct support on job transitions. To further facilitate connection between local labour demand and supply, PES are increasingly putting in place dedicated teams for employer engagement in addition to traditional job-seeker counsellors. This model enables the PES to have a better overview of local labour market needs, increasing opportunities for registered job seekers.

Staying and going

To turn these principles into an actionable strategy, the required interventions – which include the provision of a wide variety of services, infrastructure building and territorial planning – span across the competences of several ministries and levels of government. Effective institutional arrangements across all levels of government are essential to successfully reduce regional disparities and ensure prosperity for all. Only with clear frameworks and strong co-ordination mechanisms can public authorities work effectively with all stakeholders to support inclusive and sustainable local development.

Unprecedented data that offer detailed proof of intra-regional inequalities demonstrate that standard national economic responses are no longer sufficient. To measure these dynamics better and deliver more integrated solutions, policymakers must balance both national and regional priorities – as well as learning from comparable regional examples elsewhere in the world.

The goal of moving people to jobs and jobs to people should never be imposed on any worker or any employer. Instead, designing a balanced and integrated framework means that the people who want to stay not only can stay but also are given reasons to do so, including access to viable local employment opportunities; and the people who want to go can do so without facing structural barriers to relocating. Such a recipe for a co-ordinated, whole-of-government approach can help build long-term economic resilience and ensure that no region is left behind.



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Executive summary

Labour markets remain resilient but show further signs of weakening

OECD labour markets have been resilient over the past year. At 72.1% on average in Q1 2026, employment rates have reached historically high levels in the OECD. However, there have been new signs of weakening, with a slight rise in unemployment, flattening employment trends, and continued easing of labour market tightness – even though structural labour shortages persist. Young labour market entrants have increasingly high unemployment compared to the rest of the working age population. In addition, even before the recent surge in energy prices, the real wage recovery was slowing down, and real wages were still below the levels of early 2021 – just before the 2022 spike in inflation – in one-third of OECD countries. Looking ahead, geopolitical uncertainties, high tariff rates and elevated energy costs are expected to lead to higher inflation and slow down the labour market and wage recovery further.

Regional employment gaps remain large

Where people live shapes employment opportunities and living standards. In over half of OECD countries, employment rates across small regions can differ by more than 20 percentage points. Few people move from low- to high-employment regions, and those who do are often the most employable, limiting the ability of labour mobility to reduce regional disparities. Most OECD countries have seen some convergence since the early 2010s, but disparities remain wide – and they reflect by and large the unequal distribution of economic opportunities across places, with capital regions usually offering better prospects.

People in lagging regions face lower incomes and weaker chances of climbing the income ladder

Labour market disparities across regions translate directly into disparities in disposable household incomes and living standards, even if regional income gaps are narrower than regional differences in GDP per capita. Compounding disadvantages also mean that people in lower-income regions face weaker prospects for upward mobility over time. For example, over a five-year horizon, people in the poorest regions are nearly 40% more likely to stay among the lowest-income group than their peers in the most affluent regions. Closing these gaps will require co-ordination of labour and social policies with place-based policies that boost economic dynamism and strengthen labour markets in lagging regions.

Resilience of places to structural shocks hides disparities across people

While in the medium term aggregate regional employment is often resilient to structural shocks, such as import competition from low-wage countries and breakthroughs in digital technologies, adjustment in the most exposed regions involves significant reallocation across industries. These transitions generate substantial and persistent social costs for displaced workers, reflecting limited mobility across sectors and

regions. Although new economic activities create jobs over time, many displaced workers struggle to access these opportunities, often experiencing prolonged unemployment or leaving the labour force altogether. The central policy challenge is to reduce local vulnerabilities and better anticipate structural change by fostering industrial diversification, investing in education and infrastructure, and anticipating evolving skills needs. At the same time, policies need to alleviate the social costs of adjustment by supporting displaced workers transitioning toward new jobs, removing barriers to mobility across regions, especially for the most vulnerable, and promoting new job opportunities.

Skills and training pay off, but returns depend on occupations, work practices and training design

Evidence from the 2022-2023 cycle of the Survey of Adult Skills (PIAAC) shows that numeracy and formal education remain strong predictors of employment and wages, although their influence has weakened over the past decade. A large share of their association with wages operates through occupational sorting: education and skills raise earnings primarily by facilitating access to higher-paid occupations. Non-cognitive skills, such as task autonomy and co-operation, are also associated with higher wages and amplify the positive link between wages and numeracy. Non-formal training shows a consistent positive link with wages, especially when focussed on leadership, teamwork and project management, and delivered flexibly. These findings support policies that make skills visible, promote flexible high-quality learning, and strengthen employer engagement to sustain skills development in a changing labour market.

Non-compete clauses are pervasive and have adverse effects on productivity and wages

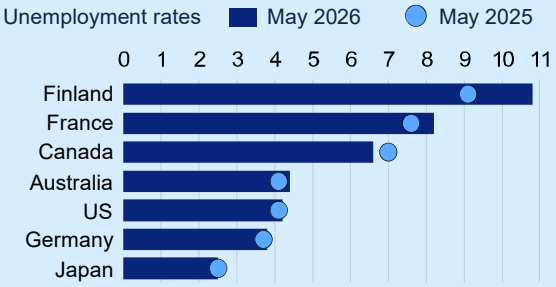
One-third of workers in the OECD countries analysed are bound by non-compete clauses, which prevent workers from joining (or starting) a competing firm, and their use has increased in recent years. Other post-employment restraint clauses – including non-disclosure agreements, non-solicitation clauses and repayment provisions for bonuses or training costs – are also widely used, often in combination with non-compete clauses. Originally intended to protect legitimate business interests such as trade secrets, these clauses have spread well beyond knowledge-intensive occupations to cover many workers with limited access to confidential information. New evidence suggests that non-compete clauses can reduce job mobility, weaken workers' bargaining power, depress wages and slow productivity growth by limiting labour reallocation and the diffusion of knowledge across firms. The pervasiveness of non-compete clauses – even in countries where they are more tightly regulated – coupled with the evidence of their adverse consequences raises questions about whether current policy frameworks are fit for purpose.

Tailored employment protection legislation can help labour markets navigate short-term fluctuations and structural changes

Employment protection legislation (EPL), which consists of dismissal and hiring regulations, aims to protect workers from arbitrary job separations and to make companies bear part of the social costs of separations. These regulations are important determinants of people's job security, career path and working conditions but, if ill-designed, can also reduce firms' ability to adapt to fluctuations in demand and structural changes. EPL disparities across OECD countries remain large. English-speaking countries continue to have less strict regulations than many EU countries, for example. Most EPL reforms implemented since the start of the current decade have focussed on harmonising dismissal regulation of workers on open-ended contracts (e.g. reducing differences between white- and blue-collar workers) and strengthening regulation of temporary contracts. These reforms could help reduce labour market dualism by making dismissal regulation for workers on open-ended contracts more predictable and temporary contracts less attractive and more difficult to use.

Infographic 1. Key facts and figures

Unemployment remains low, but rising slightly in many countries

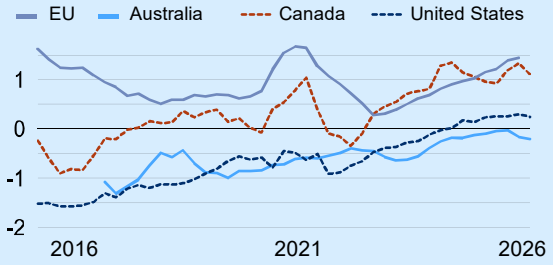


Unemployment remains low in many OECD countries but is rising in a majority of them.

The median OECD unemployment rate increased from 5.4% in May 2025 to 5.7% in May 2026.

Growing unemployment risk for young graduates compared to other workers

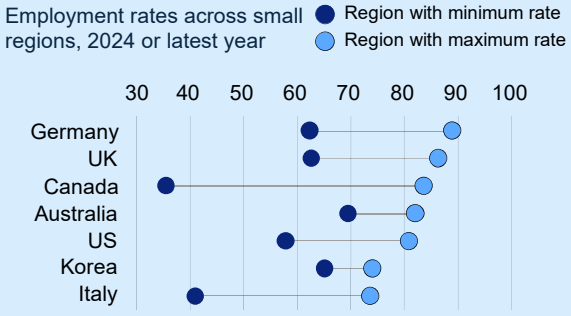
Percentage point difference in unemployment of young college graduates compared to the working age population



Graduate youth unemployment has been rising compared to the working age population since well before the spread of generative AI models.

Large variation in employment rates across regions

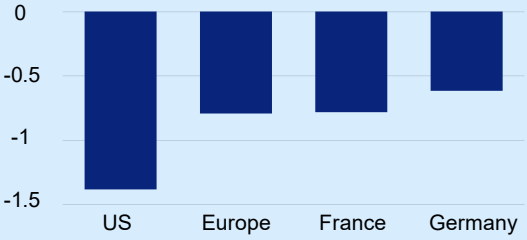
Employment rates across small regions, 2024 or latest year



In over half of OECD countries, employment rates across small regions vary by more than 20 percentage points.

Imports from low-wage countries reduce employment in the manufacturing sector

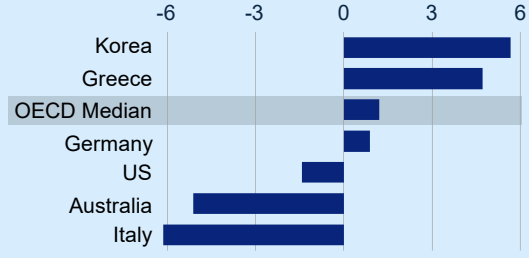
Percentage point decline in employment rate in manufacturing in regions more exposed to low-wage import competition



When faced with competition from low-wage imports, manufacturing workers tend to leave employment rather than move to another job.

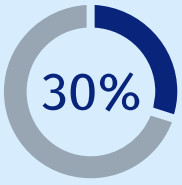
Real wages are still under pressure

Cumulative % change in real wages between Q1 2021 and Q1 2026



Even before the recent surge in energy prices, real wages had not caught up with the 2022 spike in inflation in many countries.

Non-compete clauses are widespread across OECD countries



30% of employees across 15 OECD countries are bound by non-compete clauses – contractual terms that prevent workers from joining or starting competing firms.

Such clauses reduce wage growth by limiting workers' outside options. They also risk reducing productivity growth by limiting how easily people change jobs and the spread of knowledge.

1 From resilience to risk: Employment and wages under pressure

Alexandre Georgieff and Sébastien Martin

OECD labour markets have continued to show resilience over the past year, with employment and labour force participation remaining at historic highs. However, there have been new signs of weakening, with a slight rise in unemployment, a slowdown in the growth in employment and labour force participation, and a continued easing of labour market tightness – even though structural labour shortages persist. In addition, even before the recent surge in energy prices, the real wage recovery was slowing down, despite real wages remaining below the levels seen in early 2021 – just before the post-pandemic inflation surge – in one-third of OECD countries. As real wage growth slows down, the contributions of profits and wages to domestic price pressures tend to stabilise to patterns similar to those prevailing before the COVID-19 pandemic.

In Brief

OECD labour markets have continued to show resilience, but new signs of weakening emerged over the past year, with rising unemployment, a slowdown in employment and labour force participation growth, a further easing of labour shortages, and a deceleration of the real wage recovery.

The latest labour market data available at the time of writing suggest that:

- **Employment and labour force participation rates remain at historic highs, while OECD unemployment remains low.** The OECD unemployment rate was 4.9% in May 2026, the average employment rate in the OECD reached 72.1% in Q1 2026, while the average labour force participation rate rose to 76.7%.
- **However, there are further signs of weakening in labour markets, as unemployment is rising slightly, employment trends are flattening and growth in labour force participation is slowing down.** In particular, the median unemployment rate in the OECD increased from 5.4% in May 2025 to 5.7% in May 2026.
- **Many young entrants to the labour market have become more likely to be unemployed.** The unemployment gap between young college graduates and the working age population has been widening since before the pandemic in all countries analysed. Young entrants without a graduate degree have also recently seen their unemployment gap increase in a few countries. So far, the role of recent advances in large language models (LLM) in explaining the difficulties facing young people appears to be limited. Instead, young labour market entrants may have been particularly vulnerable to the recent weakening of labour markets, as well as long-term changes in technology and skill needs.
- **Labour shortages continued to ease, but structural shortages remain.** While labour market tightness is now lower than at the onset of the COVID-19 pandemic in many countries, it remains higher than during most of the pre-pandemic decade and, in particular, than during comparable stages of the business cycle.
- **Labour productivity growth is slowing down**. In the euro area, labour hoarding (among other factors) has supported employment in spite of weak economic growth, and this has mechanically reduced labour productivity growth. Nonetheless, sectors that play a central role in AI adoption have boosted productivity performance in the United States.
- **Even before the recent surge in energy prices, the real wage recovery was slowing down, while real wages remained below the levels seen in early 2021 (just before the post-pandemic inflation surge) in one-third of OECD countries.** Annual real wage growth was positive in virtually all OECD countries in Q1 2026, but it was lower than one year earlier in two-thirds of them. It was 2.2% in Q1 2026 on average across countries, compared with 2.7% in Q1 2025.
- **Real statutory minimum wages remain above January 2021 levels and continue to rise.** In April 2026, the real minimum wage was higher than a year earlier in a majority of the 30 OECD countries that have a national statutory minimum wage and was higher than in January 2021 in virtually all of them.
- **As a result, the wages of the lowest-paid workers have proved more resilient to the inflation surge than median wages.** Statutory minimum wages have risen more than median wages since

2021 (i.e. Kaitz indexes have increased), and real wages have been more resilient in low wage sectors in some countries, reflecting a compression of the wage distribution at the bottom.

- **As real wage growth slows down, the profit – wage "catch-up" phase may be shifting towards a steadier pattern similar to that seen before the pandemic.** Unit labour costs continued to rise faster than unit profits between Q1 2025 and Q1 2026 in most OECD countries, but there are signs that the catching-up of real wages – following the disproportionate contribution of unit profits to the inflation surge in 2021-2022 – could be slowing down, with their relative contribution to domestic price pressures stabilising around pre-pandemic levels in some countries.

Looking ahead, labour market policies (e.g. unemployment insurance, active labour market policies, collective bargaining) will play a key role in addressing the labour market impacts of persistent economic uncertainty and elevated energy costs. In particular, in a context of stabilising wage pressure and rising inflation, wage setting policies, collective bargaining systems and social dialogue have a role to play in ensuring that the cost of inflation is shared fairly between workers and employers. Addressing structural labour shortages will also require co-ordinated efforts across various areas of labour market policy.

Introduction

OECD economies suffered major shocks in the wake of the COVID-19 crisis and Russia's war against Ukraine, and OECD labour markets proved resilient to the negative consequences of these shocks, with high employment, low unemployment and substantial labour shortages in many sectors of the economy. Several factors may have contributed to these strong employment outcomes. In particular, surging inflation kept real wages relatively low, labour hoarding became widespread in many countries, and workers' preferences shifted toward fewer working hours (OECD, 2025[1]; 2024[2]; 2023[3]; 2022[4]; ECB, 2024[5]).

However, this decoupling between economic activity and labour market performances showed some first signs of ending in 2023, with labour shortages declining, employment growth slowing down, and the downward trend in unemployment coming to a halt (albeit with historically low unemployment rates) in many OECD countries (OECD, 2024[2]; 2025[1]).

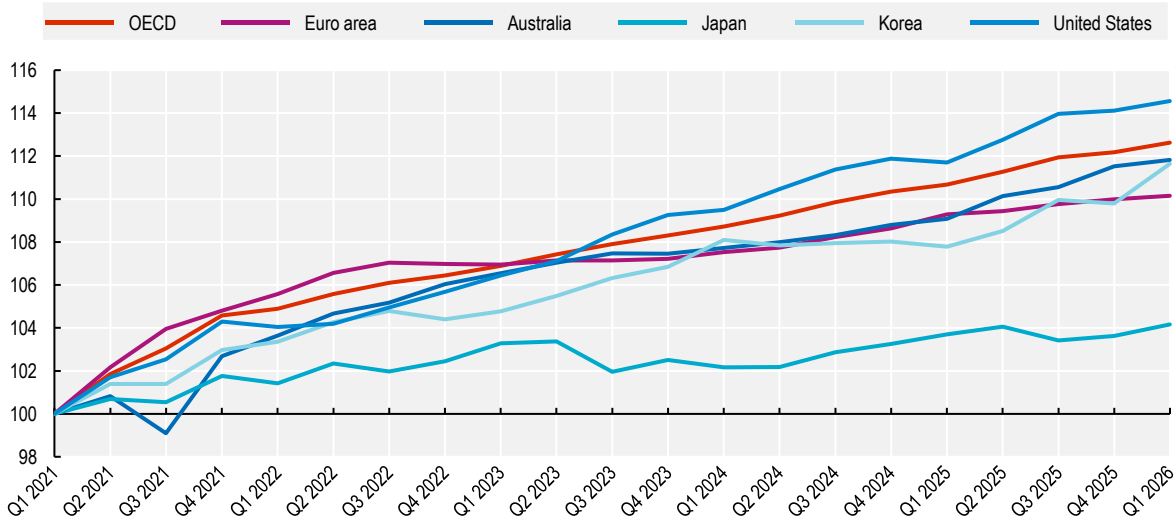
This chapter reviews recent developments by presenting the latest trends observed in the labour market and wages across OECD countries. It is organised as follows: Section 1.1 reviews recent labour market developments; Section 1.2 reports on recent wage developments, including updated information on statutory minimum wages and negotiated wages; Section 1.3 highlights the particular difficulties faced by young labour market entrants and the potential role of Artificial Intelligence (AI) in explaining these difficulties; and Section 1.4 concludes.

1.1. Labour markets have remained resilient but there have been further signs of weakening

In Q1 2026, at the onset of the recent surge in energy prices, GDP growth in OECD countries remained resilient (Figure 1.1). However, the evolving conflict in the Middle East is testing the resilience of the global economy. The duration and extent of the conflict remain uncertain, though at the time of finalising this publication a negotiated settlement is in place. Even after the conflict ends, the economic effects are likely to be felt for some time given the months it will take to restore damaged infrastructure and transport routes and deliver products around the world (OECD, 2026[6]).

Figure 1.1. GDP growth remained resilient in the first quarter of 2026

Real GDP indexed to 100 in Q1 2021, seasonally adjusted, selected OECD countries



Note: Euro area refers to the averages of 21 Eurozone countries.
Source: OECD calculations based on OECD Data Explorer, "Quarterly real GDP growth – OECD countries", http://data-explorer.oecd.org/s/2ah (accessed on 5 June 2026).

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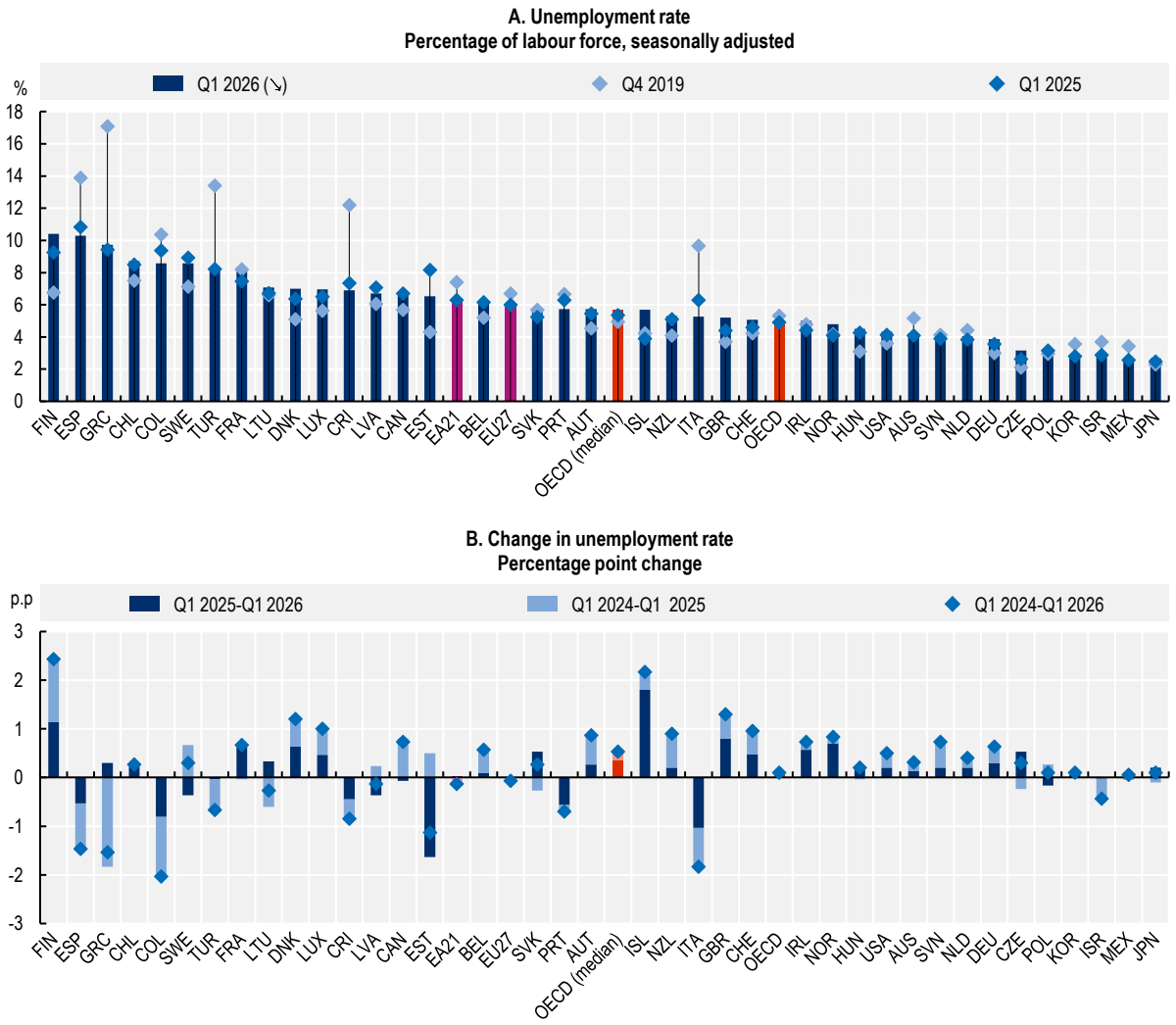
1.1.1. Unemployment remains low but is on the rise

Unemployment remains low in many OECD countries but is rising in about two-thirds of them (Figure 1.2, Panel A). In particular, the unemployment rate was more than 0.2 percentage points (p.p.) higher in Q1 2026 than a year earlier in many European countries[1] and Chile (Panel A). While the median unemployment rate has increased from 5.4% in Q1 2025 to 5.7% in Q1 2026, the overall OECD unemployment rate has risen only slightly, from 4.9% to 5%. This recent increase in unemployment mainly affects young and prime age workers (Annex Figure 1.A.1). Young workers have faced specific labour market difficulties in recent years, which are discussed in detail in Section 1.3.

Still, unemployment has declined substantially in some countries over the past year. In Q1 2026, the annual decline in the unemployment rate was greater than 0.2 p.p. in two Baltic states (Estonia and Latvia), three Southern European countries (Italy, Portugal and Spain), Colombia, Costa Rica and Sweden.

Figure 1.2. Unemployment rates remain low but are on the rise

Unemployment rate (percentage of labour force), seasonally adjusted



Note: The labour force comprises all persons aged 15 and over. Euro area ("EA21") refers to the labour force-weighted average unemployment rate across the 21 euro area countries, and European Union ("EU27") to the labour force-weighted average across the 27 EU countries. "OECD" denotes the labour force-weighted average across the 38 OECD countries. "OECD (median)" denotes the median unemployment rate across these countries. In Panel B, "OECD (median)" refers to the change in the OECD median unemployment rate (not the median of country-level changes). Data refer to Q4 2025 (Q4 2024 for the year-earlier comparison) for the United Kingdom.
Source: OECD Data Explorer, "Monthly unemployment rates", http://data-explorer.oecd.org/s/2ai (accessed on 15 June 2026).

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1.1.2. Growth in employment and labour force participation is slowing down

Employment and labour force participation rates remain at historic highs – 72.1% and 76.7% respectively in Q1 2026 on average in the OECD, but their growth is slowing down. On average in the OECD, employment trends have flattened. Labour force participation rates rose by 0.1 p.p. between Q1 2025 and Q1 2026, compared with 0.2 p.p. between Q1 2024 and Q1 2025 (Figure 1.3, Panel A). Employment rates decreased markedly over the past year in Iceland, Ireland and Luxembourg. By contrast, employment rate growth accelerated dramatically in Estonia, Latvia and Poland.

Over the past two years, employment rate growth has been strongest in some Latin American countries (Colombia and Costa Rica) and Southern European countries (Italy, Greece, Portugal and Spain), as well as in Japan and Lithuania. The growth in the labour force participation rate has also been relatively strong in all these countries, except for Costa Rica, Italy and Spain (Figure 1.3, Panel B).

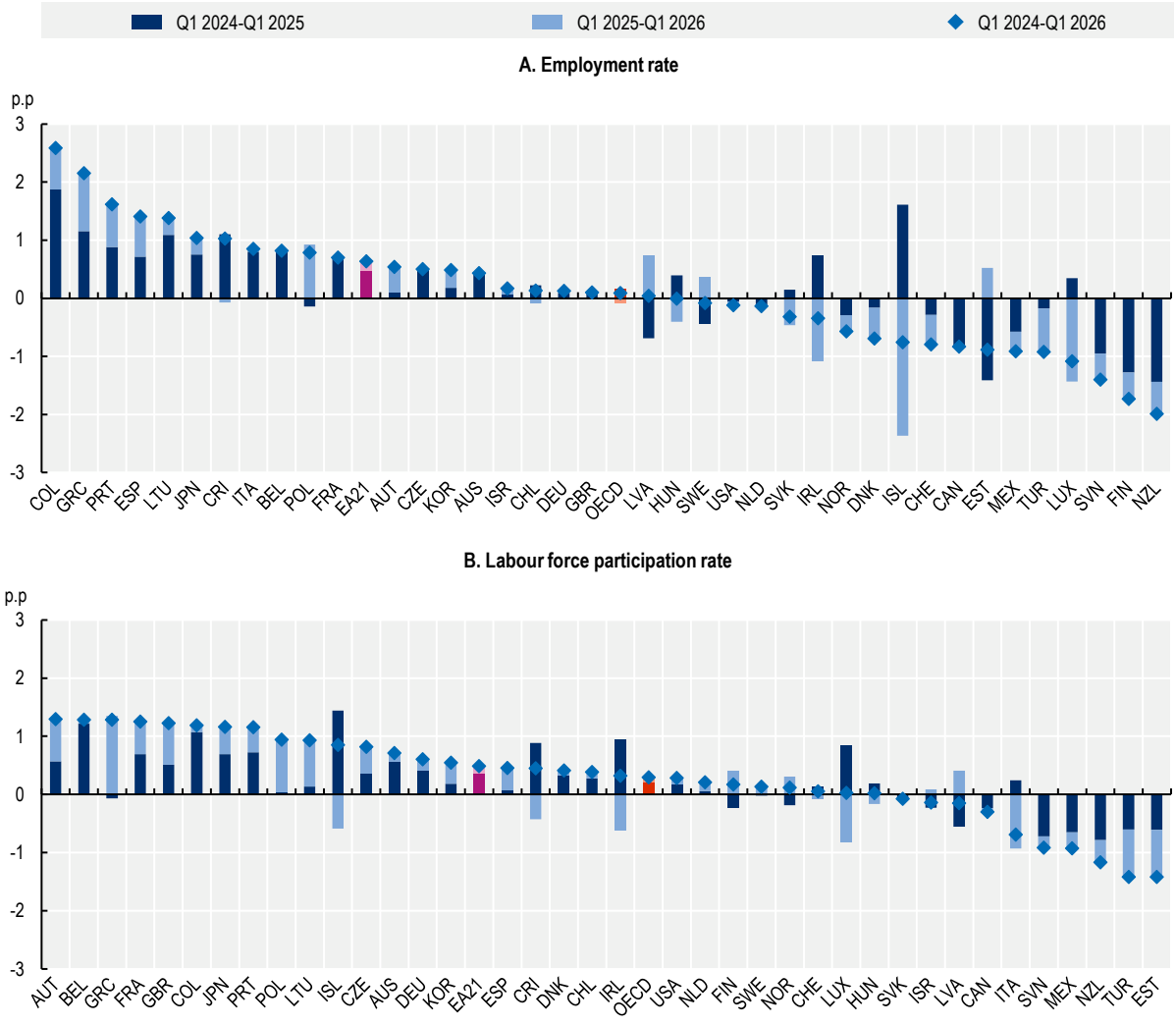
In most OECD countries, the gender gap in employment and labour participation rates have narrowed over the past year (Annex Figure 1.A.2, Panels A and B), continuing a trend observed throughout the recovery from the COVID-19 crisis (OECD, 2024[2]).

On average across OECD countries, approximately one-third of the increase in the employment rate between Q1 2024 and Q1 2026 is due to the increase in the employment rate of prime age workers (25-54), and two-thirds to the increase in the employment rate of older workers (55-64) (Annex Figure 1.A.1, Panel B). By contrast, the employment rate of younger workers (15-24) fell over the period. The increase in the employment rate for older workers is part of a trend that has been ongoing for two decades (OECD, 2025[1]). Similarly, the increase in the labour force participation rate between Q1 2024 and Q1 2026 is solely due to prime age and older workers, in roughly equal shares on average across OECD countries (Panel C).

In some countries, the increase in employment and/or rising labour force participation rates has been largely driven by growing employment and/or labour force participation rates among migrants. This is the case in Austria, Belgium, Denmark, Germany, Greece, Latvia, Norway, the Netherlands and Sweden (Annex Figure 1.A.3). Nonetheless, the gaps between both the average employment and unemployment rates of migrants and native-born people in the OECD widened in 2024, following a strong post-pandemic recovery in migrants' labour market outcomes in 2022-2023 – in most countries, migrants fare worse than native-born people in terms of employment and unemployment, even though they tend to participate more in the labour market (OECD, 2025[7]).

Figure 1.3. Growth in employment and labour force participation rates is slowing down

p.p. change among the working age population (persons aged 15-64), seasonally adjusted data



Note: OECD is the unweighted average of the 38 OECD countries shown in this Chart. Euro area refers to the 21 Eurozone countries. Statistics for Iceland and the United Kingdom refer to Q4 2023, Q4 2024, and Q4 2025. p.p: percentage point.
Source: OECD Data Explorer, "Employment rate", http://data-explorer.oecd.org/s/2al (accessed on 16 June 2026), and OECD Data Explorer, "Labour force participation rate", http://data-explorer.oecd.org/s/2am (accessed on 16 June 2026).

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1.1.3. Labour markets continued to ease but structural shortages remain

Labour markets have eased further over the past year in most of the 27 OECD countries analysed in Figure 1.5 Panel A. Labour market tightness (measured by the number of vacancies per unemployed person)[2] was higher in Q1 2026 than one year earlier in only five countries: Estonia, Poland, Portugal, Slovenia and Spain. With the exception of Slovenia, these countries are among the one-third of OECD countries where unemployment has declined over the past year (Figure 1.2).

In addition, in Q1 2026, labour market tightness was close to or below pre-COVID-19 levels in most of the countries analysed. It was also well below the post-COVID-19 peak in all countries where there was one,

with the exception of Israel. In the EU, in Q1 2026, the share of firms citing lack of labour as one of the factors limiting production is also close or below the pre-pandemic records of 2019: one in six firms in industry and one in five firms in services mentioned to be limited by lack of labour.[3] In this context of decreasing recruitment difficulties, labour hoarding behaviours have continued to decline (see Box 1.1).

Box 1.1. Labour hoarding in the EU has been declining but remains above pre-COVID-19 levels

Since the pandemic, employment has been supported by strong labour hoarding in many OECD countries, including in EU countries (ECB, 2024[5]), the United Kingdom[1] and the United States[2] – in other words, firms have preferred to adjust to negative shocks by retaining their staff while reducing working hours rather than cutting jobs. This has accentuated the decoupling between employment levels and economic activity.

Between the onset of the pandemic (Q1 2020) and early 2023, on average over the 20 OECD EU countries analysed, labour hoarding behaviour (measured by the share of firms expecting their output to decrease but their employment to increase or remain unchanged over the next 3 months) reached historic highs, overall and in most sectors (the construction sector being an exception, with persistently high labour hoarding) (Figure 1.4, Panel A). Labour hoarding was initially (2020-2021) encouraged by the widespread use of job retention schemes and other exceptional measures aimed at supporting employment during the pandemic. Then, in a second phase (2022-2023), high profit margins and persistent labour shortages increased the expected costs of rehiring. In this context, Europe's high exposure to rising gas prices and the uncertainty surrounding Russia's war against Ukraine led many firms to hoard labour while waiting for the economic situation to improve (ECB, 2025[8]; ECB, 2024[5]; OECD, 2021[9]). This rise in labour hoarding was particularly marked in the trade sector.

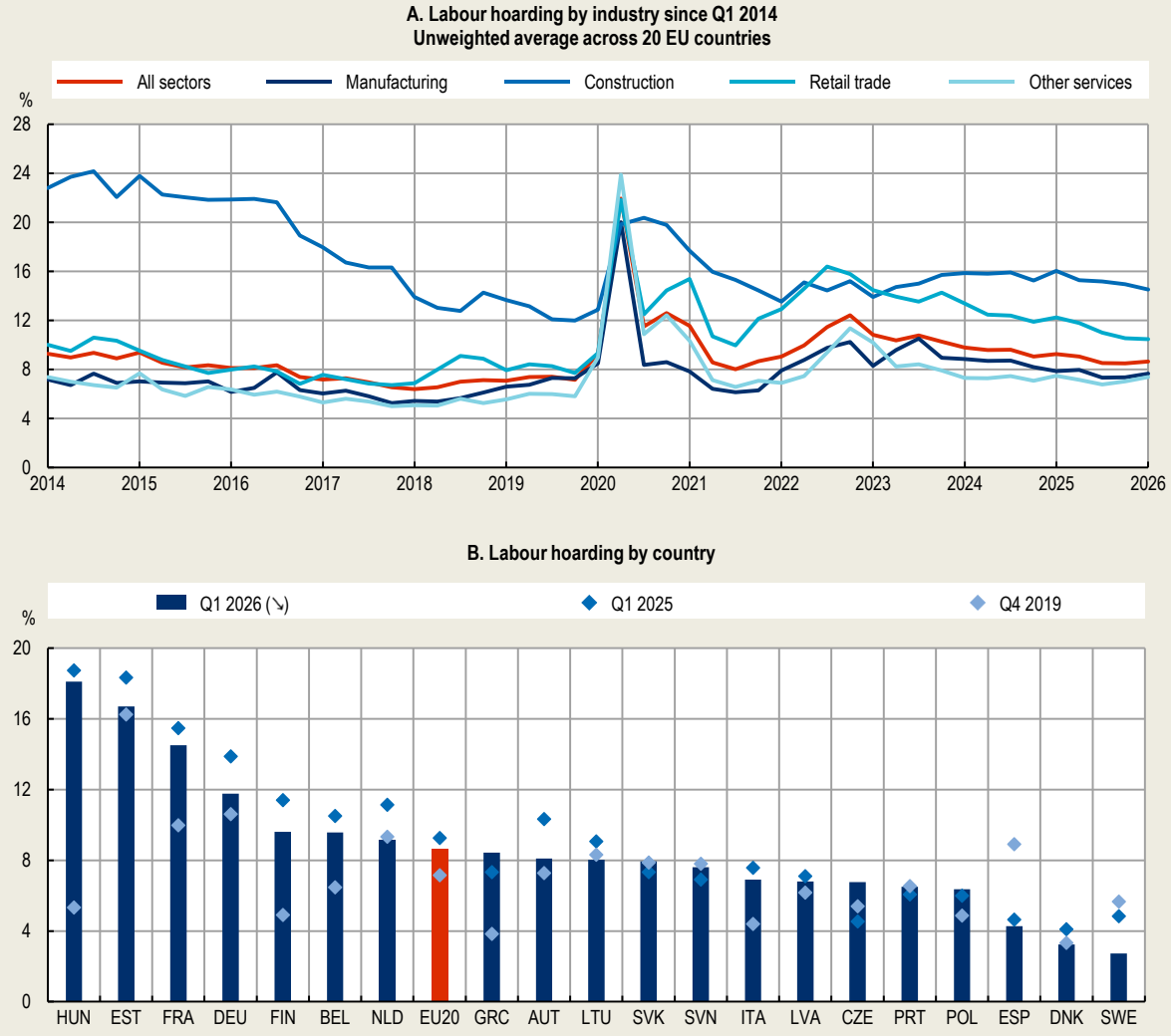
Since then, labour hoarding has declined (Figure 1.4, Panel A), as economies have adjusted to the war in Ukraine, and profits (see Section 1.2) and labour shortages (Figure 1.5) have moved closer to pre-pandemic levels. In Q1 2026, labour hoarding was lower than one year earlier in two-thirds of the countries analysed (Panel B).

Nevertheless, labour hoarding also remains above pre-pandemic levels in two-thirds of the countries analysed (Figure 1.4, Panel B), and by more than 10% in about half of them, as economic uncertainty remains high and real wages have not caught up with the post-pandemic inflation surge (see Section 1.2). In addition, shifts in worker preferences towards shorter hours may have increased rehiring costs, further fuelling labour hoarding (OECD, 2025[1]).[3]

In the future, labour hoarding could remain substantially higher than before the pandemic, as real wages could remain below pre-pandemic levels in a number of countries. Elevated energy costs in particular may weaken labour markets and raise inflation, at least in the short run. Several other factors could increase the expected costs of rehiring: demographic ageing will impose workforce reductions (OECD, 2025[1]) – thereby increasing labour market tightness –, the digital transformation (AI) and the move toward carbon neutrality may accentuate skill mismatches (OECD, 2023[3]; OECD, 2024[2]), and worker preferences may continue to shift toward fewer working hours.[1]

Figure 1.4. Labour hoarding in the EU has been declining but remains above pre-COVID-19 levels

Percentage of firms which expect their output to decrease but their employment to increase or remain unchanged over the next three months, seasonally adjusted data



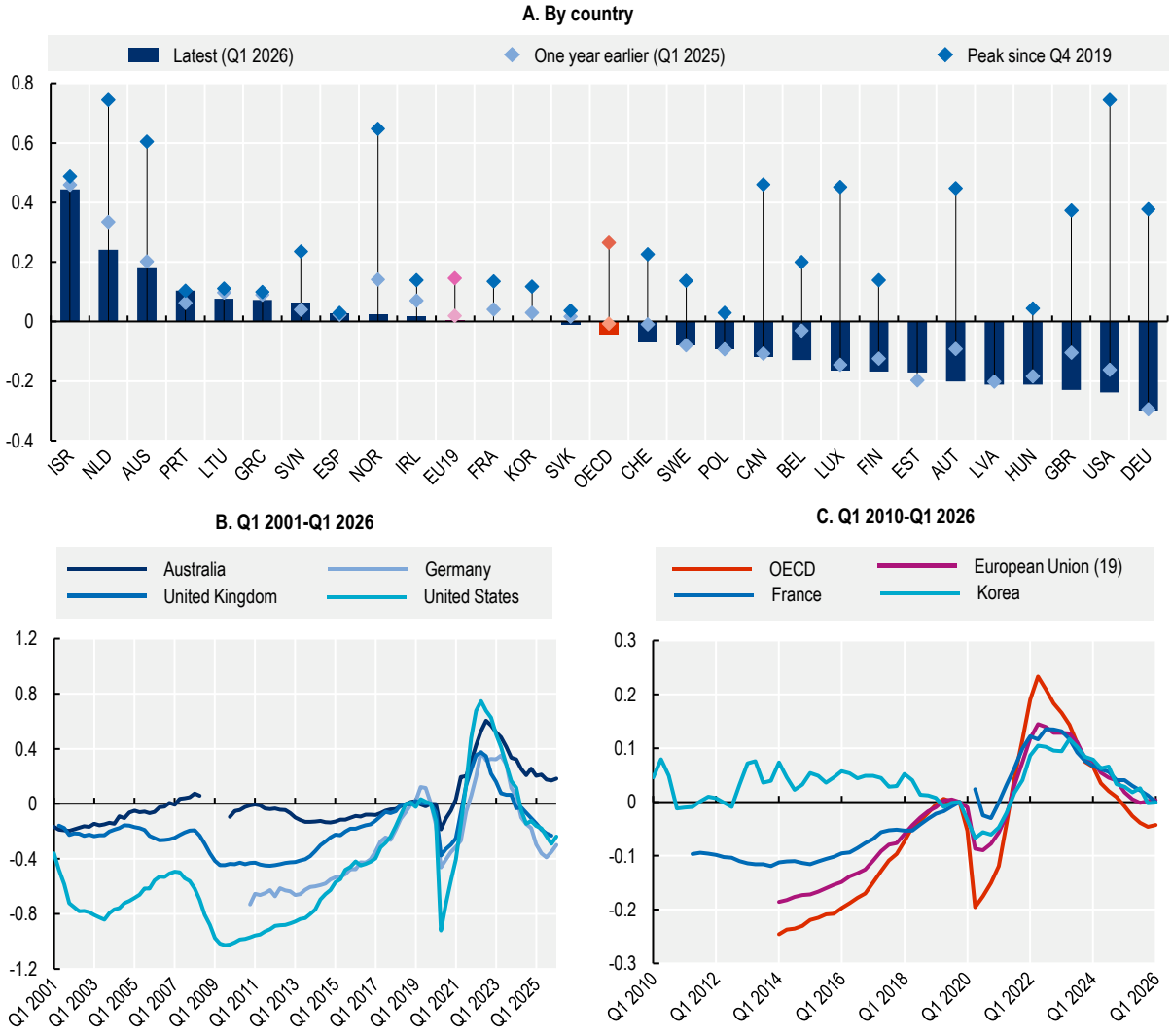
Note: The labour hoarding indicator measures the share of firms that do not expect to reduce their workforce (employment margin) despite a recent worsening in their business conditions (activity margin). Statistics refer to the non-agricultural business sector and include "Manufacturing" (Section C of the NACE Rev. 2.1), "Construction" (Section F), "Retail trade" (Section 47), and "Other services" (Sections H to N, and sections R to S). European Union (EU20) refers to the unweighted averages across the 20 EU countries shown in Panel B.
Source: OECD calculations based on the European Commission, Business and consumer surveys, https://economy-finance.ec.europa.eu/economic-forecast-and-surveys/business-and-consumer-surveys_en (accessed on 30 April 2026).

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1. https://www.bankofengland.co.uk/speech/2024/may/megan-greene-speech-at-make-uk-the-current-state-of-britains-labour-market?.
2. https://www.apricitas.io/p/the-no-hire-economy.
3. https://www.ecb.europa.eu/press/key/date/2025/html/ecb.sp250823~2f476a9a97.en.html.

Figure 1.5. Labour market tightness is close to or below pre-COVID-19 levels in most countries but remains high

Difference in the vacancies-to-unemployed ratio relative to its Q4 2019 level



Note: OECD is the unweighted average of vacancies per unemployed across the 27 OECD countries shown in Panel A (not including Chile, Colombia, Costa Rica, Czechia, Denmark, Iceland, Italy, Japan, Mexico, New Zealand and Türkiye). Europe (19) is the weighted average of vacancies per unemployed across the 19 EU countries shown in Panel A. Czechia is not shown due to a major break in the vacancy series in Q1 2025, which led to the automatic removal of older vacancies from the register and resulted in a structural discontinuity.

In Panel A, the peak refers to the maximum value of vacancies per unemployed reached between Q4 2019 and Q1 2026. For Estonia and Latvia, vacancies per unemployed remain below their Q4 2019 levels throughout the period considered; consequently, no peak is identified for these countries.

Statistics on job vacancies for Estonia and Switzerland in Panel A are not seasonally adjusted. Vacancy statistics for France exclude "Public administration and defence; compulsory social security" (NACE Rev. 2 section O), while public institutions are not fully covered in "Education" and "Human health and social work activities" (NACE Rev. 2 sections P and Q).

Vacancy statistics for Israel refer to enterprises with at least five employees and exclude "Public Administration and Defence; Compulsory Social Security", primary and secondary schools, kindergartens and day-care centres, but include government-owned enterprises in the business sector and public hospitals (including government-owned).

Labour-market tightness is measured as the number of job vacancies divided by the number of unemployed (ILO definition). Definitions of job vacancies are not fully harmonised across countries, which limits international comparability. For Israel, job vacancies refer to posts for which employers are actively seeking a candidate from outside the enterprise following retirement, resignation or promotion. Coverage is limited to enterprises with at least five employees and excludes public administration and defence, compulsory social security, and most education services, while including government-owned enterprises in the business sector and public hospitals. For country-specific vacancy definitions for all other countries, see the note to Figure 1.7 in OECD (2025[1]). Statistics for Norway, Switzerland and the United Kingdom are available up to Q4 2025.

Source: Job Vacancies (Australian Bureau of Statistics, ABS) for Australia; Job vacancies, payroll employees, and job vacancy rate (Statistics Canada) for Canada; Job vacancies and labour turnover (Statistics Estonia) for Estonia, https://andmed.stat.ee/api/v1/en/stat/PAV011; Eurostat, Job vacancy statistics by NACE Rev.2 activity (Table jvs_q_nace2) for the European countries; Job Vacancy Survey (Central Bureau of Statistics, CBS) for Israel; Labor Force Survey at Establishments (Ministry Of Employment and Labor, MOEL) for Korea; Vacancy Survey (Office for National Statistics, ONS) for the United Kingdom; and Job Openings and Labor Turnover Survey (Bureau of Labor Statistics, BLS) for the United States; OECD Data Explorer, "Monthly unemployment rates", http://data-explorer.oecd.org/s/2aq (accessed on 16 June 2026).

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However, most OECD labour markets remain tight when viewed over a longer time horizon. While, on average across the countries analysed, labour market tightness was lower in Q1 2026 than at the onset of the pandemic, it was higher in Q1 2026 than during most of the pre-pandemic decade and, in particular, than during comparable stages of the business cycle (Figure 1.5, Panels B and C). In fact, average labour market tightness had been on the rise for several years when the pandemic hit. A number of structural factors, which are still at play, contribute to explaining this trend, including population ageing, the digital transformation, the move toward carbon neutrality and poor job quality in certain sectors (Dorville, Filippucci and Marcolin, 2025[10]; Filippucci, Laengle and Marcolin, 2025[11]; OECD, 2025[1]; Knez and Arpaia, 2026[12]).

To capture labour market tightness at industry level, Figure 1.6 provides an overview of the industry-specific vacancy rates (i.e. the fraction of all jobs available in the industry that are unfilled and for which employers report that they are actively trying to recruit) in Australia, the euro area and the United States.

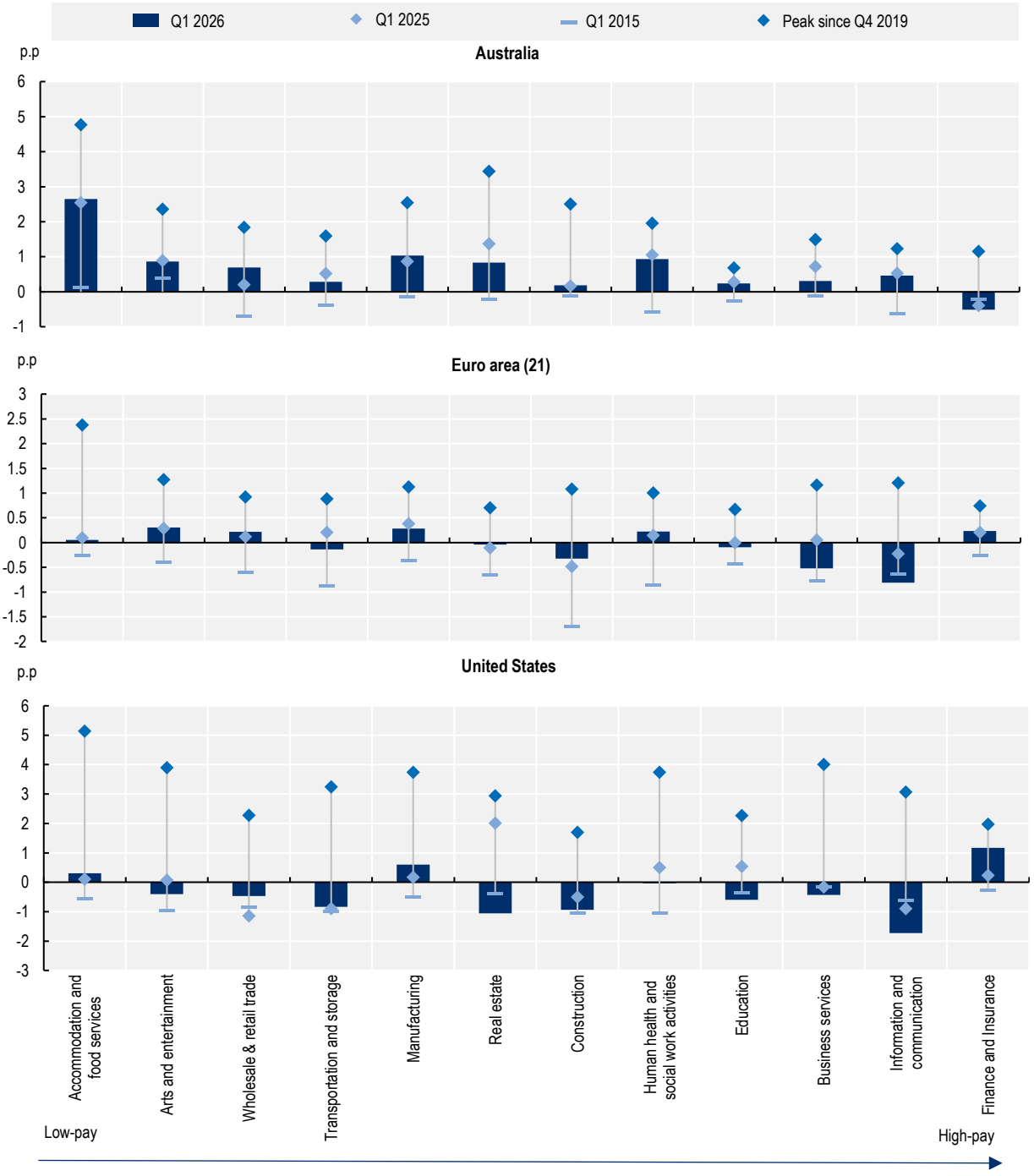
The loosening of the labour market over the past year has been particularly pronounced in some sectors, including business services (Australia and the euro area), transportation and storage (Australia and the euro area), information and communication (the euro area and the United States), real estate (Australia and the United States), and education (the United States) (Figure 1.6).

In Q1 2026, in both the euro area and the United States, labour market tightness was close to or below pre-COVID-19 levels in most sectors, including some where the peak in tightness had been particularly high, such as accommodation and food service activities or business services (Figure 1.6).[4] The sectors where labour market tightness remained highest compared with pre-crisis levels are (i) in the euro area: arts and entertainment, and manufacturing; (ii) in the United States: finance and insurance, and manufacturing. In Australia, however, labour market tightness remained substantially above pre-COVID-19 levels in most sectors, particularly those where peak tightness had been among the highest (Figure 1.6): accommodation and food service activities, manufacturing, and real estate.

In the three areas analysed, most sectors remain tight when looking at a longer time horizon (Figure 1.6 and Annex Figure 1.A.4). In Q1 2026, even in the euro area and the United States, labour market tightness remained higher than in Q1 2015 in most sectors, particularly in those where it had however returned to pre-COVID-19 levels, such as human health and social work activities; or, in the euro area, construction, and transportation and storage. Interestingly, in no country there appears to be a correlation between the typical level of pay of the sector and the difference between current tightness and Q1 2015 levels, suggesting that structural labour shortages occur both in high and low-skill jobs.

Figure 1.6. Labour market tightness is close to pre-COVID.19 levels in most sectors in the euro area and the United States

p.p. difference in job vacancy rates by industry relative to their Q4 2019 levels



Note: Industries are ranked by median wages in 2018 using the European Structure of Earnings Survey (SES). This ranking is broadly consistent when using 2019 median wage data from the United States Current Population Survey. The definition of vacancies is not harmonised across countries (see Figure 1.5 for further details).

For Australia, job vacancy rates by industry are OECD estimates based on vacancies from the Job Vacancy Survey and employees from the Labour Force Survey. Job vacancy rates by industry are seasonally adjusted for the United States. For Australia and the euro area, series are smoothed using a Hodrick-Prescott filter.
Industries refer to ANZSIC 2006 (1-digit) for Australia, NACE Rev. 2.1. (1-digit) for the euro area and NAICS for the United States and are therefore not fully comparable across countries. For the euro area (21), "Information and communication" is calculated as the unweighted average of the job vacancy rates for NACE Rev. 2.1 sections J ("Publishing, broadcasting, and content production and distribution activities") and K ("Telecommunication, computer programming, consulting, computing infrastructure and other information service activities"). In the United States, "Business services" includes administrative services, "Real estate" includes rental and leasing, "Transportation and storage" includes warehousing and utilities, while "Human health and social work activities" and "Education" cover the private sector only. Euro area refers to the 20 euro area countries. p.p: percentage point.
Source: Job Vacancies (Australian Bureau of Statistics, ABS) for Australia; Job vacancy statistics by NACE Rev.2.1. activity for the euro area; and Job Openings and Labor Turnover Survey (Bureau of Labor Statistics, BLS) for the United States.

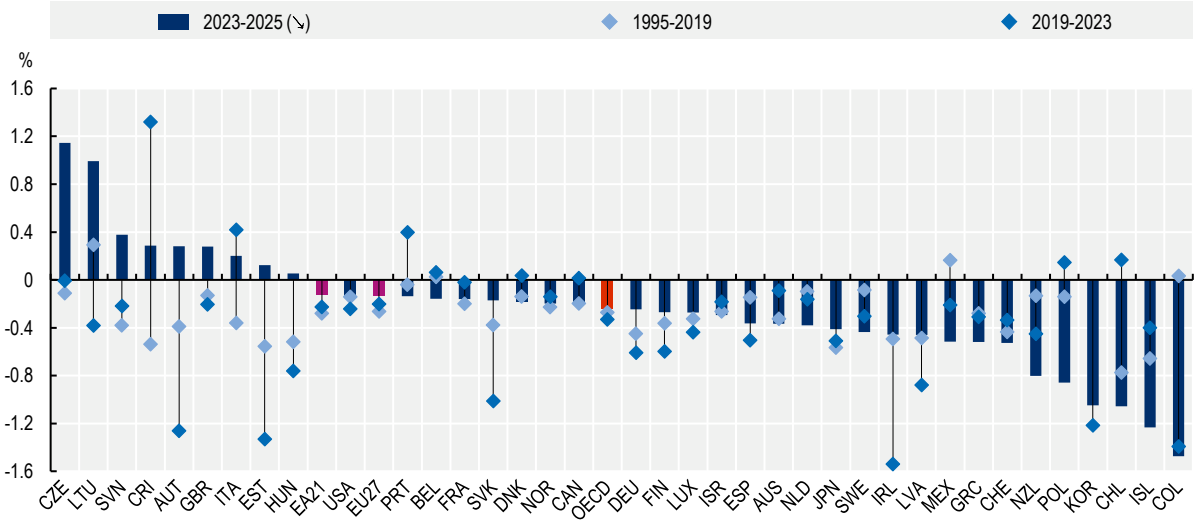
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1.1.4. The reduction in annual hours worked per worker has slowed down

Over the past two years, the reduction in total hours worked per worker and per year has decelerated compared to its long-term trend (Figure 1.7). On average across the OECD countries for which data are available, the annualised reduction in hours worked was around 0.24% during the period 2023-2025, compared with 0.27% during the period 1995-2019 and 0.33% during the period 2019-2023. The strongest slowdown (or acceleration) in the decline (growth) in working hours between these two periods was observed in the Baltic states (Estonia, Latvia and Lithuania), five Central European countries (Austria, Czechia, Hungary, the Slovak Republic and Slovenia), Ireland and the United Kingdom. In fact, annualised growth in working hours turned positive in most of these countries.

Figure 1.7. The reduction in annual hours worked per worker has slowed down

Percentage change in average hours worked per worker and per year



Note: Average hours worked per worker are calculated as total actual hours worked divided by total employment. For Canada, the series refers to average annual hours worked per job. For Colombia, 2025 refers to 2024. The percentage change over 1995-2019 is not available for Korea, as the series starts in 2008. For Estonia, the percentage change over 1995-2019 refers to 2000-2019. OECD is the unweighted average of the 36 OECD countries shown in the chart, excluding Korea and Türkiye. Euro area (21) refers to the 21 euro area countries.
Source: OECD Data Explorer, "Average annual hours actually worked per worker", https://data-explorer.oecd.org/s/4o5 (accessed on 4 June 2026), and OECD calculations based on Eurostat, Annual National Accounts (Employment by main industry (NACE Rev.2), Table nama_10_a10_e) for the euro area and the European Union.

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The decline in hours worked can be explained by several factors, including productivity gains, changes in workers' preferences towards fewer overtime hours or part-time jobs, changes in working time regulations or collective agreements (OECD, 2021[9]), but also compositional shifts towards jobs requiring fewer working hours. Evidence from Europe suggests that worker preferences are at play rather than regulatory changes or compositional effects (Astinova et al., 2024[13]; ECB, 2021[14]): while the long-term downward trend in hours worked reflects preferences for part-time employment, the recent decline observed since the end of 2021 appears to be due to a decrease in long working hours and overtime among full-time workers.[5]

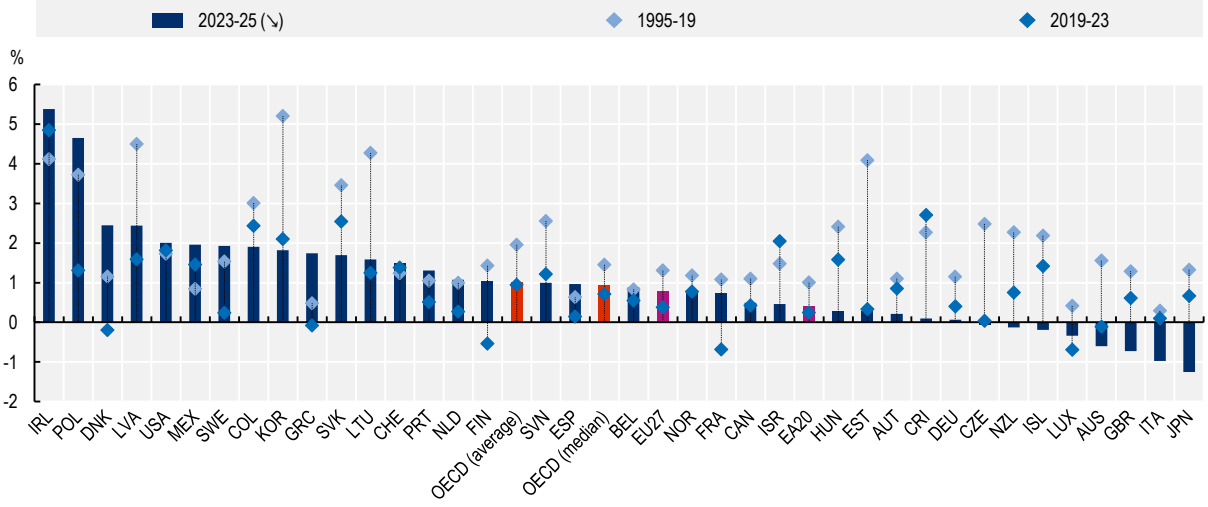
The recent slowdown in the decline in annual working hours per worker has not been accompanied by a deceleration in the rise (or an acceleration in the decline) of part-time or temporary employment. Instead, on average across the countries analysed, the incidence of part-time and temporary employment increased more (or decreased less) between 2023 and 2025 than between 2019 and 2023 (Annex Figure 1.A.5, Panel B), possibly in part due to the loosening of labour markets – firms had less need to attract workers by offering them full-time open-ended contracts.

1.1.5. Labour productivity growth is slowing down

Since the onset of the COVID-19 crisis, labour productivity growth, measured in terms of real gross domestic product (GDP) per hour worked, has been substantially below its pre-COVID-19 trend on average across OECD countries: its average annualised growth rate was 1% over the period 2019-2025, compared with 2% over the period 1995-2019 (Figure 1.8).

Figure 1.8. Labour productivity growth is slowing down

Annualised percentage change in real GDP per hour worked



Note: "OECD (average)" and "OECD (median)" are the unweighted average and the median across the 36 OECD countries shown in this Chart (not including Chile and Türkiye), respectively. Euro area refers to the averages of 20 Eurozone countries and European Union to the averages of 27 EU countries. 1995-2019 refers to 1997-2019 for Canada and 1996-2019 for Estonia. 2023-2025 refers to 2023-2024 for Australia, Colombia, Costa Rica, Israel, Japan, Korea, Mexico, New Zealand and the United Kingdom.
Source: OECD Data Explorer, "Productivity database", https://data-explorer.oecd.org/s/4rg (accessed on 15 June 2026).

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The recent slowdown in productivity growth has been particularly marked in the euro area (Figure 1.8), where long-term productivity growth (1995-2019) was already relatively weak. As a result, annualised labour productivity growth in the euro area was far below the OECD median between 2019 and 2025 (Figure 1.8 and Annex Figure 1.A.6). This can be explained by the more pronounced effects of higher gas prices and uncertainty related to Russia's war against Ukraine, as well as a tendency to hoard labour in European countries (ECB (2024[15]) and Box 1.1).

By contrast, labour productivity growth has been relatively high since the onset of the COVID-19 crisis in two Latin American countries (Colombia and Mexico), two Central and Eastern European countries (Poland and the Slovak Republic), two Baltic states (Latvia and Lithuania), as well as in Korea and the United States (Figure 1.8 and Annex Figure 1.A.6). In all these countries, except for Mexico, productivity growth has been relatively high since at least the mid-1990s. But productivity growth has even exceeded its long-term dynamic trend in Poland and the United States. In the United States, labour productivity growth registered a small uptick above its long-term trend of 1.7-1.8% over 2023-2025 (Figure 1.8), driven by a number of sectors that play a central role in the adoption of AI technologies and the transition to online retail (e.g. computer systems, data processing, online retail)[6] (Hobijn et al., 2025[16]). This suggests that AI may have played some role in the United States' strong productivity performance over recent years.

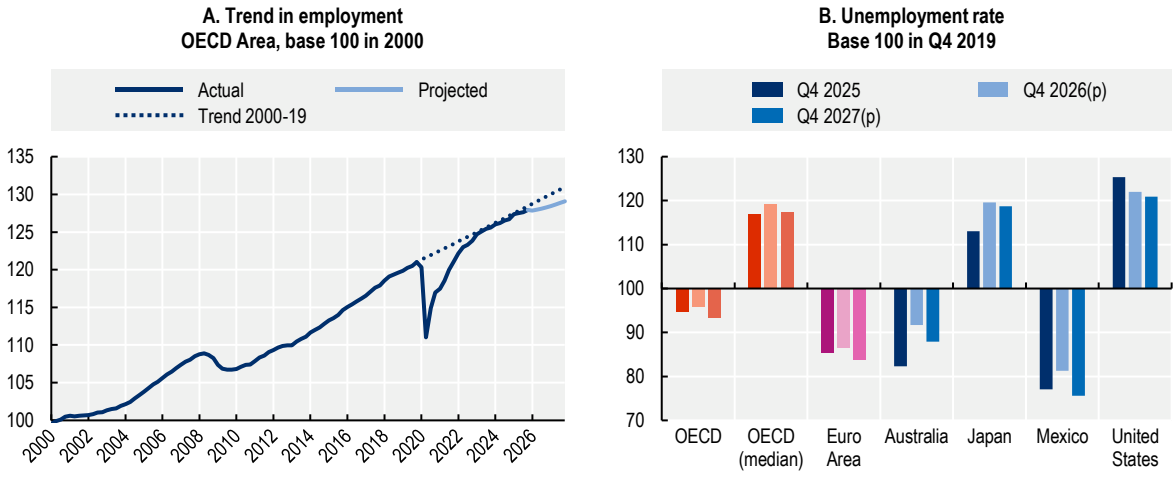
1.1.6. Labour markets are highly uncertain

In the near future, economic activity and, as a result, labour markets, will be largely shaped by the evolution of the energy crisis, the time taken to achieve a lasting settlement to the conflict in the Middle East and the resulting policy responses (OECD, 2026[6]).

Assuming the disruptions from the conflict are sizeable but limited to a relatively short period of time, and an otherwise solid underlying momentum in the global economy – with output boosted by strong AI-related investment, production and trade, supportive financial and fiscal conditions, and lower US effective tariff rates on imports than originally announced – global growth is projected to soften considerably in the second quarter of 2026, before picking up gradually thereafter (OECD, 2026[6]). Consistent with these developments, employment growth is expected to be relatively subdued in 2026 before edging up in 2027, while the median unemployment rate across OECD economies is projected to rise further in 2026 before falling back around its Q4 2025 level at the end of 2027 (Figure 1.9).

These projections should nonetheless be treated with caution, given the exceptionally uncertain situation and the extent to which economic prospects depend on achieving a durable resolution to the conflict (OECD, 2026[6]). Failing to secure a peace agreement would lead to substantially worse economic and labour market outcomes and could have adverse impacts on a wider range of countries or industries.

Figure 1.9. OECD labour markets are expected to slow down temporarily in 2026 if the conflict in the Middle East remains of limited duration



Note: (p) OECD projection. OECD (median) refers to the median unemployment rate across 35 OECD countries (not including Greece, Latvia and Slovenia). Euro Area refers to the 17 EU member states using the euro as their currency which are also OECD Member States. The 2000-2019 trend refers to the average quarterly employment growth rate prevailing in Q1 2000 to Q4 2019. Projections are based on the assumption that the disruptions from the conflict in the Middle East are sizeable but limited to a relatively short period of time.
Source: OECD Data Explorer, "Economic Outlook 119", https://data-explorer.oecd.org/s/4nt (accessed on 3 June 2026).

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In response to practices by its trading partners that the United States considered to be unfair and discriminatory, the country made a historic turn in its import tariff policy, shifting from targeted protection on selected goods toward broader and higher tariff regimes affecting multiple products (e.g. cars, car parts, steel and aluminium products, but also energy and oil) and most trading partners.[7] 2025 marks the year of most significant tariff increases. In the absence of a causal analysis, the assessment of the impact of 2025 tariff rates must rely on structural modelling and empirical analyses of previous (smaller) tariff increases, which makes it somewhat speculative. Moreover, the 2025 tariff rate hike was partially reverted following a decision of the US Supreme Court in February 2026,[8] and uncertainty remains about future tariff rates.

The overall impact of the 2025 tariff rates on employment in the United States is expected to be slightly negative, once inflation, higher input costs and possible foreign retaliation are accounted for. Structural modelling points to moderate negative net employment effects in the United States alongside composition shifts (Ai et al., 2025[17]; OECD, 2025[18]): tariffs may increase manufacturing employment, but at the cost of employment declines in other sectors (e.g. service and agriculture), with negative effects overall (Rodríguez-Clare, Ulate and Vasquez, 2025[19]).[9] Empirical analyses of 2018-2019 tariff implementations support these conclusions: they find that import protection gains were outweighed by rising input costs and retaliation (Autor et al., 2024[20]; Smarzynska Javorcik et al., 2023[21]), even within the (protected) manufacturing sector (Flaaen and Pierce, 2019[22]). Choi and Hong (2025[23]) complement these findings by examining the 2018 safeguard measures on washing machines. They show that the new production jobs created were not in US major domestic manufacturers, but rather in multinationals which relocated production.

Similarly, the detrimental employment effects of 2025 tariffs on OECD partner countries should remain moderate overall (OECD, 2025[18]). Nonetheless, in some countries (e.g. Canada or EU countries), substantial impacts can be expected in the manufacturing sector – which is particularly exposed to tariffs (Galgóczi, Watt and Mehtap, 2025[24]; Statistics Canada, 2025[25]). In addition, besides lowering exports

and raising input costs (Salotti et al., 2019[26]), US tariffs may redirect tariff-hit Chinese exports towards the euro area, a phenomenon observed following the 2018 tariff wave (ECB, 2025[8]). This could intensify competition in vehicles and chemicals and put further pressure on manufacturing jobs in Europe (ECB, 2025[27]).

Uncertainty in US tariff policy remains high (OECD, 2025[28]), which can exert negative effects on employment independently of the actual tariff rates applied (Javorcik et al., 2019[29]). Ongoing legal challenges and negotiations, and the risk of new tariffs on currently exempt items might discourage investment, disrupt production planning, and delay hiring decisions, particularly in sectors integrated into global value chains. Over time, this policy volatility might weaken business confidence and dampen labour demand even in the case of moderate or declining tariff levels.

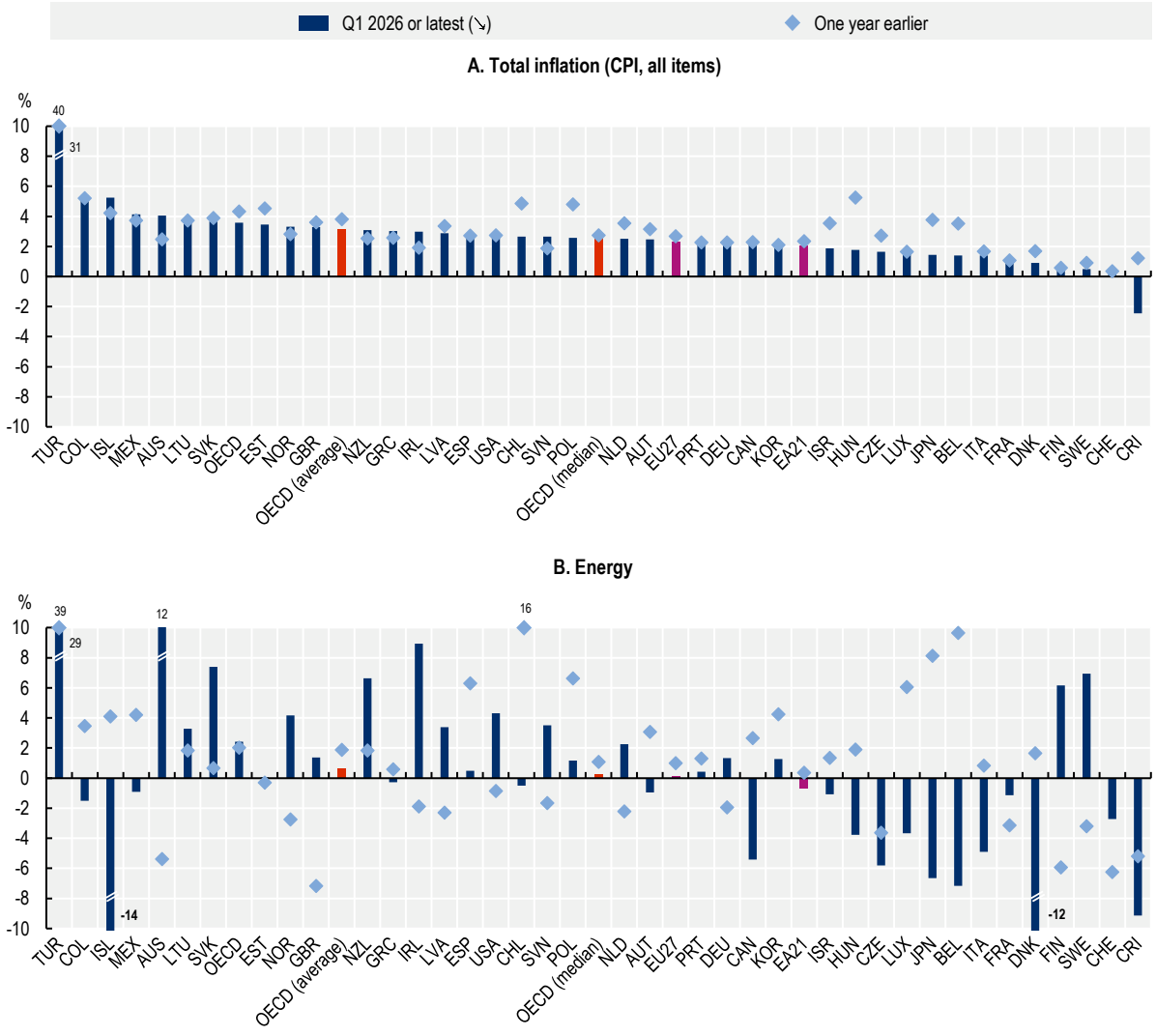
1.2. The real wage recovery was already slowing down before the recent surge in energy prices

Inflation (as measured based on the Consumer Price Index) was on a downward path until the recent surge in energy prices hit OECD economies. In Q1 2026, it was lower than one year earlier in a majority of OECD countries (Figure 1.10, Panel A), and headline inflation had decreased from 4.3% in Q1 2025 to 3.6% in Q1 2026. Energy inflation was also lower in Q1 2026 than one year earlier (Panel B); in other words, the effects of the conflict in the Middle East were still not reflected in prices in Q1 2026. The expected rise in energy inflation will weigh more heavily on low-income households, which tend to spend a larger share of their budget on these products (Caisl et al., 2023[30]).

As a result, headline inflation was a long way from its 2022 peak at the onset of the latest surge in energy prices. In Q1 2026, inflation in the OECD area (3.6%) was less than half its Q3 2022 level of 10.4% (OECD, 2025[1]), but still above 2%, which is the central bank target for many OECD countries (e.g. the euro area, the United Kingdom and the United States). Inflation remained above this target in 25 OECD countries – 31% in Türkiye and above 4% in three other OECD countries.

Figure 1.10. Inflation was on a downward path until the recent surge in energy prices

Inflation defined as annual percentage change in the consumer price index (CPI), Q1 2026



Note: "OECD (average)" and "OECD (median)" are the unweighted average and the median across the 38 OECD countries, respectively. Countries are ordered in descending order of the year-on-year percentage change in the consumer price index (all items) in Q4 2025 (Panel A). The latest quarter available refers to Q4 2025 for Poland. CPI: consumer price index.

Source: OECD Data Explorer, "Consumer price indices (CPIs, HICPs), COICOP 1999", http://data-explorer.oecd.org/s/2aw, and "Consumer price indices (CPIs), COICOP 2018", http://data-explorer.oecd.org/s/2ax (accessed on 15 June 2026).

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1.2.1. Real wage growth was slowing down in early 2026, while there was still room for catching up in one-third of OECD countries

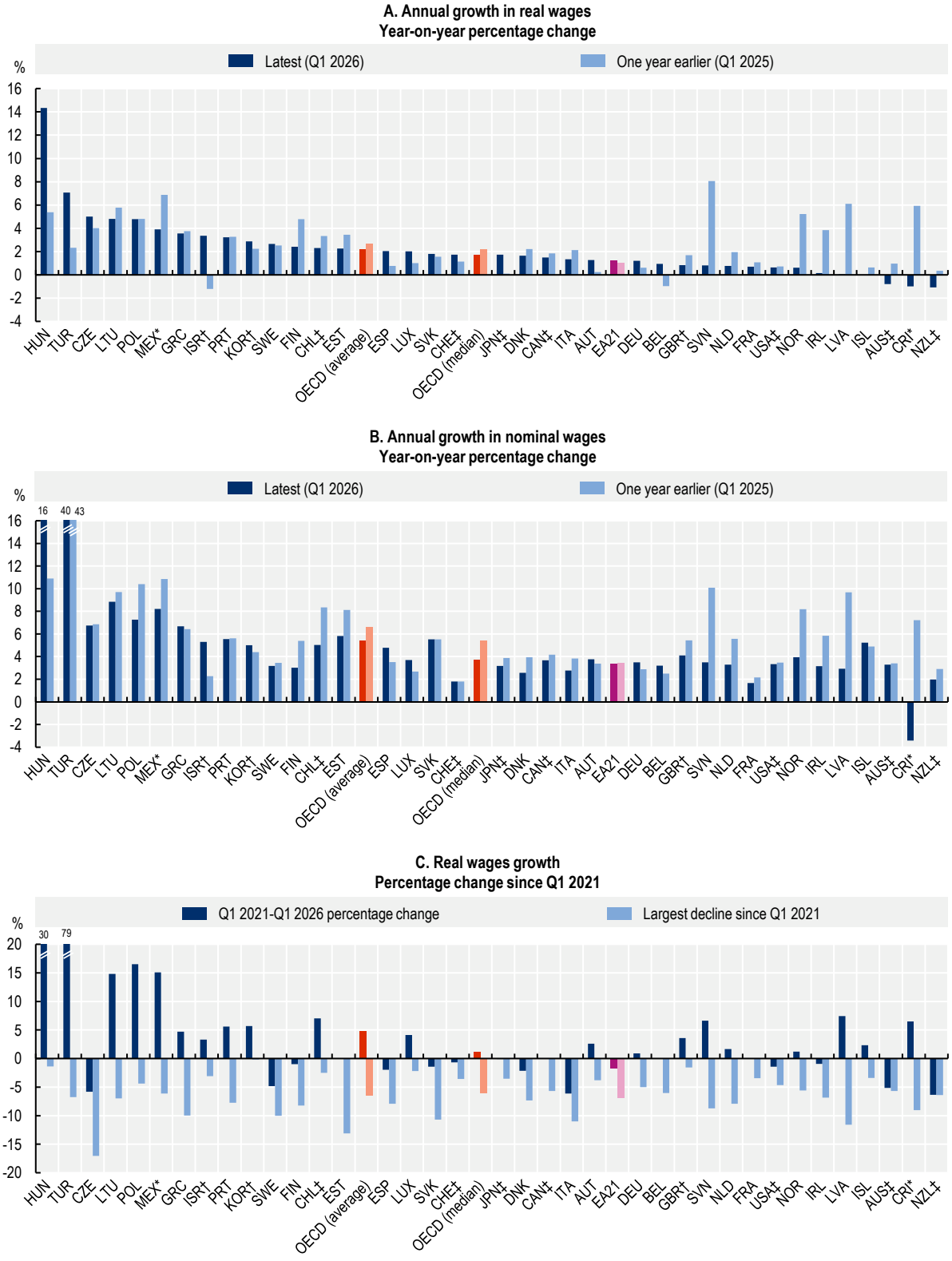
According to the latest data available, annual real wage growth was positive in virtually all OECD countries in Q1 2026 – before the recent surge in energy prices –, but was slowing down (Figure 1.11, Panel A), in spite of decreasing inflation.[10] The average annual growth in real wages across the 37 countries for which data are available was 2.2% in Q1 2026, compared with 2.7% in Q1 2025, and annual real wage growth in Q1 2026 was lower than a year earlier in two-thirds of these countries. In addition, recent data on wages

advertised in online vacancies for nine countries also indicate a further slowdown in real wage growth in recent months (Box 1.2), as the conflict in the Middle East began to affect prices.

Despite persistent annual growth, in Q1 2026, real wages remained below their Q1 2021[11] levels (pre-dating the post-pandemic inflation surge) in about one-third (13) of the 37 countries analysed (Figure 1.11, Panel C). Real wages were more than 2% below Q1 2021 levels in a quarter of countries: Australia, Czechia, Denmark,[12] Italy, New Zealand and Sweden. It should be noted that wage recovery is slowing down in most of these countries, with annual real wage growth in Q1 2026 being lower than a year earlier – wage growth accelerated only in Czechia and Sweden (Panel A). Nevertheless, real wages have regained some of the lost ground in virtually all OECD countries – real wages are near the trough of the cost-of-living crisis only in New Zealand and Australia.

Several factors could explain the slowdown in real wage growth between Q1 2025 and Q1 2026. The slowdown in labour productivity and the easing of labour market tightness, as discussed in the previous section, may have moderated wage growth, particularly for new hires. On the institutional side, negotiated wage claims have been tempered in some countries (see Box 1.3 and European Commission (2025[31])), while geopolitical and trade tensions have maintained a climate of high economic uncertainty.[13] In the future, geopolitical uncertainties and a time-limited increase in energy costs may significantly weaken labour markets while exerting further upward pressure on inflation, which likely will depress wages (Figure 1.12) (OECD, 2026[6]).

Figure 1.11. Real wage growth is slowing down while real wages remain below Q1 2021 levels in one-third of OECD countries

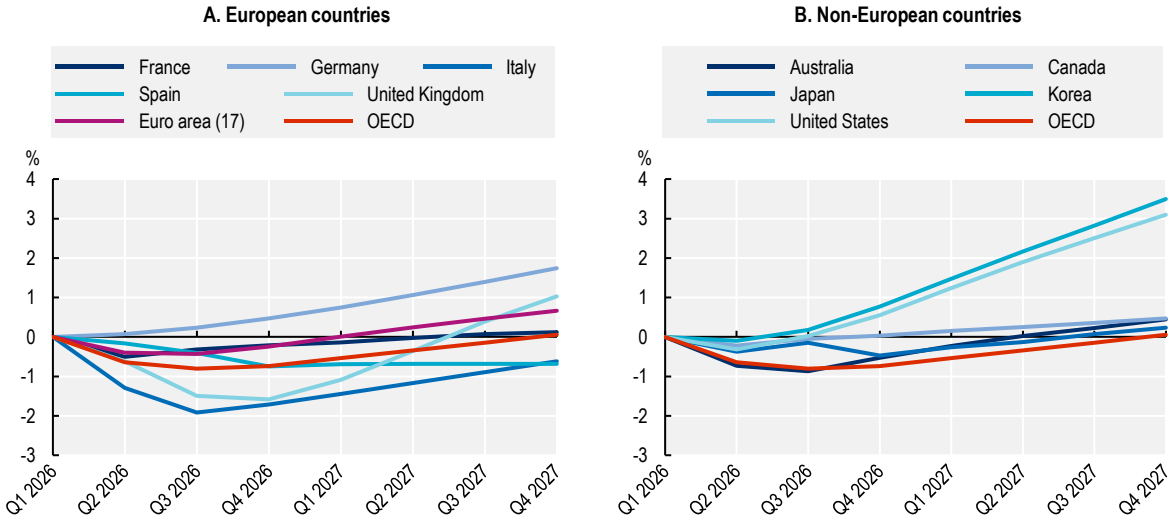


Note: Unless otherwise indicated, nominal hourly wages correspond to the wages and salaries component of the Labour Cost Index, adjusted for a constant industry structure. *: The constant-industry-structure adjustment of average hourly earnings has been estimated and revised by the OECD using total wages and salaries by industry from the 2019 Annual National Accounts. †: Nominal hourly wages refer to actual wages, without adjustment for compositional shifts; comparisons with other countries should therefore be interpreted with caution. ‡: Nominal hourly wages control for additional compositional effects depending on the country, including regions, job and worker characteristics, sex, and occupations.
Nominal wage series are seasonally adjusted for all countries except Canada, Costa Rica, Israel, Mexico, New Zealand and Switzerland. For Japan, statistics refer to regular employees in establishments with five or more regular employees in all industries excluding agriculture, forestry, fisheries and government services. Regular employees are workers employed indefinitely or employed under a contract for a period of one month or longer. Statistics cover only the business sector (NACE Rev. 2 sections B to N) for the Republic of Türkiye. Statistics for Germany and Iceland refer to enterprises with 10 or more employees; for Ireland, to enterprises with three or more employees; for Greece, to enterprises with five or more employees; and for Poland, to entities or local units with 10 or more employed persons. For Finland, statistics cover the public sector and all private sector enterprises with at least 20 or 30 employees. For Mexico, nominal hourly wages are affected by a significant degree of unreported income.
Real hourly wages are calculated by deflating nominal hourly wages using the consumer price index (CPI, all items). For Poland and the Slovak Republic, real wages in Q1 2026 are estimated using the OECD price index (COICOP 1999), available up to Q4 2025, chained with the new national price indices (COICOP 2018), available from Q1 2026.
In Panel C, the trough corresponds to the quarter in which real hourly wages reached their lowest level since Q1 2021. For Switzerland, the latest observation and the trough are identified among fourth-quarter observations only and corresponds to the lowest real hourly wage recorded since Q4 2020.
Countries are ordered by descending order of the year-on-year percentage change in real hourly wages in Q1 2026 (Panel A). The latest observation available refers to Q2 2025 for Belgium and Q4 2025 for Switzerland. OECD (average) and OECD (median) refer respectively to the unweighted average and the median across the 37 OECD countries shown in the chart (not including Colombia). Euro area (21) refers to the 21 Eurozone countries.
Source: OECD calculations based on national wage indices. For a full description of country-specific data sources, see Figure 1.15 in OECD (2025[1]), *OECD Employment Outlook 2025: Can We Get Through the Demographic Crunch?*, https://doi.org/10.1787/194a947b-en. OECD Data Explorer, "Consumer price indices (CPIs, HICPs), COICOP 1999", http://data-explorer.oecd.org/s/2aw, and "Consumer price indices (CPIs), COICOP 2018", http://data-explorer.oecd.org/s/2ax (accessed on 17 June 2026).

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Figure 1.12. Real wages are expected to weaken

Percentage change relative to Q1 2026 in projected real compensation rate



Note: The real compensation rate is defined as compensation of employees per employee deflated by the consumer price index. Euro area (17) refers to the 17 EU Member States that use the euro as their currency and are also OECD Member countries. Projections are based on the assumption that the disruptions from the conflict in the Middle East are sizeable but limited to a relatively short period of time.
Source: OECD calculations based on OECD Data Explorer, "Economic Outlook 119", http://data-explorer.oecd.org/s/2an (accessed on 3 June 2026).

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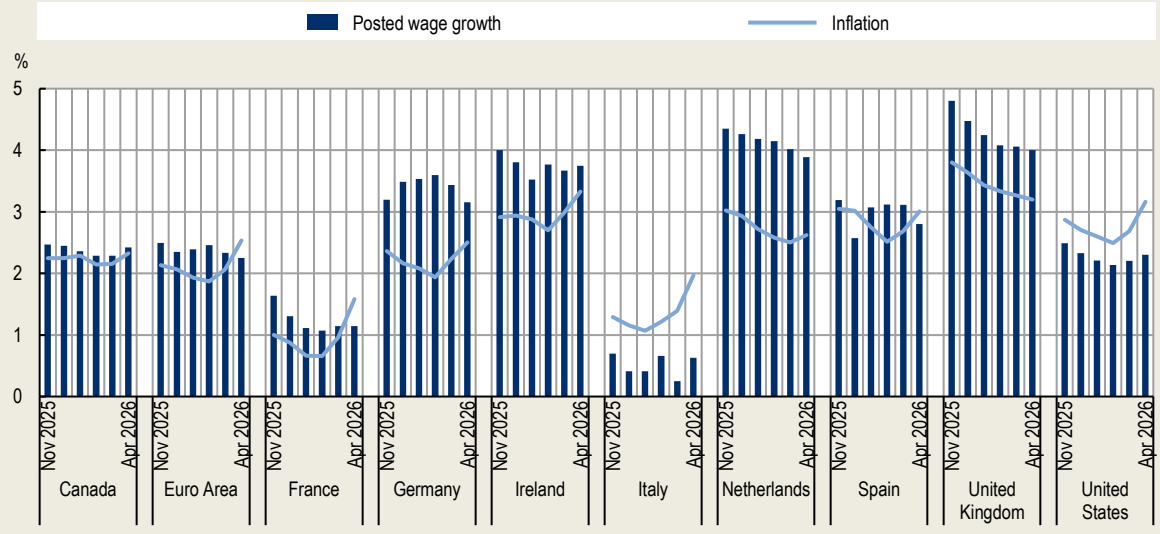
Box 1.2. Online vacancies from selected OECD countries point to a recent slowdown in the growth of real posted wages

Data on advertised wages from job postings on the online platform *Indeed*[1] indicate a slowdown in the growth of real posted wages between November 2025 and April 2026 in most countries for which data are available (Figure 1.13). In countries where real wage growth is decreasing (France, Germany, Ireland, Italy and the United States), this is due to higher inflation in April 2026, sometimes combined with declining nominal wage growth (France, Spain and the United States). The euro area as a whole has also experienced both declining nominal wage growth and higher inflation in April 2026.

In Canada, the Netherlands, Spain and the United Kingdom, the effects of the conflict in the Middle East had remained limited up to April 2026. In the Netherlands and the United Kingdom, nominal wage growth was following a fall in inflation between November 2025 and April 2026, so real wage growth remained virtually constant. In Canada and Spain, both inflation and nominal wage growth remained stable over the period.

Figure 1.13. Posted wages point to a recent slowdown in real wage growth

Year-on-year percentage change, three-month moving averages, from November 2025 to April 2026



Note: Posted wages refer to the average year-on-year percentage change in wages and salaries advertised in job postings on Indeed. Inflation refers to the Consumer Price Index (CPI, all items). As CPI data for the United States were not published for October 2025, the three-month moving averages for November and December 2025 are based on two months only, excluding October 2025.
Source: Indeed Wage Tracker (https://github.com/hiring-lab/indeed-wage-tracker); OECD Data Explorer, "Consumer price indices (CPIs, HICPs), COICOP 1999", http://data-explorer.oecd.org/s/2aw, and "Consumer price indices (CPIs), COICOP 2018", http://data-explorer.oecd.org/s/2ax (accessed on 27 May 2026).

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1. *Indeed* data are subject to a number of limitations, including the over-representation of high-skilled jobs and the under-representation of low-skilled jobs, jobs posted by small firms and the agricultural sector. Nevertheless, there is evidence that job postings at the aggregate level tend to track well with job vacancies from government sources (Adrjan and Lydon, 2024[32]; Adrjan et al., 2021[33]; Bellatin and Galassi, 2022[34]; Ciminelli et al., 2024[35]).

Box 1.3. Real negotiated wage growth in selected OECD countries is slowing down, but there is still room for catching up

Real negotiated wages (i.e. wages defined in collective agreements, as opposed to those actually paid to workers) continued to increase, albeit at a slower pace than a year earlier (Figure 1.14). Growth in real negotiated wages was positive between Q1 2025 and Q1 2026 in the 13 countries analysed as well as in the euro area as a whole, although generally lower than between Q1 2024 and Q1 2025 – only Canada, Finland and Sweden recorded a marked acceleration.

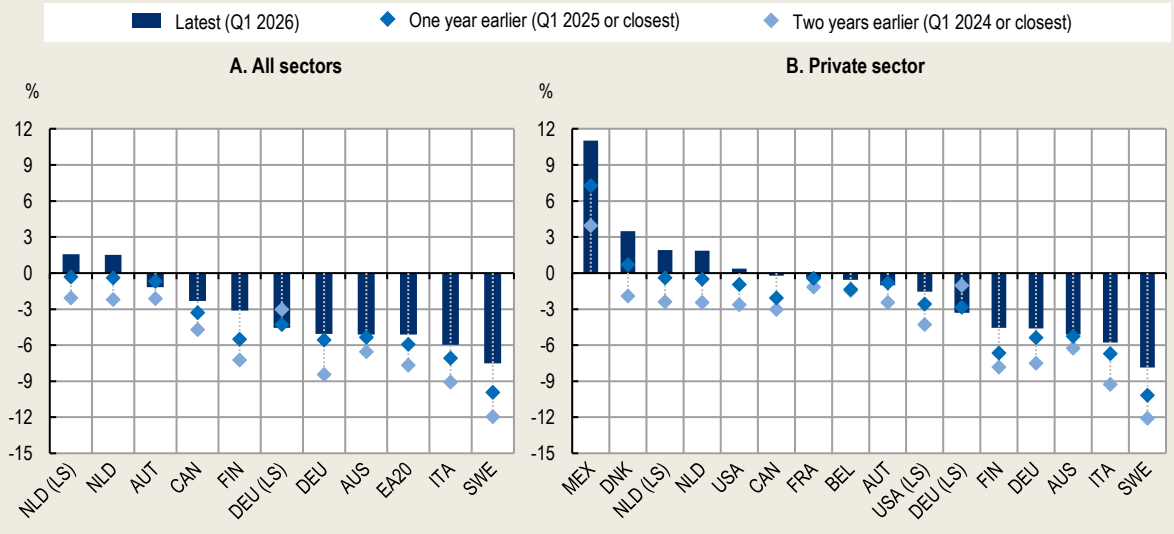
Nevertheless, in all countries except Denmark and the Netherlands, where they have fully recovered, and Mexico, where they did not fall with the inflation surge (OECD, 2025[1]), real negotiated wages remain below the levels observed just before the post-COVID-19 inflation surge (Figure 1.14). Still, in Q1 2026, real negotiated wages were less than 2% below their Q1 2021 levels in about one-third of the countries analysed (Austria, Belgium, France and the United States).

The dynamics of real negotiated wages reflect a combination of factors, including the staggered and infrequent nature of collective bargaining, the time lag between the completion of negotiations and actual wage revisions, the infrequent use of automatic inflation indexation, and workers' bargaining power (OECD, 2023[3]). Between the start of the cost-of-living crisis and Q1 2026, as bargaining rounds multiplied and affected a growing number of workers, negotiated wages regained more of the ground lost during the inflation surge.

Looking ahead, the European Central Bank's (ECB) wage tracker forecasts annual nominal negotiated wage growth to stabilise at around 2.6% in Europe by the end of 2026, below the levels seen in 2025 and in the first quarter of 2026.[1]

Figure 1.14. Real negotiated wages continued to increase but remain below Q1 2021 levels

Percentage change in real negotiated wages (i.e. resulting from collective agreements) since Q1 2021



Note: LS: wages including lump sums and/or special payments. International comparability of data on negotiated wages is affected by differences in definitions and measurement. Statistics are representative of all employees covered by a collective wage agreement for Austria, Belgium, the euro area (20), Finland, France, Germany, Italy, the Netherlands, Sweden and the United States. In Canada, statistics refer to collective bargaining settlements of all bargaining units covering 500 or more employees (units of 100 or more employees for the Federal Jurisdiction). In Denmark, statistics refer to collective agreements negotiated by the main union and employer confederations, FH and DA,

and do not cover public sector employees and the academic unions (AC). For Australia, Canada and Mexico, statistics refer only to employees affected by an increase of the negotiated wage at that date. For Denmark, wage increases cover basic wages, employer pension contributions, "fritvalg" (flexible benefit) accounts, and other collectively agreed elements (e.g. wages in the event of sickness absence or maternity/paternity leave) from the five major sectoral collective agreements (the "breakthrough agreements") that set the financial framework for the subsequent minimum wage agreements or standard wage agreements to be negotiated in the private sector. Calculations are based on the assumption of full relative pass-through of centrally negotiated wage rates to actual wage adjustments (i.e. a 1% increase in the minimum wage or standard wage rate leads to a 1% increase in locally negotiated wages higher up the wage distribution). In Mexico, statistics cover mainly employees in the private sector and certain public enterprises operating under the Federal Labour Law. For Sweden, statistics refer to wage increases resulting from central collective agreements. Wage increases in Austria, Belgium, the euro area (20), Finland, Germany, Italy, the Netherlands, Sweden and the United States refers to the average increase in negotiated wages weighted by the employment composition for a reference year (Laspeyres index). For Australia, Canada, France and Mexico wage increases refer to the average increase in negotiated wages weighted by the number of employees affected over the period considered. Private sector in Germany refers to all industries excluding agriculture, public administration, education, health, and other personal services (Sections B to N of the NACE rev. 2). Private sector in Finland refers to non-financial, financial and insurance corporations. Percentage changes for Australia, Canada, Denmark, the euro area, France, Mexico and Sweden are OECD estimates based on published year-on-year percentage changes and can therefore only be calculated between two similar quarters (Q1 in this chart). Statistics for Australia, the euro area and Mexico refer to the percentage change in Q4 2025 (Q4 2024 and Q4 2023) since Q4 2020.

Source: OECD calculations based on Trends in Federal Enterprise Bargaining (Department of Employment and Workplace Relations, DEWR) for **Australia**; index of agreed minimum wages (Statistics Austria) for **Austria**; index of agreed wages (Federal Public Service, FPS) for **Belgium**; Major wage settlements (Economic and Social Development Canada, ESDC) for **Canada**; Statistics Committee, Status Report, 3rd quarter 2025 (Ministry of Economic Affairs) for **Denmark**; negotiated wages, euro area 20, Quarterly (European Central Bank) for the **euro area**; the Index of Negotiated Wages and Salaries (Statistics Finland) for **Finland**; Negotiated wages France (Banque of France) for **France**; index of collectively-agreed hourly earnings (Destatis) for **Germany**; hourly index of wages according to collective labour agreements (Istat) for **Italy**; nominal contractual pay increases in federal and local jurisdictions (Secretaría del Trabajo y Previsión Social, STPS) for **Mexico**; CAO wages, contractual wage costs and working hours; index (Central Bureau of Statistics, CBS) for the **Netherlands**; short-term statistics, wages and salaries (Mediation Office) for **Sweden**; Employment Cost Index (BLS) for the **United States;** and OECD Data Explorer, "Consumer price indices (CPIs, HICPs), COICOP 1999", http://data-explorer.oecd.org/s/2aw, and "Consumer price indices (CPIs), COICOP 2018", http://data-explorer.oecd.org/s/2ax (accessed on 10 June 2026).

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1. https://www.ecb.europa.eu/press/pr/date/2026/html/ecb.pr260617~79dfc49802.en.html.

1.2.2. The wages of the lowest-paid workers have proved more resilient than median wages to the inflation surge

Real minimum wages remain above January 2021 levels but their growth is slowing down

Real minimum wages increased year-on-year but the rate of growth is slowing down. In April 2026, their annual growth rate was positive in nearly two-thirds of the 30 OECD countries that have a national minimum wage in place (Figure 1.15*,* Panel A). However, real minimum wages increased less between April 2025 and April 2026 than between April 2024 and April 2025 in about two-thirds of countries; and their median annual growth rate was 1.4% in April 2026, compared with 2.3% in April 2025. The real minimum wage decreased between April 2025 and April 2026 in 11 countries: Australia, Belgium, Canada, France, Greece, Luxembourg, New Zealand, Poland, Spain, Türkiye and the United States.[14]

The real statutory minimum wage was also higher in April 2026 than in April 2021 in virtually all OECD countries with a national statutory minimum wage (Figure 1.15*,* Panel B). The real minimum wage was 11% higher in April 2026 than in April 2021 on average across these 30 countries, and its median increase, unaffected by outliers (e.g. Mexico), was 9%. The real minimum wage was lower in April 2026 than in January 2021 in only two countries – Canada and the United States.

During the post-pandemic inflation surge and the ensuing cost of living crisis, national minimum wages were able to keep pace with inflation thanks to automatic or discretionary increases in the nominal minimum wage, introduced by countries to support the lowest earners (OECD, 2023[3]). By contrast, negotiated minimum wages have been less dynamic in countries without a national minimum wage (see Box 1.4). During 2022, the real gains resulting from automatic or discretionary increases in the nominal minimum wage quickly faded away on average across countries, as inflation continued to rise (Figure 1.15*,* Panel C). In 2023 and 2024, larger minimum wage adjustments and moderate inflation allowed the real minimum wage to catch up (in 2023) and exceed (in 2024) its January 2021 level on average across countries. During 2025 and early 2026 (before the surge in energy prices), still moderate inflation combined with minimum wage adjustments similar to those in 2024 on average led to a further increase in the average real minimum wage. In April 2026, the impact of the new surge in energy prices on real minimum wages has become visible (-1.5% since the beginning of the year on average across countries), although rapid adjustment mechanisms in many countries can be expected to restore purchasing power in the future months. Nevertheless, minimum wage trends should be carefully monitored given the high level of geopolitical uncertainty.

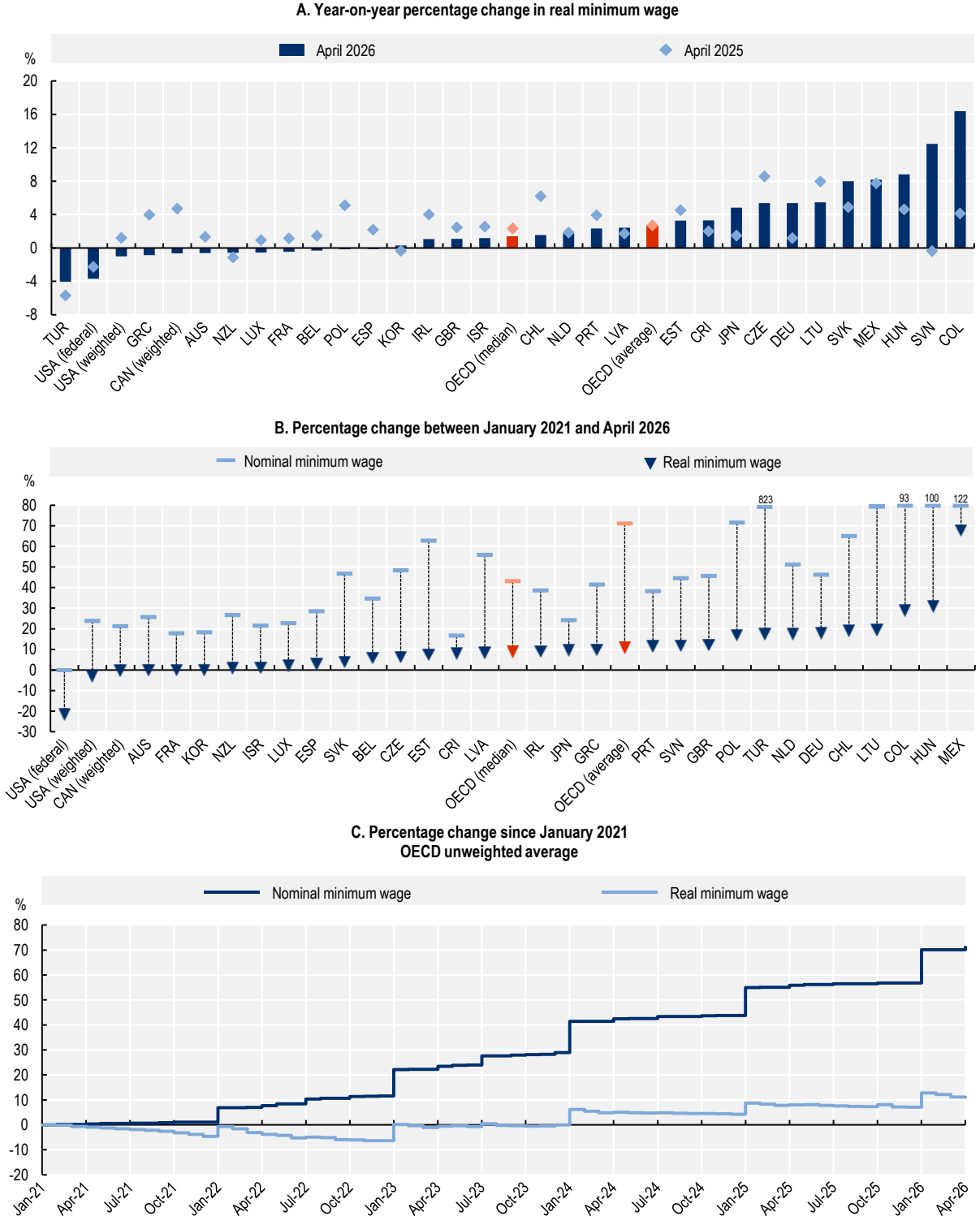
Box 1.4. Minimum wages have grown by less in countries without a national minimum wage

In countries without a national statutory minimum wage, wage floors are predominantly established through collective agreements. Eurofound has analysed minimum wages negotiated in ten representative low-paid occupations (such as cleaners, waiters, and cooks) in six European countries without a national minimum wage – i.e. Austria, Denmark, Finland, Italy, Norway and Sweden (Eurofound, 2025[36]).

Between January 2020 and January 2025, negotiated minimum wages decreased in real terms in most of the occupations analysed. This contrasts with the increases in the real minimum wage observed in virtually all OECD countries with a national statutory minimum wage during this period (OECD, 2025[37]; OECD, 2024[2]). There is some variation across countries: for example, real negotiated minimum wages in Italy have fallen increasingly behind those of the five other countries, while Austria recorded the strongest real growth.

Yet, several post-2022 collective agreements have incorporated specific mechanisms to protect low-wage workers. In Sweden, 2023 and 2024 collective agreements ensured that wages below a certain threshold received a higher percentage increase than wages above that threshold. Similarly, under 2024 collective agreements in Norway, workers in low-wage sectors often received wage increases above the general increase, and in several sectors (e.g. retail, and hotels and restaurants), lowest-paid employees received a wage increase above the sector's general increase.

Figure 1.15. Real minimum wages remain above January 2021 levels and continue to rise



Note: The real minimum wage for New Zealand in April 2026 is estimated assuming that the CPI for April 2026 remained unchanged from Q1 2026. For Poland and the Slovak Republic, the real minimum wage in April 2026 is estimated using the OECD price index (COICOP 1999), available up to December 2025, chained with the new national price indices (COICOP 2018), available from January 2026. "OECD (average)" is the unweighted average of the 30 OECD countries shown except the United States (weighted) and "OECD (median) is the median values across the same countries. Canada (weighted) is a Laspeyres index based on minimum wage of provinces and territories (excluding the Federal Jurisdiction) weighted by the share of employees of provinces and territories in 2019. United States (weighted) is calculated as a Laspeyres index of applicable minimum wages across US states. Where states set a minimum wage above the federal level, the state rate is used; otherwise, the federal minimum wage applies. State minimum wages are weighted by each state's share of non-farm private employment in 2019. US territories are excluded. For the Netherlands, the minimum wage is defined in hourly terms, while it was defined on a daily, weekly and monthly basis before 1 January 2024. The hourly minimum wage before 2024 is therefore estimated based on the weekly (or daily) minimum wage of an employee usually working 40 hours per week (or 8 hours per day). See Appendix Table 1.C.1 of the 2024 employment outlook (OECD, 2024[38]) for more details on the calculations.
Source: OECD calculations based on national data and OECD Data Explorer, "Consumer price indices (CPIs, HICPs), COICOP 1999", http://data-explorer.oecd.org/s/2aw, "Consumer price indices (CPIs), COICOP 2018", http://data-explorer.oecd.org/s/2ax (accessed on 4 June 2026), Prices indices of Consumer Goods and Services (Statistics Poland) for Poland, and Consumer prices and prices of production statistics (Statistical Office of the SR) for the Slovak Republic.

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Statutory minimum wages have increased more than median wages since 2021

In most OECD countries, minimum wages increased by more than median wages between 2021 and 2025, reflecting a compression of the wage distribution at the bottom. Figure 1.16 illustrates the changes in the minimum wage-to-median wage ratio (or Kaitz index) during this period. There was an increase in 20 of the 30 countries analysed. On average, the Kaitz index rose from 54.9% in 2021 to 55.6% in 2025. Mexico exhibits by far the largest increase in the Kaitz index, reflecting the dramatic rise in the minimum wage illustrated in Figure 1.15, Panel B. In some countries, this wage compression at the bottom of the distribution led to a substantial increase in the share of employees earning the minimum wage, as the latter caught up with slightly higher wages (Box 1.5). Türkiye is an exception, with a substantial drop in the Kaitz index, in line with very strong real growth of average wages since 2021 (Figure 1.11).

This trend toward wage compression at the bottom of the distribution can be explained in part by the fact that wages negotiated in collective agreements generally take longer than the minimum wage to keep pace with inflation (OECD, 2023[3]), particularly in a context of low productivity growth (OECD, 2024[38]) and a long-term trend toward a reduction in the scope of collective agreements (OECD, 2019[39]). Further wage compression should be observed in 2026, as inflation fuelled by rising energy costs is expected to lead to substantial minimum wage increases while impacts on negotiated wages can be expected to take time.

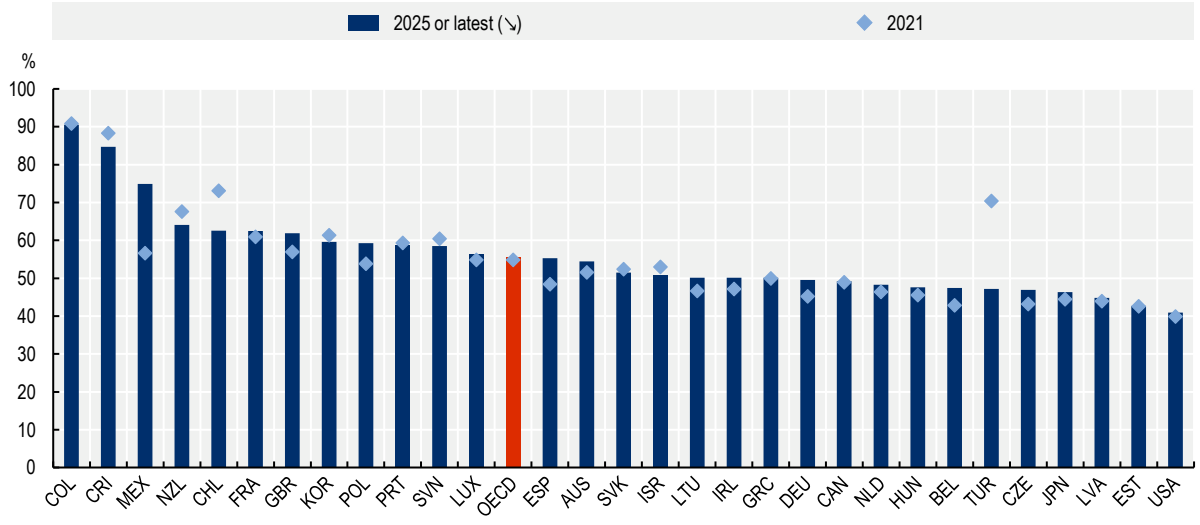
Between 2021 and 2025, as minimum wages moved closer to median wages, minimum wage workers became less at risk of in-work poverty – i.e. their net disposable income increased relative to the poverty line (set at 50% of median net disposable income) (Figure 1.17).[15] This is true for the majority of OECD countries analysed, as well as for the average across countries. The same remains valid when looking at the evolution of *real* income relative to an *invariant* "pre-inflation" poverty line (anchored at its 2021 level, i.e. 50% of the 2021 median income), albeit to a slightly lesser extent, in line with the overall increase in real minimum wages over the period.

However, in a number of countries, particularly those where real wages remain close to or below pre-pandemic levels, workers with middle and lower-middle earnings, who did not directly benefit from minimum wage increases, saw their economic security deteriorate (European Commission, 2025[31]). In addition, by narrowing pay differentials, wage compression can reduce early-career progression prospects, especially for workers with weaker bargaining power, by lowering the returns to incremental skill acquisition and job mobility within the low-wage segment. For the tax-and-benefit systems, compression may mechanically increase the caseload and budgetary cost of in-work supports and bottom-targeted transfers if more workers cluster near eligibility thresholds. A larger number of workers eligible for targeted transfers could also further weaken workers' incentives to accept slightly higher-paid jobs or invest in short training

spells. Indeed, in some countries the tax and benefit system is susceptible to generate low-wage traps mechanisms, i.e. gross wage gains at the bottom of the wage distribution translate into limited net income increases once taxes and social contributions are applied and means-tested benefits are withdrawn (as is the case, for example, in France, Germany or the United Kingdom, see Barreto et al. (2025[40])).

Figure 1.16. Statutory minimum wages have increased more than median wages

Gross minimum wage as a percentage of gross median wage of full-time workers

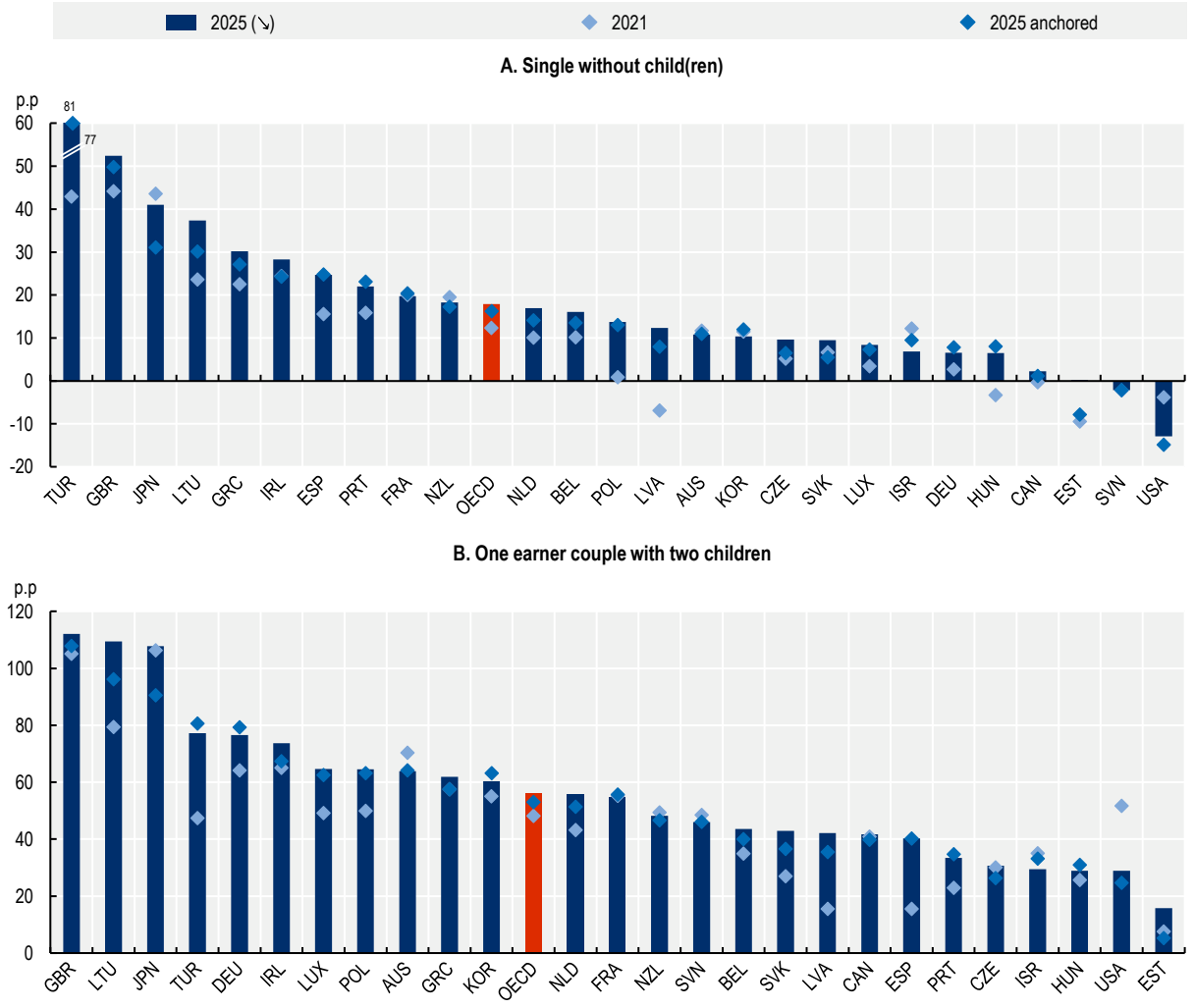


Note: The Gross minimum wage as a percentage of gross median wage of full-time workers for the United States is an estimate based on a Laspeyres index of applicable minimum wages across US states. Where states set a minimum wage above the federal level, the state rate is used; otherwise, the federal minimum wage applies. State minimum wages are weighted by each state's share of non-farm private employment in 2019. US territories are excluded. The minimum wage used for Canada is an average of the provinces' minimum wages (not including territories) weighted by employment shares. OECD is the unweighted average of the 30 OECD countries shown. The latest year available refers to 2024 for Chile and Ireland.
Source: OECD Data Explorer, "Minimum relative to average wages of full-time workers", http://data-explorer.oecd.org/s/2ay.

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Figure 1.17. In-work poverty risk has decreased for minimum wage workers

Actual and anchored poverty gaps for selected minimum-wage household types



Note: The actual (anchored) poverty gap is measured as the p.p. difference between (real) net equivalised disposable income expressed as a percentage of (2021) median equivalised disposable income and 50% (the poverty line is defined as 50% of median equivalised disposable income). OECD refers to the unweighted average of the 26 OECD countries shown. Results in Panel A refer to a single adult aged 40 without children, working full-time (40 hours per week) at the minimum wage. Results in Panel B refer to a one-earner couple (both aged 40) with two children aged four and six; the earner works full-time at the minimum wage, while the non-working partner is not eligible for unemployment benefits. Other benefits, including social assistance, housing and family benefits, are available if eligibility and income conditions are met. Housing benefits are calculated assuming private market rent plus related charges amounting to 20% of the national average wage. Statistics refer to 2024 for the Netherlands.

Minimum wages used in the TaxBEN model correspond to their statutory levels in force on 1 January of each year. For the United States, the minimum wage refers to the statutory minimum wage in Michigan. For Canada, the minimum wage is calculated as an employment-weighted average of provincial minimum wages, as reported in the OECD minimum wages database. p.p: percentage point.

Source: OECD calculations based on OECD Tax-Benefit (output from the OECD tax-benefit model (Model version 2.8.0); and OECD Data Explorer, "Consumer price indices (CPIs, HICPs), COICOP 1999", http://data-explorer.oecd.org/s/2aw, and "Consumer price indices (CPIs), COICOP 2018", http://data-explorer.oecd.org/s/2ax (accessed on 18 May 2026).

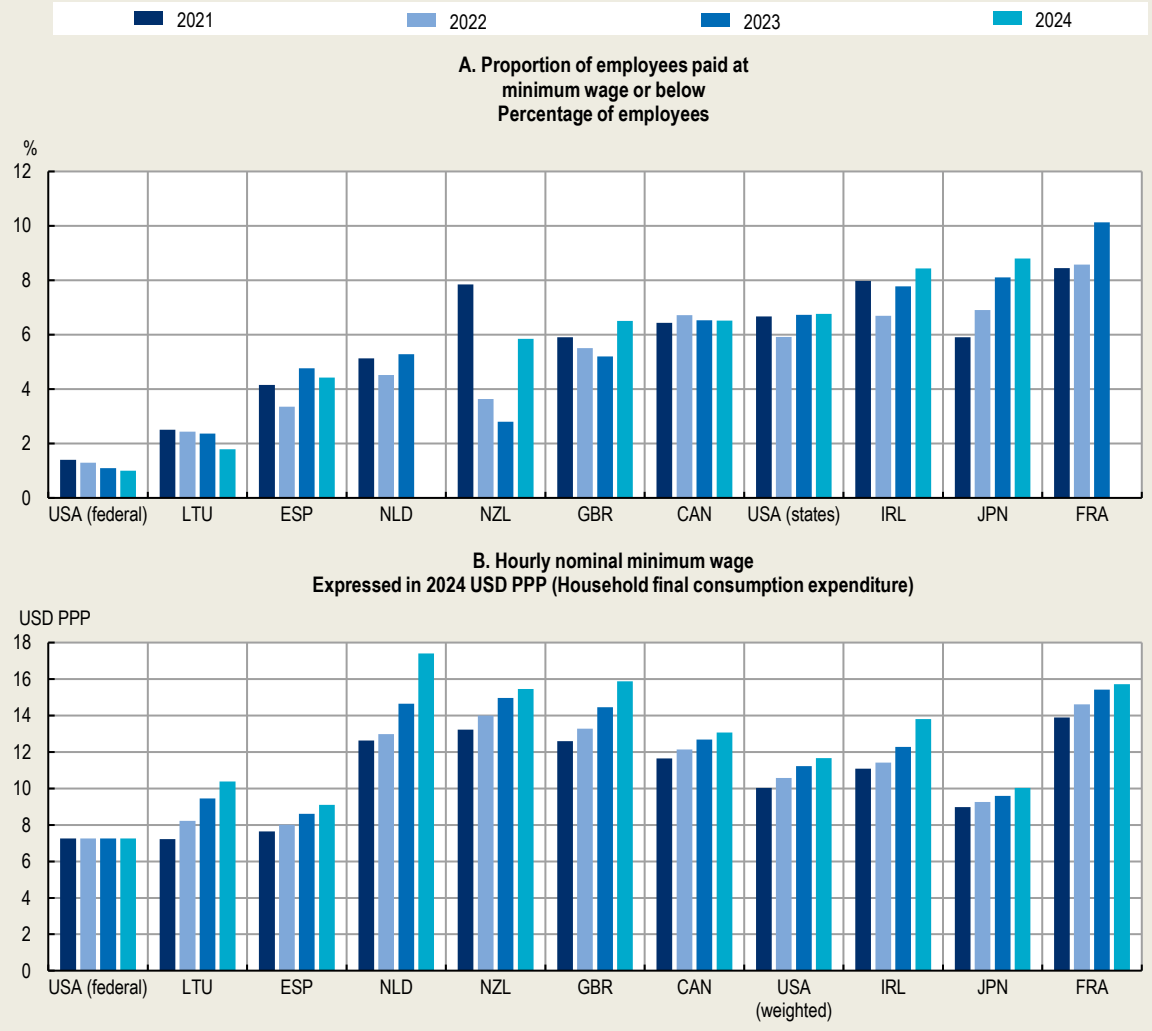
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Box 1.5. The share of minimum wage workers evolved along different trends across countries during the cost-of-living crisis

Minimum wage hikes during the cost-of-living crisis could have resulted in an increase in the share of workers earning the minimum wage, if the minimum wage had caught up with wages higher up in the distribution. This phenomenon would be more pronounced in countries where wages close to the minimum wage (i) cover a large number of workers or (ii) benefit from only limited spillover effects from minimum wage increases.

However, among the 10 countries analysed, minimum wage increases between 2021 and 2024 were associated with a steady increase in the share of minimum wage workers in only two of them: France and Japan (Figure 1.18).

Figure 1.18. The share of minimum wage workers evolved along different trends across countries during the cost-of-living crisis



Note: In Panel A, the proportion of minimum-wage earners cannot usually be established with certainty and can vary between data sources and studies. Counts of minimum-wage earners are commonly based on survey data or administrative records, which are affected by

measurement error, both in earnings and in working hours. It is therefore common to include those with wages below the minimum and slightly above it. Data for **Canada** refer to employees earning less than 101% of the applicable provincial minimum wage (excluding territories) and do not take account of the federal minimum wage. Data for **France** refer to private sector employees (excluding salaried self-employed) aged 18-64, in metropolitan France, earning less than four times the gross hourly minimum wage in their main job (i.e. highest paid in terms of gross wage); employees paid at minimum wage or below are those earning 105% or less of the statutory minimum wage, based on total remuneration, including bonuses and overtime. Data for **Japan** refer to enterprises with five or more employees (Basic Survey on Wage Structure) and use the impact rate, defined as the share of employees whose wage would fall below the revised minimum wage following the annual adjustment. For **Lithuania** and **Spain**, data refer to full-time employees only; for **New Zealand**, to employees aged 16-64. For the **Netherlands**, the 2024 share of minimum-wage workers (around 5%) is not reported due to a change in the methodology used to identify minimum-wage jobs (https://www.cbs.nl/nl-nl/longread/diversen/2025/methodebeschrijving-minimumloonbanen--vanaf-2024--/3-berekeningswijze-minimumloonbanen). For the **United States** (federal and states), data refer to employees paid by the hour earning less than the applicable federal or state minimum wage, respectively.

In Panel B, the hourly minimum wage in the **Netherlands** (prior to 2024) and **Spain** is estimated from the statutory weekly and daily minimum wages, respectively, assuming a usual working time of 40 hours per week and 8 hours per day. Since the 1 January 2024, the minimum wage in the Netherlands is defined in hourly terms, while it was defined on a daily, weekly and monthly basis before. For **Canada**, the minimum wage is a Laspeyres index based on provincial and territorial minimum wages (excluding the Federal Jurisdiction), weighted by the share of employees in each province and territory in 2019. For the **United States** (weighted), statistics refer to a Laspeyres index of applicable minimum wages across US states. Where states set a minimum wage above the federal level, the state rate is used; otherwise, the federal minimum wage applies. State minimum wages are weighted by each state's share of non-farm private employment in 2019. US territories are excluded.

Source: Panel A: Canada: OECD estimates based on the Canadian Labour Force Survey (LFS PUMFs); France: Bozio and Wasmer (2024[42]), and OECD estimates based on the Bases et Panels Tous Salariés; Ireland: Central Statistical Office (CSO), Labour Force Survey National Minimum Wage Estimates; Japan: Ministry of Health, Labor and Welfare, Minimum wage data and statistics (https://www.mhlw.go.jp/stf/seisakunitsuite/bunya/toukei_00001.html); Lithuania: Statistics Lithuania, Number of employees by October the amount of the salary; Mexico: INEGI, Encuesta Nacional de Ocupación y Empleo (ENOE), Población ocupada según nivel de ingreso, nacional trimestral; Netherlands: Central Bureau of Statistics (CBS), Statistiek Werkgelegenheid en Lonen (SWL), minimumloners; New Zealand: Ministry of Business, Innovation and Employment (MBIE), Minimum Wage reviews (https://www.mbie.govt.nz/business-and-employment/employment-and-skills/employment-legislation-reviews/minimum-wage-reviews); Spain: Instituto Nacional de Estadística (INE), Encuesta Anual de Estructura Salarial, https://www.ine.es/jaxiT3/Tabla.htm?t=28182; United Kingdom: Low Pay Commission, estimates based on the Annual Survey of Hours and Earnings (ASHE); United States (federal): Bureau of Labor Statistics (BLS), Characteristics of minimum wage workers, 2024, https://www.bls.gov/opub/reports/minimum-wage/2024/; and the United States (states): OECD estimates based on the Current Population Survey Outgoing Rotation Group (CPS MORG). Panel B: OECD calculations based on national data.

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By contrast, in six other countries (Ireland, the Netherlands, New Zealand, Spain, the United Kingdom and the United States), the share of minimum wage workers follows a U-shape curve over time (Figure 1.18, Panel A). It initially declined, mainly in 2022, possibly because many minimum wage workers were able to negotiate higher wages in response to soaring inflation, because of widespread labour shortages at the bottom of the wage distribution in the wake of the pandemic and during the cost-of-living crisis (Autor, Dube and McGrew, 2023[41]). The share of minimum wage earners then increased in 2023 – 2024, sometimes to levels above those of 2021 (e.g. in Ireland, Spain and the United Kingdom), as the minimum wage rose significantly, possibly regaining some of the ground lost to market wages.

Finally, in Lithuania and Canada, the share of workers at the minimum wage did not increase. In Canada, this pattern likely occurs because market wages increased together with the minimum wage – median wages increased at the same pace as the minimum wage (see Figure 1.16 above). In Lithuania, persistent labour shortages in low-skill sectors, likely due to high outmigration of low-skilled workers (OECD, 2025[1]), may have conferred larger bargaining power to workers at the bottom of the distribution.

Real wages have been more resilient to the post-pandemic inflation surge in low-wage sectors in some countries

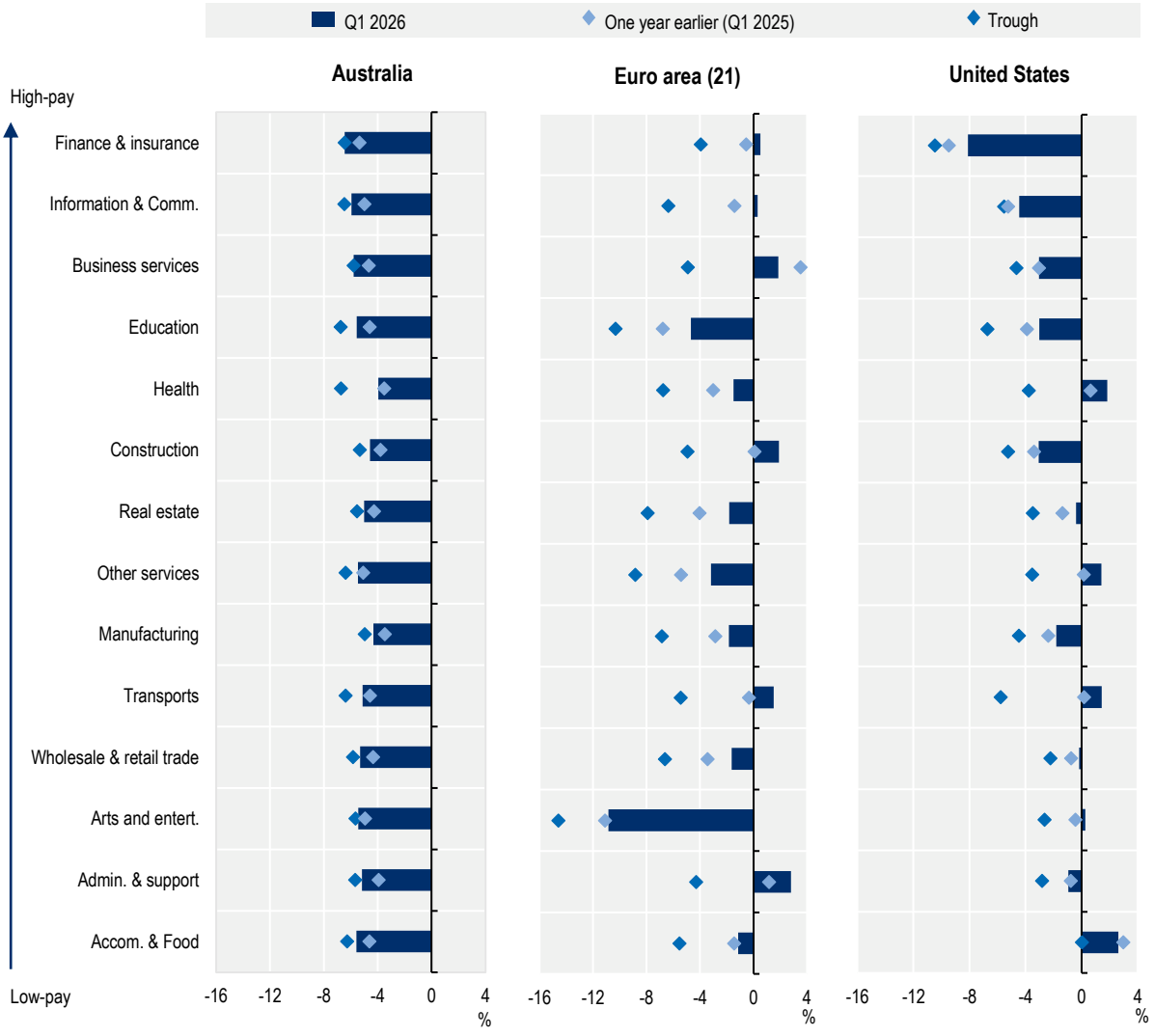
In addition to the minimum wage, other factors may have influenced wage compression at the bottom of the distribution in recent years. In the United States, for example, it was the tightening of the labour market rather than minimum wage increases that enabled some low-wage workers to benefit from substantial wage increases (Autor, Dube and McGrew, 2023[41]).

In fact, since the onset of the post-pandemic inflation surge (i.e. since Q1 2021), there has been a clear trend towards wage compression *between sectors* in the United States, a phenomenon that has not been observed in Australia or the euro area (Figure 1.19). In the United States, accommodation and food service activities is the sector with the highest wage growth over the period Q1 2021 – Q1 2026, while the largest declines in real wages are all in sectors where wages are relatively high: finance, information and communication, education, business services, and construction. The situation is less clear-cut in some other OECD countries (Annex Figure 1.A.8): there are some trends toward wage compression between sectors in Chile, Mexico and Poland but, except in Chile, they are significantly less pronounced than in the United States.

Wage compression between sectors in the United States has ceased if we focus on the latest period Q1 2025 – Q1 2026 (Figure 1.19). The only two sectors where real wages decreased are low-wage sectors (accommodation and food service activities and administrative and support services), while finance exhibits the strongest wage growth.

Figure 1.19. There has been a clear trend towards wage compression between sectors since Q1 2021 in the United States but not in Australia or the euro area

Percentage change in real hourly wages since Q1 2021



Note: Nominal hourly wages correspond to the wages and salaries component of the Labour Cost Index, adjusted for a constant industry structure for the euro area, and controls for additional occupational shifts for Australia and the United States. Real hourly wage is estimated by deflating the nominal hourly wage with the consumer price index (CPI-all items). The trough corresponds to the quarter in which real hourly wages reached their lowest level since Q1 2021. Industries are ranked by median wages in 2018 using the European Structure of Earnings Survey (SES). This ranking is broadly consistent when using 2019 median wage data from the United States Current Population Survey.
Industries are defined at the 1-digit level using ANZSIC 2006 for Australia, NACE Rev. 2 for the euro area, and NAICS for the United States; as a result, industry classifications are not fully comparable across countries. For the United States, changes in real wages in Wholesale and retail trade correspond to employment-weighted averages of the wholesale trade and retail trade industries, based on non-farm payroll employment weights from Q4 2005. Similarly, changes in real wages in Arts and entertainment are derived from the Leisure and Hospitality and Accommodation and Food Services industries, using non-farm payroll employment weights from Q4 2005.
Source: OECD calculations based on the Wage Price Index (Australian Bureau of Statistics) for Australia; wages and salaries component of labour cost index by NACE Rev. 2 activity (Eurostat) for the euro area, the Employment Cost Index (U.S. Bureau of Labor Statistics) for the United States; and OECD Data Explorer, "Consumer price indices (CPIs, HICPs), COICOP 1999", http://data-explorer.oecd.org/s/2aw, and "Consumer price indices (CPIs), COICOP 2018", http://data-explorer.oecd.org/s/2ax (accessed on 17 June 2026).

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1.2.3. The catching up of real wages relative to unit profits was already slowing down before the recent surge in energy prices

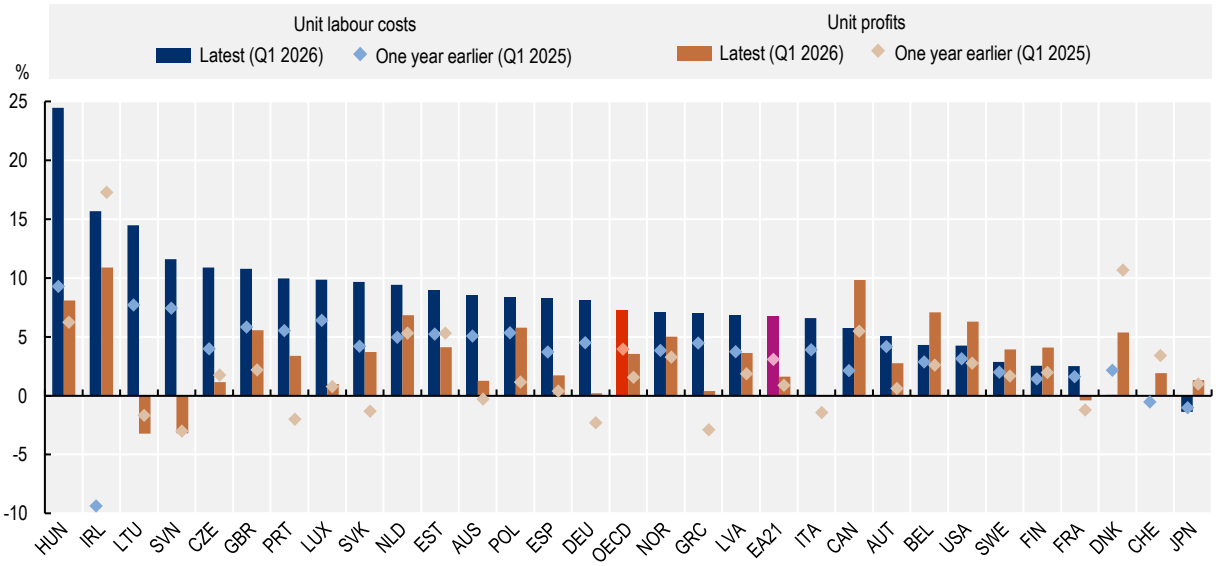
Unit labour costs[16] (i.e. nominal compensation of employees divided by real GDP) rose more than unit profits (i.e. gross operating surplus divided by real GDP) between Q1 2025 and Q1 2026 in most OECD countries (Figure 1.20), continuing a trend that began around Q1 2023 (OECD, 2024[2]). While unit profits remained virtually unchanged in the majority of countries between Q1 2024 and Q1 2026 – the magnitude of the variation was greater than 5% in only one-third of the 29 countries analysed –, unit labour costs increased significantly in many countries – by more than 5% in about three-quarters of countries.

These developments, most of which pre-date the recent surge in energy prices, still reflect the catching-up of purchasing power by wages and should not be interpreted as a warning sign of price-wage spirals – i.e. a sustained acceleration in nominal wage growth passing through to domestic prices beyond its effects on productivity –, as (i) wages had not fully caught up with the inflation surge in half of OECD countries (see previous section), which suggests that, in these countries, unit profits continue to lose the ground gained during the inflation surge;[17] and (ii) wage pressures are expected to stabilise at moderate levels for the remainder of 2026.[18]

Besides, there are signs that the catching-up of real wages might be slowing down. On average across countries, the increase in unit labour cost was slightly lower between Q1 2025 and Q1 2026 compared with the year before, while that of unit profits was slightly higher (see Figure 1.20, where the increase in the past year is represented by the difference between the top of the bar and the diamond). In addition, the relative contribution of unit labour costs to domestic price pressures has stabilised around pre-pandemic levels in the euro area (Figure 1.21), while it is even decreasing below these levels in the United States.[19,20]

Figure 1.20. Profits continue to buffer rising labour costs

Percentage change since Q1 2024, seasonally adjusted data



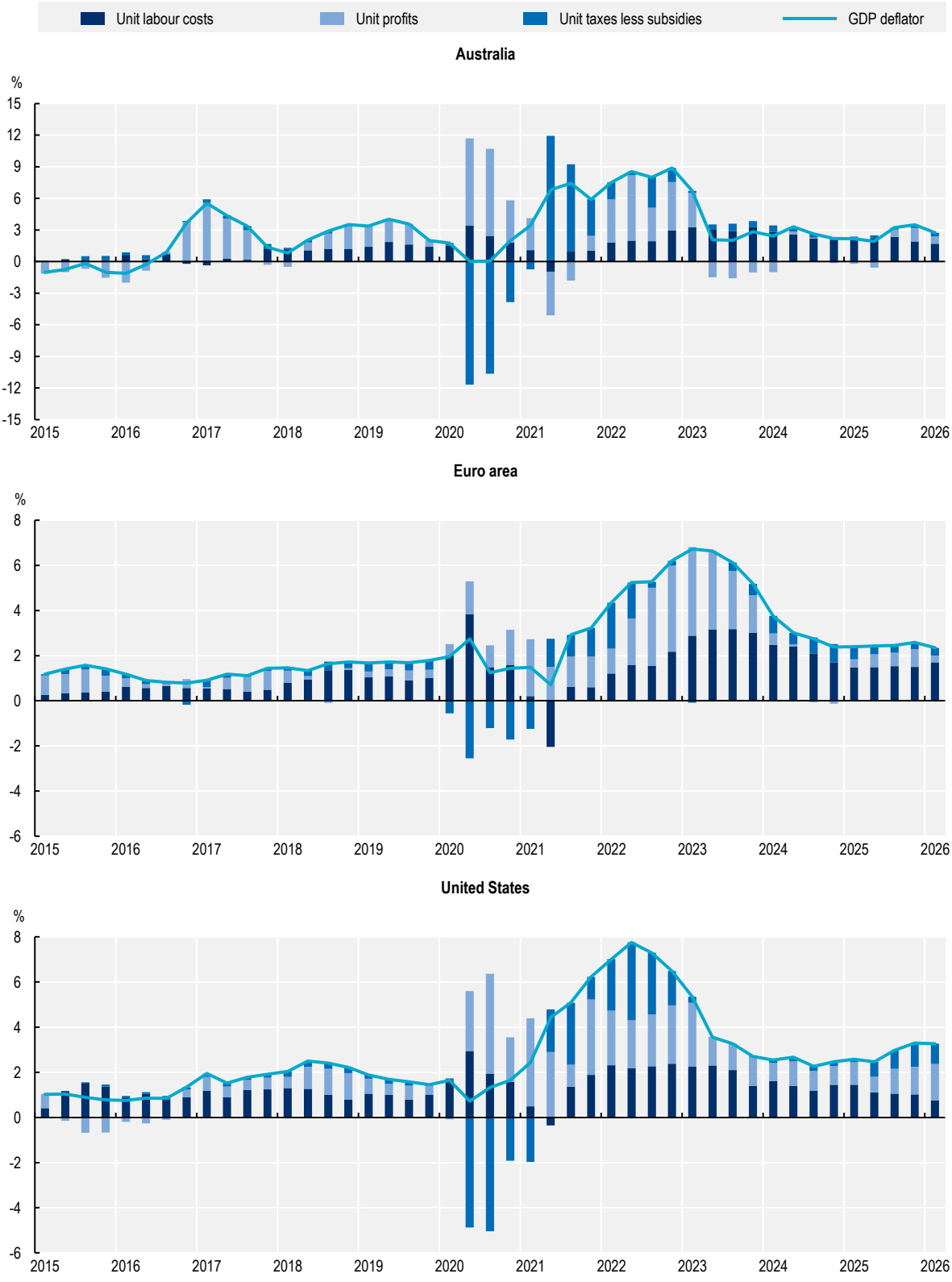
Note: Unit labour costs and unit profits are calculated by dividing compensation of employees and gross operating surplus respectively, by real GDP. For Japan and Norway, gross operating surplus is approximated by deducting compensation of employees from nominal GDP – and hence also include unit net taxes. For Norway, the data are based on mainland Norway. The latest data available for the Netherlands refer to Q4 2025. "OECD" is the unweighted average of the 29 OECD countries shown in this Chart (not including Chile, Colombia, Costa Rica, Iceland, Israel, Korea, Mexico, New Zealand and Türkiye). "Euro area" refers to 21 Eurozone countries.

Source: OECD calculations based on OECD Data Explorer, "Quarterly GDP and components – income approach", http://data-explorer.oecd.org/s/2az (accessed on 15 June 2026), Cabinet Office, Government of Japan, Economic and Social Research Institute (ESRI) Quarterly Estimates of GDP for Japan, and Statistics Norway, Quarterly National Accounts for Norway.

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Figure 1.21. The contribution of unit profits to domestic price pressures has stabilised around pre-pandemic levels in the euro area and is increasing in the United States

Contribution to the GDP deflator, year-on-year percentage changes, seasonally adjusted data



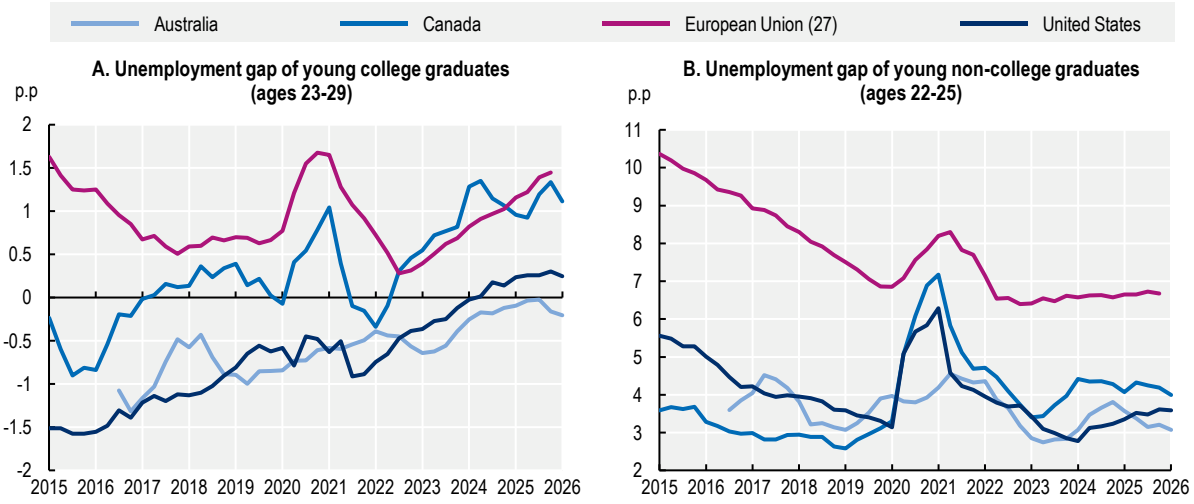
Note: Euro area refers to 21 Eurozone countries. Unit labour costs, unit profits and unit taxes less subsidies are calculated by dividing compensation of employees, gross operating surplus and taxes less subsidies on productions and imports, respectively, by real GDP. Compensation of employees, gross operating surplus, taxes less subsidies on productions and imports, gross domestic products and deflators are denominated in local currencies. For the United States, changes in the GDP deflator are reported net of statistical discrepancies.
Source: OECD calculations based on OECD Data Explorer, "Quarterly GDP and components – income approach", http://data-explorer.oecd.org/s/2az (accessed on 15 June 2026).

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1.3. Young labour market entrants face particular labour market difficulties

Young labour market entrants have been increasingly exposed to unemployment compared to the rest of the working age population, following trends that vary according to their education level. While the unemployment rate of young college graduates has been rising relative to that of the overall population in all countries analysed since before the COVID-19 pandemic, young entrants without a graduate degree have seen a significant increase in their unemployment gap relative to the overall population more recently in Canada and the United States,[21] but not in Australia and the euro area (Figure 1.22).

Figure 1.22. Young labour market entrants have been increasingly exposed to unemployment compared to the rest of the working age population



Note: The unemployment gap is measured as the p.p. difference between the unemployment rate of recent non-college or college graduates and the overall unemployment rate of all persons aged 15-64 (16-64 for the United States) who are not currently enrolled in education. **Panel A** refers to recent college graduates, defined as persons not currently enrolled in education, aged 23-29, holding a bachelor's degree or higher. **Panel B** refers to recent non-college graduates, defined as persons not currently enrolled in education, aged 22-25, holding a non-university degree. All series are smoothed using a four-quarter moving average. European Union (27) refers to the weighted average of the 27 EU countries. p.p: percentage point.
Source: OECD estimates based on the Australian Labour Force Survey, the Canadian Labour Force Survey (PUMFs), the European Union Labour Force Survey (EU-LFS) for the European Union, and the Current Population Survey (CPS) for the United States.

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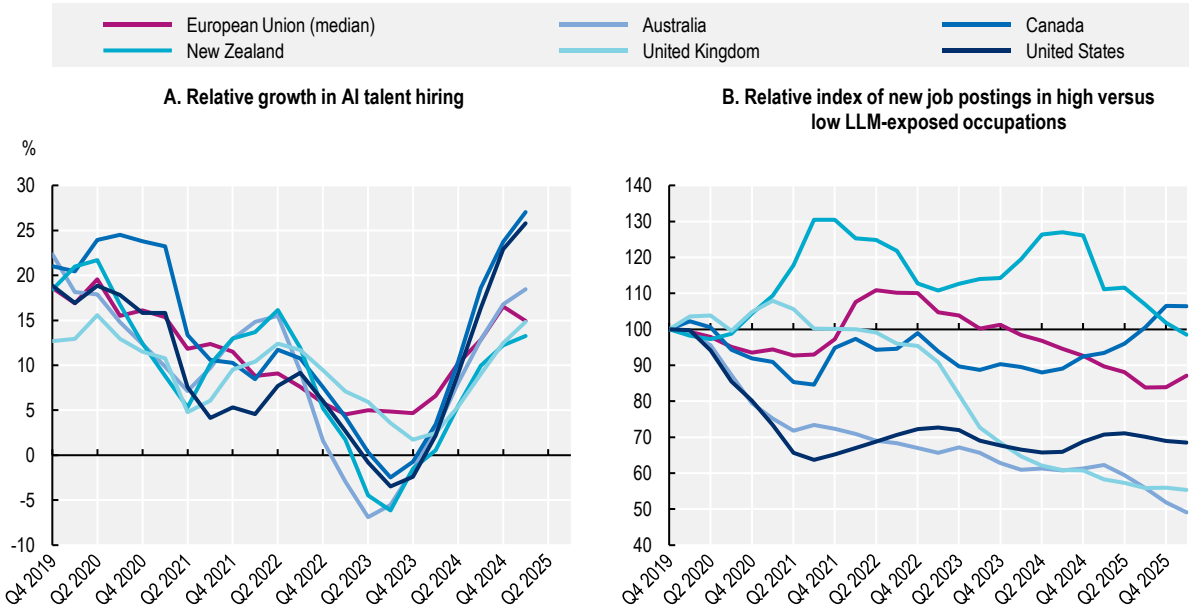
1.3.1. So far, the role of LLMs in explaining the difficulties encountered by young people entering the labour market appears to be limited

Recent advances in generative AI and Large Language Models (LLMs) may contribute to explaining the particular difficulties faced by young labour market entrants if these technologies tend to replace human labour.[22] To date, evidence on this subject is mixed and focusses mainly on the United States.[23] Some studies find no significant employment effects of generative AI (Chen and Stratton, 2026[43]; Gimbel et al., 2025[44]; Humlum and Vestergaard, 2025[45]), while others suggest that generative AI may indeed have a disproportionate impact on the employment prospects of early-career workers (with no evidence that this impact is particularly concentrated among college graduates) (Azar, Gine and Sanz-Espín, 2025[46]; Brynjolfsson, Chandar and Chen, 2025[47]; Klein Teeselink, 2025[48]; Lichtinger and Hosseini Maasoum, 2025[49]; Liu, Wang and Yu, 2025[50]; Lodefalk et al., 2026[51]). Nevertheless, some of these results might be biased by the greater sensitivity of occupations exposed to generative AI to macroeconomic developments, as these occupations are overrepresented in certain sectors that are particularly sensitive to capital cost and general economic uncertainty (e.g. information, finance and insurance, or professional and technical services), so that hiring is quickly reduced in these sectors when macroeconomic conditions worsen. Thus, what may seem an effect of the diffusion of LLMs is in fact simply the result of worsening macroeconomic environment (Curto Millet and Iscenko, 2026[52]; Frank et al., 2026[53]).

Data from Australia, Canada, the European Union and the United States suggest that the role of LLMs in explaining the unemployment gap of young labour market entrants remains limited, both for those with and without a graduate degree. Indeed, the data indicate divergent trends between, on the one hand, AI hiring (used as a proxy for AI use by firms), and, on the other hand, (i) unemployment gaps of young labour market entrants or (ii) online job postings in occupations exposed to AI language modelling capabilities[24] (which will be referred to as “high LLM-exposure occupations”).

With regard to college graduates, there has been an upward trend in the unemployment gap since before the pandemic (Figure 1.22, Panel A), and therefore well before firms began turning to LLMs. In addition, trends in AI hiring from LinkedIn[25] (Figure 1.23, Panel A) suggest that firms began using intensively LLMs from mid-2023 to early 2024 (depending on the country),[26] with a dramatic increase in LLM use since then.[27] As no turning point in the unemployment gap trend for college graduates is visible around those dates (Figure 1.22, Panel A) in any of the countries analysed, it can be concluded that LLMs diffusion is unlikely to be the main factor behind the increase in the unemployment gap for college graduates.

Figure 1.23. There have been divergent trends between AI hiring and online job postings in high LLM-exposure occupations relative to low-LLM exposure occupations



Note: In **Panel A**, the relative growth in AI talent hiring is defined as the difference between the year-on-year growth rate of the LinkedIn AI hiring rate and the year-on-year growth rate of the overall LinkedIn hiring rate in the same country. The LinkedIn hiring rate is measured as the share of LinkedIn members who added a new employer in a given period, divided by the total number of LinkedIn members in the corresponding location. The AI hiring rate is computed using the same methodology but restricted to members classified as AI talent. AI talent includes LinkedIn members who have explicitly listed at least two AI-related skills on their profile and/or who are currently employed or have previously been employed in an AI-related occupation. Values are shown as 12-month moving averages. A positive value indicates that AI talent hiring is growing faster than overall hiring. European Union (median) refers to the median relative growth in AI-talent hiring across 24 EU countries (not including Bulgaria, Malta and the Slovak Republic). **Panel B** shows the ratio of the index of new online job postings in high language-model-exposed occupations (top quintile of the Language Model Exposure score) to the index of new online job postings in low language-model-exposed occupations (bottom quintile of the Language Model Exposure score), as developed by Felten, Raj and Seamans (2023[54]). Series are smoothed using a four-quarter moving average and indexed to 100 in Q4 2019. New online job postings correspond to job advertisements first published in a given quarter. European Union (median) refers to the median relative index of new job postings in high versus low LLM-exposed occupations across 15 EU countries (Austria, Belgium, Czechia, Denmark, France, Germany, Hungary, Ireland, Italy, Luxembourg, the Netherlands, Poland, Portugal, Spain and Sweden), data for each individual country are provided in Annex Figure 1.A.11. LLM: large language model.
Source: OECD.AI (2026), data from LinkedIn Economic Graph, last updated 6 March 2026, accessed on 13 May 2026, https://oecd.ai/ (Panel A); and OECD calculations based on Lightcast online job postings and Language Model Exposure score from Felten, Raj and Seamans (2023[54]) made available in ISCO classification by Nurski (2025[55]) (Panel B).

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A similar argument can be made for young labour market entrants without a college degree (Figure 1.22, Panel B). While the unemployment gap for this group in the United States – which started increasing around early 2024 – could potentially have been caused by LLMs diffusion, this is not the case in Australia – where the unemployment gap started declining in mid-2024 – nor in Canada or the euro area – where it has remained virtually flat since at least early 2024.

In addition, in all countries analysed, trends in online job postings (from Lightcast data) in high-LLM exposure occupations relative to low-LLM exposure occupations exhibits no break at the end of 2023 – which, as discussed, marks the start of intensive use of LLMs (Figure 1.23, Panel B).[28] By contrast, job postings in LLM-exposed occupations appear, as expected (see the discussion above), more sensitive to macroeconomic shocks: posting went down during the COVID-19 pandemic, improved in the ensuing

recovery, and contracted again during the subsequent inflation shock, logistic disruption and monetary tightening. These observations remain unchanged when focussing on *junior-level* job postings in the United States (Box 1.6).

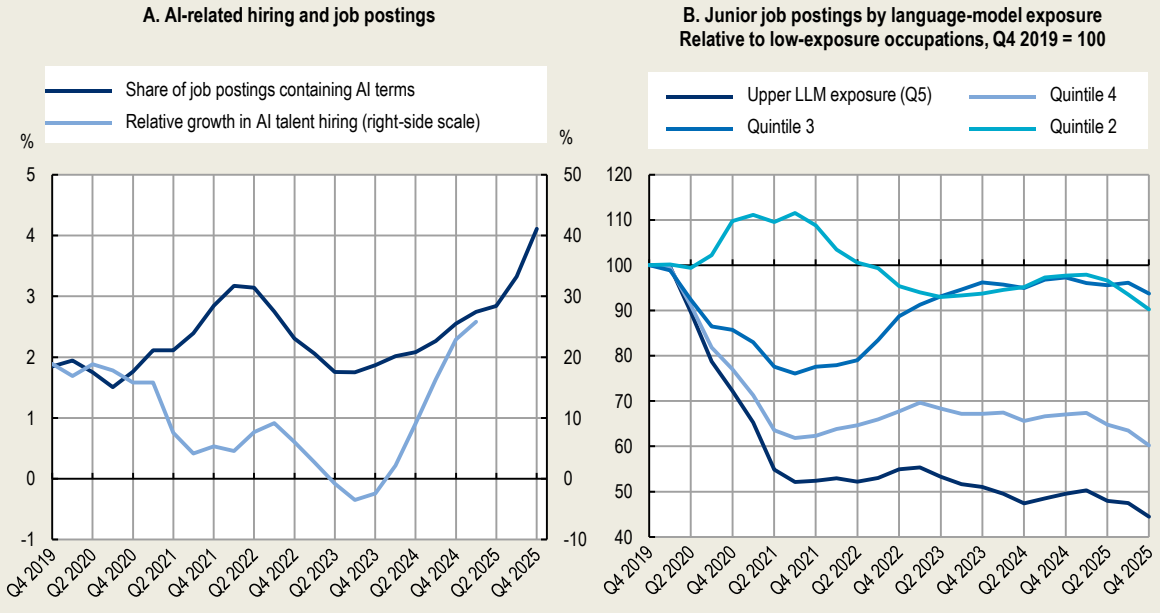
The conclusion that LLMs diffusion has not significantly impacted the employment prospects of young entrants remains preliminary, and LLMs may well have a stronger impact in the future, as technological advances and the use of LLMs by firms develop. These broad observations may also mask substantial impacts in specific occupations or sectors, and further monitoring of the effects of LLMs advances on the labour market and the resulting skill needs is necessary.

Box 1.6. Online job postings for junior positions in the United States have not declined disproportionately in LLM-exposed occupations when firms began using LLMs

Lightcast data for the United States include a job seniority indicator that classifies job postings based on explicit mentions in the job title or role description indicating that the position targets a junior or senior candidate (e.g. specific words such as “junior”, “senior”, “entry-level”, “lead”, “principal”, as well as structured phrases related to seniority).

As with job postings overall, the end of 2023 – which marks the start of LLM use according to job postings and hiring data (Figure 1.24, Panel A) – does not correspond to either the start or a sustained acceleration of a reduction in *junior* postings in high-LLM exposure occupations relative to low-LLM exposure occupations (Figure 1.24, Panel B). Junior job postings in LLM-exposed occupations have, however, been more sensitive to macroeconomic shocks, and to the pandemic in particular, because, as noted above, these occupations are also the most exposed to these shocks (e.g. information, finance and insurance, or professional and technical services) (Curto Millet and Iscenko, 2026[52]), and it has been shown that, during downturns, employers reduce especially hiring in entry-level jobs which require little experience – see e.g. Raaum and Røed (2006[56]) and Brunner and Kuhn (2013[57]).

Figure 1.24. There have been divergent trends between AI hirings and *junior* job postings in high LLM-exposure occupations relative to low-LLM exposure occupations in the United States



Note: In **Panel A**, the relative growth in AI talent hiring is defined as the difference between the year-on-year growth rate of the LinkedIn AI hiring rate and the year-on-year growth rate of the overall LinkedIn hiring rate in the same country. The LinkedIn hiring rate is measured as the share of LinkedIn members who added a new employer in a given period, divided by the total number of LinkedIn members in the corresponding location. The AI hiring rate is computed using the same methodology but restricted to members classified as AI talent. AI talent includes LinkedIn members who have explicitly listed at least two AI-related skills on their profile and/or who are currently employed or have previously been employed in an AI-related occupation. Values are shown as 12-month moving averages. A positive value indicates that AI talent hiring is growing faster than overall hiring. AI-related postings are identified using keyword searches covering both AI occupations (e.g. "Artificial Intelligence", "Machine Learning", "Data Science") and generative AI terms (e.g. "Generative AI", "Large Language Models", "ChatGPT"). The share of AI-related job postings is based on a seven-day trailing average. A value of 1% indicates that 1% of all job postings contain AI-related keywords. Further methodological details are available at: https://github.com/hiring-lab/ai-tracker (LinkedIn Hiring Lab). In **Panel B**, statistics refer to ratios of the online job postings index for junior positions in language-model-exposed occupations (Q2–Q5) relative to junior positions in low language-model-exposed occupations (first quintile of the Language Model Exposure score). Exposure quintiles are based on the occupation-level Language Model Exposure score developed by Felten, Raj and Seamans (2023[54]). Junior positions are identified using Lightcast's job seniority classifier, which flags postings as "Junior" based on job titles and text content; the classifier prioritises accuracy over recall, implying that not all junior postings are identified. New online job postings correspond to job advertisements first published in a given quarter. Series are shown as four-quarter moving averages and indexed to 100 in Q4 2019. AI: artificial intelligence. LLM: large language model.
Source: OECD.AI (2026), data from LinkedIn Economic Graph, last updated 6 March 2026, accessed on 13 May 2026, https://oecd.ai/, Indeed AI Tracker, https://data.indeed.com/#/ai (accessed on 12 May 2026), and OECD calculations based on Lightcast online job postings and Language Model Exposure score from Felten, Raj and Seamans (2023[54]) made available in ISCO classification by Nurski (2025[55]) (Panel B).

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1.3.2. Young labour market entrants may have been particularly vulnerable to the recent weakening of labour markets and long-term changes in technology and skill needs

Although resilient, OECD labour markets have been showing some signs of weakening since 2023 (OECD, 2024[2]; 2025[1]), which may have been felt more strongly by young labour market entrants (Curto Millet and Iscenko, 2026[52]). Young entrants are indeed more likely to be looking for a job or working on a fixed-term contract, which are the first to be terminated when the labour market deteriorates. In the United States, for example, hiring has fallen to its lowest level in a decade,[29] preventing many young individuals from entering employment. Specific sectoral problems have added to these difficulties, such as job cuts in the high-tech, information, and business services sectors, following excessive hiring during the pandemic.[30,31] Working conditions may also appear less favourable than expected – lengthening the time it takes to find a job that meets expectations – as, even before the recent surge in energy prices, real wages remained below their 2021 levels in many countries (Section 1.2), and some of the flexibility gained from the remote revolution has been rolled back.[32] Country-specific factors may also have played a role, such as the record increase in non-permanent residents in Canada in 2023 that led to a disproportionate rise in the young working-age population.[33]

On the longer-run, structural changes have been particularly unfavourable to graduates entering the labour market, which may explain the long-term upward trends in unemployment for this group compared to the rest of the working age population. Several studies show that the rapid growth of digital technologies has been fuelling a wave of "digital offshoring" or "telemigration" (see Broecke (2024[58]) for a review) In response to rapidly evolving skill needs, hiring models are also increasingly relying on demonstrated skills rather than formal credentials (OECD, 2025[59]) – see also Chapter 4. From a demographic perspective, longer working lives may have reduced hiring in management occupations relative to other occupations by increasing the proportion of older workers, who tend to be over-represented in these occupations (Aspen Economic Strategy Group, 2026[60]). Some of these trends may have been fostered by the COVID-19 pandemic – which has boosted online learning and digital offshoring – and recent labour shortages – which may have encouraged employers to offshore and relax degree requirements.

1.4. Concluding remarks

OECD labour markets have remained resilient. However, they have shown further signs of weakening, i.e. rising unemployment, further slowdowns in the growth in employment and labour force participation, a continuation of the decline in labour shortages, and a slowdown in real wage recovery. Young individuals entering the labour market may have been particularly vulnerable to this recent labour market slowdown in some countries.

Several factors – both cyclical and structural – could explain these developments. The catching up of real wages has brought real labour costs back to their pre-pandemic levels in many – albeit not all – countries, the reduction in labour hoarding may have led to an increase in separations, the reduction in working hours has slowed down, and the use of generative AI by firms may have begun to automate certain jobs – although the data show little evidence of this to date. These factors may also be linked to the developments in labour productivity observed since the onset of the pandemic. In particular, labour hoarding has mechanically lowered labour productivity in EU countries, while certain sectors that play a central role in AI adoption account for the strong productivity performances of the United States over the past years.

Despite signs of weakening labour markets, structural labour shortages persist. While labour market tightness is now less pronounced than at the onset of the pandemic in many countries, it remains higher than during most of the pre-pandemic decade and, in particular, than during comparable stages of the business cycle. A number of factors could contribute to this trend, including population ageing, the digital transformation, the energy transition, and poor job quality in some sectors.

Addressing these shortages requires co-ordinated policy efforts across various areas of labour market policy (Filippucci, Laengle and Marcolin, 2025[11]), and regional variations in shortages in some countries require particular attention to local implementation. Encouraging the participation of underrepresented groups in the labour market – i.e. older people (e.g. by removing mandatory retirement, see Chapter 6), women, or migrants – could increase the supply of labour (OECD, 2025[1]). Streamlining occupational licenses and non-compete agreements (see Chapter 5) could promote labour mobility and matching efficiency. Education, reskilling and upskilling policies (Chapter 4) have a role to play in developing the skills needed for the digital transformation (OECD, 2023[3]) and the energy transition (OECD, 2024[2]), while ensuring that older workers continue to have meaningful employment in a context of demographic ageing (OECD, 2025[1]). Minimum wage and collective bargaining systems should also ensure that work offers attractive working conditions.

Labour market policies (e.g. unemployment benefits, active labour market policies, collective bargaining) will also remain essential in addressing the labour market impacts of persistent economic and geopolitical uncertainty and elevated energy costs. In particular, in a context of stabilising wage pressure and rising inflation, wage setting institutions – minimum wage and collective bargaining – have a role to play in ensuring that the cost of inflation is fairly distributed between workers and employers. Collective bargaining and social dialogue should also ensure that low-wage workers whose pay exceeds the minimum wage – and who therefore do not directly benefit from minimum wage increases – are protected against inflation. Collective bargaining can help identify solutions tailored to sectors and firms' varying capacities to sustain further wage increases. In particular, the timing of wage negotiations matters, and could be adjusted through the frequency of bargaining rounds, early wage negotiations, bridge agreements and one-off payments. Wage-setting institutions could play an even bigger role than they did during the post-pandemic inflationary episode, when more dynamic labour markets were providing stronger support for market wages.

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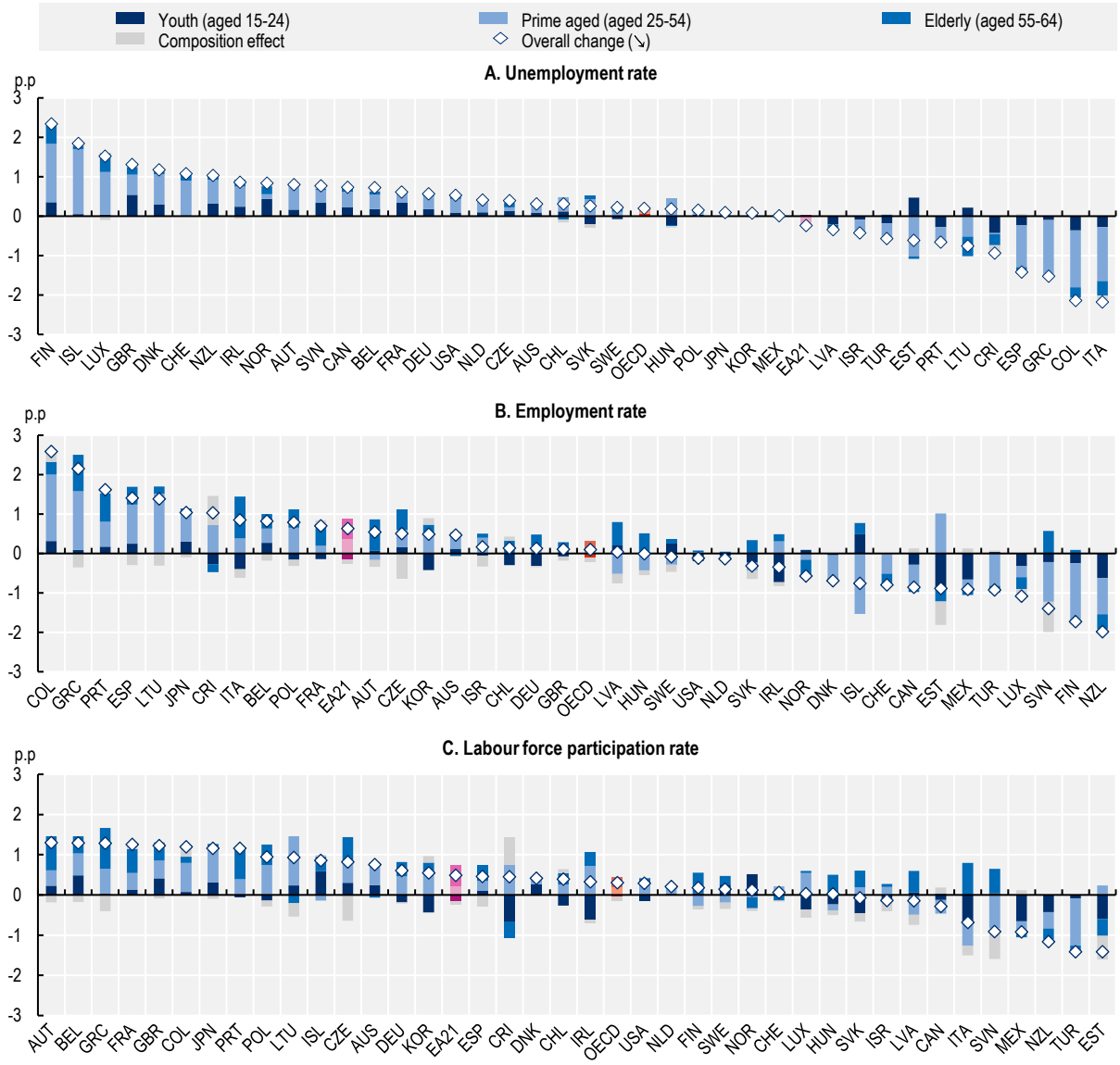
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Annex 1.A. Additional results

Annex Figure 1.A.1. Employment rates have increased among prime aged and older individuals, but not among youth

Decomposition of the overall change in the unemployment rate, employment rate and labour force participation rate (persons aged 15-64) by age group between Q1 2024 and Q1 2026

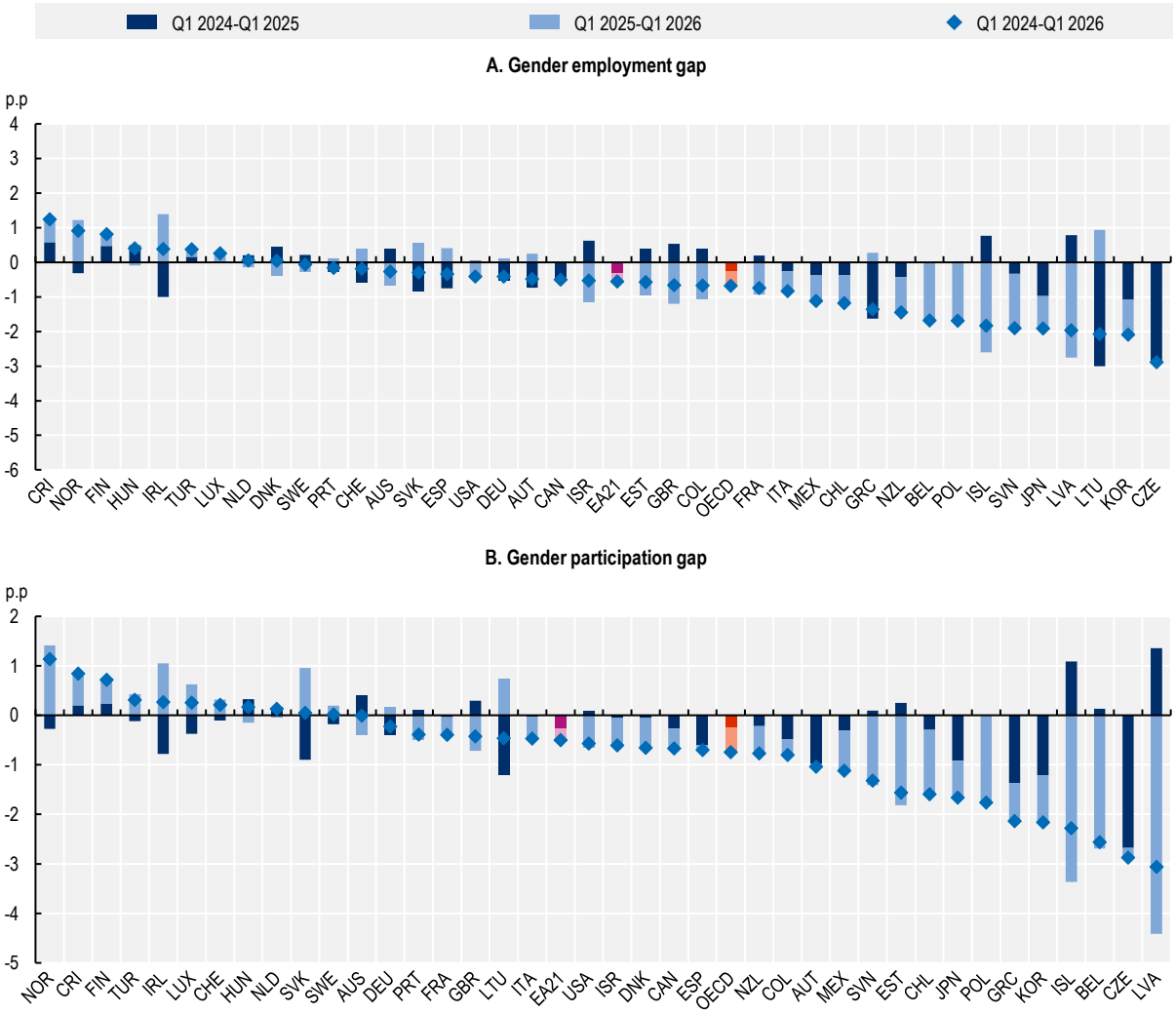


Note: Statistics for Iceland and the United Kingdom refer to the change in Q4 2023-Q4 2025. OECD is the unweighted average of the 38 OECD countries shown in this chart. Euro area (21) refers to the 21 Eurozone countries. p.p: percentage point.
Source: OECD Data Explorer, "Infra-annual labour statistics", https://data-explorer.oecd.org/s/4sf (accessed on 17 June 2026).

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Annex Figure 1.A.2. Gender employment and participation gaps have narrowed

Male-to-female differences in employment and labour-force participation rates (p.p.), persons aged 15-64, seasonally adjusted



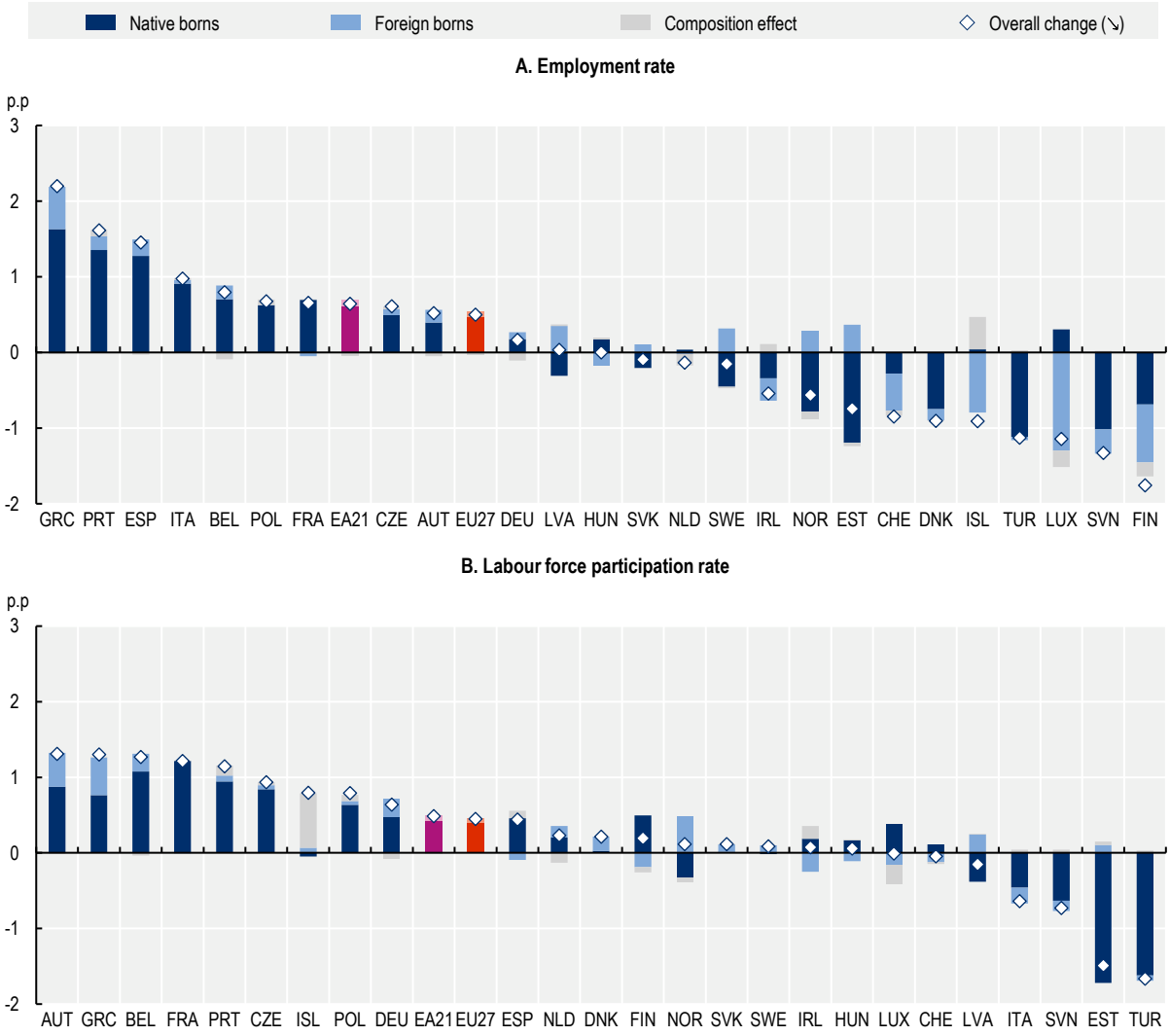
Note: The gender employment gap (participation gap) is defined as the male-to-female p.p. difference in employment rate (labour force participation rate). Statistics for Iceland refer to the second quarter. OECD is the unweighted average of the 38 OECD countries shown in this Chart. Euro area refers to the 21 Eurozone countries. Statistics for Iceland and the United Kingdom refer to Q4 2023, Q4 2024, and Q4 2025. p.p: percentage point.

Source: OECD calculations based on OECD Data Explorer, "Employment rate", http://data-explorer.oecd.org/s/2al (accessed on 16 June 2026), and OECD Data Explorer, "Labour force participation rate", http://data-explorer.oecd.org/s/2am (accessed on 16 June 2026).

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Annex Figure 1.A.3. The share of working-age migrants in employment or participating in the labour market has increased in some countries

Decomposition of the overall change in the employment rate and labour force participation rate (persons aged 15-64) by country of birth between Q1 2024 and Q1 2026



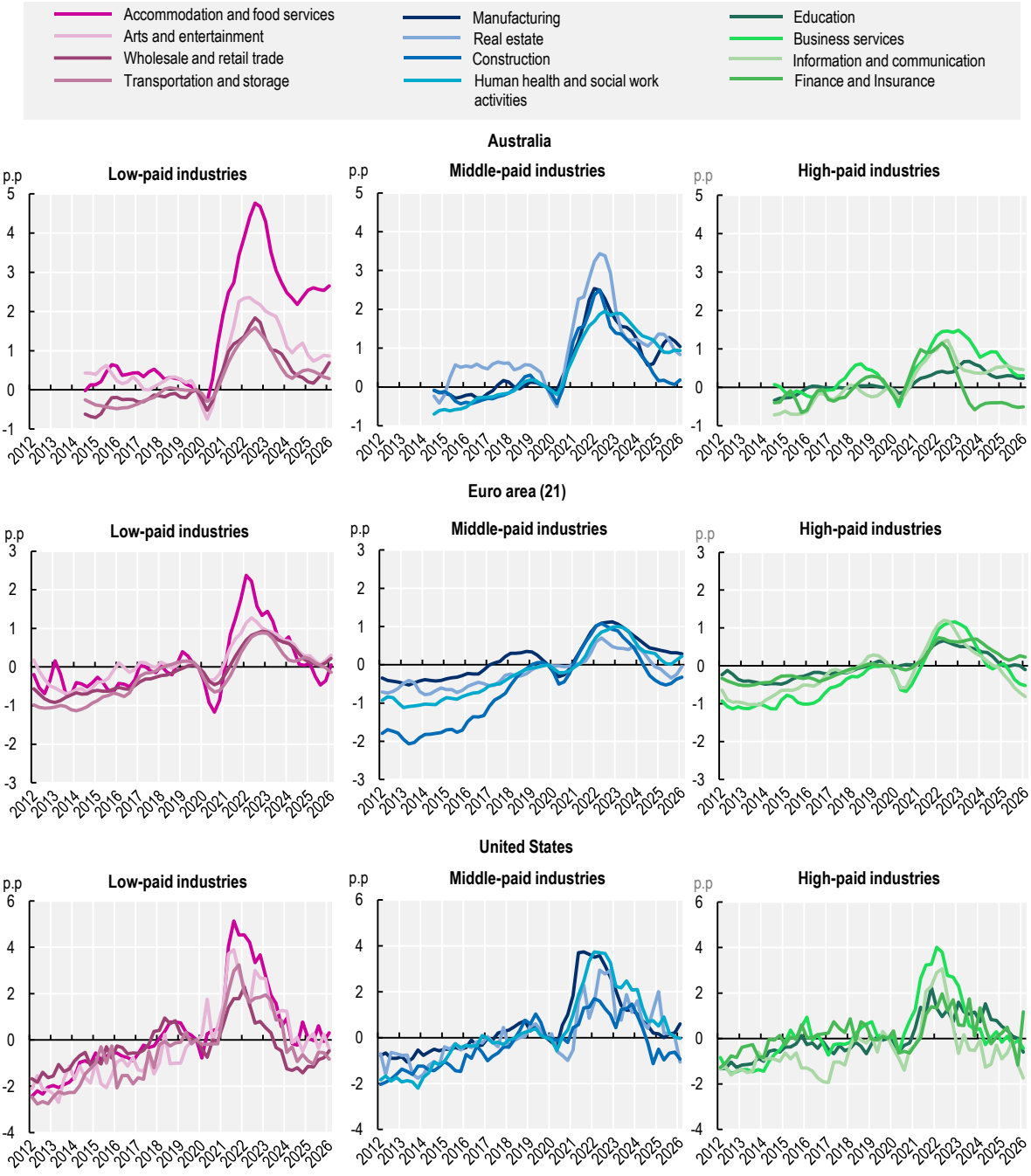
Note: Changes in employment and labour force participation rates shown in this chart may differ from those reported in Figure 1.3 because the Eurostat data used here are not seasonally adjusted, whereas the OECD data used in Figure 1.3 are seasonally adjusted. Euro area refers to the 21 Eurozone countries, and European Union to the 27 EU member countries. Statistics for Iceland refer to Q4 2023 and Q4 2025. p.p: percentage point.

Source: OECD calculations based on Eurostat, Population by sex, age, country of birth and labour status (Table lfsq_pgacws), https://doi.org/10.2908/LFSQ_PGACWS (accessed on 17 June 2026).

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Annex Figure 1.A.4. Labour market tightness is close to pre-COVID-19 levels in most sectors in the euro area and the United States

p.p. difference in job vacancy rates by industry relative to their Q4 2019 levels



Note: Industries are ranked by median wages in 2018 using the European Structure of Earnings Survey (SES). This ranking is broadly consistent when using 2019 median wage data from the United States Current Population Survey. The definition of vacancies is not harmonised across countries (see Figure 1.5 for further details).

For Australia, job vacancy rates by industry are OECD estimates based on vacancies from the Job Vacancy Survey and employees from the Labour Force Survey. Job vacancy rates by industry are seasonally adjusted for the United States. For Australia and the euro area, series are smoothed using a Hodrick-Prescott filter.

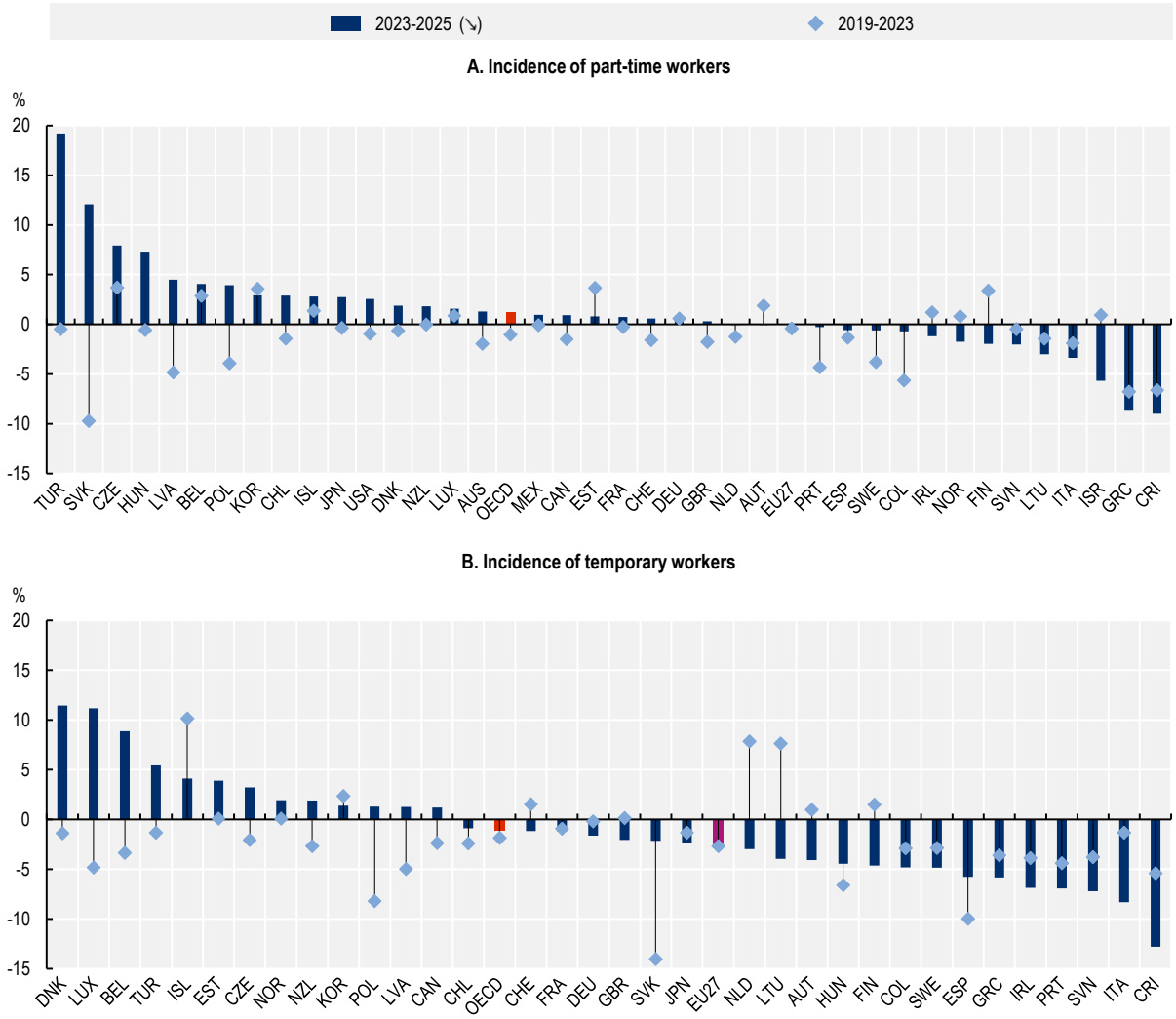
Industries refer to ANZSIC 2006 (1-digit) for Australia, NACE Rev. 2.1. (1-digit) for the euro area and NAICS for the United States and are therefore not fully comparable across countries. For the euro area (21), "Information and communication" is calculated as the unweighted

average of the job vacancy rates for NACE Rev. 2.1 sections J ("Publishing, broadcasting, and content production and distribution activities") and K ("Telecommunication, computer programming, consulting, computing infrastructure and other information service activities"). In the United States, "Business services" includes administrative services, "Real estate" includes rental and leasing, "Transportation and storage" includes warehousing and utilities, while "Human health and social work activities" and "Education" cover the private sector only. Euro area (21) refers to the 21 euro area countries. p.p: percentage point.
Source: Job Vacancies (Australian Bureau of Statistics, ABS) for Australia; Job vacancy statistics by NACE Rev.2.1. activity for the euro area; and Job Openings and Labor Turnover Survey (Bureau of Labor Statistics, BLS) for the United States.

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Annex Figure 1.A.5. Incidence of part-time workers and temporary workers

Annualised percentage change, 2019-2023 and 2023-2025

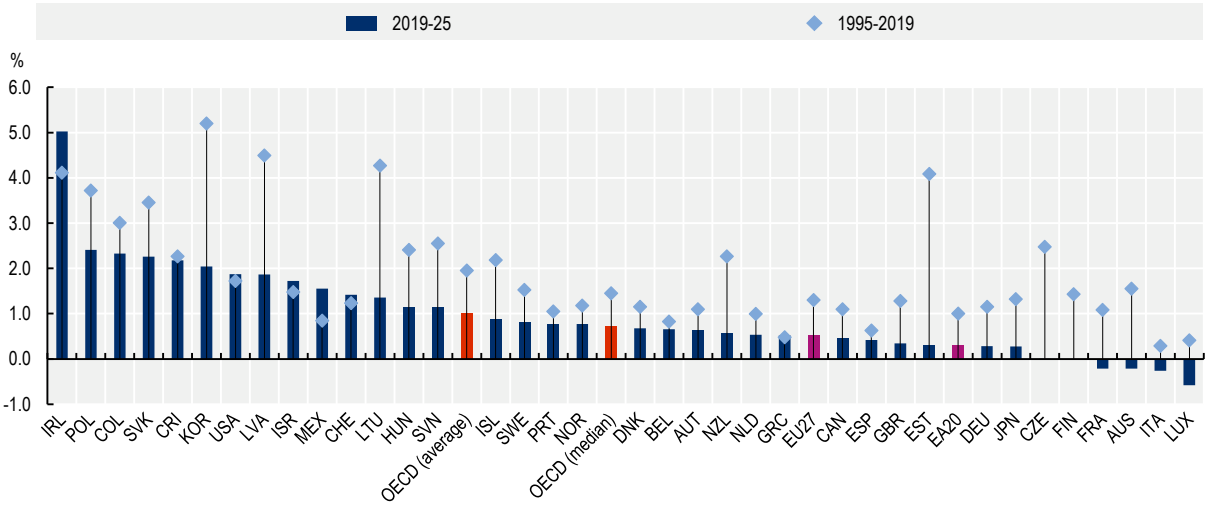


Note: In Panel A, part-time work refers to employed persons usually working less than 30 hours per week. Statistics for Korea refer to actual hours worked, and to employees for the United States. OECD is the unweighted average of the 38 OECD countries. In Panel B, OECD is the unweighted average of 34 OECD countries shown (not including Australia, Israel, Mexico and the United States). European Union (27) is the weighted averages of the 27 EU countries.
Source: OECD Data Explorer, "Incidence of full-time and part-time employment based on OECD-harmonised definition", https://data-explorer.oecd.org/s/4or (accessed on 8 June 2026), and OECD Data Explorer, "Employment by permanency of the job - Incidence", https://data-explorer.oecd.org/s/4os (accessed on 8 June 2026).

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Annex Figure 1.A.6. Labour productivity growth has been diverging between OECD countries

Annualised percentage change in real GDP per hour worked, 1995-2019 and 2019-2025

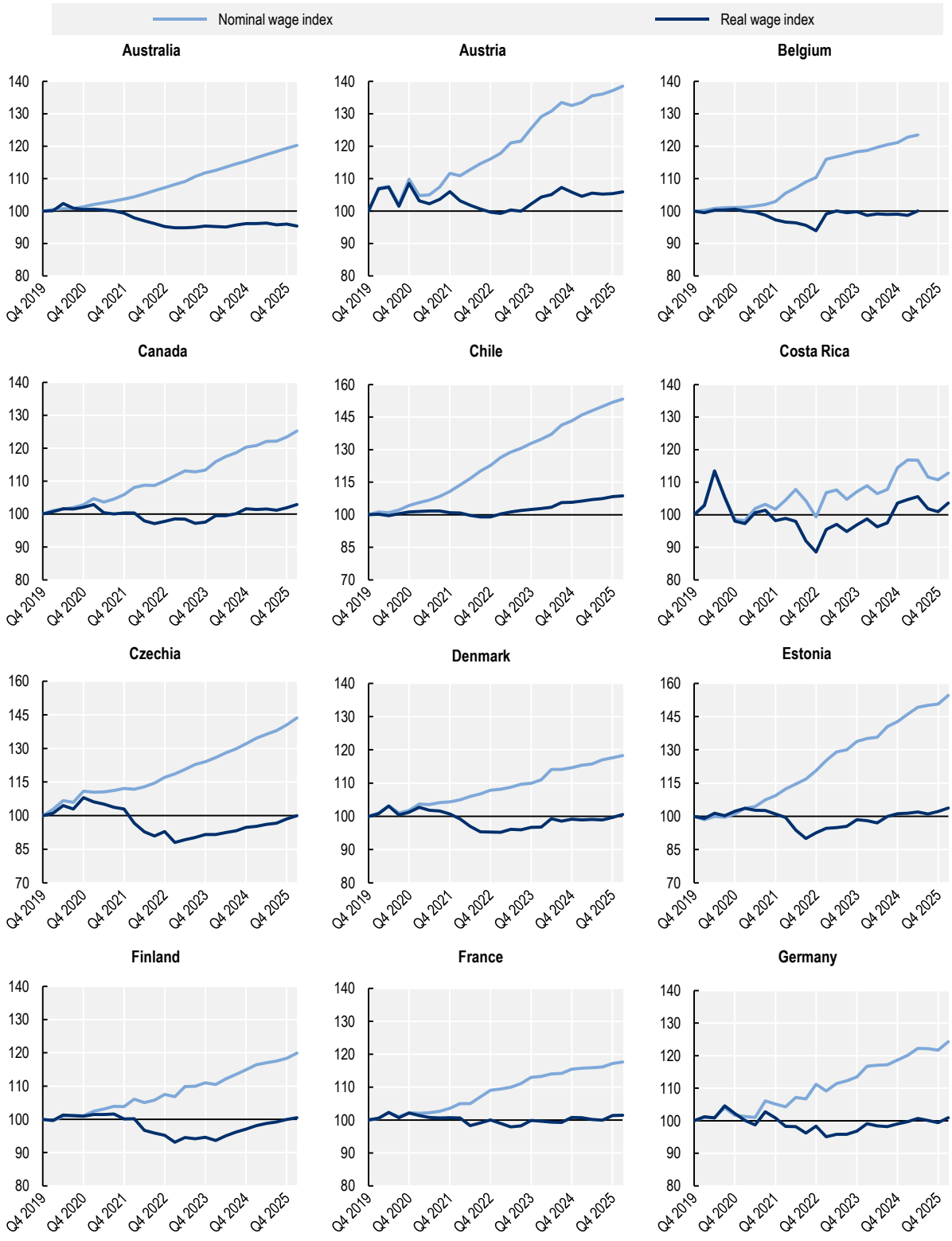


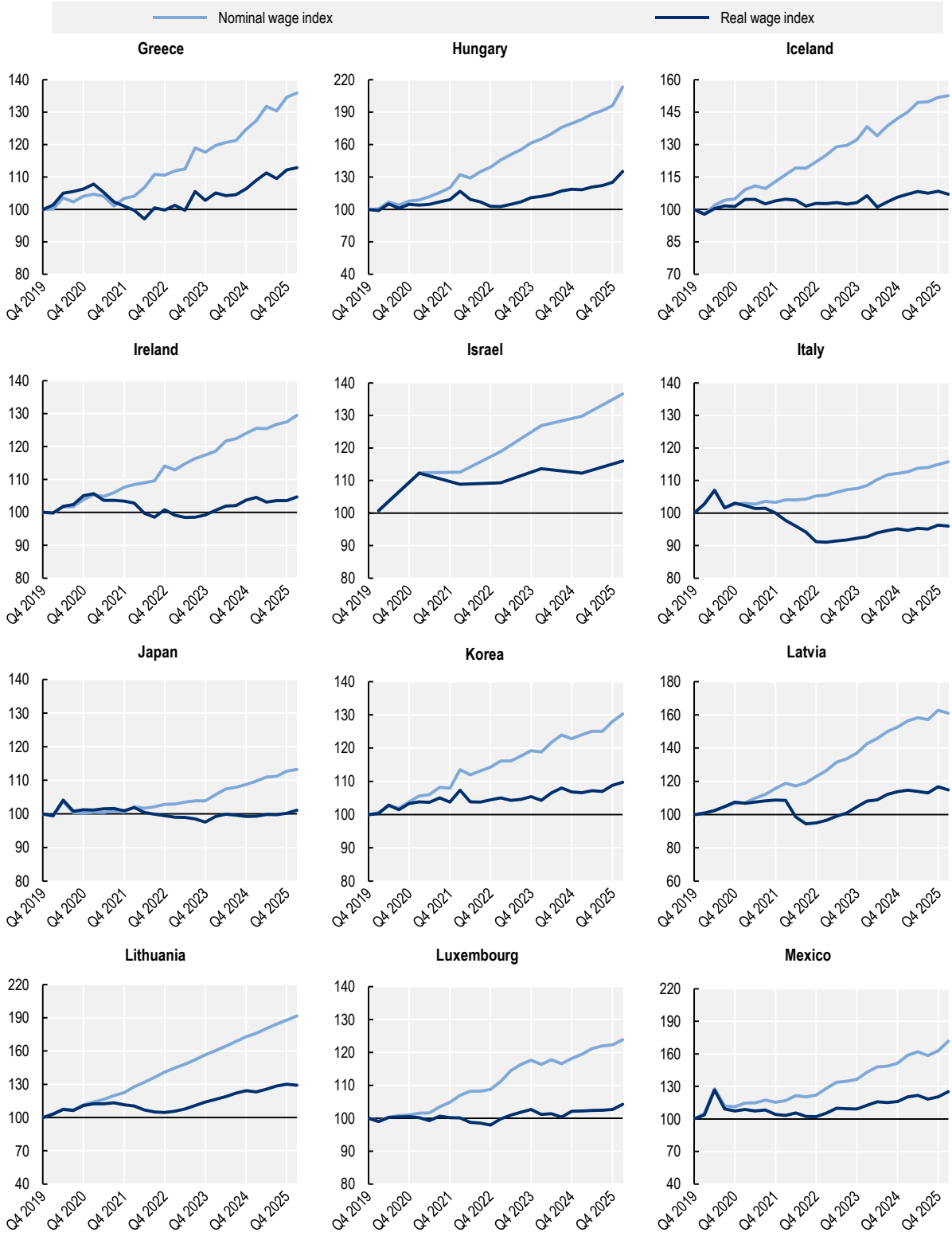
Note: "OECD (average)" and "OECD (median)" are the unweighted average and the median across the 36 OECD countries shown in this Chart (not including Chile and Türkiye), respectively. Euro area refers to the averages of 20 Eurozone countries and European Union to the averages of 27 EU countries. 1995-2019 refers to 1997-2019 for Canada and 1996-2019 for Estonia. 2019-2025 refers to 2019-2024 for Australia, Colombia, Costa Rica, Israel, Japan, Korea, Mexico, New Zealand and the United Kingdom.
Source: OECD Data Explorer, "Productivity database", https://data-explorer.oecd.org/s/4rg (accessed on 15 June 2026).

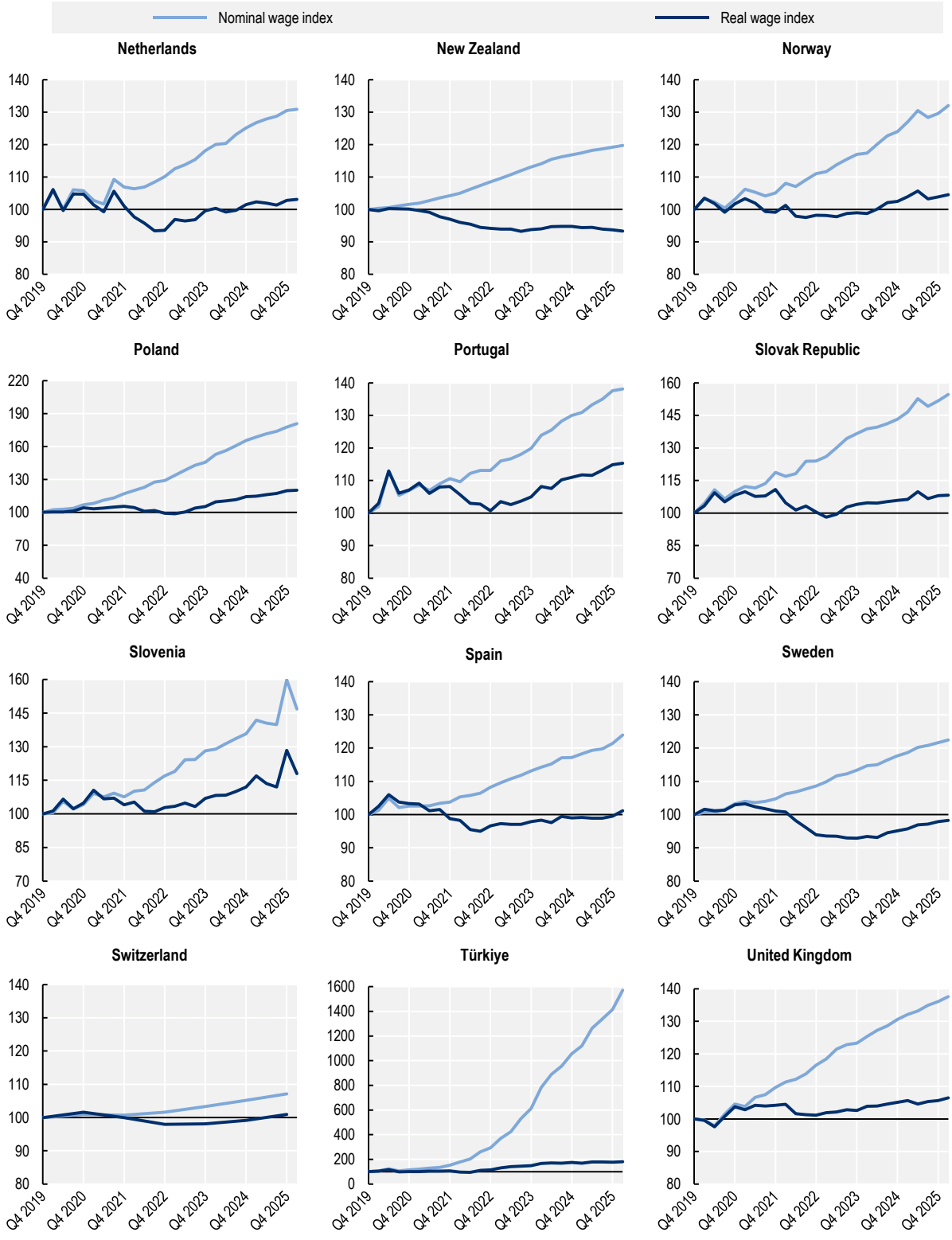
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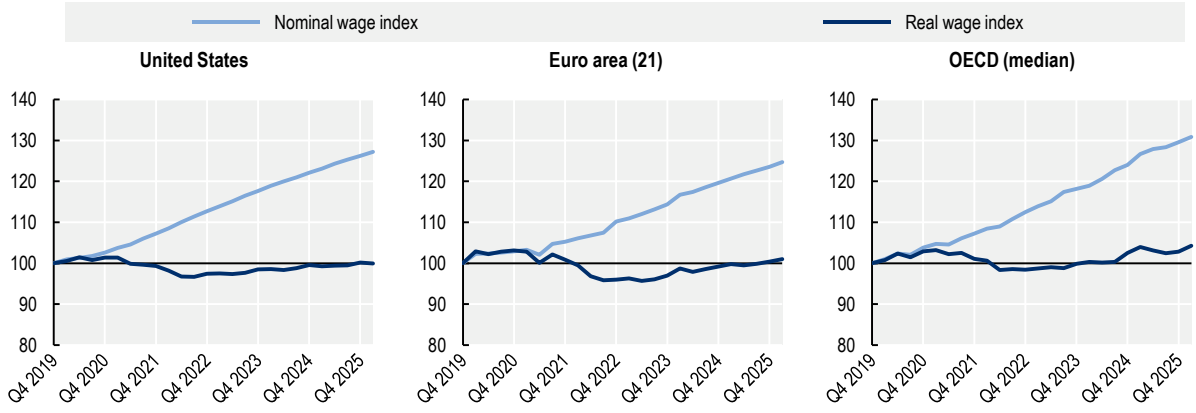
Annex Figure 1.A.7. Nominal and real wage index by country since Q4 2019

Index base 100 in Q4 2019




Nominal wage index
Real wage index
Greece
Hungary
Iceland
Ireland
Israel
Italy
Japan
Korea
Latvia
Lithuania
Luxembourg
Mexico
Q4 2019
Q4 2020
Q4 2021
Q4 2022
Q4 2023
Q4 2024
Q4 2025


Nominal wage index
Real wage index
Netherlands
New Zealand
Norway
Poland
Portugal
Slovak Republic
Slovenia
Spain
Sweden
Switzerland
Türkiye
United Kingdom
Q4 2019
Q4 2020
Q4 2021
Q4 2022
Q4 2023
Q4 2024
Q4 2025



Note: Unless otherwise indicated, nominal hourly wages correspond to the wages and salaries component of the Labour Cost Index, adjusted for a constant industry structure. The constant-industry-structure adjustment of average hourly earnings has been estimated and revised by the OECD using total wages and salaries by industry from the 2019 Annual National Accounts for Costa Rica and Mexico. For Japan, Korea and the United Kingdom, nominal hourly wages refer to actual wages, without adjustment for compositional shifts; comparisons with other countries should therefore be interpreted with caution. For Australia, Canada, Chile and New Zealand, nominal hourly wages control for additional compositional effects depending on the country, including regions, job and worker characteristics, sex, and occupations.

Nominal wage series are seasonally adjusted for all countries except Canada, Costa Rica, Israel, Mexico, New Zealand and Switzerland. Statistics cover only the private sector for Japan and Korea, and the business sector (NACE Rev. 2 sections B to N) for the Republic of Türkiye. For Mexico, nominal hourly wages are affected by a significant degree of unreported income. Series for Switzerland refer to an OECD estimate based on published year-on-year percentage change and can therefore only be calculated between two similar quarters (Q4 in this chart) with reference to Q4 2019. Due to high seasonality, series for Israel are shown for comparable quarters (Q1 in this chart) with reference to Q1 2019. Real hourly wages are calculated by deflating nominal hourly wages using the consumer price index (CPI, all items). For Poland and the Slovak Republic, real wages in Q1 2026 are estimated using the OECD price index (COICOP 1999), available up to Q4 2025, chained with the new national price indices (COICOP 2018), available from Q1 2026.

In Slovenia, the sharp increase in wages in Q4 2025 mainly reflects the payment of a one-off winter bonus in November and December recently introduced by the Act on the Right to the Winter Bonus and the Reform of Tax Base Assessment. The rise was also influenced by fewer hours worked and, to a lesser extent, by the reform of the public-sector wage system, which contributed to particularly strong increases in education and in public administration (Sections O and P of NACE Rev. 2).

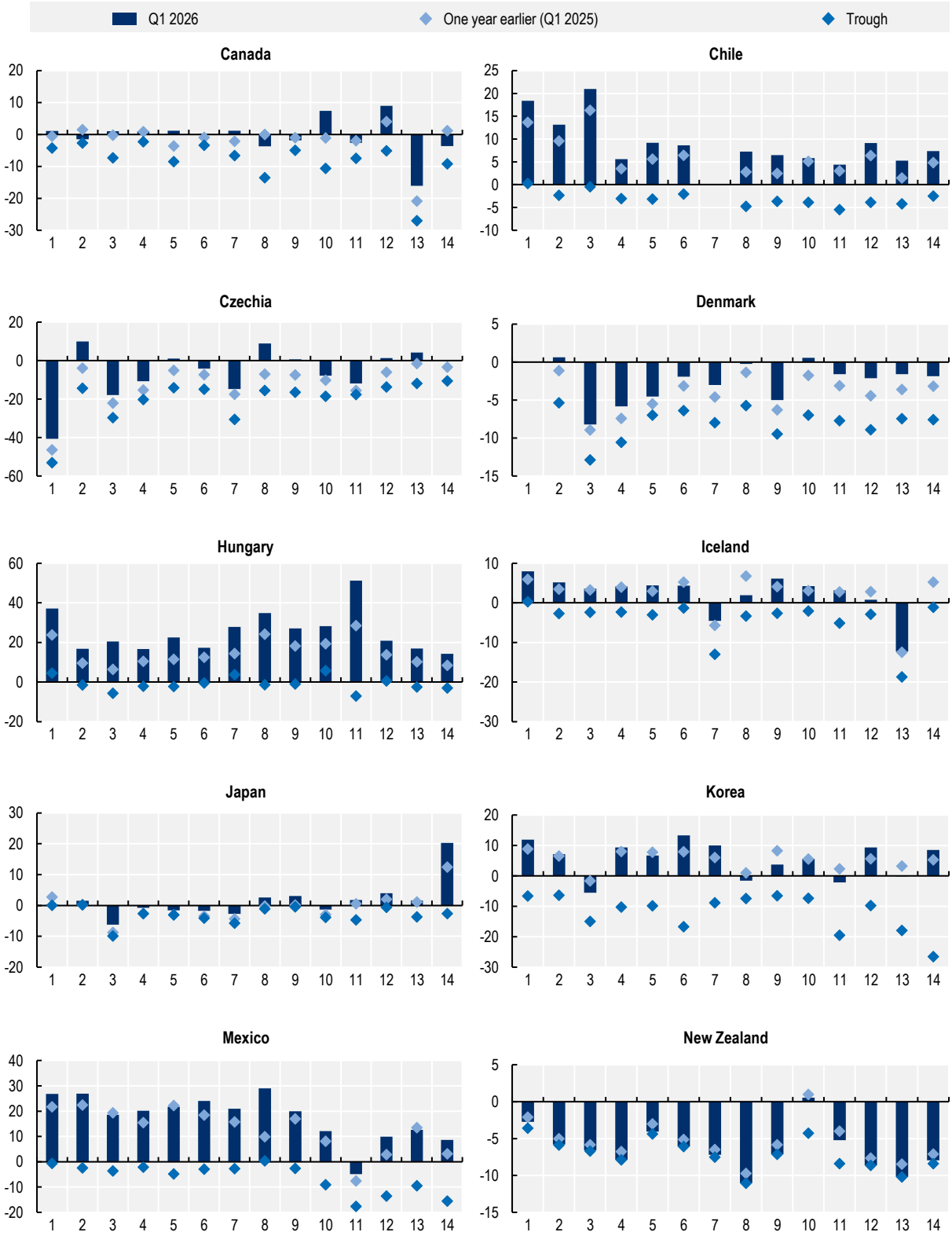
"OECD (median)" refers to the median across the 37 OECD countries shown in the chart (not including Colombia). Euro area (21) refers to the 21 Eurozone countries.

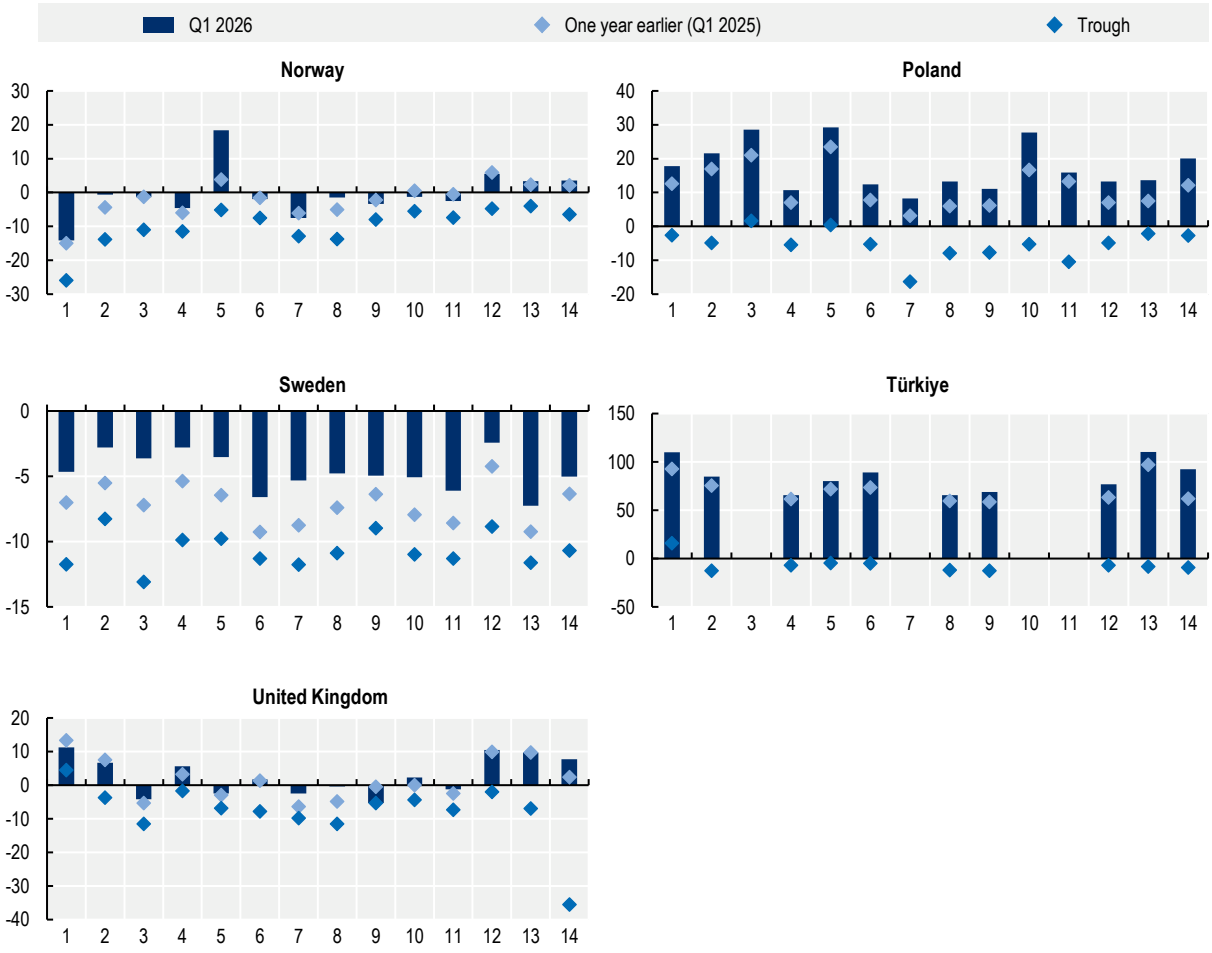
Source: OECD calculations based on national wage indices. For a full description of country-specific data sources, see Figure 1.15 in OECD (2025[1]), *OECD Employment Outlook 2025: Can We Get Through the Demographic Crunch?*, https://doi.org/10.1787/194a947b-en. OECD Data Explorer, "Consumer price indices (CPIs, HICPs), COICOP 1999", http://data-explorer.oecd.org/s/2aw, and "Consumer price indices (CPIs), COICOP 2018", http://data-explorer.oecd.org/s/2ax (accessed on 17 June 2026).

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Annex Figure 1.A.8. Change in real wage by industry in some non-euro area OECD countries

Percentage change in real hourly wages since Q1 2021

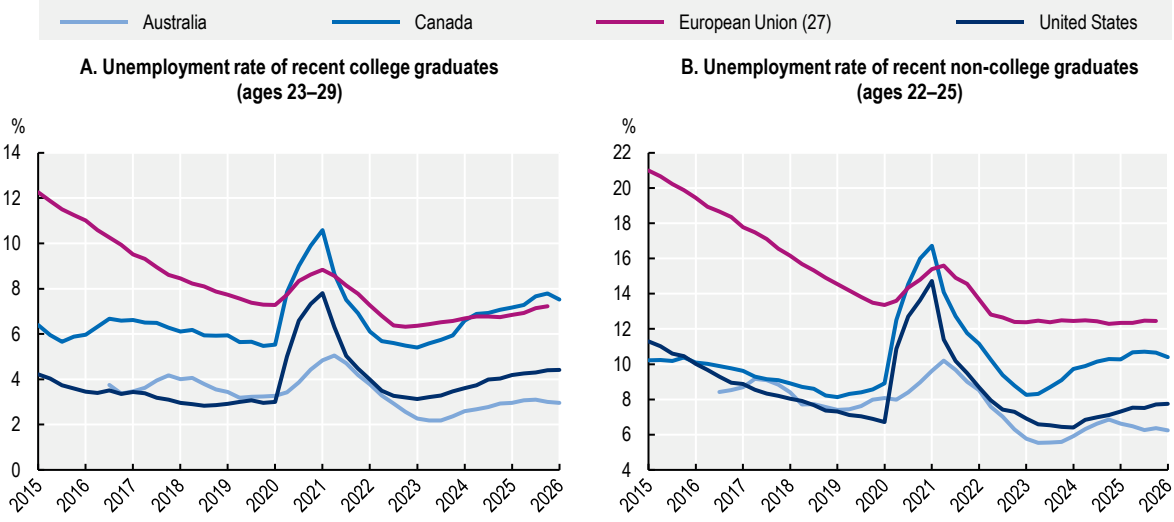




Note: Real wages are obtained by deflating nominal wages by consumer price inflation (all items). For Poland, real wages in Q1 2026 are estimated using the OECD price index (COICOP 1999), available up to Q4 2025, chained with the new national price indices (COICOP 2018), available from Q1 2026. Industries are ranked by the median wage in 2018 in the European Structure of Earnings Survey (SES). The ranking of industries is broadly consistent when 2019 data on median wages from the Current Population Survey of the United States are used.
Industries are ordered from low- to high-pay industries as follows: **1.** Accommodation and food service, **2.** Administrative and support service, **3.** Arts, entertainment and recreation, **4.** Wholesale and retail trade; **5.** Transportation and storage, **6.** Manufacturing, **7.** Other service, **8.** Real estate activities, **9.** Construction; **10.** Human health and social work, **11.** Education, **12.** Professional activities, **13.** Information and communication, and **14.** Finance and insurance.
Series are not seasonally adjusted for Canada, Chile, Japan, Korea, Mexico and the United Kingdom. Statistics for the accommodation and food service sector are not available for Denmark. For Japan, statistics refer to regular employees in establishments with five or more regular employees. Regular employees are workers employed indefinitely or employed under a contract for a period of one month or longer. For Türkiye, statistics exclude public administration and defence; compulsory social security; education; human health and social work activities; arts, entertainment and recreation; and other service activities. Nominal hourly wage presents a significant amount of unreported income for Mexico. The trough refers to the quarter where real hourly wages were at their lowest value for the indicated industry since Q1 2021.
Source: OECD calculations based on the Wage Price Index (Australian Bureau of Statistics) for Australia; Fixed weighted index of average hourly earnings for all employees (Statistics Canada) for Canada; the Labour cost index by NACE Rev. 2 activity (Eurostat) for Czechia, Denmark, Hungary, Iceland, Norway, Poland and Sweden; Monthly Labour Survey (Japanese Ministry of Health, Labour and Welfare) for Japan; Labour Force Survey at Establishments (Korean Ministry of Employment and Labour) for Korea; Nacional de Ocupación y Empleo, Encuesta Telefónica de Ocupación y Empleo, Encuesta Nacional de Ocupación y Empleo Nueva Edición (Instituto Nacional de Estadística y Geografía, Mexico) for Mexico; Labour Cost Index (Statistics New Zealand) for New Zealand; and Monthly Wages and Salaries Survey (UK Office for National Statistics) for the United Kingdom; OECD Data Explorer, "Consumer price indices (CPIs, HICPs), COICOP 1999", http://data-explorer.oecd.org/s/2aw and "Consumer price indices (CPIs), COICOP 2018", http://data-explorer.oecd.org/s/2ax (accessed on 17 June 2026).

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Annex Figure 1.A.9. Unemployment rates among young labour market entrants with and without a college degree

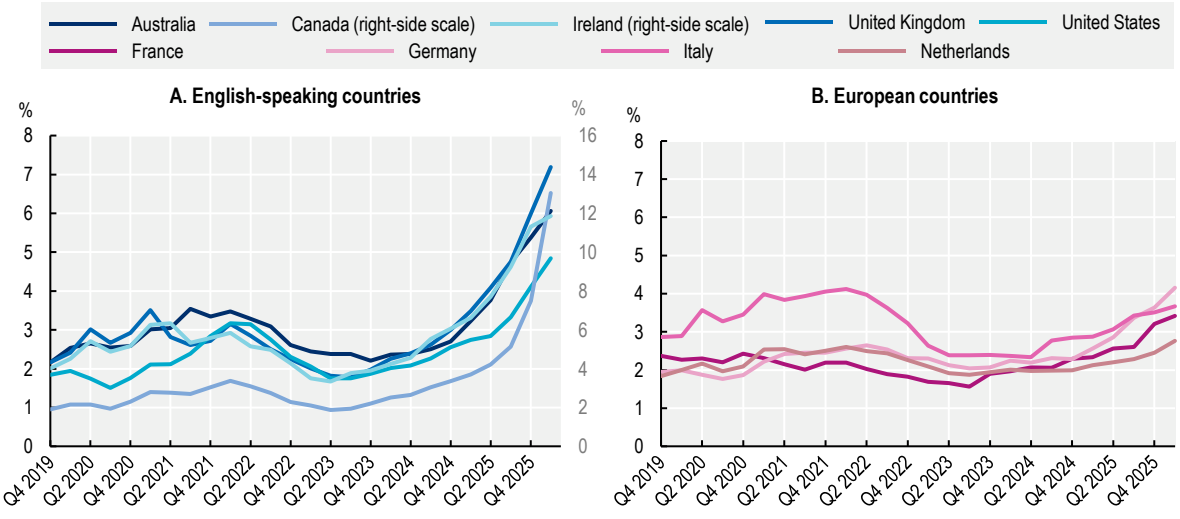


Note: In Panel A, recent non-college graduates are persons not currently enrolled in education, aged 22-25, holding a non-university degree. In Panel B, recent college graduates are persons not currently enrolled in education, aged 23-29, holding a bachelor's degree or higher. European Union (27) refers to the weighted average of the 27 EU countries.
Source: OECD estimates based on the Australian Labour Force Survey, the Canadian Labour Force Survey (PUMFs), the European Union Labour Force Survey (EU-LFS) for the European Union, and the Current Population Survey (CPS) for the United States.

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Annex Figure 1.A.10. Trends in AI online job postings

Share of job postings on Indeed containing Artificial Intelligence (AI) terms in percentage

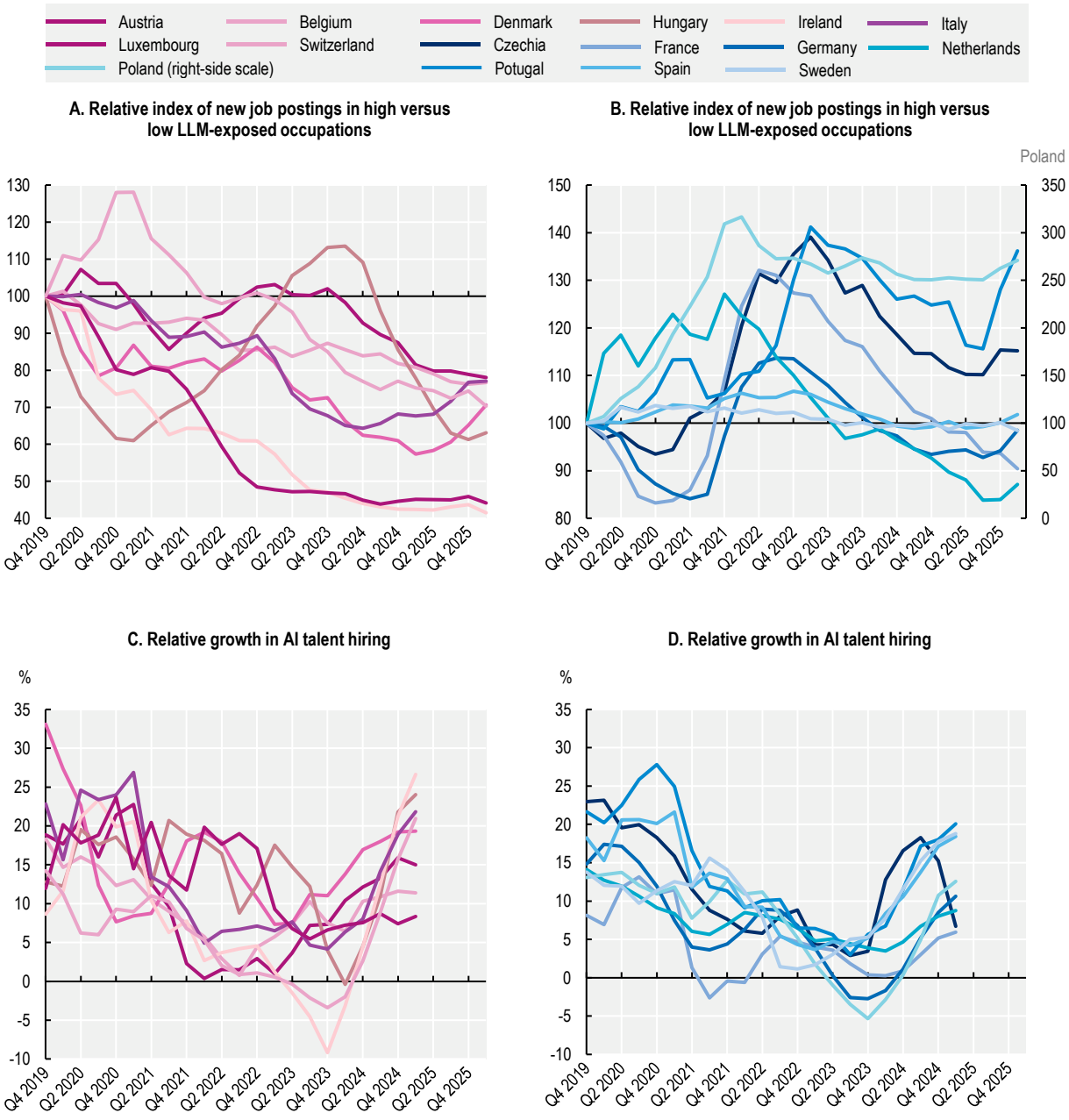


Note: AI-related postings are identified using keyword searches covering both AI occupations (e.g. "Artificial Intelligence", "Machine Learning", "Data Science") and generative AI terms (e.g. "Generative AI", "Large Language Models", "ChatGPT"). The share of AI-related job postings is based on a seven-day trailing average. A value of 1% indicates that 1% of all job postings contain AI-related keywords. Further methodological details are available at: https://github.com/hiring-lab/ai-tracker (LinkedIn Hiring Lab).
Source: Indeed AI Tracker, https://data.indeed.com/#/ai (accessed on 12 May 2026).

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Annex Figure 1.A.11. Relative index of new job postings in high- versus low-LLM exposure occupations in European countries

Ratio of the index of new online job postings in high LLM-exposed occupations to the index of new online job postings in low LLM-exposed occupations, four-quarter moving averages, base 100 in Q4 2019, European countries



Note: **Panels A and B** show the ratio of the index of new online job postings in high language-model-exposed occupations (top quintile of the Language Model Exposure score) to the index of new online job postings in low language-model-exposed occupations (bottom quintile of the Language Model Exposure score), as developed by Felten, Raj and Seamans (2023[54]). Series are smoothed using a four-quarter moving average and indexed to 100 in Q4 2019. New online job postings correspond to job advertisements first published in a given quarter. LLM: large language model. In **Panels C and D**, the relative growth in AI talent hiring is defined as the difference between the year-on-year growth rate of the LinkedIn AI hiring rate and the year-on-year growth rate of the overall LinkedIn hiring rate in the same country. The LinkedIn hiring rate is measured as the share of LinkedIn members who added a new employer in a given period, divided by the total number of LinkedIn members in the corresponding location. The AI hiring rate is computed using the same methodology but restricted to members classified as AI talent. AI

talent includes LinkedIn members who have explicitly listed at least two AI-related skills on their profile and/or who are currently employed or have previously been employed in an AI-related occupation. Values are shown as 12-month moving averages. A positive value indicates that AI talent hiring is growing faster than overall hiring.
Source: OECD calculations based on Lightcast online job postings and Language Model Exposure score from Felten, Raj and Seamans (2023[54]) made available in ISCO classification by Nurski (2025[55]) (Panels A and B); OECD.AI (2026), data from LinkedIn Economic Graph, last updated 6 March 2026, accessed on 13 May 2026, https://oecd.ai/ (Panels C and D).

StatLink https://stat.link/okejpw

Notes

[1] This is the case in Austria, Czechia, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Lithuania, Luxembourg, Norway, the Slovak Republic, Switzerland and the United Kingdom.

[2] It should be noted that vacancies might be overestimated, as employers tend to advertise job openings without intending to fill them, especially in specialised industries and in larger firms ("ghost jobs") (Ng, 2024[62]).

[3]https://ec.europa.eu/eurostat/databrowser/view/ei_bsse_q_r2__custom_16762528/default/table and https://ec.europa.eu/eurostat/databrowser/view/ei_bsin_q_r2__custom_16762125/default/table.

[4] Nonetheless, the share of firms citing lack of labour as one of the factors limiting production are still close to peak (and much higher than before the pandemic) in the food service sectors in the EU (https://economy-finance.ec.europa.eu/economic-forecast-and-surveys/business-and-consumer-surveys/download-business-and-consumer-survey-data/subsector-data_en).

[5] https://www.ecb.europa.eu/press/key/date/2025/html/ecb.sp250823~2f476a9a97.en.html.

[6] It should be noted that significant production of intangible assets in these sectors could distort productivity measures.

[7] https://www.piie.com/research/piie-charts/2019/us-china-trade-war-tariffs-date-chart?.

[8] 24-1 287 Learning Resources, Inc. v. Trump, 607 US _ (2026).

[9] Recent evidence however highlights that the effective tariff rates are significantly lower than those announced, once exemptions and tariff evasion are taken into account (Gopinath and Neiman, 2026[61]).

[10] Most of the data used in this section refer to the "wages and salaries" component of the Labour Cost Index (i.e. excluding employer's social security contributions) produced by Eurostat – or similar measure for non-European countries (see notes to the figures for the details on the countries for which different wage measures have been used). In addition to separating wages from other labour cost components, these indicators have two main advantages relative to measures of compensation per hour worked derived from National Accounts. First, they are generally constructed to follow the evolution of hourly nominal wages for a constant industry structure, therefore minimising the potential impact of compositional changes on aggregate wage dynamics. Second, they are available at a more detailed sectoral breakdown than measures of compensation of employees from National Accounts, allowing the analysis on wage dynamics by industry of different pay levels of the next section.

[11] Examining wage growth since Q4 2019 instead of Q1 2021 reveals positive wage changes in a greater number of countries. However, using Q1 2021 as the reference quarter is more relevant than

pre-COVID-19 data (Q4 2019) for analysing the wage recovery from the inflation surge. Nominal wage index series since Q4 2019 show that the artificial increase in wages induced by composition effects during the pandemic had subsided by Q1 2021 in virtually all OECD countries (Annex Figure 1.A.7).

[12] By contrast, the Danish *standardised index of average earnings* was only 1.3% above pre-inflation levels in Q1 2026. This is because the labour cost index used in Figure 1.11 refers to a constant industry structure and covers all employees, while the standardised index of average earnings is adjusted for both the industrial and occupational structure and does not include employees in private-sector firms with less than 10 employees.

[13] Compositional shifts in the sectoral composition of the workforce are adjusted for in most countries in Figure 1.11.

[14] In the United States the nominal federal minimum wage has remained unchanged since 2009, but state level minimum wages have risen frequently in recent times, so that the employment-weighted average of state level real minimum wages has been much been more dynamic than the federal real minimum wage.

[15] The actual poverty gap (Figure 1.17) measures the p.p. difference between net equivalised disposable income expressed as a percentage of median equivalised disposable income, and 50% (the poverty line is defined as 50% of median equivalised disposable income). It is therefore a measure of *relative* poverty, reflecting the shape of the bottom of the income distribution in a given year. In contrast, by anchoring the poverty line at its 2021 level and focussing on real income, the anchored poverty line better captures developments in *absolute* poverty.

[16] To enable a comparison of the dynamics between labour costs and profits, this section uses indicators from the National Accounts (see note to Figure 1.20). Using the income approach, nominal GDP can be decomposed as $PY = NCE + GOS + TAXN$ where P is the GDP deflator, Y is real GDP, NCE is nominal compensation of employees, GOS is gross operating surplus, and $TAXN$ is nominal taxes. Unit labour costs and profits are derived by dividing the two relevant GDP components by real GDP. Unit labour costs increase when growth in compensation exceeds growth in real GDP or, dividing these two components by hours worked, when growth in compensation per hour worked exceeds growth in labour productivity. This measure of unit labour costs differs in some important respects from the measure of hourly wages based on the "wages and salaries" component of the labour cost index used in the previous sections (see note 10). Most notably, unit labour costs include employer's social security contributions and do not control for changes in the sectoral composition of the economy.

[17] Unit profits made an unusually large contribution to domestic price pressures during the 2021-2022 inflation surge (OECD, 2023[3]).

[18] https://www.ecb.europa.eu/press/pr/date/2026/html/ecb.pr260617~79dfc49802.en.html.

[19] In Australia, however, the contribution of unit profits to domestic price pressures has remained at historically low levels since Q2 2023, after a sharp drop in that quarter.

[20] It should be noted that this decomposition of domestic price pressures provides only a partial picture of real wage catch-up, as they exclude the distribution of productivity gains between labour and profits.

[21] In absolute term, there has been an upward trend in the unemployment rate for both graduate and non-graduate young entrants in these three countries in recent years (Annex Figure 1.A.9).

[22] For example, LLMs could replace simpler cognitive tasks, which are widespread within entry jobs, while more sophisticated expert tasks could be more difficult to automatise. Even if it does not automate more intensively entry-level jobs, generative AI could have a disproportionate impact on youth unemployment because any general negative employment shock is likely to have a stronger impact on young people by making it more difficult for them to enter the labour market.

[23] Humlum and Vestergaard (2025[45]) focusses on Denmark and Klein Teeselink (2025[48]) on the United Kingdom.

[24] Occupational exposure to language models is an index developed by Felten, Raj and Seamans (2023[54]) and made available in ISCO classification by Nurski (2025[55]). It measures the extent to which occupations are exposed to advances in AI language modelling capabilities.

[25] A *LinkedIn* member is considered AI talent if they have explicitly added at least two AI skills to their profile and/or they are or have been employed in an AI job. LinkedIn categorises AI skills into 2 mutually exclusive groups: "AI Engineering" and "AI Literacy" skills, where, broadly, AI Engineering skills refer to the technical expertise and practical competencies required to design, develop, deploy, and maintain artificial intelligence systems, and AI Literacy skills refer to the knowledge, abilities, and critical thinking competencies needed to understand, evaluate, and effectively interact with AI technologies. The top skills that comprise the "AI engineering" skill grouping are machine learning, natural language processing, artificial intelligence, computer vision, image processing, deep learning, TensorFlow, and OpenCV, among others. The skills that comprise the "AI literacy" grouping are prompt engineering, GPT-3, GPT-4, stable diffusion, ChatGPT, Github copilot, generative art, Dall-E, Midjourney and Google Bard. An AI job is an occupation that requires AI skills to perform the job (https://oecd.ai/en/linkedin).

[26] The time lag between the release of ChatGPT (November 2022) and its use by firms might be explained by the later release dates of the OpenAI API – a prerequisite for building custom applications – and ChatGPT Enterprise – offering data privacy and security assurances for corporations (Curto Millet and Iscenko, 2026[52]). The former was released in March 2023, and the latter in August 2023.

[27] These trends are confirmed by AI job postings from the online platform *Indeed* (Annex Figure 1.A.10). AI-related postings in *Indeed* data are identified using keyword searches covering both AI occupations (e.g. "Artificial Intelligence", "Machine Learning", "Data Science") and generative AI terms (e.g. "Generative AI", "Large Language Models", "ChatGPT").

[28] Annex Figure 1.A.11 shows that this finding holds for the vast majority of the 15 EU countries analysed taken separately.

[29] The hiring rate fell from about 4.5% at its 2022 peak to less than 3.5% in 2025 (https://www.apricitas.io/p/the-no-hire-economy).

[30] https://news.crunchbase.com/startups/tech-layoffs/.

[31] https://www.economist.com/finance-and-economics/2025/11/06/dont-blame-ai-for-your-job-woes.

[32] LinkedIn global data for 2022-2023 shows that the number of applications for remote positions was increasing, while the number of remote job postings was declining (https://business.linkedin.com/content/dam/me/business/en-us/talent-solutions/resources/pdfs/future-of-recruiting-2024.pdf).

[33] https://www150.statcan.gc.ca/n1/daily-quotidien/241217/dq241217c-eng.htm and https://www150.statcan.gc.ca/n1/daily-quotidien/250924/dq250924a-eng.htm.

2 Workers, households, regions: Geographic disparities in labour market outcomes and the distribution of income

Sebastian Königs, Sérgio Pinto, Javier Terrero-Dávila, Juan Andrés Álvarez Mejía

Where people live shapes their employment opportunities and living standards. This chapter examines geographic inequalities in labour market outcomes and, in turn, disposable household incomes and income mobility across small regions in OECD countries. It analyses the extent and drivers of regional disparities in employment rates, relating them to the geographic concentration of economic activity and the composition and characteristics of the local population, and discussing the role of labour mobility across regions. It examines regional disparities in median disposable household incomes, their relationship to regional GDP per capita, and their links to regional labour market outcomes – both in the cross-section and over time. It quantifies the contribution of between-region inequalities to overall income inequality across households and examines what regional disparities imply for the prospects of individuals to move up the income ladder over time.

In Brief

Key findings

Where people grow up and live shapes their employment opportunities, career progression, and ultimately their living standards. Large inequalities across regions within countries carry real costs for economic growth, as the potential of lagging regions remains underexploited. They also pose challenges to social cohesion if significant parts of the population feel – and in many cases are – falling further behind relative to their peers in more prosperous places.

This chapter examines geographic inequalities in labour market outcomes and, in turn, the distribution of disposable household incomes and income mobility across small regions in OECD countries – at "Territorial Level 3" (TL3) in the OECD classification (e.g. *Census divisions* in Canada, *Départements* in France). It complements statistics from existing OECD databases with newly collected data drawn from both administrative and survey sources, offering – for the first time – a granular picture of the interplay between disparities in labour market outcomes, the distribution of household incomes and people's income mobility at this geographic scale.

The key findings are as follows:

- **People's employment prospects are shaped by where they live.** In over half of OECD countries, employment rates across small regions vary by more than 20 percentage points (p.p.). Regional disparities in unemployment are equally pronounced: on average, regions in the worst-performing quintile have unemployment rates more than twice as high as those in the best-performing quintile – a ratio that exceeds four in Italy, Belgium, Canada and the Slovak Republic.
- **Regional disparities in employment rates remain substantial even though there has been a period of moderate convergence**. In most countries, low-employment regions have had stronger employment growth than high-employment regions since the early 2010s. This has narrowed regional dispersion in employment rates by around 50% in Slovenia, Czechia, Estonia, Ireland, the Slovak Republic and Costa Rica, and more modestly in most other countries. Only 8 out of 29 countries with available data exhibit widening dispersion in employment rates.
- **These disparities do not simply reflect differences in who lives where, but also the opportunities that regions have to offer.** Differences in local population composition – by age, gender, educational attainment and household structure – account for between one-third and one-half of the employment rate gap between high- and low-employment regions. Regional economic performance is a key driver of people's employment opportunities, with jobs in high-value-added services concentrated in a small number of metropolitan regions, often the capital-city region.
- **Labour mobility does little to narrow disparities in labour market outcomes.** People move from low- to high-employment regions, but at a pace much too slow to make labour mobility alone a solution for meaningfully reducing labour market disparities. As regions with weaker labour markets are often geographically close to each other, people seeking better job prospects often need to relocate a considerable distance. Since people who leave low-employment regions often share characteristics associated with *stronger* employment prospects, labour mobility risks *reinforcing* existing labour market disparities.

- **Regional disparities in disposable incomes are substantially narrower than disparities in GDP per capita.** Median disposable household incomes vary most across regions in large countries with many regions, such as Australia and Canada, and countries where overall income inequality is high, such as Chile and Israel. In those countries, the highest and lowest-income regions differ by a factor of two or more, while in several Central European and Nordic countries, this ratio is as low as 1.1 to 1.2. Across all countries, regional disparities in disposable incomes are substantially narrower than disparities in GDP per capita, and in some countries the two measures are only weakly correlated. This underlines that GDP per capita, while commonly used as a proxy for income, is a poor measure of regional living standards.
- **Regional disparities in incomes are closely linked to those in employment.** In most countries, regional median disposable household incomes and employment rates are positively correlated. Trends tell the same story: 10 out of the 14 countries where regional employment gaps narrowed since the early 2010s also saw regional income dispersion decline; all three countries where regional employment gaps widened also saw an increase in regional income dispersion. This underlines the role of labour earnings as the primary channel through which regional economic conditions impact household incomes. It also suggests that **policies targeting regional labour market disparities can be effective at reducing regional disparities in living standards**.
- **Incomes in capital regions are higher and more unequally distributed than elsewhere**, as these regions attract a disproportionate share of high-income households. Other metropolitan regions beyond the capital record on average median incomes and inequality levels broadly in line with the national values; non-metropolitan regions have on average both lower median incomes and inequality.
- However, **most household income inequality occurs within regions, not between them.** Even in countries where regional income disparities are wide, between-region differences account for only a small fraction of overall inequality, typically around 5%. Within any given region, disposable household incomes vary widely, and it is these differences across households within regions that strongly dominate, representing the remaining 95% of overall income inequality.
- **People in low-income regions have weaker prospects for upward mobility.** Even though regional income disparities represent only a modest fraction of total income inequality, compounding disadvantages mean that people living in low-income regions have lower chances of climbing the income ladder over time, suffer a greater risk of income stagnation, and face a higher likelihood of remaining stuck at the bottom of the distribution.

Introduction

Where one lives shapes job opportunities and living standards. Firms are drawn to the better infrastructure, connectivity, services and human capital that prosperous regions offer (OECD, 2023[1]; OECD, 2025[2]). This creates a feedback loop in which these regions attract more and higher-productivity employers, while other regions fall behind (Moretti, 2012[3]; Bilal, 2023[4]). Since employment is the primary source of income for most households, and the main channel for people's upward mobility, regional disparities in labour market outcomes can translate into unequal opportunities for income progression over the life course, and ultimately into persistent disparities in living standards. While people can move to take up opportunities elsewhere, financial and non-financial barriers, such as housing costs, the desire to preserve social networks, and high transportation costs constrain geographic mobility in practice (Ganong and Shoag, 2017[5]; Spring, Gillespie and Mulder, 2023[6]; OECD, 2025[7]). And since it is often the young and more

educated who do leave economically lagging areas (De la Roca, 2017[8]; Causa and Pichelmann, 2020[9]), geographic mobility can reinforce regional inequalities.

Persistent regional inequalities carry large economic and societal costs. If economic opportunities are concentrated in few locations, this makes economies less resilient and leaves growth potential in lagging regions untapped (OECD, 2012[10]; Iammarino, Rodriguez-Pose and Storper, 2018[11]; OECD, 2023[1]). With the right regional development policies (OECD, 2023[12]; OECD, 2025[13]), these regions could contribute far more to national output. Among residents of lagging regions, the perception of being economically left behind can undermine trust in democratic and economic institutions and erode social cohesion (McKay, Jennings and Stoker, 2021[14]; Mitsch, Lee and Ralph Morrow, 2021[15]; Stroppe, 2023[16]).

This chapter studies regional disparities in labour market outcomes and, in turn, disposable household incomes and income mobility in OECD countries. It focusses on disparities across *small regions* – "Territorial Level 3" (TL3) in the OECD classification – a geographical level below that available from cross-country microdata, such as the Eurostat distributions of the EU-LFS and the EU-SILC, in many national labour force surveys (LFS) and most household surveys across OECD countries. It draws on a major data collection effort that complements statistics from existing OECD databases with a range of newly collected indicators drawn from both administrative and survey microdata, offering – for the first time – a granular picture of the interplay between disparities in labour market outcomes, the distribution of household incomes and people's income mobility at this geographic scale (for a detailed overview of the data sources, see Box 2.1 and Annex 2.A to Annex 2.C). This level of granularity matters: smaller geographical units reveal disparities that larger units may mask by averaging out local variation. The high granularity of the data also makes it possible to map urban-rural disparities in labour market outcomes and household income distributions, using the OECD typology classifying TL3 regions by their access to cities (Fadic et al., 2019[17]). The chapter covers the period from the early 2010s onwards, tracing regional disparities from shortly after the peak of the Global Financial Crisis (GFC) to the present.

This is the first *Employment Outlook* chapter on the geography of labour markets in two decades – since a chapter in the 2005 edition examined the persistence of regional disparities in employment and the role of geographic mobility (OECD, 2005[18]). It directly draws on the results from several streams of OECD work studying geographic disparities in labour market outcomes (OECD, forthcoming[19]), the distribution of household incomes (OECD, forthcoming[20]) and regional income convergence (European Commission, 2024[21]), and the accessibility of essential services (Almeida et al., 2024[22]). The chapter builds also on a range of earlier OECD work on labour markets at TL3 and local levels (Cho and Jeon, 2025[23]; OECD, 2025[7]; Ahrend et al., 2026[24]; Ahrend et al., 2026[25]); on how megatrends have been shaping the geography of labour markets (OECD, 2018[26]; OECD, 2023[27]; OECD, 2024[28]); and on regional disparities in GDP per capita and disposable household income per capita using regional accounts data (OECD, 2023[1]; OECD, 2024[29]).[1] The chapter contributes to broader OECD efforts to integrate administrative employment and income data into cross-country analysis at subnational levels (OECD, 2023[30]; OECD, 2025[2]; OECD, 2025[7]; Ahrend et al., 2026[24]).

The remainder of the chapter is structured as follows. Section 2.1 documents large and persistent differences in labour market outcomes, showing that these reflect not only people's characteristics but also disparities in the opportunities that places offer. It also highlights the limits of geographic mobility as a solution to eliminate these disparities. Section 2.2 documents disparities in the distribution of disposable household incomes, examining both income levels and inequality across households within regions. It shows that regional income disparities are substantially narrower than corresponding disparities in GDP per capita, and closely linked to regional disparities in employment. Section 2.3 shows that lower-income regions offer their residents fewer opportunities for upward income mobility. Section 2.4 provides some concluding remarks.

Box 2.1. Overview of data sources

The analysis in this chapter builds on a major data collection effort that has complemented regional labour market statistics from the *OECD Database on Regions, Cities and Local Areas* with additional indicators on labour market outcomes from national sources, and compiled new indicators on the distribution of household incomes and income mobility over people's lives – all at the level of small TL3 regions. Specifically, the different parts of this chapter use data from the following sources:

- The analysis of *regional disparities in labour market outcomes*, presented in Section 2.1, draws on statistical indicators from the *OECD Database on Regions, Cities and Local Areas* (https://www.oecd.org/en/topics/regions-cities-and-local-statistics.html; for 18 countries). These data were complemented with comparable indicators provided by national statistical offices (for 13 countries) or calculated directly from national microdata (for Chile);
- The analysis of *regional disparities in disposable household incomes*, presented in Section 2.2, builds entirely on newly collected data on the level and distribution of disposable household incomes across regions, and across households within regions. For 15 countries, these data were provided by national statistical offices, drawn from survey or administrative microdata; for 9 countries, results were calculated by the OECD from microdata from administrative sources (for 4 countries), the Luxembourg Income Study (LIS) database (for 4 countries) and national survey microdata (for Chile);
- The analysis of *regional disparities in people's income mobility*, presented in Section 2.3, presents calculations based on administrative income microdata for a selection of OECD countries, carried out by the OECD (for 3 countries) and provided by national authorities (for 3 countries).

Certain pieces of analysis on labour market outcomes in Section 2.1 are equally based on calculations carried out by the OECD using microdata from administrative sources or the LIS database.

Since the results presented in this chapter are based on data from various different sources – primarily administrative registers (tax, social security, population and public-employment-service records); in some cases population censuses or large surveys – they are somewhat less harmonised than official OECD labour market and income statistics derived from highly standardised labour force and household surveys. Considerable care has been taken in the preparation of this chapter to identify sources of data that are sufficiently comparable, to harmonise the microdata as far as possible, and to document any remaining differences in coverage and definitions. For a detailed overview of the data sources used in the various parts of the analysis, see Annex 2.A to Annex 2.C.

A general challenge when comparing regional outcomes across countries is that the size and population of TL3 regions can vary substantially – even between countries with similar populations and territorial extension. This can affect the results in cross-country comparisons as, *ceteris paribus*, measured regional inequalities are usually larger for smaller geographical units of analysis. There is no obvious solution to this issue. No alternative territorial classification exists that would offer more homogeneous geographical units at a comparable level of granularity. Commuting zones are an obvious alternative, but they are unavailable in many OECD countries and, where they exist, they also vary in size and population across countries due to country-specific methodologies. Functional Urban Areas (FUAs), while constructed using a harmonised methodology, are limited to urban areas and do not cover the entire territory.

A methodological point to keep in mind is that most labour market indicators presented in this chapter are computed at people's place of *residence*, not their place of *work*. Commuting across regional boundaries, and across national borders, can distort regional labour market statistics as workers

contribute to economic activity in a region that is different from their region of residence. Earlier OECD analysis has addressed within-country commuting by aggregating metropolitan TL3 regions into a single unit in cases where at least 50% of the population of each constituent region lived in the same FUA of at least 250 000 inhabitants (OECD, 2024[29]). This chapter has not adopted a comparable approach: while the labour market statistics presented in Section 2.1 could have indeed been easily aggregated across metropolitan regions, the same does not hold for the regional median incomes and Gini coefficients presented in Section 2.2. For consistency, the chapter therefore considers metropolitan TL3 regions separately even if they host the same FUA, flagging the role of commuting in the discussion of results where relevant.

2.1. Regional disparities in labour market outcomes

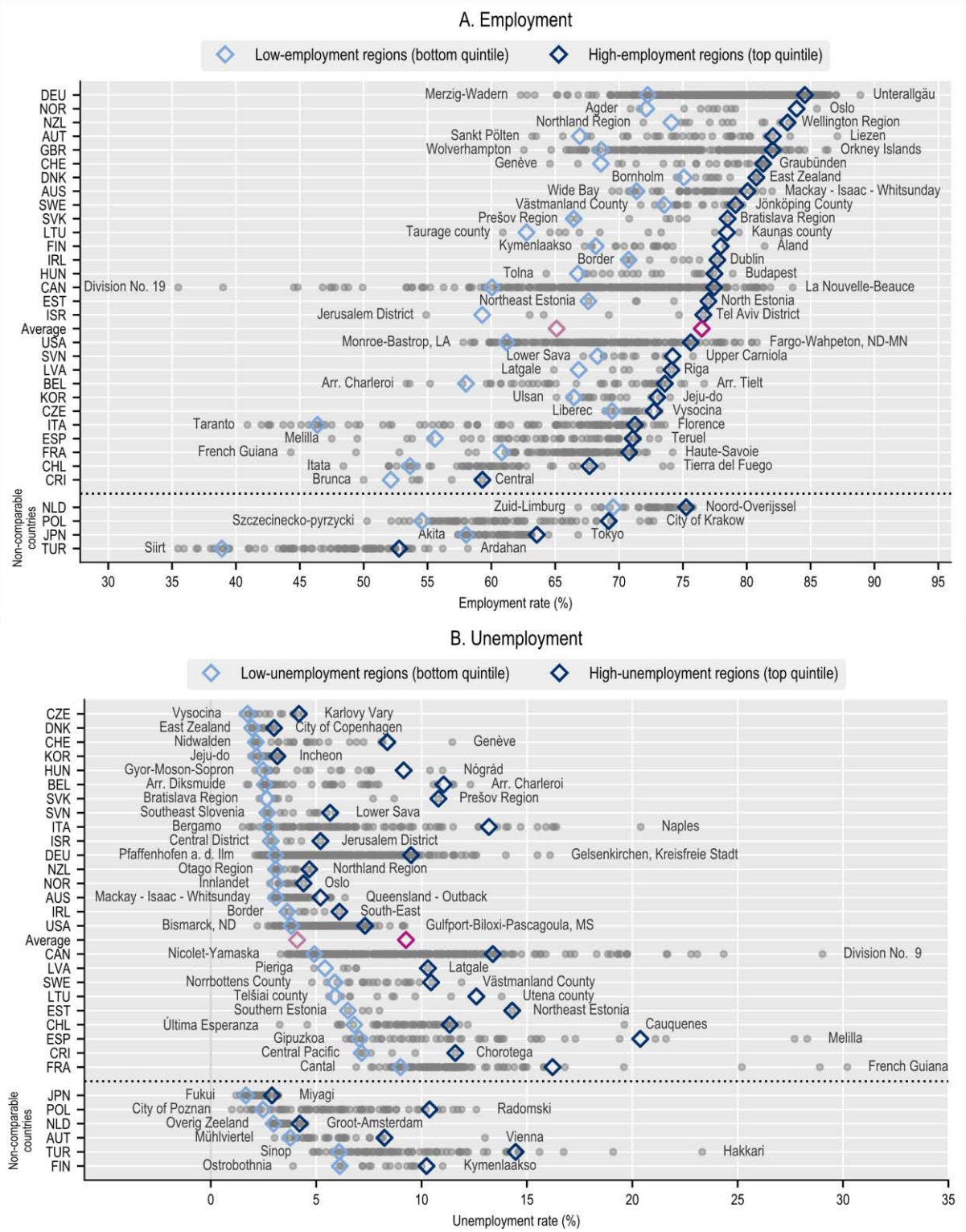
Employment represents the primary source of income for most households and the most important channel for upward mobility. Yet, in most OECD countries, high-productivity firms (Bilal, 2023[4]; Menon and Vermeulen, 2026[31]), innovation (Usai, 2011[32]) and economic activity remain unevenly distributed across regions, with significant implications for the regional distribution of labour market opportunities (OECD, 2023[1]; OECD, 2025[2]). Drawing on aggregate, TL3-level labour market statistics and microdata analysis for selected countries, this section documents regional disparities in labour market outcomes and examines the mechanisms behind them. The analysis suggests that regional economic performance plays a central role in shaping people's employment opportunities. It also illustrates that labour mobility alone is not sufficient to narrow regional disparities, underlining the need for place-based policies.

2.1.1. People's employment prospects are shaped by where they live

Despite favourable labour market conditions across most OECD countries, people experience very different employment outcomes depending on their region of residence. While employment and labour force participation have reached record levels in most OECD countries (see Chapter 1), these national averages mask substantial disparities in employment and unemployment rates across regions within countries. Across OECD economies with comparable data, the average gap in employment rates between high- and low-employment regions – defined as those in the top and bottom quintiles of regions within each country – stands at 11.4 p.p. (Figure 2.1, Panel A). Regional gaps in employment rates differ significantly across countries: they are largest in Italy (24.8 p.p.), Canada (17.4 p.p.) and Israel (17.3 p.p.), but much smaller in Czechia (3.2 p.p.), Sweden (5.6 p.p.) and the Netherlands (5.8 p.p.). Still, in over half of OECD economies, the range across regions exceeds 20 p.p. Regional disparities in unemployment rates are similarly pronounced. On average across the OECD, the unemployment rate in the lowest-performing quintile of regions is more than twice that in the highest-performing quintile; the ratio exceeds four in Italy, Belgium, Canada and the Slovak Republic (Figure 2.1, Panel B). Overall, these regional disparities are larger than those identified in recent OECD analyses for large TL2 regions (OECD, 2023[27]; OECD, 2024[28]; OECD, 2025[2]), which highlights the importance of examining labour market outcomes at finer geographic scales.

Figure 2.1. Regional disparities in labour market outcomes are large in most OECD countries

Employment and unemployment rates across TL3 regions, 2024 or latest available year



Note: Light-blue diamonds show the averages across regions in the bottom quintile of regional employment and unemployment rates, weighted by the working-age population; dark-blue diamonds show the top quintile average. In Panel A, countries are sorted by the employment rate in high-employment regions in descending order; in Panel B, they are sorted by the unemployment rate in low-unemployment regions in ascending order. Employment and unemployment rates refer to the population aged 15 to 64, with minor differences in DNK and GBR for employment rates (16-64) and DNK for unemployment rates (16-64). Non-comparable countries are those for which age thresholds differ more substantially: JPN (15+), NLD (15-75), and TUR (15+), and for unemployment rates only: FIN (15-75), and POL (18-65 for men, 18-60 for women). In POL, employment rates are not fully comparable as they exclude workers in civil law contracts (*umowy cywilnoprawne*). In some countries, a small number of regions is excluded from the analysis or aggregated due to data limitations (see Annex Table 2.D.1 for a complete list). "Average" gives the unweighted average across OECD countries excluding non-comparable countries.
Source: OECD calculations based on the OECD Database on Regions, Cities and Local Areas, https://www.oecd.org/en/topics/regions-cities-and-local-statistics.html (accessed in February 2026) and data collection by the OECD. See Annex Table 2.A.1 for further details.

StatLink https://stat.link/sjcyao

Regional employment disparities often map to long-standing differences in regional productivity (OECD, 2024[29]), as discussed further below in this chapter. In several countries, these divides follow persistent geographic cleavages: employment rates in the Italian *Mezzogiorno* continue to lag the more industrialised North; in Belgium, Wallonia trails Flanders; and the eastern regions of both Germany and Poland have yet to close the employment gap with the rest of the country. Regions hosting the capital tend to be the most productive (OECD, 2024[29]), and exhibit higher employment rates than elsewhere in most OECD countries. The picture is more nuanced for unemployment. Some remote regions, particularly in the Nordic countries and in New Zealand, exhibit low unemployment, but their tight local labour markets mainly reflect limited labour supply rather than economic dynamism; in Austria, Denmark and Norway, capital regions record high unemployment.

These within-country disparities in employment rates are, on average, as significant as those observed between best- and worst-performing OECD economies, yet many labour market policies are designed and implemented at the national level. In many OECD countries, a single minimum wage applies nationwide, even if wage setting institutions are often formally required to assess its impact across geographies. Other policy areas, including active labour market policies, are also relatively centralised in principle: subnational governments hold formal competences in only about two out of five OECD countries (OECD, 2023[33]). In practice, however, regional and local authorities often assume a more prominent role than their formal mandates suggest (OECD, 2025[34]).

These large regional disparities in employment outcomes persist despite a period of moderate convergence since the early 2010s. The Global Financial Crisis (GFC) had an asymmetric impact on regional employment, intensifying pressures for industrial restructuring in many local labour markets (Ahrend et al., 2026[25]) – see also Chapter 3. Capital cities felt the immediate shock more acutely (Dijkstra, Garcilazo and McCann, 2015[35]), but regions with lower pre-crisis labour market dynamism ultimately experienced greater job losses (Fratesi and Rodríguez-Pose, 2016[36]). Across the European Union, the crisis led to a sudden increase in regional labour market disparities (European Commission, 2013[37]; European Commission, 2014[38]). The dynamics shifted from the early 2010s onwards, when steady economic growth and improving labour market conditions contributed to a narrowing of regional gaps in employment rates across most OECD countries.

Empirically, such convergence processes can be described using two well-established metrics (Barro and Sala-i-Martin (1992[39]), see Box 2.2 for a more technical description):

- *Sigma (σ) convergence*, which measures whether the dispersion of employment rates across regions narrows over time. This is captured by the percentage change in the coefficient of variation, which measures dispersion relative to the mean, allowing for meaningful comparisons across countries. A negative percentage change indicates that regional employment rates are converging toward the mean.

- *Beta (β) convergence*, which measures whether low-employment regions are catching up with high-employment regions. A negative coefficient indicates that regions with lower initial employment rates experienced faster subsequent growth.

Box 2.2. Measuring convergence in labour market outcomes across regions

This chapter uses two complementary metrics to assess whether employment rates across TL3 regions converge over time. All indicators are weighted by the working-age population to account for cross-regional differences in population.

Sigma (σ) convergence

Sigma convergence measures whether the dispersion of employment rates across regions narrows over time. To measure it, this chapter uses the percentage change in the coefficient of variation (CV). The CV is calculated as:

$$CV = \frac{\sigma}{\mu}$$

where σ and μ are the standard deviation and mean of employment rates across TL3 regions, both weighted by the regional working-age population. The standard deviation measures how far regional employment rates typically deviate from the average, with higher values indicating greater dispersion across regions. However, raw standard deviations are difficult to compare across countries or over time because the same absolute spread can have different implications depending on the baseline level. For example, a 2 p.p. standard deviation represents greater relative dispersion in a country with lower employment rates. The coefficient of variation addresses this issue by producing a unit-free measure that expresses dispersion as a share of the mean regional employment rate.

The percentage change in the CV over time $\frac{CV_t - CV_{t-n}}{CV_{t-n}}$ indicates how this relative dispersion has evolved. A negative value indicates that regional employment rates have become less dispersed, i.e. have converged towards the mean.

Beta (β) convergence

Beta convergence measures whether regions with lower initial employment rates experience faster subsequent growth. A negative coefficient typically signals a catch-up process of lagging regions, but can also describe a case of leading regions falling behind. It is estimated using the following regression:

$$\frac{1}{n}\,\frac{Erate_{i,t} - Erate_{i,t-n}}{Erate_{i,t-n}} = \alpha + \beta Erate_{i,t-n} + \varepsilon_i$$

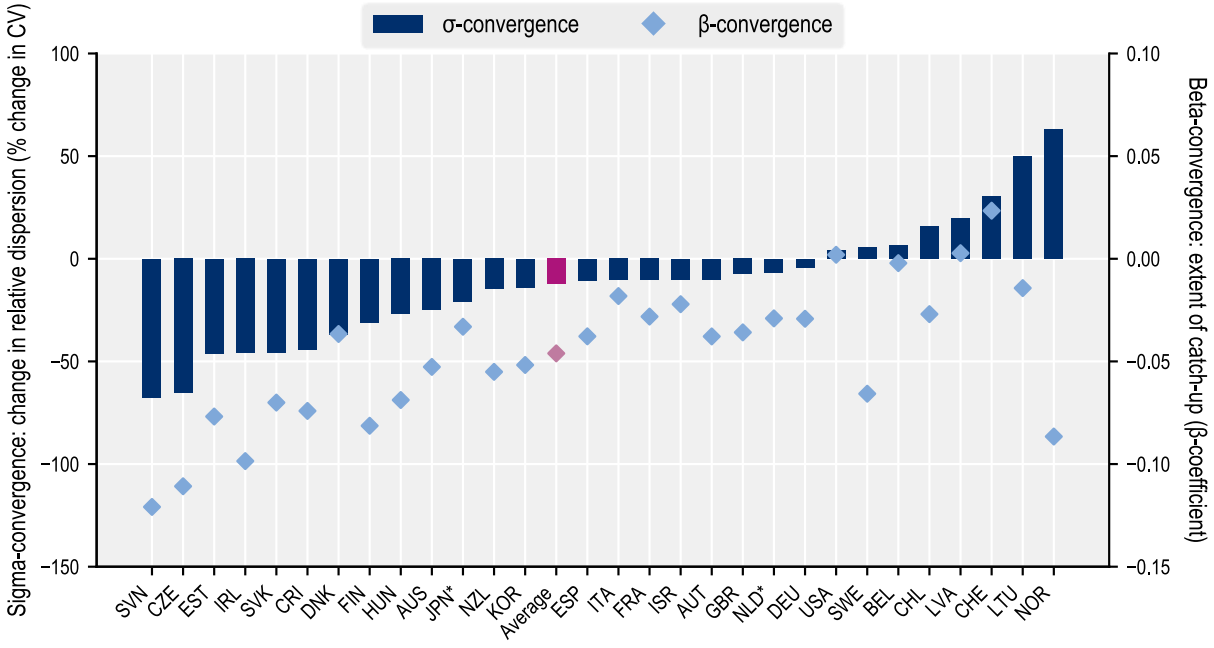
where $Erate_{i,t}$ is the employment rate in TL3 region i at time t, $Erate_{i,t-n}$ is the employment rate n years earlier, and therefore the dependent variable represents the average annual growth in the employment rate over the period. Observations are again weighted by the working-age population. A negative β-coefficient indicates β-convergence: regions with lower initial employment rates grew faster than those with higher initial rates. β-convergence is necessary, but not sufficient, for σ-convergence. If initially low-employment regions grow so rapidly that they overtake initially high-employment regions, the resulting re-ranking can leave overall dispersion unchanged or even wider at the end of the period.

Based on these metrics, 21 of the 29 countries for which regional employment rates can be traced back to the early 2010s have experienced both catching up by lagging regions (β-convergence) and a narrowing of relative disparities across regions (σ-convergence) (Figure 2.2). The reduction in dispersion has been particularly strong in countries such as Slovenia, Czechia, Estonia and Ireland – close to or exceeding

50% of the mean – but modest in most other countries and almost negligible in Germany, the Netherlands and the United Kingdom. Only two countries, Latvia and Switzerland, show the opposite pattern: increasing dispersion, and high-employment regions pulling further ahead. Finally, Chile, Lithuania and Norway present a less intuitive case, combining *β*-convergence with *σ-divergence*. This occurs when initially low-employment regions overtake initially high-employment regions, and dispersion at the end of the period is wider than at the start.

Figure 2.2. Low-employment regions have been catching up, narrowing regional disparities

Sigma- (left-axis) and Beta-convergence (right-axis), TL3 regions, early 2010s to latest available year



Note: Change in dispersion relative to the mean (Sigma (σ) convergence) is expressed as the percentage change in the coefficient of variation, whereas the extent of catch-up (Beta (β) convergence) is captured by the β-coefficient of a linear regression of annual growth in the employment rate on initial employment levels. Employment rates refer to the population aged 15 to 64, with minor differences in DNK and GBR (16-64). Non-comparable countries (marked with *) are those with more substantial differences in age thresholds: JPN (15+) and NLD (15-75). The period of analysis is 2010-2024, or the closest available years. In some countries, a small number of regions is excluded from the analysis or aggregated due to data limitations (see Annex Table 2.D.1 for a complete list). "Average" gives the unweighted average across OECD countries excluding non-comparable countries.

Source: OECD calculations based on the OECD Database on Regions, Cities and Local Areas, https://www.oecd.org/en/topics/regions-cities-and-local-statistics.html (accessed in February 2026) and data collection by the OECD. See Annex Table 2.A.1 for further details.

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Previous academic literature also documents large geographic disparities in other labour market outcomes. Recent empirical work suggests that wage inequality across local labour markets has roughly doubled in Canada, Germany and the United States since the 1970s, and more than tripled in the United Kingdom (Bauluz et al., 2024[40]). This process of divergence has reversed or stalled in the last decade in large European economies, but not in Canada and the United States. Later in this chapter, Section 2.2 illustrates that regional differences are also large for *disposable household incomes*, i.e. incomes after redistribution through taxes and government transfers.

That regional disparities in labour market outcomes remain so large even after years of convergence points to structural factors on both sides of the labour market. On the labour supply side, workers in some regions

may have characteristics that make them less employable, such as lower levels of educational attainment. On the labour demand side, some regions benefit from a concentration of economic activity that attracts productive firms, increasing the availability of jobs. This distinction is more blurred in practice, as supply and demand reinforce each other: skilled workers attract productive firms, and productive firms attract skilled workers (Moretti, 2010[41]; Combes and Gobillon, 2015[42]). This self-reinforcing dynamic is partly what makes regional employment disparities so persistent.

The next two subsections present descriptive evidence on these dynamics, focussing primarily on employment rates, where data coverage across OECD countries is more complete. Consistent with recent empirical research (Card, Rothstein and Yi, 2023[43]), the results suggest that workers' characteristics explain only part of geographic disparities in employment, and that place-based factors play a significant role.

2.1.2. Workers are different across regions, but this alone cannot explain regional employment disparities

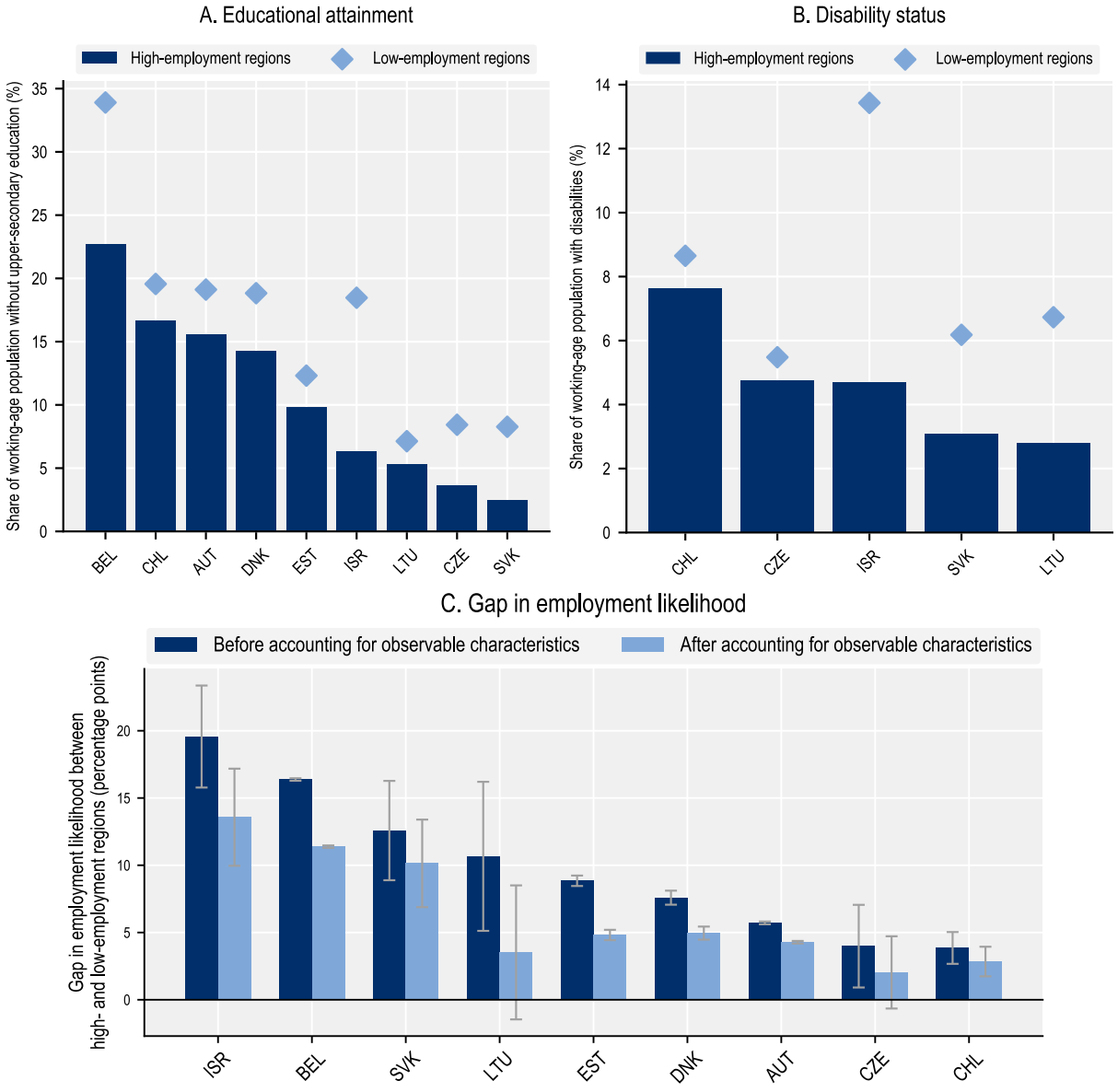
Workers differ substantially across regions, but this explains only a limited share of regional employment gaps. Working-age people in low-employment regions, defined again as regions in the bottom quintile of employment rates, have on average characteristics associated with weaker employment prospects. For instance, they are more likely to have left education before completing high school and to live with disabilities (Figure 2.3, Panels A and B). However, such differences only go so far in explaining regional disparities. Across most countries for which microdata at the TL3 level are available, residents of low-employment regions remain significantly less likely to be employed than those in high-employment regions even after accounting for differences in age, gender, education, household composition, and migration background (Figure 2.3, Panel C). Differences in people's observable characteristics explain only between a third and half of the observed gap in regional employment rates across countries. These results align with previous empirical research on employment at higher geographic levels in the United Kingdom (Overman and Xu, 2024[44]) and Spain (López-Bazo and Motellón, 2013[45]). Lithuania and Czechia are the only countries where the regional employment gap becomes statistically insignificant after accounting for observable characteristics, though relatively small sample sizes in these countries mean that this should be interpreted with caution.

One limitation of these results is that workers in regions with weaker labour markets may differ in ways not captured in the data, such as innate ability, motivation or propensity for risk-taking. However, empirical research addressing this point, notably by tracking people who move across regions and observing how their labour market outcomes evolve, reaches similar conclusions. Evidence from the United States suggests that the sorting of higher-skilled workers into stronger labour markets explains only around half of geographic earnings differences (Card, Rothstein and Yi, 2023[43]), while evidence from France points to a more limited role for sorting in explaining geographic differences in job separation rates (Bilal, 2023[4]). These results might even understate the importance of geography, as they do not account for the additional skills that workers gain over time by living in more productive regions (Roca and Puga, 2016[46]).

The role of place in shaping employment opportunities is particularly pronounced for groups with weaker labour market attachment, such as young people, those with lower educational attainment, and women. While these groups have lower employment rates everywhere, the gaps are often larger in regions with weaker labour markets. For instance, in Chile, the gender gap in employment rates is 18.2 p.p. in high-employment regions but rises to 27.9 p.p. in low-employment regions. Similarly, in the Slovak Republic, the employment gap between individuals with and without tertiary education is only 1.7 p.p. in high-employment regions, but nearly 20 p.p. in low-employment regions.

Figure 2.3. Workers' observable characteristics explain a limited part of regional disparities in employment outcomes

Differences in workforce characteristics (Panels A and B) and the gap in the likelihood of employment (Panel C) between high- and low-employment TL3 regions, 2024 or latest available year



Note: High-employment regions refer to those in the top quintile of employment rates within each country; low-employment regions correspond to those in the bottom quintile. Indicators are computed for people aged 25-64. Cross-country disparities in Panel B should be interpreted with caution given potential cross-country differences in the underlying definition of disability status. Panel C estimates are derived from ordinary least squares (OLS) regressions at the individual level, with and without controlling for individual and household characteristics (age, educational attainment, migration status, gender, disability status and household composition). Data are missing on disability status in BEL, DNK and EST, on household composition in CHL and on migration status in LTU. In some countries a small number of regions is excluded from the analysis or aggregated due to data limitations (see Annex Table 2.D.1 for a complete list). Error bars indicate 90% confidence intervals.
Source: OECD calculations based on microdata from administrative records (AUT, BEL, EST), the Luxembourg Income Study (LIS) database (CZE, DNK, ISR, LTU, SVK), and CASEN (CHL).

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2.1.3. Regional economic performance is a major driver of employment disparities across regions

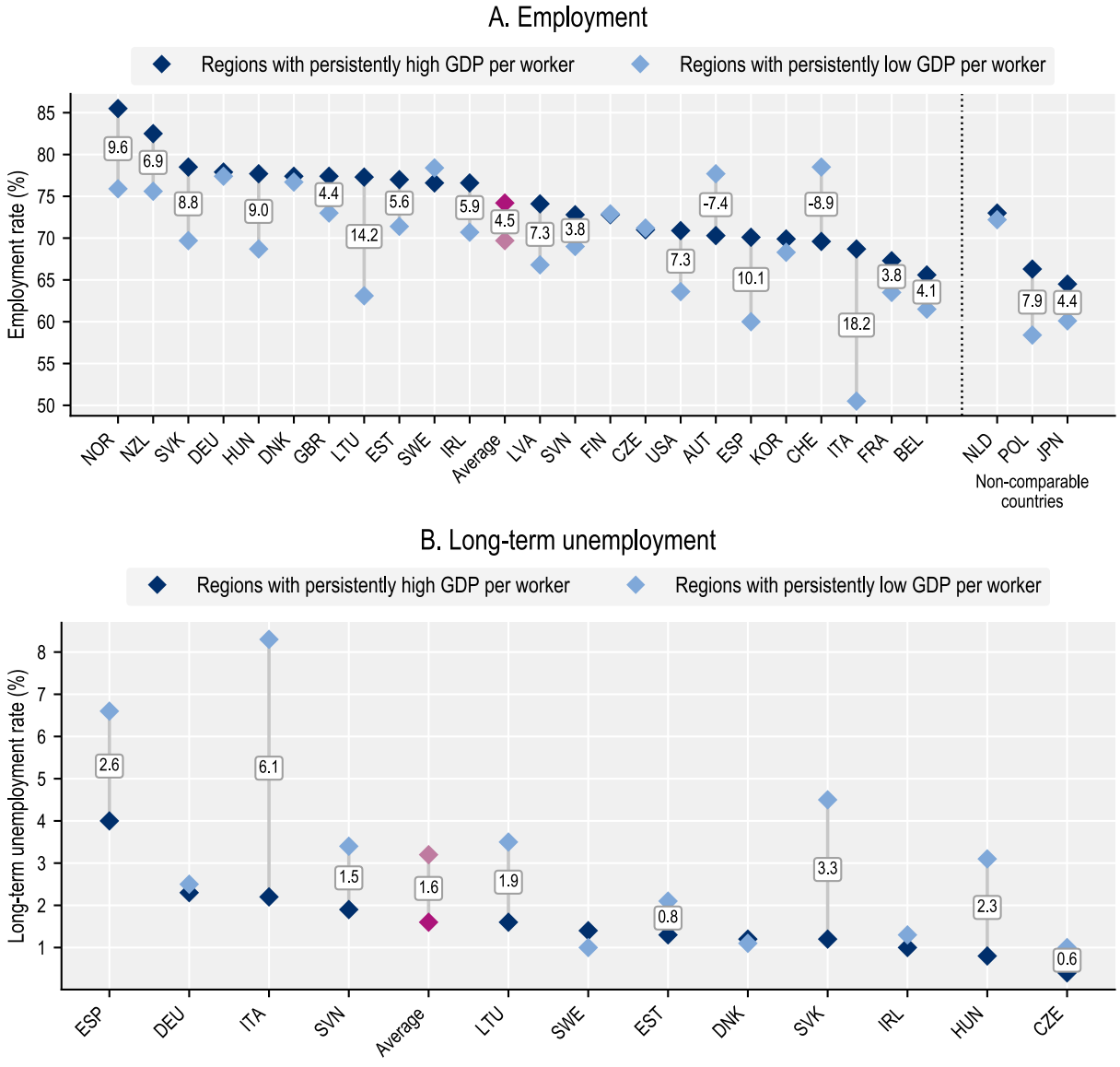
Regional economic performance plays a central role in shaping geographic disparities in labour market outcomes. This happens through two interrelated mechanisms. First, more productive firms tend to concentrate in higher-productivity regions (Lindenlaub, Oh and Peters, 2022[47]; Bilal, 2023[4]). While part of this regional productivity variation reflects differences in human capital as explored in the previous section, empirical studies suggest that these account for only 20% to 35% of the gap in the United States, (Hanushek, Ruhose and Woessmann, 2017[48]), and a smaller share in Europe (Beugelsdijk, Klasing and Milionis, 2017[49]), with place-based factors such as infrastructure, capital, and local institutions explaining the remainder. Second, once high-productivity clusters take hold, they generate agglomeration economies – faster matching between employers and employees, knowledge transfers across firms, and denser networks of suppliers and clients (Combes and Gobillon, 2015[42]) – which further raise the productivity and attractiveness of these regions.

This mechanism can create a virtuous cycle that strengthens employment opportunities in leading regions: regions with greater productivity attract productive firms, increasing the availability and quality of employment. Lagging regions face the opposite dynamic. As productive firms relocate toward more developed areas, employment in left-behind places contracts, and the firms that remain tend to offer less attractive job opportunities. Previous OECD work relying on firm-level data for Italy and Spain suggests that firms in less developed regions are smaller, and 20% to 30% less productive than comparable firms elsewhere (Menon and Vermeulen, 2026[31]).

Indeed, across OECD countries, employment outcomes are closely tied to regional productivity, with regions that have persistently ranked in the bottom quintile of GDP per worker over the past 15 years showing employment rates 4.5 p.p. lower than the most productive regions (Figure 2.4, Panel A). Austria and Switzerland exhibit strong employment gaps in the opposite direction. In Austria, this reflects strong commuting flows into Vienna from surrounding regions. Because employment is measured at the place of *residence* and productivity at the place of *work* (see Box 2.1), commuters raise employment rates and aggregate income in their home regions while their output is recorded in Vienna. As a result, Vienna combines high productivity with a comparatively low employment rate, and notably an overrepresentation of people with weaker labour market attachment, such as students and recent immigrants (OECD, 2025[7]). In Switzerland, Geneva and Basel-Stadt boast high productivity due to the concentration of financial and pharmaceutical firms. Resident employment rates in both cantons are supressed by a large foreign-born population, who exhibits weaker labour market attachment particularly among women (Lacroix and Vidal-Coso, 2018[50]). Long-term unemployment provides further evidence of limited job availability in low-productivity regions: rates are nearly twice as high in the least than in the most productive regions across countries with available data (Figure 2.4, Panel B). The size of this gap differs across countries: it is much narrower in Northern European countries and wider in Southern Europe, Hungary and the Slovak Republic.

Figure 2.4. People's labour market outcomes are substantially worse in low-GDP-per-worker regions

Gap in labour market outcomes between TL3 regions with persistently high and low GDP per worker, 2024 or latest available year



Note: Regions with persistently high (low) GDP per worker are those belonging to the top (bottom) quintile of their respective countries in most of the last 15 years. GDP per worker is defined as regional output divided by workplace employment, which includes commuters from other regions and cross-border commuters. The diamonds capture the averages of both groups, weighted by the working-age population. Employment and long-term unemployment rates refer to the population aged 15 to 64, with minor differences for employment in DNK and GBR (16-64). Non-comparable countries are those with more substantial differences in age thresholds, such as JPN (15+) and NLD (15-75), as well as POL, where employment rates exclude workers in civil law contracts (*umowy cywilnoprawne*). In Panel B, long-term unemployment rates measure the share of the labour force that has been unemployed for 12 months or more. In some countries, a small number of regions is excluded from the analysis or aggregated due to data limitations (see Annex Table 2.D.1 for a complete list). "Average" gives the unweighted average across OECD countries excluding non-comparable regions.

Source: OECD calculations based on the OECD Database on Regions, Cities and Local Areas, https://www.oecd.org/en/topics/regions-cities-and-local-statistics.html (accessed in February 2026) and data collection by the OECD. See Annex Table 2.A.1 for further details.

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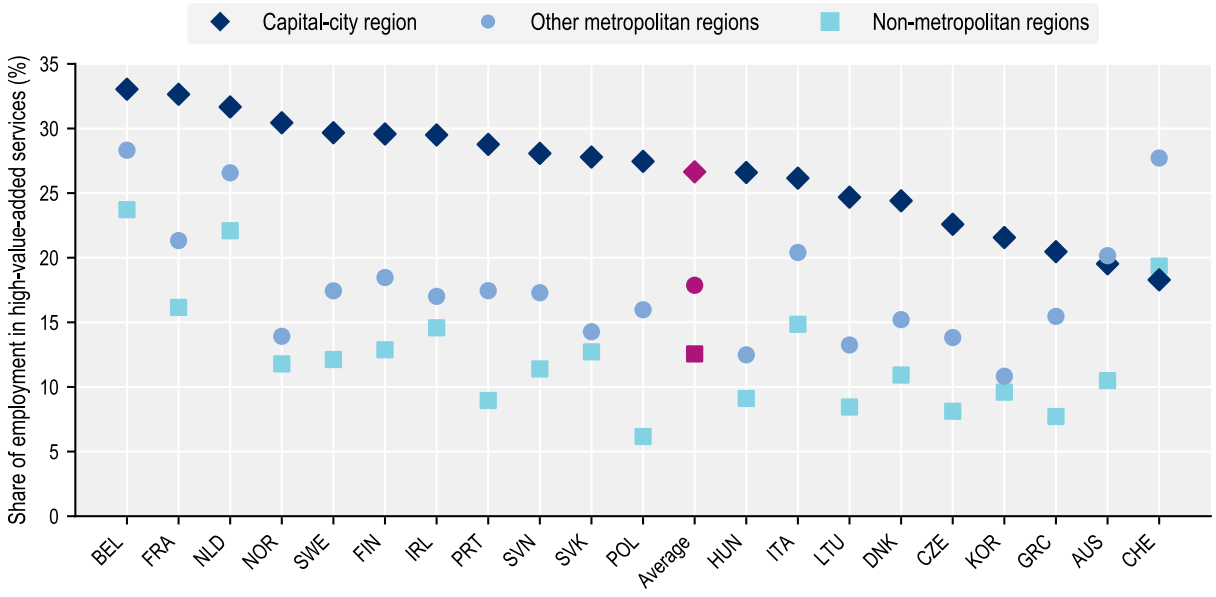
The progressive transformation of OECD countries into knowledge-intensive economies since the 1970s has contributed to the concentration of high-productivity employment in fewer locations. Manufacturing firms were often spread out geographically, responding to the local availability of infrastructure, raw materials, and cheap labour; as transport costs fell production dispersed even further across regions (Glaeser and Kohlhase, 2004[51]). Knowledge-intensive industries work differently. Their productivity depends on the density of skilled workers and the face-to-face interactions that drive innovation and learning in specific locations, often cities (Moretti, 2012[3]). Over the previous decades, these dynamics have resulted in a growing concentration of high-productivity firms in a small number of metropolitan areas (Clarke, Martin and Tyler, 2016[52]; Kemeny and Storper, 2020[53]), even if the labour market recovery since the GFC has brought some regional convergence in employment outcomes in more recent years (Figure 2.2). Meanwhile, regions previously specialised in manufacturing have faced pressure to shift their industrial structure (Ahrend et al., 2026[24]) and have become increasingly vulnerable to employment shocks, which often leave long-lasting scars on local labour markets (Autor, Dorn and Hanson, 2016[54]; Celli, Cerqua and Pellegrini, 2023[55]; Vermeulen and Braakmann, 2023[56]) – see also Chapter 3.

In most OECD countries, employment in high value-added services is disproportionately concentrated in capital-city regions, while the share of such jobs in other metropolitan regions is closer to that of non-metropolitan regions (Figure 2.5). Unlike employment rates, sectoral employment is measured by place of work; these shares therefore capture where high-value-added activity is located. On average across OECD countries where data are available, 26.6% of all jobs in capital-city regions are in high-value-added services, compared to 17.8% in other metropolitan regions and just 12.5% in non-metropolitan regions. Switzerland and Australia, countries where the capital city is relatively small compared to other urban centres, represent exceptions. In Switzerland, jobs in high-value-added services are concentrated in larger metropolitan regions, such as Geneva and Zurich, rather than in Bern. In Australia, several larger metropolitan regions beyond Canberra, including Melbourne and Sydney, account for a significant share of this type of employment. In Belgium, Greece, Italy and the Netherlands, capital-city regions dominate, but high-value-added services are more evenly spread across other metropolitan regions than is typical across the OECD.

A similar but much less pronounced pattern holds for employment rates more broadly. Across countries with available data, capital-city regions tend to have somewhat higher employment rates, while other metropolitan and non-metropolitan regions perform broadly similarly (Annex Figure 2.E.1). That not all metropolitan regions are thriving equally is also reflected in population dynamics: OECD metropolitan regions expanded their population by 15% on average between 2001 and 2021, outpacing non-metropolitan regions; however, more than one-in-five metropolitan regions experienced population decline over the same period (OECD, 2025[57]).

Figure 2.5. High-value-added jobs are disproportionately concentrated in capital-city regions

Share of employment in high-value-added services by region type, 2023 or latest available year



Note: Employment by economic activity at TL3 level is recorded by place of work and is available only at broad sectoral aggregations. High-value-added services are proxied by employment in information and communication (NACE J), financial and insurance activities (NACE K), and professional, scientific, technical, administrative and support services (NACE M-N). The OECD typology for small (TL3) regions by access to cities classifies regions based on the presence/absence of metropolitan areas and the extent to which the latter is accessible by the population living in each region (Fadic et al., 2019[17]). According to this typology, TL3 regions are classified as "metropolitan" if more than half of their population lives in a Functional Urban Area (FUA) of at least 250 000 inhabitants and as "non-metropolitan" otherwise. Capital-city regions aggregate TL3 regions belonging to the metropolitan area of the capital city of a country (OECD, 2024[29]). Data refer to 2023, except for GRC, IRL, ITA, LTU, POL, SVK, SVN (2022) and CHE, FIN, NLD, NOR, PRT (2021). In some countries, a small number of regions is excluded from the analysis or aggregated due to data limitations (see Annex Table 2.D.1 for a complete list). "Average" gives the unweighted average across OECD countries.

Source: OECD calculations based on the OECD Database on Regions, Cities and Local Areas, https://www.oecd.org/en/topics/regions-cities-and-local-statistics.html (accessed in February 2026).

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2.1.4. Workers' mobility is not sufficient to narrow regional disparities in labour market outcomes

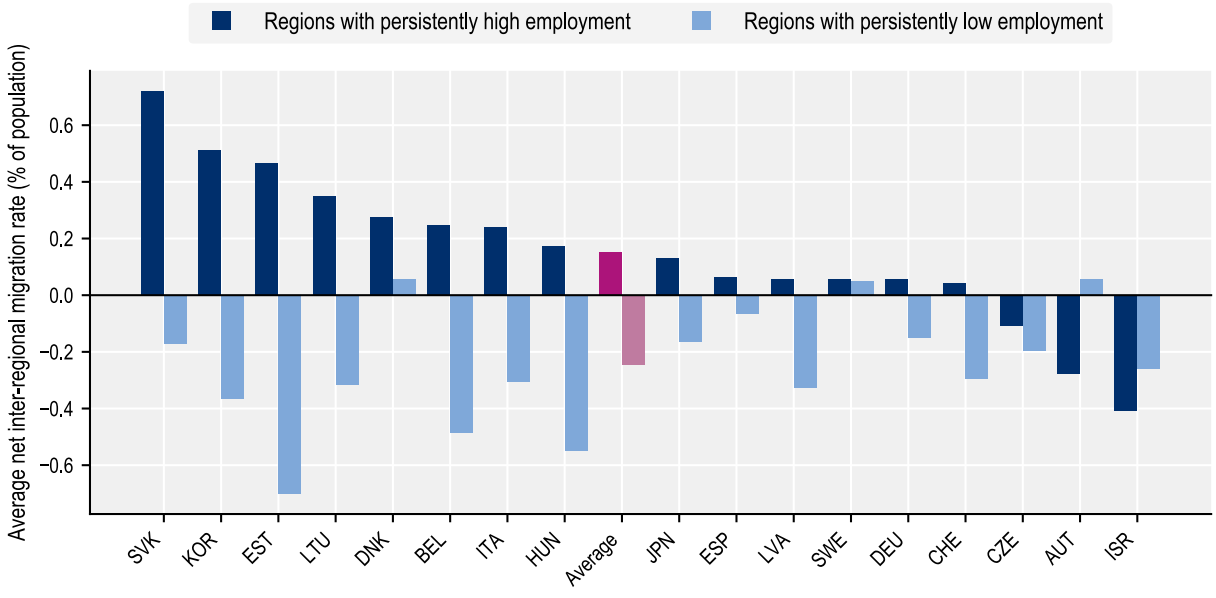
Within-country mobility could, in principle, contribute to narrowing regional disparities in employment outcomes if people with limited job prospects relocated from weaker to stronger labour markets. Supporting mobility for those who wish to move in search of better opportunities has been shown to improve job matching (OECD, 2025[7]), and should therefore play a role as part of broader strategies to reduce regional labour market imbalances – see also Chapter 3. However, the evidence in this section suggests that labour mobility is not sufficient to close existing regional employment gaps, and may sometimes even reinforce them.

Mobility from low- to high-employment regions is rather limited in magnitude. Across countries with available data, regions with persistently low employment – defined as those in the bottom quintile of employment rates within each country for most of the past 15 years – experienced annual net migration outflows of 0.25% of their population; meanwhile, high-employment regions experienced annual net inflows of approximately 0.15% from other parts of the country (see Figure 2.6). Mobility is considerably more pronounced in the Slovak Republic, Korea and Estonia, which drive up the OECD average, but very limited

in many large economies such as Japan, Germany and Spain. The implication of such low mobility rates is that even if all out-migrants from low-employment regions were unemployed, these population flows would be too small to meaningfully reduce the regional disparities in labour market outcomes documented earlier in this chapter. Moreover, in countries such as Austria, Czechia and Israel, high-employment regions are experiencing population outflows.

Figure 2.6. People move out of low-employment regions and into high-employment ones, but at a slow pace

Average net inter-regional migration rates (% of the population) in high- and low-employment TL3 regions, early 2010s to latest available year



Note: Regions with persistently low (high) employment are those in the bottom (top) quintile of employment rates within their respective countries for most of the past 15 years. The yearly net inter-migration rate is the difference between residential inflows and outflows from other regions of the same country, as a share of the population of low- or high-employment regions. These migration rates are averaged over 2010 to 2023, except for BEL and CHE (2010-2022), DEU (2010-2021) and LVA (2011-2022). In some countries, a small number of regions is excluded from the analysis or aggregated due to data limitations (see Annex Table 2.D.1 for a complete list). "Average" gives the unweighted average across OECD countries.

Source: OECD calculations based on the OECD Database on Regions, Cities and Local Areas, https://www.oecd.org/en/topics/regions-cities-and-local-statistics.html (accessed in February 2026).

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Mobility is low in part because people face multiple barriers to relocation. Financial costs can be significant, especially for people moving to regions with better employment prospects. Housing in these regions is typically more expensive, which deters low-skilled workers from moving (Ganong and Shoag, 2017[5]; OECD, 2020[58]; Causa, Abendschein and Cavalleri, 2021[59]). Access to welfare benefits tied to the region of residence, as well as higher childcare costs, add further disincentives for mobility (OECD, 2025[7]). Job search itself can also be costly, and costs rise with distance, such that most jobseekers focus their search on areas close to their place of residence (Manning and Petrongolo, 2017[60]; Gobillon and Selod, 2021[61]). These barriers can be lowered through policy interventions. Relaxing land-use regulations can ease housing supply constraints, reducing the costs of settling in high-employment regions. Making social housing entitlements easily transferable across regions can reduce immobility (Causa, Abendschein and Cavalleri, 2021[59]; OECD, 2021[62]). For example, in the Australian state of Victoria, social housing tenants

can apply to transfer to another property if changes in their employment require them to move a significant distance from their current residence. Extending such arrangements to enable social housing transfers across broader geographies – particularly where responsibilities for social housing are fragmented across regional jurisdictions – would further foster the mobility of those with weaker labour market attachment. On the job search side, transport subsidies for jobseekers (Franklin, 2017[63]), and direct relocation subsidies (Caliendo, Künn and Mahlstedt, 2017[64]) have shown positive effects, though both can prove expensive at scale. Other barriers are much harder to address – not least because they reflect legitimate preferences, such as proximity to established social networks (Spring, Gillespie and Mulder, 2023[6]) or caregiving responsibilities that tie people to a specific location (Artamonova and Syse, 2021[65]). Recent OECD work explores these mobility barriers and potential policy responses in greater detail (OECD, 2020[58]; OECD, 2021[62]; OECD, 2025[7]).

A further challenge is that regions with weak labour markets tend to cluster geographically. Moving to places with substantially better employment prospects therefore often requires relocating over longer distances, which amplifies the barriers discussed above. This can be illustrated through *Moran's I,* a widely used measure of spatial clustering in economic variables (Patacchini and Rice, 2007[66]; Cracolici, Cuffaro and Nijkamp, 2008[67]; Furková and Chocholatá, 2020[68]; OECD, 2023[1]) Two distinct *Moran's I* metrics exist that provide complementary insights into these spatial patterns (see Box 2.3 for a technical description):

- *Global Moran's I* measures the overall degree of spatial clustering in a country by comparing each region's value against the weighted average of its neighbours. Values range from −1 to 1; a positive value indicates that regions with similar values tend to be located near one another, while a negative value indicates that neighbouring regions tend to have dissimilar values.
- *Local Moran's I* identifies *where* spatial clustering occurs, pinpointing specific groups of regions whose values are persistently above (High-High) or below (Low-Low) the overall mean.

Applying these metrics to regional unemployment rates reveals substantial spatial clustering in most large OECD economies, with regions' unemployment rates strongly correlated with those of their neighbours (Figure 2.7, Panel A).[2] Overall clustering, as measured by *Global Moran's I*, is strong, for example, in Italy and Türkiye, though cross-country disparities should be interpreted with caution given differences in the size and number of regions. Japan is somewhat an exception in that the degree of clustering is weak and only marginally statistically significant.

This overall clustering often translates into stark divides within countries as measured by *Local Moran's I* (Figure 2.7, Panel B). In Germany, low-unemployment clusters are concentrated in prosperous southern regions, such as Bavaria and parts of Baden-Württemberg, while high-unemployment clusters are found in eastern Germany – still bearing the structural legacy of reunification – and in the *Ruhr* area, scarred by decades of decline in the coal and steel industries. In Italy, the clustering mirrors the well-documented North-South divide, with *Mezzogiorno* regions lagging the industrialised North. Poland exhibits a similar east-west gradient as Germany, with high-unemployment clusters in its less developed eastern regions, historically reliant on small-scale agriculture and characterised by lower levels of educational attainment. In the United States, low-unemployment clusters stretch across the *Great Plains* and *Upper Midwest*, while high unemployment is concentrated in the *Deep South*, where longstanding underinvestment in infrastructure and human capital continues to weigh on labour market outcomes. In Türkiye, high-unemployment clusters are concentrated in the South-East, reflecting persistent regional development gaps; in Japan, a few low-unemployment clusters emerge in the greater *Chūbu* region in Central Japan, home to a strong manufacturing base (*maps not shown*).

Box 2.3. Measuring spatial clustering: *Global* and *Local Moran's I*

A standard approach to measuring spatial clustering is the *Moran's I* statistic, which assesses the degree to which regions with similar values of a given variable are located near one another (Moran, 1950[69]; Anselin, 1995[70]).

Two *Moran's I* metrics provide complementary insights:

Global Moran's I

It quantifies the overall degree of spatial clustering. It is defined as:

$$I = \frac{n}{S_0} \times \frac{\sum_{i=1}^{n}\sum_{j=1}^{n} w_{ij}(x_i - \bar{x})(x_j - \bar{x})}{\sum_{i=1}^{n}(x_i - \bar{x})^2}$$

where n captures the number of regions, x_i is the value of the variable of interest (here: the unemployment rate) in region i, $\bar{x}$ is the average of that variable across all regions, w_{ij} is the spatial weight describing the strength of the connection between regions i and j, and $S_0 = \sum_i \sum_j w_{ij}$ is the sum of all spatial weights. In essence, the index measures the degree to which each region's value co-varies with those of its neighbours, as defined by the spatial weight matrix. The spatial weights used in this chapter are based on whether they share a common border (a concept referred to in technical terms as rook contiguity). Each neighbour receives equal weight, such that each region is compared against the simple average of its neighbours' values.

The *Global Moran's I* score ranges from −1 (perfect dispersion) to +1 (perfect clustering), with values near zero indicating no systemic spatial pattern. To visualise it, this chapter plots each region's unemployment rate against the average rate of its neighbours (Figure 2.7, Panel A). The slope of the fitted line in this scatterplot is identical to the *Global Moran's I* statistic. Statistical significance is assessed using a permutation test, which repeatedly shuffles values across regions to evaluate whether the observed spatial pattern is unlikely to have occurred by chance.

Local Moran's I

While the global statistic summarises the overall degree of clustering, *Local Moran's I* identifies *where* specific clusters or outliers occur. For each region *i*, it is defined as:

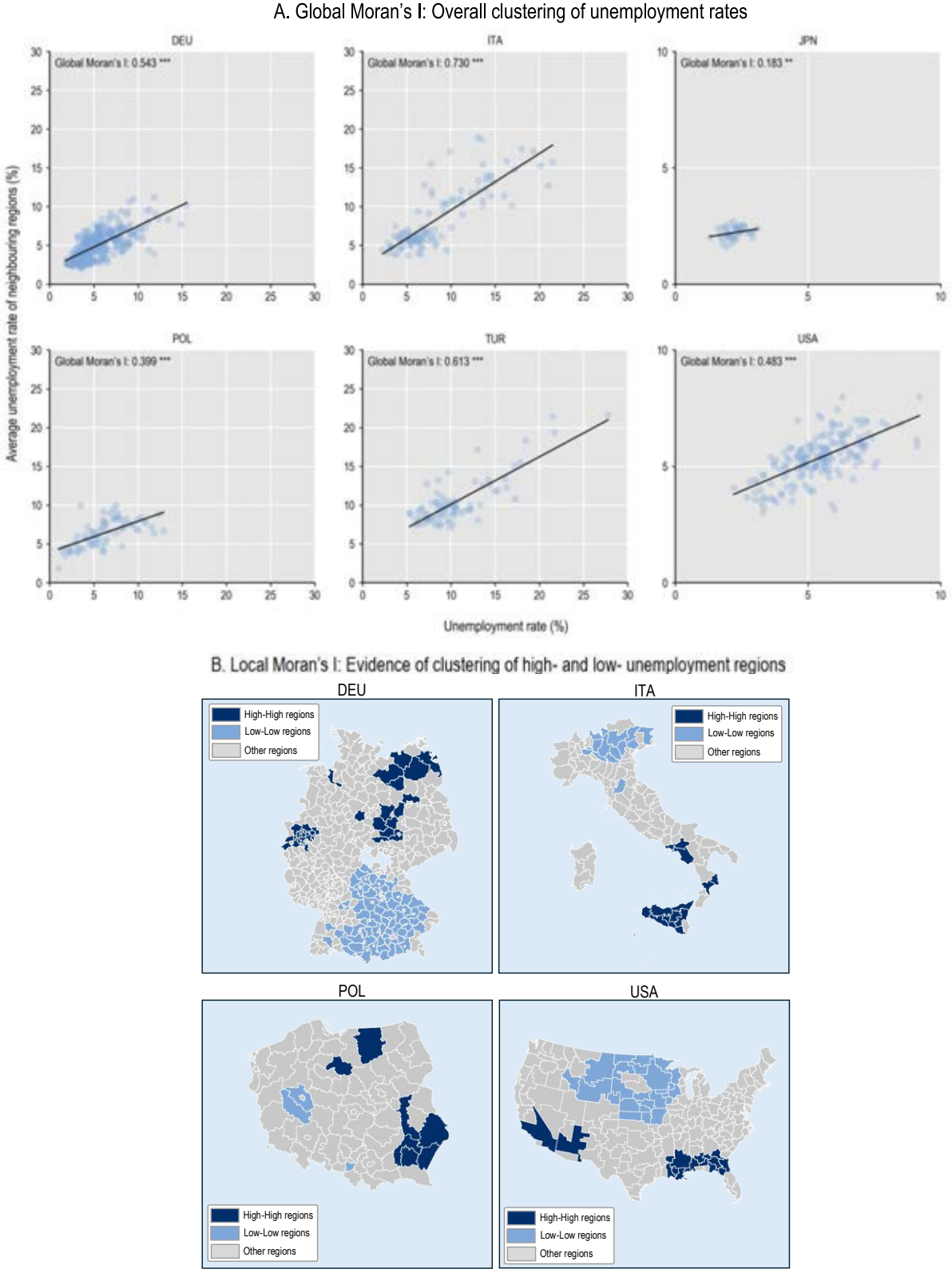
$$I_i = \frac{(x_i - \bar{x})}{S^2} \times \sum_{j=1}^{n} w_{ij}(x_j - \bar{x})$$

where I_i is the *Local Moran's I* for the region i, x_i is again the value of the variable of interest in region i, $\bar{x}$ is the average of x across all regions, w_{ij} is the spatial weight, summing up to 1, which describes the relative connection between regions i and j, and S^2 is the variance of x across all regions. Dividing by the variance standardises each region's deviation from the mean to ensure comparability. In essence, the index assesses whether a region's unemployment rate and those of its neighbours jointly deviate from the overall average.

Based on the sign and magnitude of I_i and the value of region i, four types of statistically significant clusters can be identified. A region can belong to a cluster of similar values: *High-High* (high-unemployment region surrounded by high-unemployment neighbours) or *Low-Low* (low-unemployment region surrounded by low-unemployment neighbours). Alternatively, it can be a spatial outlier: *High-Low* (high unemployment surrounded by low) or *Low-High* (low unemployment surrounded by high). As with the global statistic, statistical significance is assessed via permutation tests. For simplicity, this chapter focusses on statistically significant *High-High* and *Low-Low* clusters (Figure 2.7, Panel B).

Figure 2.7. Regions with high unemployment are spatially clustered

Global and *Local Moran's I* for unemployment rates across TL3 regions in selected large OECD economies, 2022 or latest available year



Note: Panel A: The slope of the fitted line equals the *Global Moran's I*: higher values indicate stronger spatial clustering of unemployment rates. Neighbours are defined as regions sharing a common border. Statistical significance is assessed via permutation tests, with * denoting significance at the 10%, ** at the 5% and *** at the 1% level. Panel B shows statistically significant High-High and Low-Low clusters, i.e. regions with high (low) unemployment rates surrounded by neighbours with similarly high (low) rates. For further methodological details, see Box 2.3. Unemployment rates refer to population aged 15 to 64 in all countries except for JPN (15+), POL (18 to 65 for men, 18 to 60 for women) and TUR (15+). In JPN and USA, a small number of regions are excluded from the analysis because they have no neighbours; in DEU some are excluded due to missing data. Annex Table 2.D.1 provides a complete list.
Source: OECD calculations based on the OECD Database on Regions, Cities and Local Areas, https://www.oecd.org/en/topics/regions-cities-and-local-statistics.html (accessed in February 2026) and data collection by the OECD. See 2.4 for further details on the data.

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These patterns of geographic clustering limit the employment opportunities available close to where jobseekers live. This not only discourages mobility by raising the costs of relocation, but renders commuting an unfeasible strategy to bridge the gap between places with surplus workers and those with open jobs.

Furthermore, mobility alone is unlikely to reduce regional labour market inequalities because people who move from low- to high-employment regions are often those with the *strongest* employment prospects. This partly reflects the fact that barriers to mobility weigh most heavily on people with weaker labour market attachment. A large body of empirical research shows that people who migrate across regions (Panichella and Impicciatore, 2024[71]), and particularly those moving to areas with greater employment opportunities (Combes, Duranton and Gobillon, 2008[72]; De la Roca, 2017[8]), have on average higher levels of education, earn more in their previous job, and work in higher-skilled occupations than those who stay behind. OECD estimates from administrative records for Belgium and Estonia confirm that unemployed people are not more likely to move than those who are employed (Box 2.4). People leaving low-employment regions in these countries also tend to be younger, more frequently in the labour force and more educated. The outmigration of these workers can slowly erode the human capital base in low-employment regions, further weakening labour markets in these regions. As a result, if not well-managed, regional migration patterns can reinforce, rather than reduce, regional disparities in labour markets.

These results should not be interpreted as implying that workers' mobility should not be encouraged. Rather, it highlights the need to reduce mobility barriers for those with weaker employment prospects, who also tend to have lower incomes. However, even if such barriers were eased and mobility converged to that of groups with stronger employment prospects, relocation would likely remain limited, with only a small share of jobseekers moving. Hence, place-based policies remain an important lever for reducing regional labour market inequalities (OECD, 2025[13]).

Box 2.4. Who leaves low-employment regions behind? Evidence from administrative records in Belgium and Estonia

This box draws on census and labour administrative records to examine the mobility patterns of the working-age population in Belgium and Estonia. Consistent with previous empirical research (Combes, Duranton and Gobillon, 2008[72]; Fendel, 2014[73]; De la Roca, 2017[8]; Panichella and Impicciatore, 2024[71]), it illustrates that the people most likely to leave low-employment regions are not those with the weakest job prospects, but rather those with comparatively good chances of being in employment.

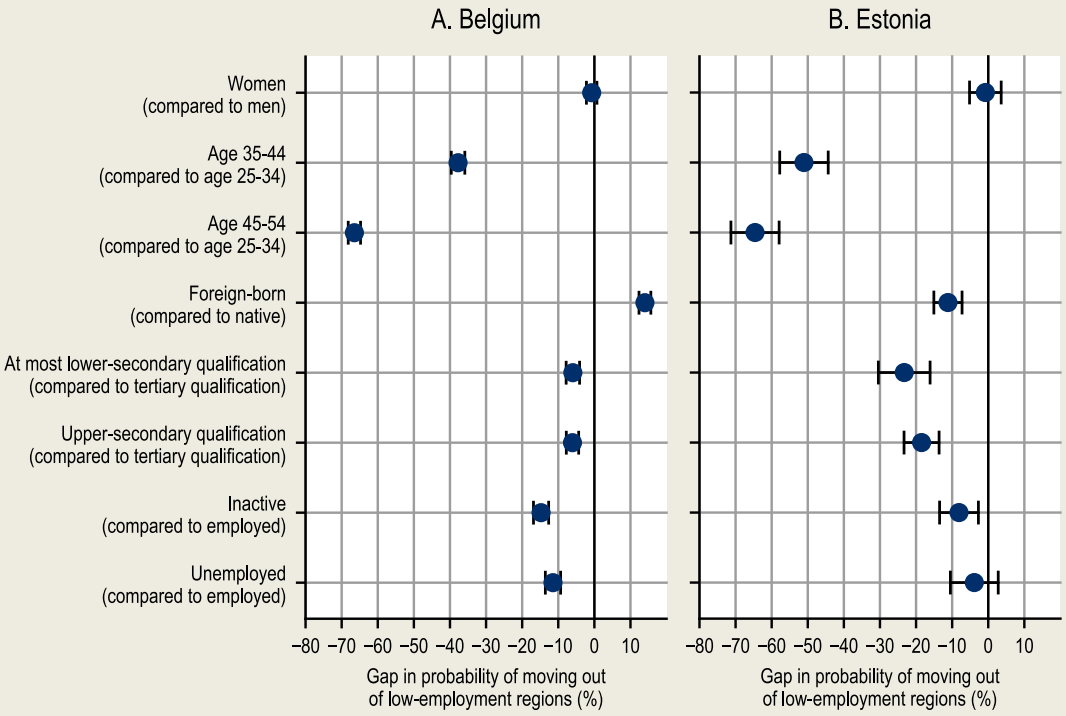
A straightforward way to illustrate this is by comparing the characteristics of those who leave low-employment regions, defined as regions in the bottom quintile of employment rates, compared to those who stay behind. Survey data typically lack the geographic coverage or the sample size to capture such transitions reliably. Administrative records for Belgium and Estonia, however, make it possible to track the entire population geographically on a yearly basis, enabling such comparisons.

Regression analysis can then isolate the independent effect of different observable characteristics, such as age, education, or employment status, net of the influence of the others – without of course accounting for factors unobservable in the data such as people's motivation or specific skills.

In low-employment regions in Belgium and Estonia, older workers, those with lower educational attainment, and those who are inactive or unemployed in a given year are less likely to have moved to stronger labour markets a year later (Figure 2.8). Age is by far the strongest predictor, with workers aged 45-54 almost 70% less likely to leave than those aged 25-34. Education also plays a significant role: working-age people with at most upper-secondary education are around 6% less likely to leave low-employment regions in Belgium, and around 20% less likely in Estonia than their peers with a tertiary qualification. Crucially, those outside of the labour force are not the ones leaving low-employment regions. In both countries, the inactive are less likely to move than those in employment. In Belgium, the unemployed are also 11.5% less likely to leave than the employed, while in Estonia they are just as likely to move.

Figure 2.8. People with better employment prospects are more likely to move out of low-employment regions

Differences in the probability of leaving low-employment TL3 regions from one year to the next, by socio-economic characteristics, Belgium and Estonia



Note: Low-employment regions are those in the bottom quintile of employment rates within each country. Estimates are derived from an ordinary least squares (OLS) regression of the probability of moving from low-employment regions into other regions on a set of individual characteristics, expressed as the percentage gap compared to reference groups. The model also controls for household composition, not shown in the figure. Error bars indicate 90% confidence intervals. Mobility transitions are observed from 2018 to 2019 in BEL, and 2023 to 2024 in EST.
Source: OECD calculations using in-house microdata from administrative records.

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2.2. From labour market outcomes to the distribution of household incomes: Regional inequalities in living standards

Where people live shapes not just their chances of finding work and the types of jobs available to them, but also the incomes they can generate and the living standards they can expect to achieve. For most households, earnings from work represent by far the largest source of income, making regional gaps in employment rates and earnings primary drivers of differences in living standards. Large and persistent differences in living standards across regions matter for several reasons: such disparities often reflect deeper structural factors – geographic remoteness, weak agglomeration, lack of high-value-added industries, or the availability and quality of essential infrastructure and services – that shape the opportunities available to people across regions; they create obstacles for people to seize economic opportunities regardless of where they live, undermining investment in human capital, innovation and risk-taking; they can fuel social discontent and erode economic and societal resilience; and they can complicate the design of labour market, training and social policies that are both efficient and well-targeted. Understanding the scale, structure, and drivers of disparities in household incomes and living standards is therefore a necessary first step for governments seeking to address them.

Despite this policy relevance, internationally comparable evidence on geographic disparities in the distribution of household incomes remains scarce at a more granular level. Household surveys – the standard source of cross-country data on incomes and living conditions – are in many countries representative only at the level of large (TL2) regions, given their limited sample sizes.[3] As a result, both the OECD and Eurostat compile income distribution data only at the TL2/NUTS2 level (Eurostat, 2025[74]; OECD, 2026[75]). The empirical literature has consequently focussed largely on income disparities across large regions (Piacentini, 2014[76]; Castells-Quintana, Ramos and Royuela, 2015[77]; Royuela, Veneri and Ramos, 2018[78]; Veneri and Murtin, 2018[79]; Erfurth, 2023[80]; European Commission, 2024[81]; Savoia, 2024[82]; OECD, 2025[2]). In a small but growing number of countries, country-specific studies have pushed beyond this constraint, examining income distributions at finer geographic scales by drawing on register-based income data.[4] The most prominent example is the work of Chetty et al. (2014[83]) under the *Opportunity Insights* project in the United States. In Europe, Bonnet, d'Albis and Sotura (2021[84]) use tax record data to track inequality across French *départements* over the last century, while Dzhavatova et al. (2025[85]) document income distributions across municipalities in Denmark, Finland, Norway and Sweden.[5]

National accounts have served as an alternative source of regional income measures. A large literature has used GDP per capita as a widely available proxy for income (Iammarino, Rodriguez-Pose and Storper, 2018[11]; Gbohoui, Lam and Lledo, 2019[86]; Pina and Sicari, 2021[87]; Rosés and Wolf, 2021[88]; OECD, 2023[1]; European Commission, 2024[81]; Chan, Ellingsen and Simpson, 2025[89]). This reflects, in large part, that GDP-per-capita data offer much broader geographic and temporal coverage than household surveys, though, as a measure of economic output rather than household income, they are an imperfect proxy for living standards. For 14 OECD countries, regional accounts provide TL3-level statistics on disposable household income per capita (OECD, 2024[29]; OECD, 2025[90]). However, these macro-level data do not account for individual household structure and provide no information on the distribution of incomes across households within regions – for a detailed discussion, see OECD (2023[1]).[6]

This section presents, for the first time, comparable statistics on income levels and distributions across small (TL3) regions based on microdata from 24 OECD countries. It relates these patterns to regional differences in economic activity, as measured by GDP per capita, and to the disparities in labour market outcomes documented in Section 2.1. Throughout this section, the term "household income" is used to refer to equivalised disposable household income – that is, income after taxes, social insurance contributions and government transfers, adjusted for household size. The analysis draws on newly collected income distribution statistics derived from administrative records and household surveys; Annex 2.B provides an overview of data sources and their coverage.

2.2.1. Regional income disparities vary across countries and align only weakly with regional disparities in GDP per capita

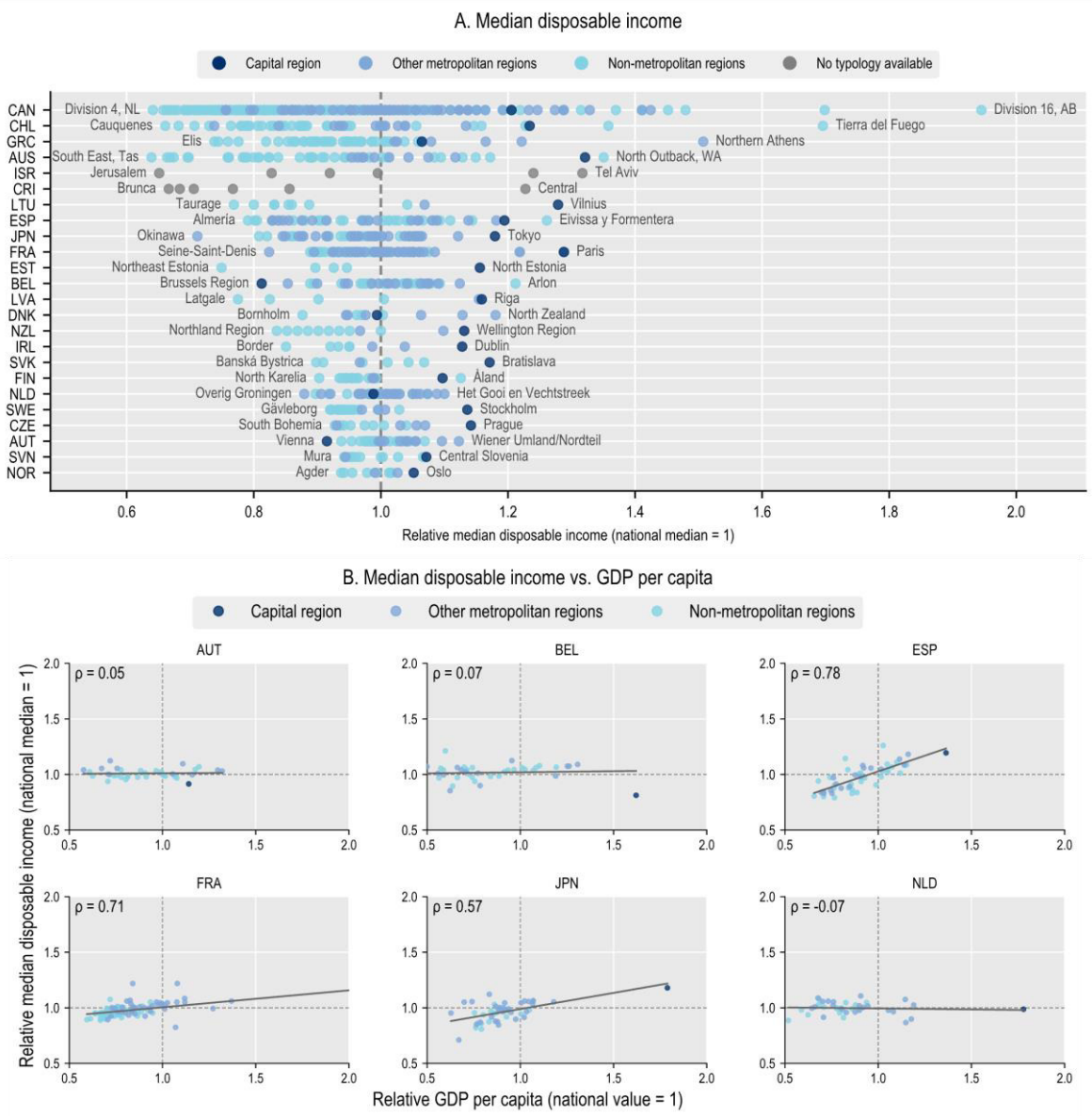
Many OECD countries display substantial regional disparities in household income levels. Figure 2.9, Panel A shows median disposable household incomes across TL3 regions – that is, the income of the person at the exact middle of each region's income distribution – expressed relative to the national median. In most OECD countries, the median person in the highest-income region has a disposable income around 10-30% above the national median. This highest-income region is often the country's capital-city region – for example, Paris in France, Tokyo in Japan, Vilnius in Lithuania, and Wellington in New Zealand. Austria and Belgium are two exceptions: in both countries, the capital region has the lowest median income, reflecting that both capital regions are surrounded by affluent suburban regions.[7] In some countries, top-income regions owe their position to natural resource wealth, as in Division No. 16 in Alberta (Canada), the southernmost Tierra del Fuego in Chile and the North Outback in Western Australia. At the other end of the distribution, the median person in the lowest-income region has a disposable income around 10-20% below the national median in most countries. On average, across the 24 OECD countries covered, median incomes in the highest- and lowest-income regions differ by a factor of around 1.60 – meaning the median person in the highest-income region has a disposable income approximately 60% above that of their counterpart in the lowest-income region.

However, cross-country variation in regional income disparities is considerable, reflecting differences in country size, the number of regions, and overall income inequality. Disparities are widest in geographically large countries with many regions – such as Australia and Canada, where the top-to-bottom regional income ratio ranges between 2.1 and 3.0 – as well as in countries with many regions relative to their size, such as Greece, with a ratio of 2.1, and in populous countries such as France, Japan and Spain, where ratios range between 1.6 and 1.7 (Figure 2.9, Panel A).[8] High levels of overall income inequality are also associated with wider regional disparities: Chile displays a top-to-bottom ratio of 2.6, Israel, Costa Rica and Lithuania display top-to-bottom ratios between 1.7 and 2.0.[9] By contrast, regional income disparities are narrowest in smaller, more equal countries. In several Central European countries – Slovenia, Austria and Czechia – the top-to-bottom ratio stands at just 1.1-1.2, with similarly narrow gaps in the Netherlands and the Slovak Republic (both 1.3) and across the Nordic countries: Norway (1.1), Sweden (1.2), Finland (1.2), and Denmark (1.3).

The greater geographic granularity of the data used in this chapter reveals a more differentiated picture of regional income disparities than earlier cross-country work based on large (TL2) regions. In Piacentini's (2014[76]) earlier study, top-to-bottom regional income ratios stood below 1.5 in most countries: Mexico was the only country exceeding a ratio of 2 and cross-country differences were comparatively more compressed. The move to TL3 regions uncovers substantially wider disparities.

Figure 2.9. Regional disparities in median household incomes vary substantially across countries, but are much narrower than disparities in GDP per capita

Median disposable incomes (Panel A) and the relationship between median disposable incomes and GDP per capita in selected OECD countries (Panel B), TL3 regions, 2024 or latest available year



Note: The OECD typology for small (TL3) regions by access to cities classifies regions based on the presence/absence of metropolitan areas and the extent to which the latter is accessible by the population living in each region (Fadic et al., 2019[17]). According to this typology, TL3 regions are classified as "metropolitan" if more than half of their population lives in a Functional Urban Area (FUA) of at least 250 000 inhabitants and as "non-metropolitan" otherwise (OECD, 2024[29]). Capital regions are the TL3 regions that host the capital city of the country In Greece, where Athens is subdivided into several TL3 regions, Central Athens is chosen as the capital region. No typology of regions by access to cities is available for Costa Rica and Israel. ρ refers to the correlation coefficient between the two plotted variables. For an overview of the years covered in Panel A, see Annex Table 2.B.1. In Panel B, all countries shown have at least 35 TL3 regions and the data refer to 2023 for Belgium, 2022 for Austria, the Netherlands and Spain, 2021 for France, and 2019 for Japan. For France, two outlier regions (Hauts-de-Seine and Paris) are included in the computation of the correlation coefficient but not shown in the figure. In some countries, a small number of regions are excluded from the analysis or aggregated due to data limitations (see Annex Table 2.D.1 for a complete list).

Source: Income distribution indicators collected from national authorities (AUS, AUT, CAN, CRI, DNK, FIN, FRA, IRL, JPN, LVA, NLD, NOR, NZL, SVN, SWE) and OECD calculations based on microdata from administrative records (BEL, ESP, EST, GRC), the LIS database (CZE, ISR, LTU, SVK) and CASEN (CHL). GDP-per-capita data from the *OECD Database on Regions, Cities and Local Areas*, https://www.oecd.org/en/topics/regions-cities-and-local-statistics.html (accessed in February 2026).

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Regional household incomes are much less closely tied to regional GDP per capita than one might expect. Figure 2.9, Panel B illustrates this for a selection of OECD countries, plotting regional median disposable household income against GDP per capita, both expressed relative to their national-level values. For the remaining countries, most of them with a smaller number of regions, disparities in GDP per capita are shown in Annex Figure 2.E.2 the correlation coefficient ρ of the relationship between median incomes and GDP per capita is reported in Annex Table 2.E.1. Two main findings emerge:

- *Regional disparities in household incomes are substantially narrower than those in GDP per capita* – consistent with earlier evidence on narrower disparities in disposable income per capita compared to GDP per capita between metropolitan and non-metropolitan regions based on regional accounts data (OECD, 2024[29]). This pattern partly reflects the geographic concentration of high-value-added economic activity in particular regions – one example being the so-called "headquarter effect", which arises when the economic activity of large, multi-plant firms is attributed to the region in which their headquarters are located. Commuting across regional boundaries means that the income people earn and the economic value they generate may be registered in different regions. Finally, the redistributive effect of the tax and benefit system compresses income inequalities between households and, by extension, also between regions.
- *In some countries, regional household incomes and regional GDP per capita are only weakly correlated*. In many countries, such as Spain and France, regional GDP per capita maps closely onto regional household incomes (correlation coefficient ρ of 0.78 and 0.71, respectively). In four countries, however, there is no correlation between regional median household incomes and GDP per capita at all: in Austria, Belgium, Denmark and the Netherlands, ρ is insignificant and close to 0 or even negative. These are mostly relatively small, densely populated countries with well-developed transport infrastructure, where many people commute across regional boundaries. All four also have strong redistributive systems that further compress income differences between regions.

These results underscore that GDP per capita – while frequently used as a proxy for the income of a representative individual in a region (Pina and Sicari, 2021[87]; OECD, 2023[1]) – is likely a poor measure of regional living standards. Across the six countries shown in Figure 2.9, Panel B, the dispersion in GDP per capita is, on average, 3.5 times larger than that in median household incomes when measured by the unweighted coefficient of variation (*not shown*). These differences are again considerably larger than those documented by Piacentini (2014[76]) across large TL2 regions, reflecting that both incomes and GDP per capita can vary substantially between small TL3 regions nested within the same TL2 region. In a few cases, high regional GDP per capita coincides with low median household incomes, and vice versa. A striking illustration is Belgium, where the Brussels Region combines the highest GDP per capita of any region with the lowest median disposable household income, while precisely the opposite holds for Arlon, a region in Wallonia bordering Luxembourg.

Even data on regional disposable household incomes do not, however, provide a complete picture of disparities in living standards. The income statistics reported in this chapter do not account for regional differences in the cost of living. To the extent that prices – and notably housing costs – are higher in higher-income regions, the income differences shown in Figure 2.9 overstate differences in living standards.[10] Ongoing OECD work to develop subnational price indices across OECD regions could help address this issue in the future (Alasia, Amann and Horvat, 2025[91]). Regional income differences may also interact with geographic disparities in the accessibility and quality of key public services and infrastructure – another important determinant of living standards (OECD, 2021[92]; OECD, 2023[1]). Recent OECD research finds that people in regions with lower GDP per capita face longer travel times to reach essential services, including public employment services, primary schools, and early childhood education and care (Box 2.5 and Almeida et al., (2024[22])).

Box 2.5. Disparities in the accessibility of essential services compound regional disparities in incomes

Besides incomes, people's ability to access essential services – such as childcare and education, healthcare, and employment and social support – close to where they live is a key determinant of their living standards, and a driver of labour force participation. In the OECD's 2022 *Risks that Matter* survey, fewer than half of respondents considered that they could access good-quality and affordable public services in areas such as education, employment and family support (OECD, 2023[93]). At the 2022 OECD Employment and Labour Ministerial Meeting, Ministers underlined their commitment to improving the accessibility and responsiveness of employment services to support jobseekers and firms in the transition to greener jobs, and to providing accessible and affordable care systems to reduce gender gaps in employment, pay and career progression (OECD, 2022[94]).

Recent OECD work (Almeida et al., 2024[22]) has mapped the physical accessibility of selected essential services across European OECD countries, documenting substantially lower service accessibility in regions with lower GDP per capita. This work estimated travel times to the nearest service facility for three types of essential services – public employment services (PES), early childhood education and care, and primary education – combining data on the locations of service facilities with population density data and road network information.[1] Regional differences in service accessibility are large and closely related to GDP per capita: in the highest-GDP-per-capita regions of France and Germany, for example, almost all people can reach a PES centre within a 15-minute drive, compared with fewer than 50% in the countries' lowest-GDP-per-capita regions. A similar pattern holds for access to the nearest early childhood education and care facility and primary school within a 15-minute walk.

These disparities partly reflect differences between metropolitan and non-metropolitan regions, but the relationship between service accessibility and GDP per capita holds more broadly. Metropolitan regions have, on average, higher GDP per capita and shorter travel times to the nearest PES facility – largely reflecting greater population density and better transport infrastructure. However, regression analysis confirms a statistically significant positive relationship between service accessibility and GDP per capita even after controlling for a range of regional characteristics, including access to cities, population density, population levels and growth, GDP-per-capita growth, the unemployment rate, and country fixed effects. Across 661 regions in 16 countries, a 10% higher GDP per capita is associated with a 2 p.p. greater share of people able to reach a PES centre within 15 minutes by motor vehicle.

This analysis illustrates that different dimensions of regional disparities can reinforce one another (see also OECD (2025[2])).[2] People in lower-income regions not only face fewer job opportunities and lower household incomes, but also poorer access to the essential services and infrastructure that shape living standards and enable them to seize economic opportunities.[3]

Table 2.1. OLS regression estimates of regional PES accessibility on regional characteristics

	% of people within 15 minutes to nearest PES by motor vehicle			
	(1)	(2)	(3)	(4)
Unemployment rate in 2019 (%)	0.233			0.807***
	(0.307)			(0.253)
Children aged 5 to 9 in 2022 (%)				
GDP p.c. in 2019 (Ln)		23.389***		20.531***
		(2.920)		(4.029)
Annual GDP p.c. growth 2005-2019 (%)		-2.951***		-4.028***
		(0.866)		(0.987)

Total population in 2022 (Ln)			8.744***	0.480
			(0.755)	(1.331)
Annual population growth 2015-2022 (%)			2.325	-7.631***
			(1.467)	(2.021)
Population density in 2022 (Ln)				6.615***
				(1.157)
2. Metropolitan – Medium				-2.797
				(3.153)
3. Non-metropolitan – Medium				-4.510
				(3.838)
4. Non-metropolitan – Small				-3.867
				(4.017)
5. Non-metropolitan – Remote				-9.723**
				(4.557)
Country FE	Yes	Yes	Yes	Yes
Observations	692	922	1 612	661
Number of countries	18	25	32	16
Adjusted R-squared	0.383	0.455	0.546	0.617

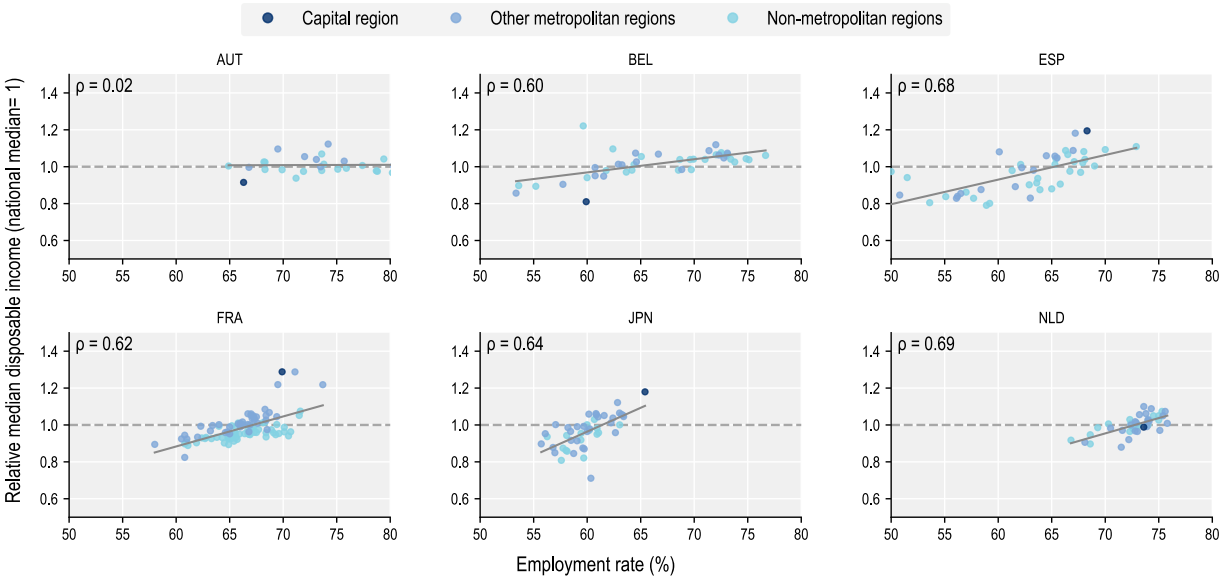
Note: Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1. The number of countries included in the regressions varies across models depending on data availability. Regional observations are weighted by the inverse of the number of regions within a country, such that all countries carry equal weight. GDP per capita and unemployment data are measured in 2019 to avoid potential distortions because of the COVID-19 crisis. The reference category for access to cities is large metropolitan regions.
Source: Almeida et al. (2024[22]), "Geographic inequalities in accessibility of essential services", https://doi.org/10.1787/12bab9fb-en.
1. By focussing on travel times, this analysis captures only the physical accessibility of essential services; it does not account for other dimensions of accessibility, such as capacity, opening hours or quality. Ongoing follow-up work examines competitive accessibility – a combined measure of physical distance and service capacity relative to local demand – for early childhood education and care services and primary education in Estonia and the Netherlands (Almeida et al., 2026[95]).
2. This analysis is not intended to estimate any causal relationship between service accessibility and regional economic activity, which would require a considerably more complex approach. In particular, a standard OLS model cannot account for potential feedback effects running from service accessibility to economic activity.
3. Across OECD countries, PES have made substantial progress in digitalising their services and operations, reducing the need for jobseekers to physically visit a PES centre. However, even in the digital age, physical accessibility may remain important for the provision of inclusive and effective employment support – particularly for more disadvantaged jobseekers, such as those with limited digital skills, people with disabilities, and others who benefit from face-to-face support.

2.2.2. Median incomes are higher in regions where employment rates are higher

Regional median incomes are strongly and positively associated with regional employment rates in many countries, suggesting that regional disparities in labour market outcomes are an important driver of disparities in household incomes. Figure 2.10 illustrates this relationship for a selection of OECD countries with a sufficient number of TL3 regions, plotting regional median disposable household incomes against regional employment rates. For the remaining countries, the correlation coefficient between median incomes and employment rates is again reported in Annex Table 2.E.1. The relationship is strongly positive in most countries for which data on both variables are available, and somewhat stronger overall than the relationship between median incomes and GDP per capita shown in Figure 2.9, Panel B. As with GDP per capita, however, a few countries – Austria being a notable example – display no clear association between regional employment rates and median incomes.

Figure 2.10. Regional median incomes increase with employment rates in most countries

Median disposable household incomes vs. employment rates across TL3 regions, selected countries, 2023 or latest available year



Note: The OECD typology for small (TL3) regions by access to cities classifies regions based on the presence/absence of metropolitan areas and the extent to which the latter is accessible by the population living in each region (Fadic et al., 2019[17]). According to this typology, TL3 regions are classified as "metropolitan" if more than half of their population lives in a Functional Urban Area (FUA) of at least 250 000 inhabitants and as "non-metropolitan" otherwise (OECD, 2024[29]) Capital regions are the TL3 regions that host the capital city of the country. ρ refers to the correlation coefficient between the two plotted variables. The data refer to 2022 for Austria, Belgium and Spain, 2021 for France, 2020 for Australia, and 2019 for Japan. Data for Belgium are for 2022 because this is the last year available with complete employment data at the regional level. In some countries, a small number of regions are excluded from the analysis or aggregated due to data limitations (see Annex Table 2.D.1 for a complete list).

Source: Income distribution indicators collected from national authorities (AUS, AUT, FRA, JPN) and OECD calculations using microdata from administrative records (BEL, ESP). The labour market data are OECD calculations based on the OECD Database on Regions, Cities and Local Areas, https://www.oecd.org/en/topics/regions-cities-and-local-statistics.html (accessed in February 2026) and data collection by the OECD. See Annex Table 2.A.1 for further details.

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The somewhat stronger association of regional median incomes with employment rates than with GDP per capita likely reflects the central role of labour earnings as the primary channel through which regional economic conditions translate into household incomes and, hence, living standards. GDP per capita captures a broader range of economic activity – including the capital intensity of local industries and the value added generated by commuters – that does not necessarily translate into higher incomes for resident households. Regional employment rates, by contrast, directly determine the share of working-age adults with access to labour income, which is the principal source of income for most households and the prime determinant of their living standards. Differences in earnings levels across regions – driven by variation in industry composition, productivity gains associated with agglomeration, skill intensity and local labour market conditions – likely reinforce this relationship further, as implied by the earlier finding that high-value-added jobs are disproportionately concentrated in capital-city regions. Those results are consistent with earlier work on productivity in capital-city regions (OECD, 2024[29]) and the spatial concentration of high-skilled workers in cities (Autor, 2019[96]).

2.2.3. Regional incomes have converged across regions in most countries with available data, reflecting convergence in employment rates

Beyond the cross-sectional disparities in income levels documented above, a key question for policy is whether lagging regions are catching up with more prosperous ones – or falling further behind. Due to data constraints, research on within-country trends in regional disparities has mostly focussed on GDP per capita, painting at best a mixed picture. OECD analysis covering the period starting before the Global Financial Crisis finds that disparities in GDP per capita across regions increased in approximately half of the OECD countries with available data (OECD, 2020[97]; OECD, 2023[1]). The most recent EU Cohesion Report similarly presents mixed evidence, documenting significant convergence in five European OECD countries but divergence in six others (European Commission, 2024[81]). Over a longer time horizon, Ganong and Shoag (2017[5]) show that the long-run convergence of US state incomes – documented for much of the twentieth century by Barro and Sala-i-Martin (1992[39]) – has sharply declined over the past three decades.

The analysis presented in this section points to a somewhat more encouraging picture for median disposable household incomes for the period from around 2010. Across the 19 OECD countries with available time series data, a majority have experienced convergence in regional median disposable household incomes, according to both convergence metrics introduced in Section 2.1 (see Figure 2.11, Panel A). Specifically, σ-convergence – a decline in the relative dispersion of regional median incomes – is observed in 13 out of 19 countries, and β-convergence – catch-up growth by regions with relatively lower median incomes at the start of the observation period – in 15 out of 19 countries. Czechia, Slovenia and Chile experienced the strongest reductions in regional dispersion, with their coefficients of variation declining by more than 20%, driven in all cases by rapid catch-up growth in lower-income regions. The Slovak Republic recorded the most rapid catch-up of all countries but a comparatively slower decline in the overall dispersion of regional median incomes.

Divergence in regional incomes across both measures was confined to a small number of countries. The most notable cases are Lithuania, where the relative dispersion of regional median incomes nearly doubled over the observation period, as well as Sweden and Costa Rica, where it rose by about 23% and 12%, respectively. In these countries, the widening of regional income dispersion reflects a combination of rapid income growth in the top-income capital regions Vilnius, Stockholm and Central, combined with slower-than-average growth in many regions that were lagging at the start of the period.[11]

While these results point to relatively broad convergence in regional incomes since 2010, the magnitude of this convergence is modest in most countries. This is particularly noteworthy given that the observation period coincides with a sustained expansion in employment across most OECD countries, which might have been expected to compress regional income disparities more substantially. That said, the results shown in Figure 2.11 likely understate real convergence in living standards, because the analysis corrects for *national-level* changes in prices, but not for differential changes in price levels *across regions*. If regional prices levels – and housing costs in particular – have risen more rapidly in higher-income regions, as suggested, for example, by previous work on Germany (Ahrend and Lembcke, 2016[98]) and the United States (Hsieh and Moretti, 2019[99]; Fraisse and Pionnier, 2020[100]; Hornbeck and Moretti, 2024[101]), then convergence in living standards was stronger than suggested by Figure 2.11.

Patterns of regional income convergence closely mirror those of convergence in employment rates (Figure 2.11, Panel B), reinforcing the finding of the previous subsection that employment is central to narrowing regional divides in household incomes. This close association is reflected in a relatively high correlation coefficient ρ of 0.67. Most countries are clustered in bottom-left quadrant: 10 out of the 14 countries that saw a narrowing in the dispersion of regional employment rates also saw regional income dispersion decline; in all 3 countries where regional disparities in employment rates widened, this was associated with a simultaneous increase in regional income disparities (top-right quadrant). However, the relationship is less than one-for-one: the slope of the line of best fit is much flatter than the 45-degree line,

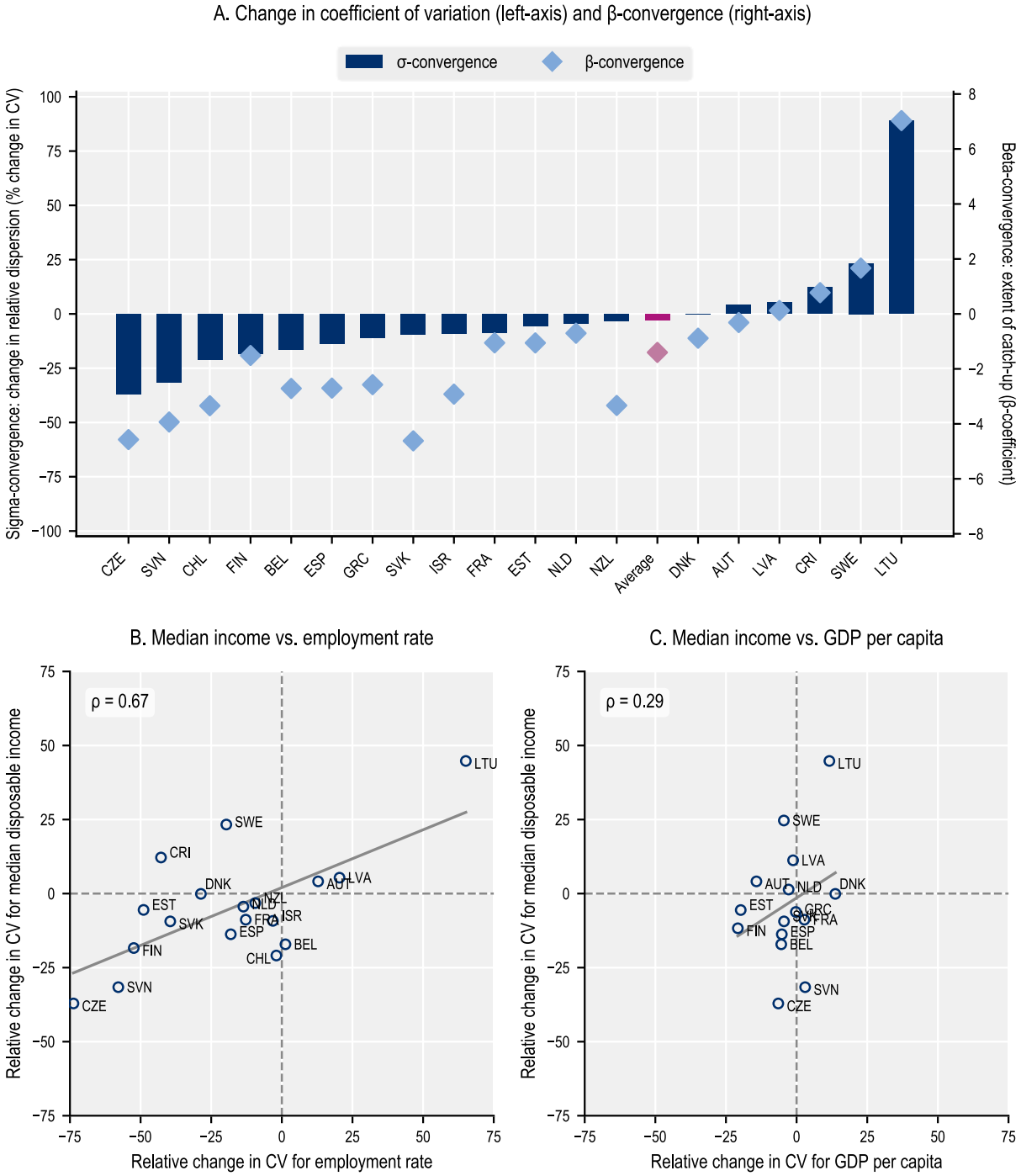
suggesting that convergence in employment rates translates only partially into convergence in median incomes. This may reflect disparities in the type of jobs created in lower- versus higher-income regions, as well as the equalising effects of redistributive tax and transfer systems. Sweden stands out as an outlier: while the dispersion in regional employment rates declined, regional income dispersion substantially widened. This reflects a similarly-sized divergence in *market* incomes, i.e. household incomes *before* taxes and transfers – with particularly rapid growth in Stockholm and slower-than-average growth in most other regions – which more than offset the equalising effect of employment convergence. This pattern is likely related to the marked increase in overall income inequality in Sweden over the same period, with an increase in the Gini coefficient by 2.5 points, or approximately 10%, attributed in part to the welfare state cutbacks and consequent declines in redistribution (Causa and Hermansen, 2017[102]; Søgaard et al., 2018[103]).

Patterns of regional income convergence also align broadly with corresponding trends in the dispersion of GDP per capita over the same period, though the relationship is considerably weaker (Figure 2.11, Panel C), with a correlation coefficient ρ of just 0.29. Most countries that experienced a decline in the dispersion of regional GDP per capita also saw a reduction in the dispersion of regional median incomes, as shown by the cluster of countries in the bottom-left quadrant of Figure 2.11, Panel C. At the other end of the spectrum, Lithuania, which experienced the greatest divergence in regional median incomes, also saw divergence in regional GDP per capita (top-right quadrant). For several countries, however, the two convergence patterns do not align: Austria, Latvia, the Netherlands and Sweden all combine regional income divergence with convergence in GDP per capita – placing them in the top-left quadrant – while France and Slovenia show the opposite pattern. This weak and imperfect relationship is consistent with the earlier finding that the regional dispersion of GDP per capita and of median disposable household incomes are not always strongly correlated in the cross-section (Figure 2.9). Trends in the dispersion of regional GDP per capita should therefore not be interpreted as a reliable proxy for changes in household incomes or living standards.

An important limitation of the analysis presented in this section is that the finding of relatively broad, if modest, income convergence may not necessarily generalise beyond the countries covered here. The analysis focusses on 19 OECD countries for which time series data on regional median disposable household incomes could be collected; the correlation of convergence trends in median incomes and GDP per capita in Figure 2.11, Panel C draws on a more restricted sample of 15 countries for which also comparable time series on regional GDP per capita are available. These country samples may not be representative of trends across OECD countries more broadly. Indeed, earlier OECD analysis (OECD, 2020[97]; OECD, 2023[1]) had documented growing disparities in GDP per capita since before the Global Financial Crisis in a number of countries not covered in the present analysis for lack of comparable regional income data – such as in Poland, the United Kingdom and the United States.

Figure 2.11. Median incomes have converged across regions since 2010 in most countries, and convergence in incomes closely aligns with convergence in employment rates

Sigma- (left-axis) and Beta-convergence (right-axis) in median disposable incomes (Panel A) and the relationship between the relative change in the coefficient of variation for median disposable income vs. employment rate (Panel B) and vs. GDP per capita (Panel C), TL3 regions, 2010 to 2024 or closest available years



Note: In all calculations, regions were weighted by their population. The cross-country average in Panel A is unweighted. In Panel A, change in dispersion relative to the mean (σ-convergence) is expressed as the percentage change in the coefficient of variation; the extent of catch-up (β-convergence) is captured by the β-coefficient of a linear regression of annual growth in median incomes on initial income levels. ρ refers to the correlation coefficient between the two plotted variables. For Belgium, Finland, Latvia and the Netherlands, the values shown in Panels B and/or C deviate from those shown in Panel A because of the shorter availability of employment and GDP data for these countries. In some countries, a small number of regions are excluded from the analysis or aggregated due to data limitations (see Annex Table 2.D.1 for a complete list).
Source: Income distribution indicators collected from national authorities (AUT, CRI, DNK, FIN, FRA, LVA, NLD, NZL, SVN, SWE) and OECD calculations using microdata from administrative records (BEL, ESP, EST, GRC), the LIS database (CZE, ISR, LTU, SVK), and CASEN (CHL). The labour market data are OECD calculations based on the OECD Database on Regions, Cities and Local Areas, https://www.oecd.org/en/topics/regions-cities-and-local-statistics.html (accessed in February 2026) and data collection by the OECD.

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2.2.4. Capital regions are marked by both higher incomes and greater inequality, but more broadly there is no clear link between regional income levels and inequality

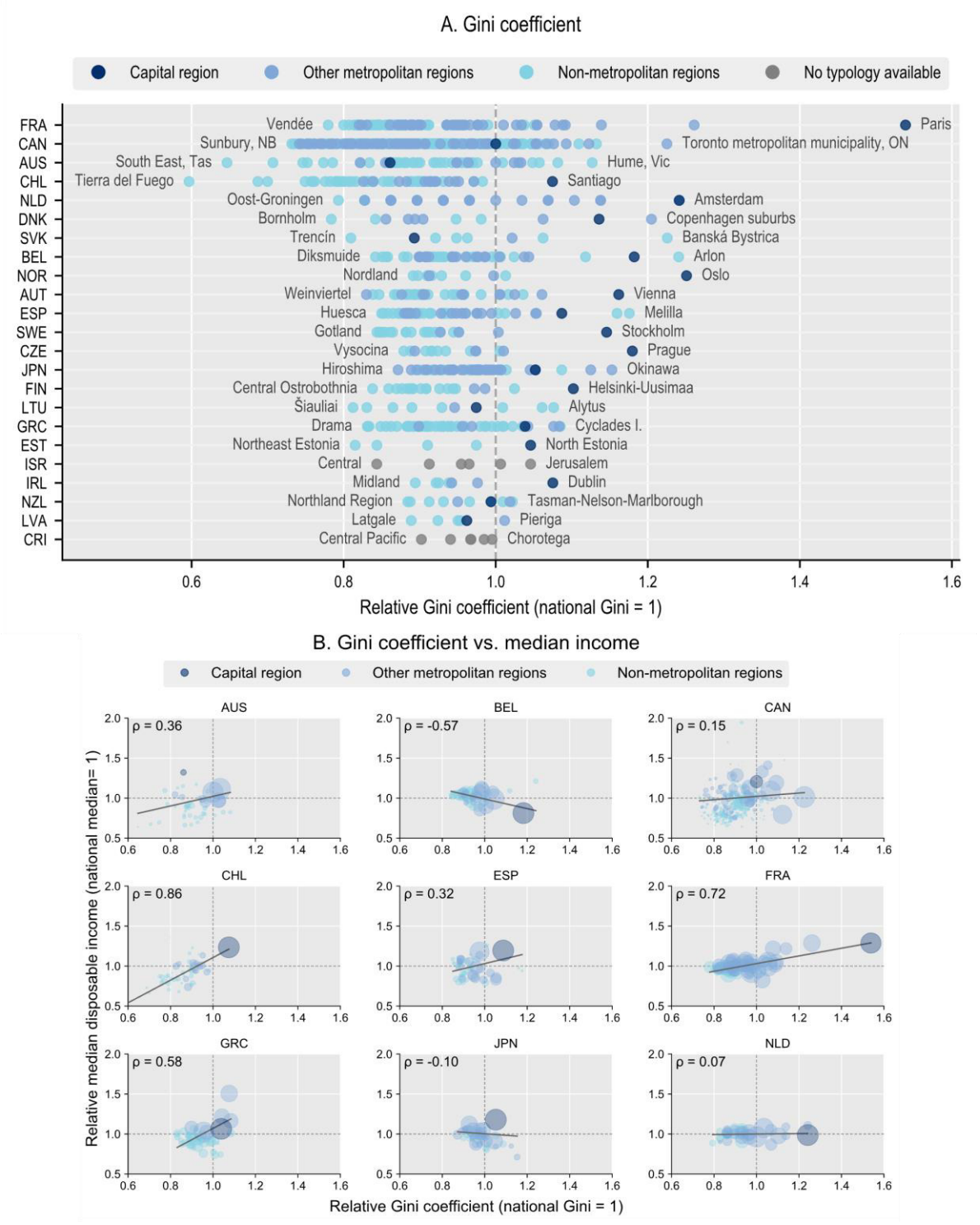
The preceding subsection showed that regional income convergence closely relates to convergence in employment rates, but that the relationship is less than one-for-one. This suggests that differences in the type and quality of jobs across regions, including the concentration of high-value-added employment in capital regions documented in Section 2.1.3, matter alongside differences in employment levels. This section examines a further dimension of regional income disparities that employment rates and median incomes alone cannot capture: the distribution of incomes *across households within regions*. Indeed, one of the advantages of using administrative or survey microdata rather than regional accounts to study regional income disparities is precisely that these data can shed light on income inequalities *within regions*, alongside differences in income levels across regions. This can provide further evidence on the role of spatial sorting for both regional income levels and within-region inequalities, and helps linking regional income disparities and overall inequalities in household incomes.

Within-region income inequality, as measured by the regional Gini coefficient expressed relative to the national Gini, varies across countries to a similar degree as the dispersion in median incomes documented earlier. In many OECD countries, the Gini in the most unequal region is around 10-30% higher than national-level Gini, while the least unequal regions typically record inequality levels around 10-20% below the national value (Figure 2.12, Panel A). Capital regions are often the most unequal, while the least unequal regions are nearly always non-metropolitan. Cross-country differences in regional disparities in income inequality align only partially with earlier evidence produced at TL2 level (OECD, 2022[104]), and some countries with many TL3 regions, such as Canada, show considerably greater heterogeneity in the more granular data.

There is no universal relationship between a region's income level and the degree of within-region inequality across the countries with available data. That said, a positive relationship – whereby higher-income regions tend to have more unequal income distributions – is the most common pattern. This is the case, for example, in Chile, France, Spain and Sweden, where the most populous regions often combine high income levels with high inequality (Figure 2.12, Panel B). This pattern holds also in most countries (11 out of 14) with a smaller number of regions, for which the correlation coefficient is again reported in Annex Table 2.E.1, though in these cases the relationship is more likely to be driven by outliers. The reverse relationship holds in Austria and Belgium, where the capital regions of Vienna and Brussels record low median incomes alongside relatively high inequality; as described earlier, these low median incomes partly reflect the fact that the Vienna and Brussels Functional Urban Areas stretch over several small regions, with the higher-income suburbs falling into regions neighbouring the capital region.[12] No systematic relationship is apparent in the Netherlands and in Japan, where median income and inequality levels do not differ consistently between metropolitan and non-metropolitan regions.

Figure 2.12. Within-region income inequality also varies widely and, in many countries, is greater in higher-income regions

Gini coefficient for disposable incomes (Panel A) and its relationship with median disposable incomes in selected OECD countries (Panel B), TL3 regions, 2024 or latest available year



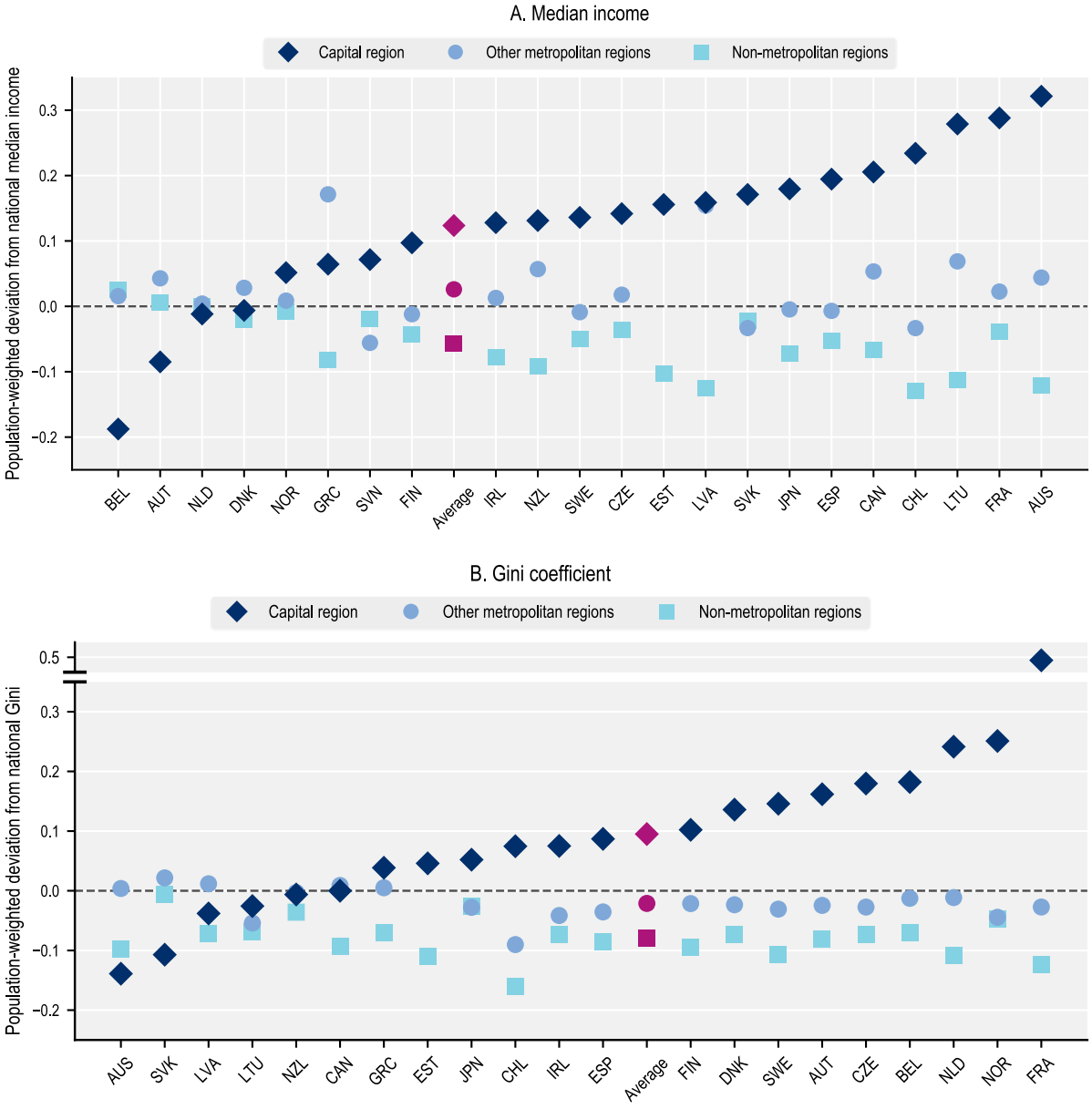
Note: The OECD typology for small (TL3) regions by access to cities classifies regions based on the presence/absence of metropolitan areas and the extent to which the latter is accessible by the population living in each region (Fadic et al., 2019[17]). According to this typology, TL3 regions are classified as "metropolitan" if more than half of their population lives in a Functional Urban Area (FUA) of at least 250 000 inhabitants and as "non-metropolitan" otherwise (OECD, 2024[29]). Capital regions are the TL3 regions that host the capital city of the country. In Greece, where Athens is subdivided into several TL3 regions, Central Athens is chosen as the capital region. No typology of regions by access to cities is available for Costa Rica and Israel. Panel A plots the Gini coefficient for every region expressed relative to the national-level value. For the Netherlands, the circles for multiple regions perfectly overlap because they are based on rounded values of the regional Gini. Panel B plots, for selected countries, each region's median disposable income and Gini coefficient, expressed relative to the national-level value, with each region's bubble size being proportional to the region's population. ρ refers to the population-weighted correlation coefficient between the two plotted variables. The line of linear best fit is based on a population-weighted regression. In some countries, a small number of regions are excluded from the analysis or aggregated due to data limitations (see Annex Table 2.D.1 for a complete list).
Source: Income distribution indicators collected from national authorities (AUS, AUT, CAN, CRI, DNK, FIN, FRA, IRL, JPN, LVA, NLD, NOR, NZL, SWE), and OECD calculations using microdata from administrative records (BEL, ESP, EST, GRC), the LIS database (CZE, ISR, LTU, SVK), and CASEN (CHL).

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Capital regions stand out, on average, for both their higher income levels and greater income inequality relative to the rest of the country. In most countries (15 out of 22), they record median incomes at least 10% above the national median, but the gap is much larger than that in countries such as Australia, France, Lithuania and Chile (Figure 2.13, Panel A).[13] These results are consistent with the metropolitan/non-metropolitan gap in disposable income per capita in regional accounts data (OECD, 2024[29]). Belgium and Austria are again the main exceptions: in both countries, the capital region records median incomes substantially below the national median and those of other region types. In most countries, the higher median incomes in capital regions coincide with substantially higher income inequality (Figure 2.13, Panel B), often reflecting large disparities between urban centres and their surrounding commuting zones (OECD, 2024[29]). Notable exceptions are Australia and the Slovak Republic – where Canberra and Bratislava combine a very high median incomes with low inequality. Beyond the capital, metropolitan regions record median incomes and inequality levels broadly in line with the national values, while non-metropolitan areas have both lower median incomes and inequality. These averages conceal substantial variation within both groups, however, as illustrated in Figure 2.12, and consistent with earlier work on income inequalities within Functional Urban Areas (Boulant, Brezzi and Veneri, 2016[105]).

Figure 2.13. Capital regions record, on average, higher median incomes and higher inequality

Regional median disposable incomes (Panel A) and Gini coefficients (Panel B) averaged across metropolitan and non-metropolitan TL3 regions, 2024 or latest available year



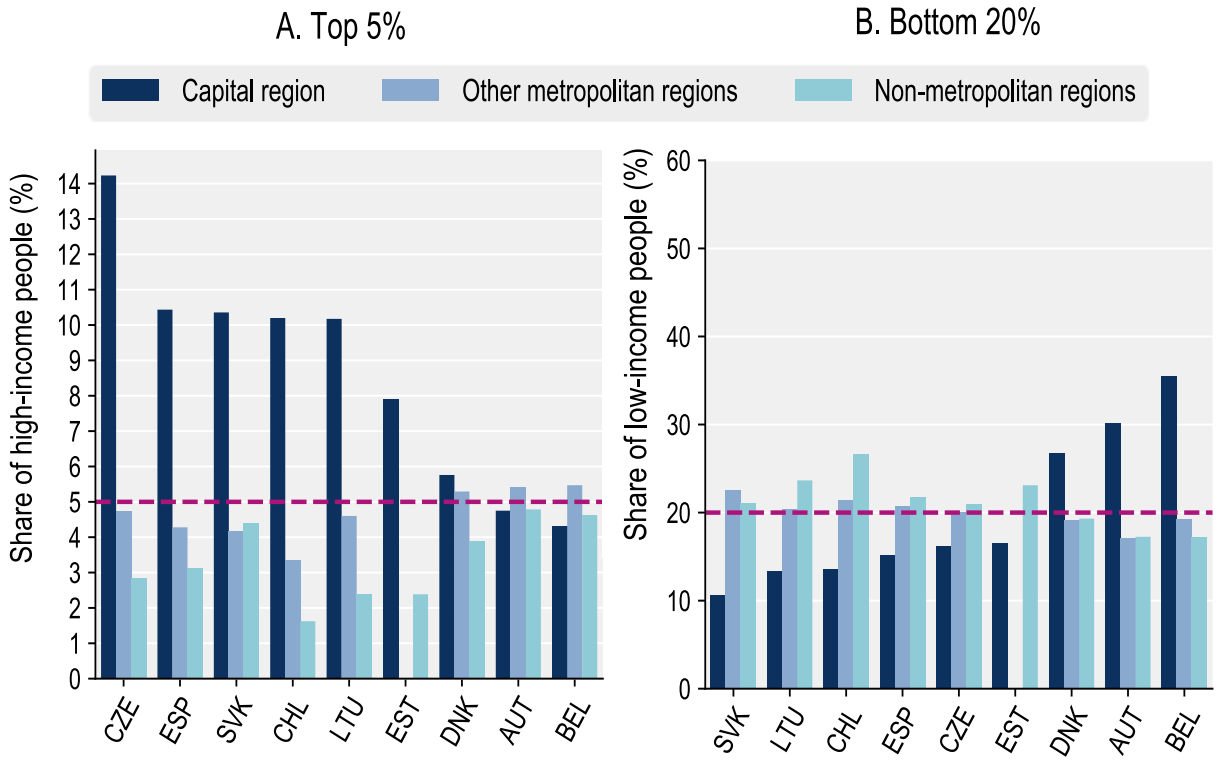
Note: The OECD typology for small (TL3) regions by access to cities classifies regions based on the presence/absence of metropolitan areas and the extent to which the latter is accessible by the population living in each region (Fadic et al., 2019[17]). According to this typology, TL3 regions are classified as "metropolitan" if more than half of their population lives in a Functional Urban Area (FUA) of at least 250 000 inhabitants and as "non-metropolitan" otherwise (OECD, 2024[29]). Capital regions are the TL3 regions that host the capital city of the country. In Greece, where Athens is subdivided into several TL3 regions, Central Athens is chosen as the capital region. No typology of regions by access to cities is available for Costa Rica and Israel, which are therefore excluded from both charts. In Panels A and B, the average median income and Gini coefficient were computed as the population-weighted averages for capital regions, other metropolitan regions, and non-metropolitan regions, expressed as percentage deviations from the national-level value. Cross-country averages are unweighted. In Estonia, the capital region is the only metropolitan region. In some countries, a small number of regions are excluded from the analysis or aggregated due to data limitations (see Annex Table 2.D.1 for a complete list). "Average" gives the unweighted average across OECD countries.
Source: Income distribution indicators collected from national authorities (AUS, AUT, CAN, DNK, FIN, FRA, IRL, JPN, LVA, NLD, NOR, NZL, SVN, SWE) and OECD calculations using microdata from administrative records (BEL, ESP, EST, GRC), the LIS database (CZE, LTU, SVK), and CASEN (CHL).

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The higher inequality in capital regions reflects the concentration of high-income households. In most countries with available data, households in the top 5% of the income distribution are significantly overrepresented in capital regions relative to both other metropolitan and non-metropolitan regions (Figure 2.14). Exceptions are once more Austria and Belgium, where, as highlighted earlier, the capital region is surrounded by affluent suburban regions. The distribution of low-income households, defined here as those in the bottom 20% of the distribution, follows a similar but less pronounced pattern: in most countries, low-income households are underrepresented in capital regions and overrepresented in non-metropolitan regions. Austria and Belgium, as well as Denmark, are again exceptions.

Figure 2.14. High-income households are overrepresented and lower-income households are underrepresented in capital regions

Share of the population who are in the top 5% (Panel A) and the bottom 20% (Panel B) of the income distribution, by type of region, 2024 or latest year available



Note: The OECD typology for small (TL3) regions by access to cities classifies regions based on the presence/absence of metropolitan areas and the extent to which the latter is accessible by the population living in each region (Fadic et al., 2019[17]). According to this typology, TL3 regions are classified as "metropolitan" if more than half of their population lives in a Functional Urban Area (FUA) of at least 250 000 inhabitants and as "non-metropolitan" otherwise (OECD, 2024[29]).Capital regions are the TL3 regions that host the capital city of the country. In Estonia, the capital region is the only metropolitan region. In some countries, a small number of regions are excluded from the analysis or aggregated due to data limitations (see Annex Table 2.D.1 for a complete list).

Source: OECD calculations using microdata from administrative records (AUT, BEL, ESP, EST), the LIS database (CZE, DNK, LTU, SVK), and CASEN (CHL).

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2.2.5. Most household income inequality occurs within regions, not between them

While the regional disparities documented in this chapter are substantial in several countries, a useful way of putting them in perspective is to assess how much they contribute to overall inequality in household incomes. A standard way of doing so is to decompose aggregate income inequality into the part reflecting differences in average incomes *between* regions and the part due to income differences *across households within* regions. The Gini index – the most widely used measure of income inequality, and the one used earlier in this chapter to characterise within-region income distributions – cannot be cleanly decomposed in this way, as doing so produces a residual interaction term that cannot be attributed to either component. Alternative, commonly used inequality measures from the generalised entropy family, such as the Theil index and the Mean Logarithmic Deviation, do not suffer from this limitation and can be additively decomposed into between- and within-region components (Bourguignon, 1979[106]; Shorrocks, 1980[107]). Box 2.6 sets out the technical details of the Theil index decomposition used in this subsection.

Box 2.6. Decomposing overall household income inequality into *between*- and *within*-region components

One standard approach to evaluating the contribution of regional disparities to overall income inequality is to decompose the Theil index – one of the most widely used measures of income inequality alongside the Gini coefficient – into its *between*- and *within*-region components.

The Theil index is defined as:

$$\mathrm{T} = \sum_r \sum_i \left(\frac{y_{ri}}{Y}\right) ln\left(\frac{y_{ri}/Y}{n_{ri}/N}\right),$$

where y_{ri} is the income of household *i* residing in region *r*, and the ratios y_{ri}/Y and n_{ri}/N give the income and population of household *i* as shares of total national income *Y* and total population *N*.

This index can be decomposed as $\mathrm{T}_{Total} = \mathrm{T}_{Between} + \mathrm{T}_{Within}$, where:

$$\mathrm{T}_{Between} = \sum_r \left(\frac{Y_r}{Y}\right) ln\left(\frac{Y_r/Y}{N_r/N}\right)$$

is the between-region Theil index, with Y_r denoting the total income of region *r*, and the ratios Y_r/Y and N_r/N giving the income and population of region *r* as shares of national totals; and.

$$\mathrm{T}_{Within} = \sum_r \left(\frac{Y_r}{Y}\right) \mathrm{T}_r$$

is the within-region component, defined as an income-weighted average of the Theil indices computed across households within each region *r*, with $\mathrm{T}_r = \sum_{i \in r} \left(\frac{y_{ri}}{Y_r}\right) ln\left(\frac{y_{ri}/Y_r}{n_{ri}/N_r}\right)$.

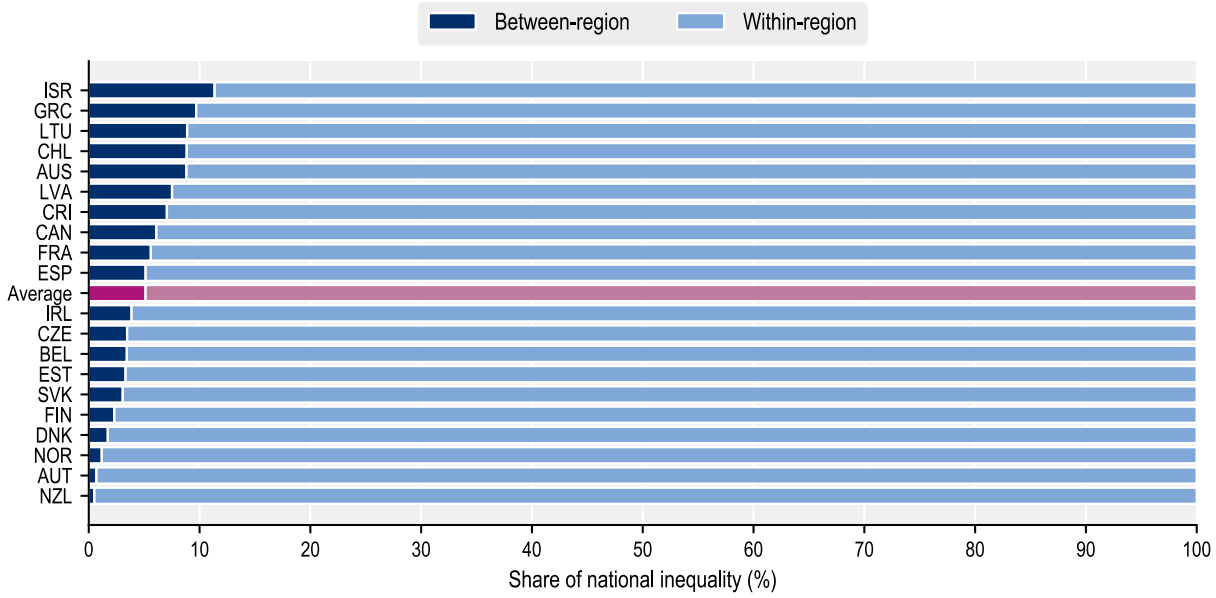
The analysis covers a selection of 20 countries for which Theil indices could be constructed at the TL3 level.

This decomposition shows that regional disparities account for only a small share of overall inequality in disposable household incomes. Across OECD countries with available data, differences in average incomes between regions explain, on average, about 5% of total household income inequality – the remaining 95% reflect differences in incomes across households living within the same region (Figure 2.15).[14] The between-region share is largest in countries characterised by wide regional disparities in median incomes, such as Israel, Greece, Lithuania, Chile and Australia (see Figure 2.9); even in Israel though – the only country

where the between-region share exceeds 10% – the within-region component remains dominant by a wide margin. At the other end of the spectrum, the between-region share is negligible in New Zealand, Austria, Norway, Denmark and Finland, where it amounts to just 1-3% of total inequality.

Figure 2.15. Between-region differences account for only a fraction of overall household income inequality

Share of overall household income inequality that results from *between*- vs. *within*-region inequalities, TL3 regions, 2024 or latest year available



Note: The number of countries represented in this figure is smaller than for some earlier figures because data on the Theil index were not available for all countries. In some countries, a small number of regions in some countries are excluded from the analysis or aggregated due to data limitations (see Annex Table 2.D.1 for a complete list). "Average" gives the unweighted average across OECD countries.
Source: Income distribution indicators collected from national authorities (AUS, AUT, CAN, CRI, FIN, FRA, IRL, LTU, LVA, NOR, NZL) and OECD calculations using microdata from administrative records (BEL, ESP, EST, GRC), the LIS database (CZE, DNK, ISR, SVK) and CASEN (CHL).

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This finding is consistent with a longer stream of work on the decomposition of income inequality into between- and within-region components (Shorrocks and Wan, 2005[108]; Novotný, 2007[109]; Carrascal-Incera et al., 2020[110]), though most earlier studies focussed on GDP per capita and/or larger geographic units.[15] In his study of regional disparities in household disposable income across OECD countries, Piacentini (2014[76]) finds that between-TL2-region differences account for between 1% and 6% of overall income inequality across eight European countries with available data. A study exploiting more granular data for Chile attributes 5.6% of overall disposable income inequality to variation between TL2-level regions, a further 2.2% to variation between TL3-level provinces, and 9% to variation between local communities – with the remaining 83% reflecting income differences across households within the same community (Paredes, Iturra and Lufin, 2014[111]). Together, these results suggest that the geographic contribution to income inequality increases as the unit of analysis becomes more granular, but that within-area inequality across households remains dominant at every level of aggregation. Comparable results emerge for labour earnings, with Bauluz et al. (2024[40]) finding that between 2% and 8% of national wage inequality across five OECD countries can be explained by differences in mean wages across local labour markets. A cross-country perspective reinforces this picture: Blanchet, Chancel and Gethin

(2022[112]) use a Theil decomposition to show that only around 3% of pre-tax income inequality in the United States is attributable to variation between states – while in Europe, 17% of pre-tax income inequality reflects variation between countries, rather than within them.

However, the small contribution of between-region income variation to overall inequality should not be read as evidence that place of residence does not matter. It reflects, first and foremost, the fact that any regional aggregation will group together households with widely varying incomes and living standards, and that these within-region differences strongly dominate differences in average incomes across regions. This is illustrated in Annex Figure 2.E.3, which plots the distribution of disposable household incomes across TL3 regions in Belgium and Estonia drawing on administrative microdata. Median disposable household incomes vary considerably across regions in both countries – from 81% of the national median in Belgium's lowest-income region of Brussels to 121% in the highest-income region of Arlon, and from 75% in Northeast Estonia to 116% in North Estonia. Yet this variation is dwarfed by the spread of incomes within each region, as shown by the 10th and 90th percentile markers – the regional income distributions overlap strongly as a result. The evidence from Chile cited above (Paredes, Iturra and Lufin, 2014[111]) further suggests that part of this within-TL3-region variation reflects income differences between local communities, implying that the contribution of geographic disparities to overall income inequality may be larger when more granular spatial units are considered. OECD calculations for two countries for which local-level Theil indices could be collected also suggest this is the case: for Austria and Finland, the between-territorial component increases, respectively, from 0.7% to 2.3% and from 2.3% to 3.8% when moving from the TL3 to the LAU level (OECD, forthcoming[20]), underlining the importance of fine-grained data collection for accurately measuring people's living conditions.

Moreover, this decomposition analysis provides only a snapshot of spatial inequalities, overlooking how regional disparities shape people's income trajectories over time. Even in countries where regional gaps in median incomes are relatively modest, residents of low-income regions experience more limited economic opportunities. Compounded over the course of their lives, these constraints translate into weaker prospects for upward mobility and greater exposure to downward mobility. The following section turns to this dynamic dimension.

2.3. Moving up the ladder: Regional disparities in people's income mobility

As documented earlier in this chapter, higher regional income levels are closely linked to greater employment opportunities (see Figure 2.10). Previous research using GDP per capita as a proxy for incomes finds that low-income regions also face multiple reinforcing disadvantages along other dimensions, including lesser accessibility of essential services (see Box 2.5), poorer infrastructure and weaker institutions (Charron, Dijkstra and Lapuente, 2014[113]; OECD, 2023[1]; OECD, 2024[29]; OECD, 2025[2]). Low rates of inter-regional mobility documented earlier in this chapter (see Figure 2.6) imply that workers are unlikely to relocate in search of better prospects. The more limited economic opportunities in lower-income regions may therefore imply less scope for income progression for people living in those regions.

This section provides evidence on these regional disparities in income mobility for a selection of countries drawing on a new OECD infrastructure for the study of income dynamics (see details in Annex 2.C). This infrastructure leverages matched tax and other administrative records that track the entire population – or large samples of it – over time, making it possible to observe people's income and place of residence over longer time periods. The analysis builds on previous OECD work using this infrastructure that studied income mobility at the national level (Königs and Terrero-Dávila, 2025[114]), and represents the first cross-country analysis of mobility in disposable incomes over the life course at TL3 level. The analysis complements previous evidence highlighting the role of place in shaping income mobility *across generations* (OECD, 2025[2]; Chetty et al., 2026[115]).

People in low-income regions experience, on average, weaker upward income mobility over the life course than those in high-income regions, reflecting inequalities in opportunity across places. To illustrate this, the analysis tracks the income dynamics of low-income working-age individuals over a six-year period. The analysis focusses on people around the 15th percentile of the national income distribution who remain in the same region throughout. This allows comparing low-income earners with the same starting income who are continuously exposed to different local conditions.[16] Given the limited inter-regional mobility in OECD countries (Figure 2.6), however, results do not change substantially when movers are included.

Among these low-income earners, people living in *low-income regions* – defined as regions in the bottom quintile of regional median incomes – experience both lower *relative* and *absolute* income mobility. In particular, they:

- *Advance less, on average, in their country's income distribution*. For example, in Finland, low-income earners living in low-income regions move up, on average, 10 percentiles over six years, while their counterparts living in the capital region of *Helsinki-Uusimaa* advance by 17 percentiles on average (Figure 2.16, Panel A). The gap between people living in low- and high-income regions is large also in Estonia and Spain, relatively smaller in Norway, and minimal in Canada. Mean advancement in the income distribution is a frequently used measure of relative mobility (Loisel and Sicsic, 2024[116]; Chetty et al., 2014[83]).[17]
- *Face a greater risk of stagnating living standards*. In most countries, the share of people experiencing no real income growth over six years is also higher for those living in low-income regions (Figure 2.16, Panel B). In Belgium, for example, 31% of low-income earners living in *La Louvière*, a low-income region in Wallonia, experience no income growth after adjusting for inflation, compared to 22% in the high-income Flemish region of *Roeselare*. Regional disparities are narrower in Nordic countries and Austria.

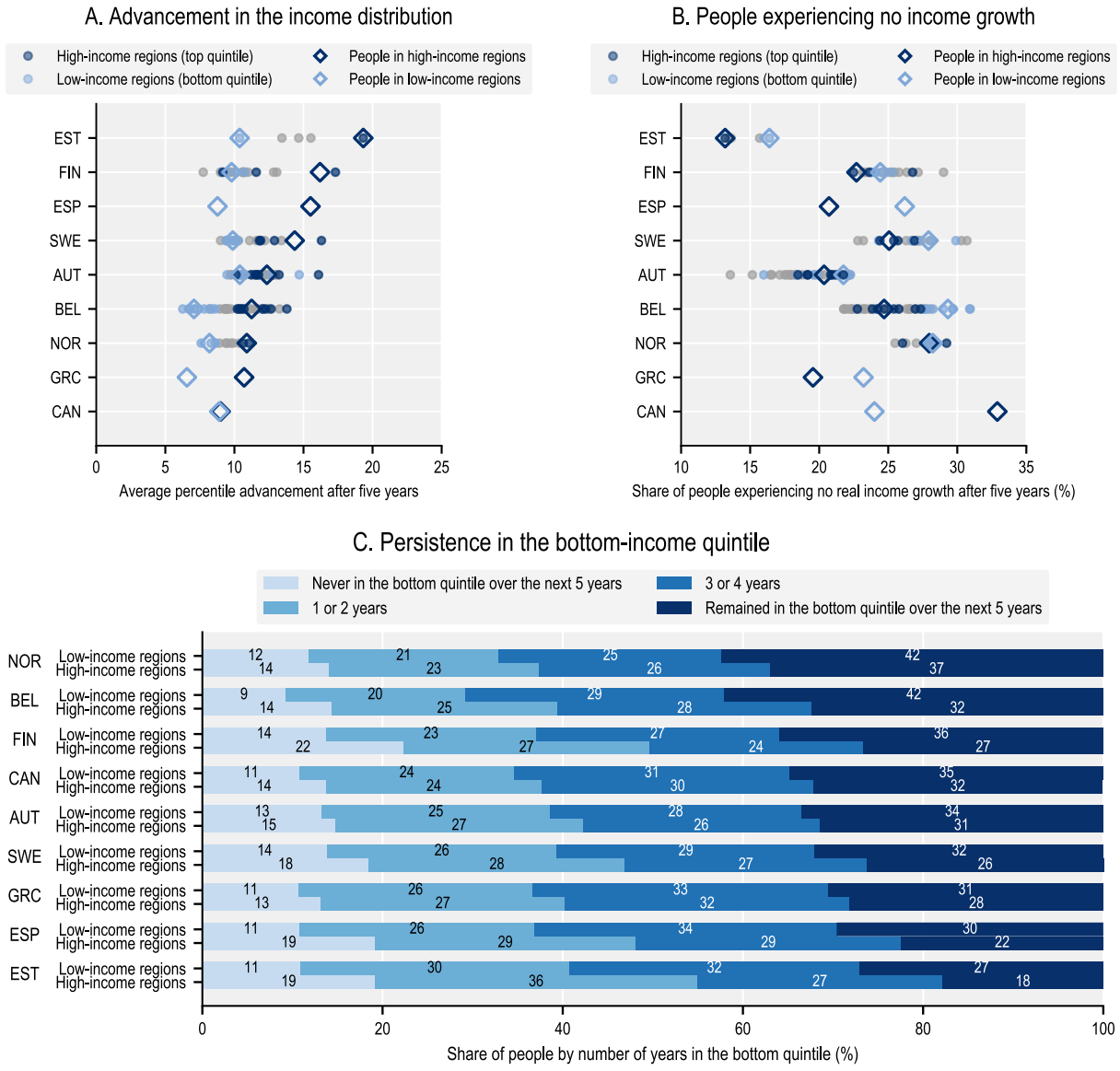
As a consequence, there is also *greater persistence on lower incomes* in low-income regions. In all countries with available data, people at the bottom of the income distribution who live in low-income regions tend to remain on low incomes for longer, while those in high-income regions experience shorter low-income spells (Figure 2.16, Panel C). Overall, persistence at the bottom of the distribution over six years is greatest in Norway (42% in low-income regions and 37% in high-income regions), and lowest in Estonia (27% vs. 18%).

Weaker upward mobility in low-income regions may partly reflect the characteristics of the people living in those regions, for example if they are older or have lower levels of educational attainment. However, there is strong evidence that regional disparities in resident characteristics are not the main driver of differential income mobility patterns. Previous OECD work for Belgium (OECD, 2025[2]) using the same administrative microdata finds persistent regional differences in income mobility even after accounting for individual characteristics, a finding in line with earlier research from the United States using a similar methodology (Auten and Gee, 2009[117]). Instead, the results suggest that the more limited economic and labour market opportunities in lower-income regions (see Section 2.1) translate into fewer opportunities for income progression and, hence, permanently lower living standards over the life course.

People in economically less dynamic regions are also more exposed to risks of downward mobility, including job loss. In past recessions, regions with a lower employment share in low-productivity sectors (Di Caro, 2014[118]; Crescenzi, Luca and Milio, 2016[119]) and less dynamic labour markets (Fratesi and Rodríguez-Pose, 2016[36]) suffered greater employment loses. Research also shows that workers in low-employment regions face a higher risk of job displacement (Bilal, 2023[4]). For those who do lose their jobs, higher initial unemployment and fewer high-productivity firms in the local labour market are associated with longer unemployment spells and deeper, more persistent earnings losses (Jacobson, Lalonde and Sullivan, 1993[120]; Athey et al., 2024[121]) – see also Chapter 3.

Figure 2.16. Low-income regions offer less opportunity for upward income mobility

Mobility outcomes over the following five years for people initially in the 15th percentile of the national income distribution, TL3 regions, 2017 to 2022



Note: Calculations are for working-age individuals (25-54 in the initial year) between the 13th and 17th percentile of the national distribution of equivalised disposable household income. In Panel C, quintiles also refer to the national income distribution. High-income regions are those in the top quintile of median disposable household incomes in 2017, the starting year of the mobility window, or the closest available year; low-income regions are those in bottom quintile. The diamonds capture population-weighted averages of both groups. Because data for Canada, Greece and Spain are drawn from population samples, regions in those countries have been aggregated into two broader income categories to mitigate representativeness concerns. In some countries, a small number of regions is excluded from the analysis or aggregated due to data limitations (see Annex Table 2.D.1 for a complete list).

Source: OECD calculations based on in-house administrative income data (AUT, BEL, EST, ESP) and tabulations provided by national authorities (CAN, FIN, GRC, NOR, SWE). See Annex 2.C for further details on the data.

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2.4. Concluding remarks

Persistent regional inequalities carry large economic and societal costs. They can make economies less resilient and leave growth potential in lagging regions untapped. Among residents of lagging regions, the perception of being economically left behind can erode social cohesion and undermine trust in democratic and economic institutions.

Documenting these inequalities at a granular level requires data that go beyond what labour force and household surveys in many countries can offer. While survey data remain the backbone of the labour market analysis in this chapter, the analysis of household incomes and income mobility draws on register-based microdata – illustrating the vast potential of such data for cross-country analysis in this area. Administrative microdata on employment and earnings trajectories and firm characteristics have become central to OECD work on labour market dynamics, job mobility and productivity under the LinkEED 2.0 project,[18] one output of which is Chapter 3 of this *Employment Outlook* on the impact of structural change on local labour markets. The analysis in this chapter demonstrates that such data are an equally powerful resource for cross-country analysis of income inequality and mobility – a development made possible by progress in many OECD countries in linking administrative records from various sources and making them available for research and policy analysis. Compared to most surveys, their much larger number of observations enables granular analysis across segments of the income distribution, socio-demographic groups and geographic locations; their longitudinal dimension allows tracking individuals and households over extended periods of time. Together, these features offer considerable potential for future cross-country work on income trajectories, the role of the household and of social protection systems in cushioning income shocks, and the factors shaping living standards over the life course.

Using these different sources of data, this chapter has documented substantial regional disparities in labour market outcomes and in the distribution of household incomes across many OECD countries. It has shown that people's labour market prospects are shaped by where they live, and that regional disparities in employment translate into disparities in household incomes and, hence, differences in living standards. While differences in average incomes across regions account for only a fraction of overall household-level income inequality at any given point in time, the chapter has also shown that income mobility is less favourable in lower-income regions. This implies that the reduced economic opportunities associated with living in a region with a weaker labour market, lower economic dynamism, and more limited access to essential infrastructure and services can accumulate over the life course, translating into persistently lower living standards.

These findings underscore the importance of place-based policies in ensuring that people can access labour market and economic opportunities regardless of where they live. Such policies can reduce the spatial mismatch between workers and firms, align the supply of skills and labour with local demand, improve regional infrastructure and services, and help regions adapt to structural shifts with unequal territorial impact. The OECD has produced essential evidence on the geographic labour market impact of megatrends, such as automation (OECD, 2018[26]), transitions towards low-carbon economies (OECD, 2023[27]), the rise of Generative AI (OECD, 2024[28]) and the demographic transition (OECD, 2025[122]). The recent report *Place-based Policies for the Future* synthesises existing evidence on the design and evaluation of place-based interventions (OECD, 2025[13]); the *OECD Recommendation on Regional Development Policy* and its accompanying implementation toolkit (OECD, 2023[12]) set out guiding principles for broader regional development policies, covering capacity-building, multi-level governance, and the role of regional and local taxes, fiscal transfers and equalisation mechanisms in reducing regional disparities. These policies are an essential complement to national-level policies that aim at developing people's skills and employability, raising productivity and wages, and ensuring adequate social protection and effective redistribution – see also Chapter 3.

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Annex 2.A. Sources of data on regional labour market outcomes

The analysis in Section 2.1 relies on aggregate regional employment and unemployment rates. For 18 of the 32 countries covered, these indicators are drawn from the *OECD Database on Regions, Cities and Local Areas* (https://www.oecd.org/en/topics/regions-cities-and-local-statistics.html) and refer to the population aged 15 to 64. For the remaining countries, data were collected from statistical authorities' websites, which has permitted extending data coverage or including more recent years. Exceptions to this are Chile (own calculations based on CASEN) and Poland (data provided by national authorities). The newly collected data are mostly drawn from LFS, though in some countries they derive from census or administrative records to achieve TL3-level granularity. Cross-country comparability of results based on these sources may therefore be somewhat lower than for standard OECD indicators, given different definitions of employment status. In France, for example, census data – in which employment status is self-declared – yield higher unemployment rates and lower employment rates than the LFS; in Denmark register-based unemployment rates, which count as unemployed only those enrolled with the public employment service, fall below LFS estimates. Cross-country comparisons should accordingly be interpreted with caution wherever the underlying data source differs. For most countries, the data refer to 15-to-64-year-olds or a similar age group (e.g. 16-64 for Denmark); where only a substantially different age group was available, this is clearly flagged in the chapter. Annex Table 2.A.1 below provides full overview.

Annex Table 2.A.1. Data sources for regional employment and unemployment rates

Country	Data source	Years	Age group
AUS	Downloaded from Australian Bureau of Statistics Underlying data: national labour force survey + estimation model	2012, 2024	15-64
AUT	Employment: OECD Database on Regions, Cities and Local Areas Unemployment: AMS (Arbeitsmarktservice)	2010, 2024	Employment: 15-64 Unemployment: Labour force potential
BEL	Downloaded from the *Institute Wallon De L'Évaluation, De La Prospective Et De La Statistique* (IWEPS) Underlying data: national labour force survey + calibration with administrative records	2010, 2022	15-64
CAN	Downloaded from Statistics Canada Underlying data: population census	2021	15-64
CHE	Downloaded from Federal Statistical Office Underlying data: population census	2010, 2024	15-64
CHL	Own calculations based on CASEN microdata	2011, 2022	15-64
CZE	OECD Database on Regions, Cities and Local Areas	2010, 2023	15-64
DEU	OECD Database on Regions, Cities and Local Areas	2010, 2023	15-64
DNK	Downloaded from Statistics Denmark Underlying data: administrative records (RAS/AMR_UN)	2010, 2024	16-64
ESP	OECD Database on Regions, Cities and Local Areas	2010, 2024	15-64
EST	OECD Database on Regions, Cities and Local Areas	2010, 2024	15-64
FIN	Downloaded from Statistics Finland Underlying data: national labour force survey	2010, 2024	Employment: 15-64 Unemployment: 15-74
FRA	Downloaded from INSEE Underlying data: population census	2010, 2022	15-64

Country	Data source	Years	Age group
GBR	Downloaded from Office for National Statistics Underlying data: national labour force survey	2010, 2024	16-64
HUN	OECD Database on Regions, Cities and Local Areas	2010, 2024	15-64
IRL	OECD Database on Regions, Cities and Local Areas	Employment: 2010, 2024 Unemployment: 2010, 2023	15-64
ISR	OECD Database on Regions, Cities and Local Areas	2010-2023	15-64
ITA	OECD Database on Regions, Cities and Local Areas	2010, 2024	15-64
JPN	Downloaded from e-Stat Japan Underlying data: national labour force survey + estimation model	2010-2024	15+
KOR	OECD Database on Regions, Cities and Local Areas	2010, 2023	15-64
LTU	OECD Database on Regions, Cities and Local Areas	2010, 2024	15-64
LVA	Downloaded from Central Statistical Bureau Underlying data: national labour force survey	2010-2023	15-64
NLD	Central Statistical Bureau Underlying data: national labour force Survey	2013-2023	15-75
NOR	OECD Database on Regions, Cities and Local Areas	2010, 2023	15-64
NZL	OECD Database on Regions, Cities and Local Areas	2010, 2023	15-64
POL	Tabulations provided by Statistics Poland Underlying data: administrative records	Employment: 2023 Unemployment: 2024	Employment: 15-64 Unemployment (men): 18-65 Unemployment (women): 18-60
SVK	OECD Database on Regions, Cities and Local Areas	2010, 2024	15-64
SVN	OECD Database on Regions, Cities and Local Areas	2010, 2022	15-64
SWE	OECD Database on Regions, Cities and Local Areas	2010, 2024	15-64
TUR	Downloaded from TurkStat Underlying data: national labour force survey	2023	15+
USA	OECD Database on Regions, Cities and Local Areas	2010, 2019	15-64

* In Austria, the labour force potential is calculated as the sum of the number of unemployed and employed people registered under social insurance institutions.

Annex 2.B. Sources of data on regional income distributions

Section 2.2 presents newly collected income distribution statistics across TL3 regions for 22 OECD countries. For 13 countries (Austria, Belgium, Canada, Denmark, Estonia, Finland, France, Greece, Ireland, the Netherlands, Norway, Spain and Sweden), income distribution data are based on administrative registers – mainly tax records, often matched with other sources of administrative data; for the remaining 11 countries (Australia, Chile, Costa Rica, Czechia, Israel, Japan, Latvia, Lithuania, New Zealand, the Slovak Republic and Slovenia), the income data come from surveys that include TL3-level information (see Annex Table 2.B.1 for an overview).

Annex Table 2.B.1. Data sources for indicators on regional income levels and inequality

Country	Data provider	Data source	Years
AUS	Australian Bureau of Statistics	Survey of Income and Housing	2020
AUT	Statistics Austria	Administrative	2012-2022
BEL	OECD calculations using administrative records (see Annex Table 2.C.1)	Administrative	2016-2023
CAN	Statistics Canada	Administrative	2010, 2015, 2020
CHL	Instituto Nacional de Estadística	Casen (Encuesta de Caracterización Socioeconómica Nacional)	2011, 2022
CRI	Instituto Nacional de Estadística y Censos	Encuesta Nacional de Hogares	2010, 2023
CZE	Czech Statistical Office and LIS	EU-SILC and LIS (based on EU-SILC)	2010-2023
DNK	Statistics Denmark and LIS	Administrative	2010-2023
ESP	OECD calculations using administrative records (see Annex Table 2.C.1)	Administrative	2016-2022
EST	OECD calculations using administrative records (see Annex Table 2.C.1)	Administrative	2017-2024
FIN	Statistics Finland	Administrative	2010-2024
FRA	*Institut National De La Statistique Et Des Études Économiques* (Insee)	Administrative	2012-2021
GRC	OECD calculations using administrative records (see Annex Table 2.C.1)	Administrative	2017-2023
IRL	Central Statistics Office	Administrative	2022
ISR	OECD calculations using LIS	LIS (based on Household Expenditure Survey)	2010-2022
JPN	Statistics Bureau of the Ministry of Internal Affairs and Communications	National Survey of Family Income, Consumption and Wealth	2019
LTU	Statistics Lithuania and OECD calculations using LIS	EU-SILC and LIS (based on SILC)	2010-2021, 2023
LVA	Central Statistical Bureau of Latvia	EU-SILC	2010-2023
NLD	Statistics Netherlands	Administrative	2011-2023
NOR	Statistics Norway	Administrative	2023
NZL	Stats NZ, provided to the OECD by the New Zealand Treasury	Household Economic Survey	2019-2024
SVK	OECD calculations using LIS	LIS (based on SILC)	2010, 2013-2018
SVN	Statistical Office of the Republic of Slovenia	EU-SILC	2010-2023
SWE	Statistics Sweden	Administrative	2011-2024

Administrative data can have several advantages over survey data for studying regional income distributions, notably their much larger number of observations, which permit mapping household incomes with great granularity. However, they also come with certain limitations, reflecting that these data originate as a by-product of administrative processes, such as tax collection, rather than to have been produced with the explicit intent to facilitate empirical analysis. Administrative data are therefore less standardised than "traditional" household survey data, notably in their coverage of income sources and definition of the household as the relevant unit of observation.

Great care has been taken to ensure a high degree of comparability between the survey- and register-based income data used in this chapter, and to closely document any remaining differences in data coverage and definitions. Indeed, for all countries covered in the analysis, the data sources used for this chapter provide a broad coverage of the main sources of household income, permitting the reliable calculation of disposable household incomes (see Annex Table 2.B.2 for an overview). In particular:

- *Labour income* – comprising both employment and self-employment income, as well as public pensions – is typically fully captured by the data, as are the corresponding taxes and social security contributions paid.
- *Capital income* is also well covered, though coverage is only partial in a few countries (Austria, Belgium, Finland, Ireland). This income source likely represents a more sizable share of disposable income for households at the top of the income distribution, but the partial coverage would likely not significantly affect median incomes.
- *Government transfers, private/occupational pensions, and inter-household transfers* are fully covered in most countries. Any existing gaps likely account for only a small fraction of disposable household income.

All income distribution statistics presented in Section 2.2 have been calculated over individuals attributing to each person the equivalised disposable household income of the household they live in. In most countries, household incomes were adjusted for household size by dividing disposable household incomes by the square root of the household size; in some, the modified OECD scale or national equivalence scales were used.

In the analysis presented in Section 2.2, regional disparities in income levels and inequalities are in all cases expressed *relative to the national values*, rather than in absolute currency values or as Gini coefficients. Those relative values are likely less sensitive to smaller differences in methodology or coverage of certain income sources across countries.

Annex Table 2.B.2. Income component coverage by country

	AUS	AUT	BEL	CAN	CHL
Data source	Survey	Administrative	Administrative	Administrative	Survey
Equivalence scale	Sq. root	Mod. OECD	Sq. root	Sq. root	Sq. root
Employment income	Yes	Yes	Yes	Yes	Yes
Self-employment income	Yes	Yes	Yes	Yes	Yes
Capital / property income	Yes	Partial	Partial	Yes	Yes
Public pensions	Yes	Yes	Yes	Yes	Yes
Private/occupational pensions	Yes	Partial	Partial	Yes	Yes
Net inter-household transfers (e.g. alimony)	Yes	No	Yes	Yes	Yes
After taxes on labour and pension income (deducted)	Yes	Yes	Yes	Yes	Yes
After taxes on capital income (deducted)	Yes	Yes	Yes	Yes	Yes
After social security contributions (deducted)	Yes	Yes	Yes	No	Yes
Unemployment benefits	Yes	Yes	Yes	Yes	Yes
Family / parental and child benefits	Yes	Yes	Yes	Yes	Yes
Health and disability benefits	Yes	Yes	Yes	Yes	Yes
Education-related benefits	Yes	No	No	Yes	Yes
Housing benefits	Yes	No	No	Yes	Yes
Other old age and survivor benefits	Yes	No	Yes	Yes	Yes
Other social assistance benefits	Yes	Yes	Yes	Yes	Yes
	CRI	**CZE**	**DNK**	**ESP**	**EST**
Data source	Survey	Survey	Administrative	Administrative	Administrative
Equivalence scale	Sq. root	Sq. root	Mod. OECD	Sq. root	Sq. root
Employment income	Yes	Yes	Yes	Yes	Yes
Self-employment income	Yes	Yes	Yes	Yes	Yes
Capital / property income	Yes	Yes	Yes	Yes	Yes
Public pensions	Yes	Yes	Yes	Yes	Yes
Private/occupational pensions	Yes	Partial	Yes	Yes	Yes
Net inter-household transfers (e.g. alimony)	Partial	Yes	Yes	Yes	Yes
After taxes on labour and pension income (deducted)	Yes	Yes	Yes	Yes	Yes
After taxes on capital income (deducted)	No	Yes	Yes	Yes	Yes
After social security contributions (deducted)	Yes	Yes	Yes	Yes	Yes
Unemployment benefits	Yes	Yes	Yes	Yes	Yes
Family / parental and child benefits	No	Yes	Yes	Yes	Yes
Health and disability benefits	No	Yes	Yes	Yes	No
Education-related benefits	Yes	Yes	Yes	Yes	Yes
Housing benefits	Yes	Yes	Yes	Yes	Yes
Other old age and survivor benefits	Yes	Yes	Yes	Yes	Yes
Other social assistance benefits	No	Yes	Yes	Yes	Yes

	FIN	FRA	GRC	IRL	ISR
Data source	Administrative	Administrative	Administrative	Administrative	Survey
Equivalence scale	Mod. OECD	Mod. OECD	Sq. root	Sq. root	Sq. root
Employment income	Yes	Yes	Yes	Yes	Yes
Self-employment income	Yes	Yes	Yes	Yes	Yes
Capital / property income	Partial	Yes	Yes	Partial	Yes
Public pensions	Yes	Yes	Yes	Yes	Yes
Private/occupational pensions	Yes	Partial	Yes	Yes	Yes
Net inter-household transfers (e.g. alimony)	Yes	Yes	No	No	Yes
After taxes on labour and pension income (deducted)	Yes	Yes	Yes	Yes	Yes
After taxes on capital income (deducted)	Yes	Yes	Yes	Yes	Yes
After social security contributions (deducted)	Yes	Yes	Yes	Yes	Yes
Unemployment benefits	Yes	Yes	Yes	Yes	Yes
Family / parental and child benefits	Yes	Yes	Yes	Yes	Yes
Health and disability benefits	Yes	Yes	Yes	Yes	Yes
Education-related benefits	Yes	Yes	No	Yes	Yes
Housing benefits	Yes	Yes	Yes	Yes	Yes
Other old age and survivor benefits	Yes	Yes	Yes	Yes	Yes
Other social assistance benefits	Yes	Yes	Yes	Yes	Yes
	JPN	**LTU**	**LVA**	**NLD**	**NOR**
Data source	Survey	Survey	Survey	Administrative	Administrative
Equivalence scale	Sq. root	Sq. root / Mod. OECD	Mod. OECD	National scale	Sq. root
Employment income	Yes	Yes	Yes	Yes	Yes
Self-employment income	Yes	Yes	Yes	Yes	Yes
Capital / property income	Yes	Yes	Yes	Yes	Yes
Public pensions	Yes	Yes	Yes	Yes	Yes
Private/occupational pensions	Yes	Yes	Yes	Yes	Yes
Net inter-household transfers (e.g. alimony)	Yes	Partial	Yes	Yes	Yes
After taxes on labour and pension income (deducted)	Yes	Yes	Yes	Yes	Yes
After taxes on capital income (deducted)	Yes	Yes	Yes	Yes	Yes
After social security contributions (deducted)	Yes	Yes	Yes	Yes	Yes
Unemployment benefits	Yes	Yes	Yes	Yes	Yes
Family / parental and child benefits	Yes	Yes	Yes	Yes	Yes
Health and disability benefits	Yes	Yes	Yes	Yes	Yes
Education-related benefits	Yes	Yes	Yes	Yes	Yes
Housing benefits	Yes	Yes	Yes	Yes	Yes
Other old age and survivor benefits	Yes	Yes	Yes	Yes	Yes
Other social assistance benefits	Yes	Yes	Yes	Yes	Yes

	NZL	SVK	SVN	SWE	
Data source	Survey	Survey	Survey	Administrative	
Equivalence scale	Sq. root	Sq. root	Mod. OECD	National scale	
Employment income	Yes	Yes	Yes	Yes	
Self-employment income	Yes	Yes	Yes	Yes	
Capital / property income	Yes	Yes	Yes	Yes	
Public pensions	Yes	Yes	Yes	Yes	
Private/occupational pensions	Yes	Yes	Yes	Yes	
Net inter-household transfers (e.g. alimony)	Partial	Yes	Yes	Yes	
After taxes on labour and pension income (deducted)	Yes	Yes	Yes	Yes	
After taxes on capital income (deducted)	Yes	Yes	Yes	Yes	
After social security contributions (deducted)	N/A	Yes	Yes	Yes	
Unemployment benefits	Yes	Yes	Yes	Yes	
Family / parental and child benefits	Yes	Yes	Yes	Yes	
Health and disability benefits	Yes	Yes	Yes	Yes	
Education-related benefits	Yes	Yes	Yes	Yes	
Housing benefits	Partial	Yes	Yes	Yes	
Other old age and survivor benefits	Yes	Yes	Yes	Yes	
Other social assistance benefits	Yes	Yes	Yes	Yes	

Annex 2.C. Sources of data on regional income mobility

The analysis in Section 2.3 presents evidence on people's mobility in disposable household incomes across regions for 9 OECD countries, drawing on a new OECD microdata infrastructure for the study of income dynamics. The infrastructure relies on administrative data, mainly tax records linked with other administrative income data and population registries, which permit tracking people both geographically and over time. In 5 countries (AUT, BEL, ESP, EST, GRC), the OECD has access to the administrative microdata and the results presented in the chapter come from OECD calculations. For the 4 other countries (CAN, FIN, NOR, SWE), the results come from tabulations provided by the national authorities especially prepared for this chapter. Annex Table 2.C.1 below provides a detailed overview.

Great care has been taken to ensure a high degree of comparability across administrative sources from different countries, even as the presented analysis of disparities in income mobility within countries is likely less sensitive to smaller cross-country differences in methodology or income coverage. The definition of disposable income mirrors the one used in Section 2.2, and the underlying administrative microdata are the same in both sections. For a detailed description of the income and tax components covered in the data for each country, see Annex Table 2.B.2.

Annex Table 2.C.1. Data sources for analysis of income mobility

Country	Data source
AUT	Own calculations using administrative records from Statistics Austria, in particular: • LUE – Integrierte Lohn- und Einkommensteuerstatistik (LUE – Integrated Wage and Income Tax Statistics) • AEST REGZ – Abgestimmte Erwerbsstatistik und Registerzählung (AEST REGZ – Co-ordinated Employment Statistics and Register Census).
BEL	OECD calculations using administrative records from StatBel, in particular: • Administrative Disposable Incomes (ADI) Database • Population census
CAN	Tabulations provided by Statistics Canada based on tax and population records
ESP	OECD calculations using administrative records from Institute for Fiscal Studies, in particular: • Panel de Hogares (Household Panel) • Muestra Continua de Vidas Laborales (Continuous Work History Sample)
EST	OECD calculations using administrative records from Statistics Estonia, in particular: • EUROMOD-SILC administrative database
FIN	Tabulations provided by Esa Karonen (University of Turku) using tax and population records in co-ordination with the Finnish Ministry of Economic Affairs and Employment and the Ministry of Social Affairs and Health
GRC	OECD calculations replicated by the Ministry of Labour and Social Security using administrative records, in particular: • Tax records (AADE)
NOR	Tabulations provided by Statistics Norway based on tax and population records
SWE	Tabulations provided by Statistics Sweden based on tax and population records

Annex 2.D. Regions excluded from the analysis

Annex Table 2.D.1. Regions excluded from the analysis due to missing data, small samples or other data-related issues

Figure	Regions excluded from the analysis
Figure 2.1. Regional disparities in labour market outcomes are large in most OECD countries (Panel A. Employment)	Regions with missing data: • **AUS:** AU510 (Western Australia – Outback (North), AU511 (Western Australia – Outback (South) • **CHE:** CH054 (Appenzell Innerrhoden) • **CHL:** CL012 (Tamarugal), CL052 (Isla de Pascua), CL104 (Palena), CL113 (Capitán Prat), CL114 (General Carrera), CL122 (Antártica Chilena), CL152 (Parinacota) • **DEU:** DEG04 (Suhl, Kreisfreie Stadt), DEG0B (Schmalkalden-Meiningen), DEG0F (Ilm-Kreis), DEG0H (Sonneberg), DEG0I (Saalfeld-Rudolstadt), DEG0N (Eisenach, Kreisfreie Stadt), DEG0P (Wartburgkreis) • **ESP:** ES531 (Eivissa y Formentera), ES532 (Mallorca), ES533 (Menorca), ES703 (El Hierro), ES704 (Fuerteventura), ES705 (Gran Canaria), ES706 (La Gomera), ES707 (La Palma), ES708 (Lanzarote), ES709 (Tenerife) • **FRA:** FRY50 (Mayotte) • **GBR:** UKM61 (Caithness & Sutherland and Ross & Cromarty), UKM62 (Inverness & Nairn and Moray, Badenoch & Strathspey), UKM63 (Lochaber, Skye & Lochalsh, Arran & Cumbrae and Argyll & Bute), UKM64 (Eilean Siar (Western Isles)), UKM65 (Orkney Islands), UKM66 (Shetland Islands), UKE13 (North and North East Lincolnshire), UKF25 (North Northamptonshire), UKN06 (Belfast), UKN07 (Armagh City, Banbridge and Craigavon), UKN08 (Newry, Mourne and Down), UKN09 (Ards and North Down), UKN0A (Derry City and Strabane), UKN0B (Mid Ulster), UKN0C (Causeway Coast and Glens), UKN0D (Antrim and Newtownabbey), UKN0E (Lisburn and Castlereagh), UKN0F (Mid and East Antrim), UKN0G (Fermanagh and Omagh) • **ITA:** ITG2D (Sassari), ITG2E (Nuoro), ITG2F (Cagliari), ITG2G (Oristano), ITG2H (Sud Sardegna) • **KOR:** KR054 (Sejong) • **NOR:** NO0B1 (Jan Mayen), NO0B2 (Svalbard) • **NZL:** NZ016 (Hawke's Bay Region), NZ022 (West Coast Region) Regions aggregated due to data availability constraints: • **BEL:** BE335 (Arr. Verviers – communes francophones) aggregated with BE336 (Bezirk Verviers – Deutschsprachige Gemeinschaft) • **NZL:** NZ016 (Hawke's Bay Region) aggregated with NZ015 (Gisborne Region); NZ022 (West Coast Region) aggregated with NZ021 (Tasman – Nelson – Marlborough)
Figure 2.1. Regional disparities in labour market outcomes are large in most OECD countries (Panel B. Unemployment)	Regions with missing data: • **AUS:** AU510 (Western Australia – Outback (North), AU511 (Western Australia – Outback (South) • **CHE:** CH054 (Appenzell Innerrhoden) • **CHL:** CL012 (Tamarugal), CL052 (Isla de Pascua), CL104 (Palena), CL113 (Capitán Prat), CL114 (General Carrera), CL122 (Antártica Chilena), CL152 (Parinacota) • **DEU:** DEG04 (Suhl, Kreisfreie Stadt), DEG0B (Schmalkalden-Meiningen), DEG0F (Ilm-Kreis), DEG0H (Sonneberg), DEG0I (Saalfeld-Rudolstadt), DEG0N (Eisenach, Kreisfreie Stadt), DEG0P (Wartburgkreis) • **ESP:** ES531 (Eivissa y Formentera), ES532 (Mallorca), ES533 (Menorca), ES703 (El Hierro), ES704 (Fuerteventura), ES705 (Gran Canaria), ES706 (La Gomera), ES707 (La Palma), ES708 (Lanzarote), ES709 (Tenerife) • **FIN:** FI1D5 (Central Ostrobothnia), FI1D8 (Kainuu), FI200 (Åland) • **FRA:** FRY50 (Mayotte) • **ITA:** ITG2D (Sassari), ITG2E (Nuoro), ITG2F (Cagliari), ITG2G (Oristano), ITG2H (Sud Sardegna) • **KOR:** KR054 (Sejong) • **BEL:** BE335 (Arr. Verviers – communes francophones) aggregated with BE336 (Bezirk Verviers – Deutschsprachige Gemeinschaft) Regions aggregated due to data availability constraints: • **BEL:** BE335 (Arr. Verviers – communes francophones) aggregated with BE336 (Bezirk Verviers – Deutschsprachige Gemeinschaft) • **NZL:** NZ016 (Hawke's Bay Region) aggregated with NZ015 (Gisborne Region); NZ022 (West Coast Region) aggregated with NZ021 (Tasman – Nelson – Marlborough)

Figure	Regions excluded from the analysis
Figure 2.2. Low-employment regions have been catching up, narrowing regional disparities	Regions with missing data: • **AUS:** AU510 (Western Australia – Outback (North), AU511 (Western Australia – Outback (South) • **CHE:** CH054 (Appenzell Innerrhoden) • **CHL:** CL012 (Tamarugal), CL052 (Isla de Pascua), CL104 (Palena), CL113 (Capitán Prat), CL114 (General Carrera), CL122 (Antártica Chilena), CL152 (Parinacota) • **DEU:** DEG04 (Suhl, Kreisfreie Stadt), DEG0B (Schmalkalden-Meiningen), DEG0F (Ilm-Kreis), DEG0H (Sonneberg), DEG0I (Saalfeld-Rudolstadt), DEG0N (Eisenach, Kreisfreie Stadt), DEG0P (Wartburgkreis) • **ESP:** ES531 (Eivissa y Formentera), ES532 (Mallorca), ES533 (Menorca), ES703 (El Hierro), ES704 (Fuerteventura), ES705 (Gran Canaria), ES706 (La Gomera), ES707 (La Palma), ES708 (Lanzarote), ES709 (Tenerife) • **FRA:** FRY50 (Mayotte) • **GBR:** UKM61 (Caithness & Sutherland and Ross & Cromarty), UKM62 (Inverness & Nairn and Moray, Badenoch & Strathspey), UKM63 (Lochaber, Skye & Lochalsh, Arran & Cumbrae and Argyll & Bute), UKM64 (Eilean Siar (Western Isles)), UKM65 (Orkney Islands), UKM66 (Shetland Islands), UKE13 (North and North East Lincolnshire), UKF25 (North Northamptonshire), UKN06 (Belfast), UKN07 (Armagh City, Banbridge and Craigavon), UKN08 (Newry, Mourne and Down), UKN09 (Ards and North Down), UKN0A (Derry City and Strabane), UKN0B (Mid Ulster), UKN0C (Causeway Coast and Glens), UKN0D (Antrim and Newtownabbey), UKN0E (Lisburn and Castlereagh), UKN0F (Mid and East Antrim), UKN0G (Fermanagh and Omagh) • **ITA:** ITG2D (Sassari), ITG2E (Nuoro), ITG2F (Cagliari), ITG2G (Oristano), ITG2H (Sud Sardegna) • **KOR:** KR054 (Sejong) • **NOR:** NO0B1 (Jan Mayen), NO0B2 (Svalbard) Regions aggregated due to data availability constraints: • **BEL:** BE335 (Arr. Verviers – communes francophones) aggregated with BE336 (Bezirk Verviers – Deutschsprachige Gemeinschaft) • **NZL:** NZ016 (Hawke's Bay Region) aggregated with NZ015 (Gisborne Region); NZ022 (West Coast Region) aggregated with NZ021 (Tasman – Nelson – Marlborough)
Figure 2.3. Workers' observable characteristics explain a limited part of regional disparities in employment outcomes	Regions with missing data: • **CHL:** CL012 (Tamarugal), CL052 (Isla de Pascua), CL104 (Palena), CL113 (Capitán Prat), CL114 (General Carrera), CL122 (Antártica Chilena), CL152 (Parinacota) Regions aggregated due to data availability constraints: • **BEL:** BE335 (Arr. Verviers – communes francophones) aggregated with BE336 (Bezirk Verviers – Deutschsprachige Gemeinschaft)
Figure 2.4. People's labour market outcomes are substantially worse in low-GDP-per-worker regions	Regions with missing data: • **CHE**: CH054 (Appenzell Innerrhoden) • **DEU**: DEG04 (Suhl, Kreisfreie Stadt), DEG0B (Schmalkalden-Meiningen), DEG0F (Ilm-Kreis), DEG0H (Sonneberg), DEG0I (Saalfeld-Rudolstadt), DEG0N (Eisenach, Kreisfreie Stadt), DEG0P (Wartburgkreis) • **ESP**: ES531 (Eivissa y Formentera), ES532 (Mallorca), ES533 (Menorca), ES703 (El Hierro), ES704 (Fuerteventura), ES705 (Gran Canaria), ES706 (La Gomera), ES707 (La Palma), ES708 (Lanzarote), ES709 (Tenerife) · • **FRA**: FRY50 (Mayotte) • **GBR**: UKN06 (Belfast), UKN07 (Armagh City, Banbridge and Craigavon), UKN08 (Newry, Mourne and Down), UKN09 (Ards and North Down), UKN0A (Derry City and Strabane), UKN0B (Mid Ulster), UKN0C (Causeway Coast and Glens), UKN0D (Antrim and Newtownabbey), UKN0E (Lisburn and Castlereagh), UKN0F (Mid and East Antrim), UKN0G (Fermanagh and Omagh) • **NOR**: NO0B1 (Jan Mayen), NO0B2 (Svalbard) Regions aggregated due to data availability constraints: • **NZL**: NZ016 (Hawke's Bay Region), NZ022 (West Coast Region)
Figure 2.6. People move out of low-employment regions and into high-employment ones, but at a slow pace	Regions with missing data: • **DEU**: DEG04 (Suhl, Kreisfreie Stadt), DEG0B (Schmalkalden-Meiningen), DEG0F (Ilm-Kreis), DEG0H (Sonneberg), DEG0I (Saalfeld-Rudolstadt), DEG0N (Eisenach, Kreisfreie Stadt), DEG0P (Wartburgkreis) • **ESP**: ES531 (Eivissa y Formentera), ES532 (Mallorca), ES533 (Menorca), ES703 (El Hierro), ES704 (Fuerteventura), ES705 (Gran Canaria), ES706 (La Gomera), ES707 (La Palma), ES708 (Lanzarote), ES709 (Tenerife) • **ITA**: ITG2D (Sassari), ITG2E (Nuoro), ITG2F (Cagliari), ITG2G (Oristano), ITG2H (Sud Sardegna) • **KOR**: KR054 (Sejong)

Figure	Regions excluded from the analysis
Figure 2.7. Regions with high unemployment are spatially clustered (Panel A)	Regions without neighbours: • **USA:** US008 (Anchorage, AK), US074 (Honolulu, HI) • **JPN:** JPJ47 (Okinawa), JPA01 (Hokkaido) Regions with missing data: • **DEU**: DEG04 (Suhl, Kreisfreie Stadt), DEG0B (Schmalkalden-Meiningen), DEG0F (Ilm-Kreis), DEG0H (Sonneberg), DEG0I (Saalfeld-Rudolstadt), DEG0N (Eisenach, Kreisfreie Stadt), DEG0P (Wartburgkreis)
Figure 2.7. Regions with high unemployment are spatially clustered (Panel B)	Regions without neighbours: • **USA:** US008 (Anchorage, AK), US074 (Honolulu, HI) Regions with missing data: • **DEU:** DEG04 (Suhl, Kreisfreie Stadt), DEG0B (Schmalkalden-Meiningen), DEG0F (Ilm-Kreis), DEG0H (Sonneberg), DEG0I (Saalfeld-Rudolstadt), DEG0N (Eisenach, Kreisfreie Stadt), DEG0P (Wartburgkreis)
Figure 2.9. Regional disparities in median household incomes vary substantially across countries, but are much narrower than disparities in GDP per capita (Panel A. Regional median equivalised disposable incomes across TL3 regions)	Regions with missing data: • **CHL:** CL052 (Isla de Pascua), CL104 (Palena), CL113 (Capitán Prat), CL122 (Antártica Chilena), CL152 (Parinacota) • **ESP:** ES211 (Araba/Álava), ES212 (Gipuzkoa), ES213 (Biscay), ES220 (Navarre). • **FRA:** FRY10 (Guadeloupe), FRY20 (Martinique), FRY30 (French Guiana), FRY40 (La Réunion), FRY50 (Mayotte) • **NOR:** NO0B1 (Jan Mayen), NO0B2 (Svalbard) Regions aggregated due to data availability constraints: • **BEL:** BE335 (Arr. Verviers – communes francophones) aggregated with BE336 (Bezirk Verviers – Deutschsprachige Gemeinschaft) • **ESP:** ES704 (Fuerteventura) and ES708 (Lanzarote) aggregated with ES705 (Gran Canaria); ES706 (La Gomera), ES703 (El Hierro) and ES707 (La Palma) aggregated with ES709 (Tenerife) • **NZL:** NZ016 (Hawke's Bay Region) aggregated with NZ015 (Gisborne Region); NZ022 (West Coast Region) aggregated with NZ021 (Tasman – Nelson – Marlborough)
Figure 2.9. Regional disparities in median household incomes vary substantially across countries, but are much narrower than disparities in GDP per capita (Panel B. Median disposable incomes vs. GDP per capita across TL3 regions, selected OECD countries)	Regions with missing data: • **ESP:** ES211 (Araba/Álava), ES212 (Gipuzkoa), ES213 (Biscay), ES220 (Navarre). • **FRA:** FRY10 (Guadeloupe), FRY20 (Martinique), FRY30 (French Guiana), FRY40 (La Réunion), FRY50 (Mayotte) Regions aggregated due to data availability constraints: • **BEL:** BE335 (Arr. Verviers – communes francophones) aggregated with BE336 (Bezirk Verviers – Deutschsprachige Gemeinschaft) • **ESP:** ES704 (Fuerteventura) and ES708 (Lanzarote) aggregated with ES705 (Gran Canaria); ES706 (La Gomera), ES703 (El Hierro) and ES707 (La Palma) aggregated with ES709 (Tenerife)
Figure 2.10. Regional median incomes increase with employment rates in most countries	Regions with missing data: • **CHL:** CL052 (Isla de Pascua), CL104 (Palena), CL113 (Capitán Prat), CL122 (Antártica Chilena), CL152 (Parinacota) • **ESP:** ES211 (Araba/Álava), ES212 (Gipuzkoa), ES213 (Biscay), ES220 (Navarre), ES703 (El Hierro), ES704 (Fuerteventura), ES706 (La Gomera), ES707 (La Palma), ES708 (Lanzarote), ES531 (Eivissa y Formentera), ES532 (Mallorca), ES533 (Menorca), ES705 (Gran Canaria), ES709 (Tenerife) • **FRA:** FRY10 (Guadeloupe), FRY20 (Martinique), FRY30 (French Guiana), FRY40 (La Réunion), FRY50 (Mayotte) Regions aggregated due to data availability constraints: • **BEL:** BE335 (Arr. Verviers – communes francophones) aggregated with BE336 (Bezirk Verviers – Deutschsprachige Gemeinschaft)
Figure 2.11 (Panel A. Change in coefficient of variation and β-convergence)	Regions with missing data: • **BEL:** BE335 (Arr. Verviers – Communes francophones), BE336 (Bezirk Verviers – Deutschsprachige Gemeinschaft) • **CHL:** CL052 (Isla de Pascua), CL104 (Palena), CL122 (Antártica Chilena) • **ESP:** ES211 (Araba/Álava), ES212 (Gipuzkoa), ES213 (Biscay), ES220 (Navarre) • **FRA:** FRY10 (Guadeloupe), FRY20 (Martinique), FRY30 (French Guiana), FRY40 (La Réunion), FRY50 (Mayotte) • **NZL:** NZ015 (Gisborne), NZ016 (Hawke's Bay), NZ021 (Tasman-Nelson-Marlborough), NZ022 (West Coast) Regions aggregated due to data availability constraints: • **BEL:** BE335 (Arr. Verviers – communes francophones) aggregated with BE336 (Bezirk Verviers – Deutschsprachige Gemeinschaft) • **ESP:** ES704 (Fuerteventura) and ES708 (Lanzarote) aggregated with ES705 (Gran Canaria); ES706 (La Gomera), ES703 (El Hierro) and ES707 (La Palma) aggregated with ES709 (Tenerife) • **NZL:** NZ016 (Hawke's Bay Region) aggregated with NZ015 (Gisborne Region); NZ022 (West Coast Region) aggregated with NZ021 (Tasman – Nelson – Marlborough)

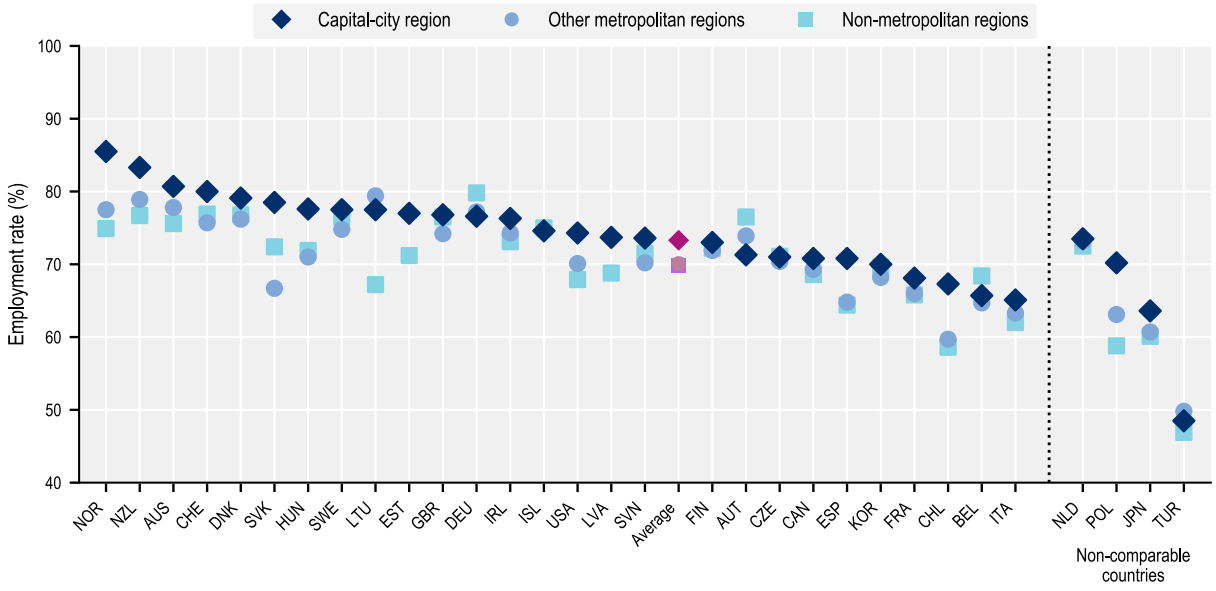
Figure	Regions excluded from the analysis
Figure 2.11 (Panel B. Median income vs. Employment rate)	Regions with missing data: • **CHL:** CL012 (Tamarugal), CL052 (Isla de Pascua), CL104 (Palena), CL113 (Capitán Prat), CL114 (General Carrera), CL122 (Antártica Chilena), CL152 (Parinacota) • **ESP:** ES531 (Eivissa y Formentera), ES532 (Mallorca), ES533 (Menorca), ES703 (El Hierro), ES704 (Fuerteventura), ES705 (Gran Canaria), ES706 (La Gomera), ES707 (La Palma), ES708 (Lanzarote), ES709 (Tenerife), ES211 (Araba/Álava), ES212 (Gipuzkoa), E213 (Biscay), ES220 (Navarre) • **FRA:** FRY10 (Guadeloupe), FRY20 (Martinique), FRY30 (French Guiana), FRY40 (La Réunion), FRY50 (Mayotte)
Figure 2.11 (Panel C. Median income vs. GDP per capita)	Regions with missing data: • **CHL:** CL052 (Isla de Pascua), CL104 (Palena), CL122 (Antártica Chilena) • **ESP:** ES211 (Araba/Álava), ES212 (Gipuzkoa), ES213 (Biscay), ES220 (Navarre) • **FRA:** FRY10 (Guadeloupe), FRY20 (Martinique), FRY30 (French Guiana), FRY40 (La Réunion), FRY50 (Mayotte) Regions aggregated due to data availability constraints: • **BEL:** BE335 (Arr. Verviers – communes francophones) aggregated with BE336 (Bezirk Verviers – Deutschsprachige Gemeinschaft) • **ESP:** ES704 (Fuerteventura) and ES708 (Lanzarote) aggregated with ES705 (Gran Canaria); ES706 (La Gomera), ES703 (El Hierro) and ES707 (La Palma) aggregated with ES709 (Tenerife) • **NZL:** NZ016 (Hawke's Bay Region) aggregated with NZ015 (Gisborne Region); NZ022 (West Coast Region) aggregated with NZ021 (Tasman – Nelson – Marlborough)
Figure 2.12. Within-region income inequality also varies widely and, in many countries, is greater in higher-income regions (Panel A. Gini coefficient)	Regions with missing data: • **AUS:** AU315 (Outback, Qld) • **CHL:** CL052 (Isla de Pascua), CL104 (Palena), CL113 (Capitán Prat), CL122 (Antártica Chilena), CL152 (Parinacota) • **ESP :** ES211 (Araba/Álava), ES212 (Gipuzkoa), ES213 (Biscay), ES220 (Navarre) • **FRA:** FRY10 (Guadeloupe), FRY20 (Martinique), FRY30 (French Guiana), FRY40 (La Réunion), FRY50 (Mayotte) • **NOR:** NO0B1 (Jan Mayen), NO0B2 (Svalbard) Regions aggregated due to data availability constraints: • **BEL:** BE335 (Arr. Verviers – communes francophones) aggregated with BE336 (Bezirk Verviers – Deutschsprachige Gemeinschaft) • **ESP:** ES704 (Fuerteventura) and ES708 (Lanzarote) aggregated with ES705 (Gran Canaria); ES706 (La Gomera), ES703 (El Hierro) and ES707 (La Palma) aggregated with ES709 (Tenerife) • **NZL:** NZ016 (Hawke's Bay Region) aggregated with NZ015 (Gisborne Region); NZ022 (West Coast Region) aggregated with NZ021 (Tasman – Nelson – Marlborough)
Figure 2.12. Within-region income inequality also varies widely and, in many countries, is greater in higher-income regions (Panel B. Gini coefficient vs. median income)	Regions with missing data: • **AUS:** AU315 (Outback, Qld), AU204 (Hume, Vic), AU217 (Warrnambool and S.W., Vic) • **CHL:** CL052 (Isla de Pascua), CL104 (Palena), CL113 (Capitán Prat), CL122 (Antártica Chilena), CL152 (Parinacota) • **ESP :** ES211 (Araba/Álava), ES212 (Gipuzkoa), ES213 (Biscay), ES220 (Navarre) • **FRA:** FRY10 (Guadeloupe), FRY20 (Martinique), FRY30 (French Guiana), FRY40 (La Réunion), FRY50 (Mayotte) • **NOR:** NO0B1 (Jan Mayen), NO0B2 (Svalbard) Regions aggregated due to data availability constraints: • **BEL:** BE335 (Arr. Verviers – communes francophones) aggregated with BE336 (Bezirk Verviers – Deutschsprachige Gemeinschaft) • **ESP:** ES704 (Fuerteventura) and ES708 (Lanzarote) aggregated with ES705 (Gran Canaria); ES706 (La Gomera), ES703 (El Hierro) and ES707 (La Palma) aggregated with ES709 (Tenerife) • **NZL:** NZ016 (Hawke's Bay Region) aggregated with NZ015 (Gisborne Region); NZ022 (West Coast Region) aggregated with NZ021 (Tasman – Nelson – Marlborough)

Figure	Regions excluded from the analysis
Figure 2.13. Capital regions record, on average, higher median incomes and higher inequality (Panel A. Median income)	Regions with missing data: • **AUS:** AU315 (Outback, Qld) • **CHL:** CL052 (Isla de Pascua), CL104 (Palena), CL113 (Capitán Prat), CL122 (Antártica Chilena), CL152 (Parinacota) • **ESP:** ES211 (Araba/Álava), ES212 (Gipuzkoa), ES213 (Biscay), ES220 (Navarre) • **FRA:** FRY10 (Guadeloupe), FRY20 (Martinique), FRY30 (French Guiana), FRY40 (La Réunion), FRY50 (Mayotte) • **NOR:** NO0B1 (Jan Mayen), NO0B2 (Svalbard) Regions aggregated due to data availability constraints: • **BEL:** BE335 (Arr. Verviers – communes francophones) aggregated with BE336 (Bezirk Verviers – Deutschsprachige Gemeinschaft) • **ESP:** ES704 (Fuerteventura) and ES708 (Lanzarote) aggregated with ES705 (Gran Canaria); ES706 (La Gomera), ES703 (El Hierro) and ES707 (La Palma) aggregated with ES709 (Tenerife) • **NZL:** NZ016 (Hawke's Bay Region) aggregated with NZ015 (Gisborne Region); NZ022 (West Coast Region) aggregated with NZ021 (Tasman – Nelson – Marlborough)
Figure 2.13. Capital regions record, on average, higher median incomes and higher inequality (Panel B. Gini coefficient)	Regions with missing data: • **AUS:** AU315 (Outback, Qld) • **CHL:** CL052 (Isla de Pascua), CL104 (Palena), CL113 (Capitán Prat), CL122 (Antártica Chilena), CL152 (Parinacota) • **ESP:** ES211 (Araba/Álava), ES212 (Gipuzkoa), ES213 (Biscay), ES220 (Navarre) • **FRA:** FRY10 (Guadeloupe), FRY20 (Martinique), FRY30 (French Guiana), FRY40 (La Réunion), FRY50 (Mayotte) • **NOR:** NO0B1 (Jan Mayen), NO0B2 (Svalbard) Regions aggregated due to data availability constraints: • **BEL:** BE335 (Arr. Verviers – communes francophones) aggregated with BE336 (Bezirk Verviers – Deutschsprachige Gemeinschaft) • **ESP:** ES704 (Fuerteventura) and ES708 (Lanzarote) aggregated with ES705 (Gran Canaria); ES706 (La Gomera), ES703 (El Hierro) and ES707 (La Palma) aggregated with ES709 (Tenerife) • **NZL:** NZ016 (Hawke's Bay Region) aggregated with NZ015 (Gisborne Region); NZ022 (West Coast Region) aggregated with NZ021 (Tasman – Nelson – Marlborough)
Figure 2.14. High-income households are overrepresented and lower-income households are underrepresented in capital regions.	• **ESP:** ES211 (Araba/Álava), ES212 (Gipuzkoa), ES213 (Biscay), ES220 (Navarre) • **CHL:** CL052 (Isla de Pascua), CL104 (Palena), CL113 (Capitán Prat), CL122 (Antártica Chilena), CL152 (Parinacota) Regions aggregated due to data availability constraints: • **ESP:** ES704 (Fuerteventura) and ES708 (Lanzarote) aggregated with ES705 (Gran Canaria); ES706 (La Gomera), ES703 (El Hierro) and ES707 (La Palma) aggregated with ES709 (Tenerife)
Figure 2.15. Between-region differences account for only a fraction of overall household income inequality	Regions with missing data: • **AUS:** AU315 (Outback, Qld), AU204 (Hume, Vic), AU217 (Warrnambool and S.W., Vic), AU308 (Central, Qld), AU201 (Ballarat, Vic), AU113 (Riverina, NSW) • **CHL:** CL052 (Isla de Pascua), CL104 (Palena), CL113 (Capitán Prat), CL122 (Antártica Chilena), CL152 (Parinacota) • **ESP:** ES211 (Araba/Álava), ES212 (Gipuzkoa), ES213 (Biscay), ES220 (Navarre) • **FRA:** FRY10 (Guadeloupe), FRY20 (Martinique), FRY30 (French Guiana), FRY40 (La Réunion), FRY50 (Mayotte) • **NOR:** NO0B1 (Jan Mayen), NO0B2 (Svalbard) Regions aggregated due to data availability constraints: • **BEL:** BE335 (Arr. Verviers – communes francophones) aggregated with BE336 (Bezirk Verviers – Deutschsprachige Gemeinschaft) • **ESP:** ES704 (Fuerteventura) and ES708 (Lanzarote) aggregated with ES705 (Gran Canaria); ES706 (La Gomera), ES703 (El Hierro) and ES707 (La Palma) aggregated with ES709 (Tenerife) • **NZL:** NZ016 (Hawke's Bay Region) aggregated with NZ015 (Gisborne Region); NZ022 (West Coast Region) aggregated with NZ021 (Tasman – Nelson – Marlborough)
Figure 2.16. Low-income regions offer less opportunity for upward income mobility	Regions with missing data: • **ESP:** ES211 (Araba/Álava), ES212 (Gipuzkoa), ES213 (Biscay), ES220 (Navarre) • **NOR:** NO0B1 (Jan Mayen), NO0B2 (Svalbard) Regions aggregated due to data availability constraints: • **BEL:** BE335 (Arr. Verviers – communes francophones) aggregated with BE336 (Bezirk Verviers – Deutschsprachige Gemeinschaft) • **ESP:** ES704 (Fuerteventura) and ES708 (Lanzarote) aggregated with ES705 (Gran Canaria); ES706 (La Gomera), ES703 (El Hierro) and ES707 (La Palma) aggregated with ES709 (Tenerife)

Annex 2.E. Additional results

Annex Figure 2.E.1. Capital-city regions often exhibit higher-employment rates

Employment rates by access to cities typology, 2024 or latest available year

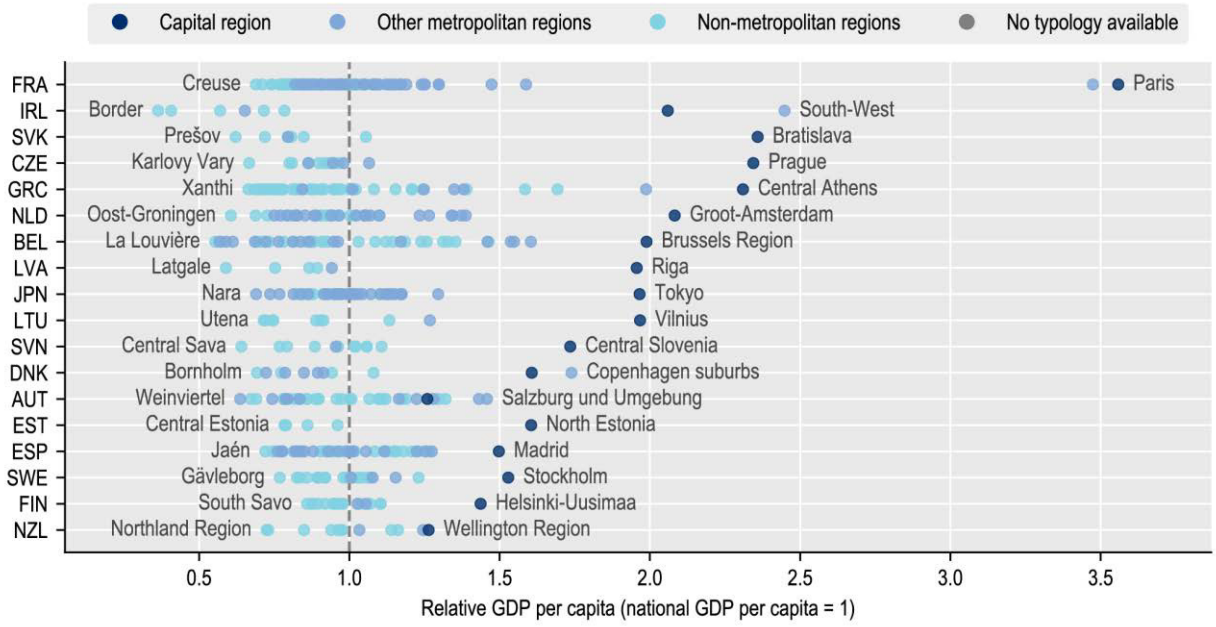


Note: The OECD typology for small (TL3) regions by access to cities classifies regions based on the presence/absence of metropolitan areas and the extent to which the latter is accessible by the population living in each region (Fadic et al., 2019[17]). According to this typology, TL3 regions are classified as "metropolitan" if more than half of their population lives in a Functional Urban Area (FUA) of at least 250 000 inhabitants and as "non-metropolitan" otherwise. Capital-city regions aggregate TL3 regions belonging to the metropolitan area of the capital city of a country (OECD, 2024[29]). Each marker represents the average of each type of region, weighted by the working-age population. Employment rates refer to the population aged 15 to 64, with minor differences for employment in DNK and GBR (16-64). Non-comparable countries are those with more substantial differences in age thresholds: NLD (15-75) and JPN (15+); as well as POL, where employment rates exclude workers in civil law contracts (*umowy cywilnoprawne*). In some countries, a small number of regions with missing data are excluded from the analysis (see Annex Table 2.D.1 for a complete list). "Average" gives the unweighted average across OECD countries excluding non-comparable ones.
Source: OECD calculations based on the OECD Database on Regions, Cities and Local Areas, https://www.oecd.org/en/topics/regions-cities-and-local-statistics.html (accessed in February 2026) and data collection by the OECD. See 2.4 for further details on the data.

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Annex Figure 2.E.2. Regional disparities in GDP per capita are large in many OECD countries

GDP per capita, TL3 regions for selected OECD countries, 2024 or latest available year



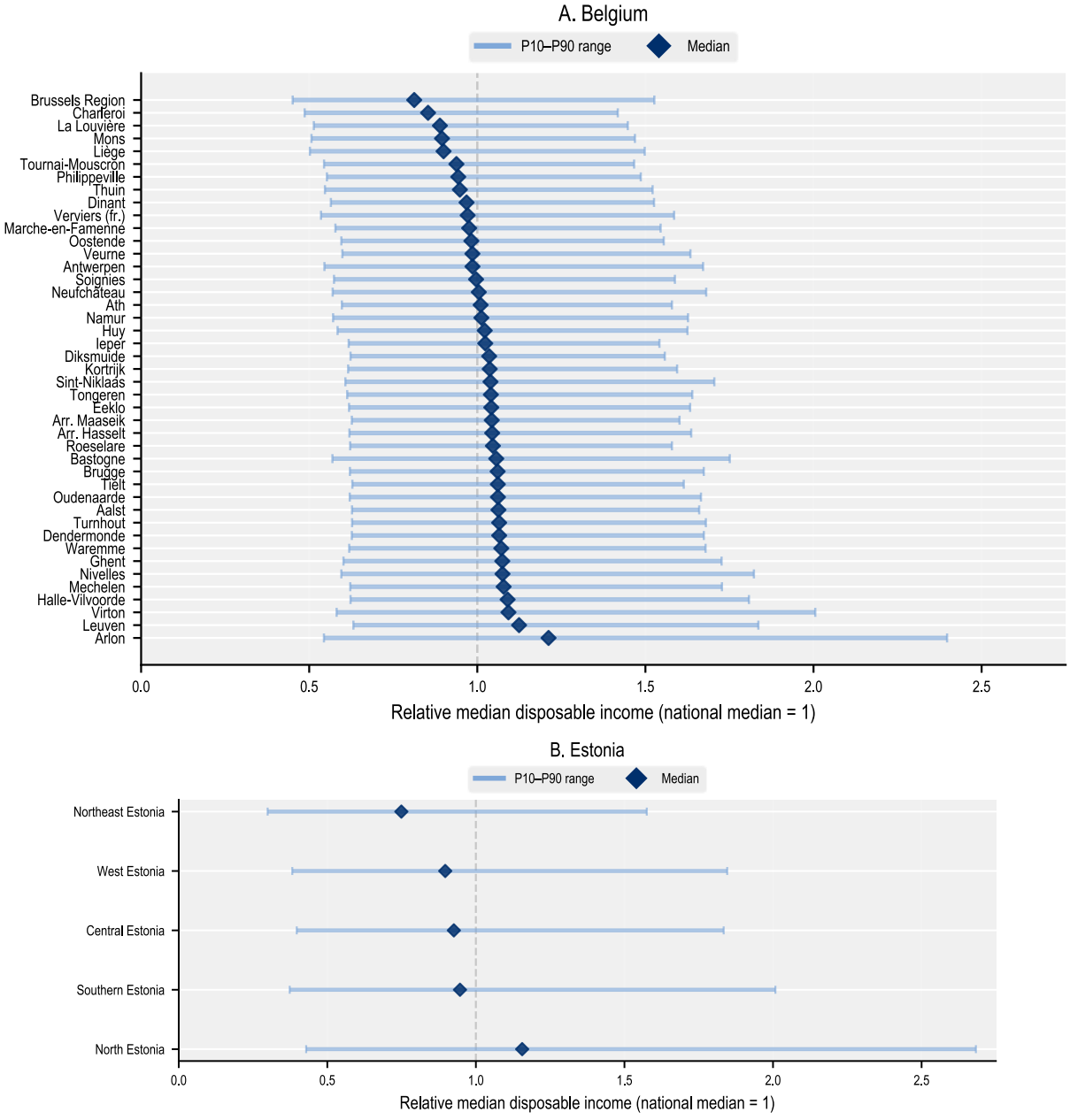
Note: The figure is restricted to countries for which also data on disposable household incomes are available as shown in Figure 2.9. Data on regional GDP per capita are missing for Australia, Canada, Chile, Costa Rica, Israel and Norway for any year of the period covered by the disposable income data. The OECD typology for small (TL3) regions by access to cities classifies regions based on the presence/absence of metropolitan areas and the extent to which the latter is accessible by the population living in each region (Fadic et al., 2019[17]). According to this typology, TL3 regions are classified as "metropolitan" if more than half of their population lives in a Functional Urban Area (FUA) of at least 250 000 inhabitants and as "non-metropolitan" otherwise (OECD, 2024[29]). Capital regions are the TL3 regions that host the capital city of the country In Greece, where Athens is subdivided into several TL3 regions, Central Athens is chosen as the capital region.

Source: GDP-per-capita data from the *OECD Database on Regions, Cities and Local Areas*, https://www.oecd.org/en/topics/regions-cities-and-local-statistics.html (accessed in February 2026).

StatLink https://stat.link/uxq2tp

Annex Figure 2.E.3. Regional income distributions have a very large degree of overlap

Median, percentile 10 and percentile 90 of the disposable household income distribution for Belgium in 2023 (Panel A) and Estonia in 2024 (Panel B), TL3 regions



Source: OECD calculations using microdata from administrative records.

StatLink https://stat.link/3s7ob4

Annex Table 2.E.1. Country-level correlation coefficient of regional median incomes vs. GDP per capita, employment rates and the Gini coefficient

Country	Number of TL3 regions	Correlation coefficient ρ of median income vs. GDP per capita	Correlation coefficient ρ of median income vs. employment rate	Correlation coefficient ρ of median income vs. Gini coefficient
AUS	49	n/a	0.40	0.36
AUT	35	0.05	0.02	-0.67
BEL	42	0.06	0.60	-0.57
CAN	293	n/a	n/a	0.15
CHL	51	n/a	0.84	0.86
CRI	6	n/a	0.79	0.22
CZE	14	0.74	0.26	0.58
DNK	11	0.18	0.91	0.46
ESP	50	0.78	0.68	0.32
EST	5	0.82	0.96	0.95
FIN	19	0.80	0.68	0.91
FRA	96	0.71	0.62	0.72
GRC	52	0.60	n/a	0.58
IRL	8	0.64	0.45	0.89
ISR	6	n/a	0.99	-0.73
JPN	47	0.57	0.64	-0.10
LTU	10	0.96	0.85	0.40
LVA	6	0.60	0.91	0.73
NLD	40	-0.07	0.69	0.07
NOR	11	n/a	0.59	0.69
NZL	10	0.82	0.47	0.65
SVK	8	0.85	0.86	-0.75
SVN	12	0.51	0.65	n/a
SWE	21	0.76	0.20	0.92

Note: Entries marked n/a indicate cases where TL3-level data on employment rates, GDP per capita or the Gini coefficient were not available. The number of regions refers to the number of TL3 regions covered by the microdata. For information on observation years and data sources, see Figure 2.9, Figure 2.10 and Figure 2.12.

Source: Income distribution indicators collected from national authorities (AUS, AUT, CAN, CRI, DNK, FIN, FRA, IRL, JPN, LVA, NLD, NOR, NZL, SVN, SWE) and OECD calculations based on microdata from administrative records (BEL, ESP, EST, GRC), the LIS database (CZE, ISR, LTU, SVK) and CASEN (CHL). GDP per capita from the OECD Database on Regions, Cities and Local Areas, https://www.oecd.org/en/topics/regions-cities-and-local-statistics.html (accessed in February 2026).

Notes

[1] These data are available in the *OECD Database on Regions, Cities and Local Areas* (https://www.oecd.org/en/topics/regions-cities-and-local-statistics.html).

[2] Similar clustering patterns are observed also for employment rates.

[3] This applies notably to the EU-SILC and to most surveys covered by the Luxembourg Income Study (LIS), the two most important sources of cross-country microdata on household incomes.

[4] In a few non-European countries, studies of geographic income inequalities have also been conducted using large survey data, including the Chilean CASEN (Paredes, Iturra and Lufin, 2014[111]), the Canadian Census (Breau and Saillant, 2016[123]; Marchand, Dubé and Breau, 2020[124]), the US Census (Partridge, 2005[125]; Moller, Alderson and Nielsen, 2009[126]) and the US American Communities Survey (Florida and Mellander, 2014[127]).

[5] In an earlier OECD study, Boulant, Brezzi and Veneri (2016[105]) use micro-aggregated administrative data to assess income inequalities, but only within large Functional Urban Areas (those with at least 500 000 inhabitants).

[6] A related literature examines geographic inequalities in employment income or wages; see, for example, Bauluz et al. (2024[40]) on long-run trends in spatial wage disparities between and within local labour market areas in Canada, France, West Germany, the United Kingdom and the United States, and Cho and Jeon (2025[23]) on disparities in jobs and earnings across functional urban areas in the United States.

[7] In Austria, Vienna's two surrounding suburbs – Wiener Umland/Nordteil and Wiener Umland/Südteil – are the country's highest-income regions. In Belgium, the two regions surrounding Brussels – Leuven and Halle-Vilvoorde – have the 2nd and 4th highest median incomes in the country, respectively. Earlier OECD work has aggregated these regions into a single unit for empirical analysis, see Box 2.1, but such an approach that is not possible with regional median incomes and Gini coefficients.

[8] Of the countries covered in this section, Canada has by far the largest number of regions (293, all covered), followed by France (101, 96 covered), Spain (59, 50 covered), Chile (56, 51 covered), Greece (52, all covered), and Australia (50, 49 covered).

[9] Costa Rica, Chile, Lithuania and Israel are among the OECD countries with the highest income inequality, with Gini coefficients of 0.46, 0.45, 0.35 and 0.34, respectively, compared to an OECD average of 0.31 (OECD, 2025[128]).

[10] The same point applies though to standard national-level income distributions, which equally do not account for the fact that households at different income levels may face systematically different costs of living depending on where they live.

[11] Austria presents a less intuitive case combining β-convergence with σ-divergence. As in Section 2.1.1 for employment rates, this occurs when regions with low median incomes at the outset rapidly overtake regions with initially high median incomes, but dispersion at the end of the period is wider than at the start.

[12] In both countries, dropping the capital region attenuates the relationship observed in Figure 2.12, Panel B, but the correlation coefficient still takes values very close to zero.

[13] These gaps are considerably smaller again than those observed for GDP per capita: for countries with regional data available for both indicators, the average capital to non-metropolitan gap in median incomes amounts to 17% of the national median, less than one-third of the 59% gap observed for GDP per capita. This figure is based on a slightly smaller number of countries than those shown in Figure 2.13, as regional GDP-per-capita data at TL3 level are not available for Australia, Canada, Chile and Norway.

[14] Elbers et al. (2007[129]) have proposed an alternative measure for this type of inequality decomposition that accounts for the number of different groups as well as their relative sizes. However, as the authors indicate, if the largest region accounts for less than 30% of the population, their alternative measure yields nearly identical results as the conventional decomposition approach followed here. Out of the 780 regions across the 20 countries with available data for the Theil decomposition, only 7 account for more than 30% of the country's population and only 2 account for more than 33%.

[15] Related OECD analysis examines the contribution of regions to disparities in GDP per capita across OECD and EU countries, finding an overall decline in inequality over the last two decades, but slowing convergence between countries – as measured by the between-country Theil index – and divergence within countries, as measured by the within-country between-TL3-region Theil index (Pina and Sicari, 2021[87]; OECD, 2023[1]; OECD, 2024[29]).

[16] Using a narrow percentile band of the national distribution avoids comparing individuals with different starting incomes, as people in broader groups, such as the bottom quintile, already show substantial differences in incomes across regions. Using the national, as opposed to the regional, income distribution as the benchmark for mobility means that, in low-income regions, people at a given *national* percentile sit higher in the *regional* income distribution than their counterparts in high-income regions. Where regional income inequalities are large, this can imply comparing individuals who differ in important ways and may have different mobility prospects. However, using regional distributions instead would also not provide an apples-to-apples comparison: it would compare individuals with very different absolute starting incomes, which directly affects mobility estimates. Moreover, differences in the shape of regional income distributions could translate equal income gains into very different relative mobility patterns across regions. More importantly, this approach would obscure part of the regional variation that the analysis aims to capture, namely that in low-income regions higher incomes may be structurally out of reach.

The sample further excludes individuals with zero or negative incomes in any year of the mobility window. This serves to limit the influence of cross-country differences in how administrative records treat zero and missing incomes, to exclude individuals who arrive mid-year in the country, and to remove people whose large negative capital income in one period offsets positive capital income in others, distorting mobility transitions in "real" living standards.

[17] On average, people at the lower end of the distribution tend to move up in the distribution over time, while those at the top tend to move down – a phenomenon referred to as "mean reversion".

[18] See https://www.oecd.org/en/about/projects/linkeed-200.html.

3 Places and people: The impact of structural change on local labour markets

César Barreto, Alexander Hijzen, Carlo Menon and Antonela Miho

The capacity of places to adapt to profound and rapid structural change in the labour market varies significantly, with some emerging stronger and more prosperous, while others experience persistent economic decline. These divergent trajectories carry important implications for the well-being of residents and contribute to growing geographic inequalities. This chapter documents how structural change is reshaping local labour markets by focussing on trade and technology shocks and their effects on the careers of individual workers (people), the composition of employers (firms) and the economic fortunes of regions (places). The chapter concludes by discussing the implications for place-based labour market, industrial and regional policies.

In Brief

Local labour markets are experiencing deep and rapid structural change, driven by digitalisation, advances in artificial intelligence, evolving global trade patterns, and the energy transition. This chapter explores how structural transformation reshapes local labour markets and considers the implications for public policy and institutions. It focusses on local exposure to major global shocks, including China's accession to the WTO, EU enlargement to Central and Eastern Europe, and the rapid spread of digital technologies such as artificial intelligence and robotics. The analysis assesses the impacts of these changes on regions, workers and firms, drawing on linked employer – employee data from 14 OECD countries over the period 2000-2022 (Austria, Canada, Denmark, Finland, France, Germany, Hungary, Italy, the Netherlands, Norway, Portugal, Spain, Sweden, the United States).

Exposure to structural change

A region's exposure to structural change depends crucially on its industrial mix.

- **Regions vary considerably in the degree of industrial specialisation**. In the average region across the countries covered by the analysis, about 20% of activity would need to shift across sectors for the region to mirror the national industrial structure. However, disparities within countries are substantial. Some regions closely resemble the national average, while in others the share of activity that would need to be shifted can be 50% or more.
- **Regional differences in industrial specialisation lead to differences in exposure to structural change**. A region's exposure to trade is measured by the increase in import penetration in an industry from China and Central and Eastern European countries between 2000 and 2007 weighted by the initial employment share in the region (import competition from low-wage countries). Likewise, a region's exposure to technological change is measured by global patents for digital technologies related to an industry between 2012 and 2021, weighted by its initial employment share in the region (digital innovation).
- **Regional differences in worker and firm composition lead to uneven exposure to import competition from low-wage countries and digital innovation.** Higher-educated and foreign-born workers, who are more likely to sort into urban areas, tend to be more exposed to technology shocks and less to trade shocks. Large and high-wage firms are more exposed to trade shocks in manufacturing and technology shocks in all sectors, since such firms tend to be concentrated in urban areas.

Effects of structural change on places

Regional exposure to import competition from low-wage countries and digital innovation are important drivers of a region's structural employment trends.

- **Regional exposure to import competition from low-wage countries is associated with persistent job losses in manufacturing while job gains elsewhere only materialise after some time**. A one standard-deviation increase in regional trade exposure, which corresponds to moving from a region with average exposure to one around the 80th to 90th percentile, is associated with a reduction in manufacturing employment relative to the initial population of 0.5 percentage points (p.p.) across the Western European countries considered in the analysis and 1.25 p.p. in the United States by 2018. To put these effects in perspective, this amounts to the loss of about one in ten manufacturing jobs in Western Europe and one in

seven in the United States. However, job losses in manufacturing are more than offset eventually by job gains in non-manufacturing, especially producer services.

- **Regional exposure to emerging digital technologies is associated with a sustained increase in regional employment.** These gains are driven by producer services and non-routine occupations. However, it is associated with job losses in regions exposed to digital innovation in industries with a high share of routine-manual occupations (e.g. computers, machinery). This suggests that digital innovation is labour-augmenting overall, boosting demand for workers in complementary tasks, while acting as a labour-saving force in routine-manual roles where tasks are more easily automated.

Effects of structural change on people

The effects of regional exposure to trade and technology on regional employment are decomposed into their different flow components: in or out of employment, local job reallocation across sectors, and internal migration across regions. For both trade and technology shocks, movements in and out of work represent the main margin of adjustment, while mobility between sectors and regions plays a comparatively minor role.

- **Changes in regional employment by broad sector in response to structural change are largely brought about by flows in and out of national employment**. Trade and technology shocks lead to persistent increases in joblessness among incumbent manufacturing workers. The existing literature shows that the resulting social costs can go beyond unemployment and may include deprivation, social exclusion, chronic health issues and premature retirement. Job gains in non-manufacturing largely reflect inflows from inactivity, including young labour market entrants making the transition from school to work. Adjustment to structural change is largely generational, with older cohorts leaving and younger cohorts entering employment in different sectors.
- **Mobility between industries and regions plays only a minor role in adjusting to structural change.** Net worker flows from manufacturing to non-manufacturing account for less than 15% of the decline in manufacturing employment due to exposure to low-wage import competition, while net worker flows between regions typically account for even less (except in Germany). Prior evidence for the United States suggests that workers who change industry had higher initial earnings, whereas those that did not had lower initial earnings and faced larger and more persistent earnings declines. For regional exposure to digital innovation, the contribution of net worker flows between regions to the increase in employment between 2012 and 2017 is even smaller (mobility between industries is not considered).

Effects of structural change on firms

The effects of trade and technology shocks on regional employment also differ across groups of firms, e.g. high/low-wage industries, high/low-wage firms and small/large firms.

- **Import competition from low-wage countries shifts employment away from high-wage industries.** Import competition disproportionately reduces manufacturing employment in industries with more generous wage-setting practices, while non-manufacturing job growth is spread evenly across high- and low-wage industries. Digital innovation supports job creation evenly across high and low wage industries, while routine-manual job losses are concentrated in low-wage industries.
- **Import competition from low-wage countries shifts employment to better firms within industries.** When industry employment contracts, this tends to be concentrated in firms with wage premia below the average of their industry, typically lower productivity and smaller firms.

By contrast, when industry employment expands, this tends to be concentrated in firms with above average wage premia, often high productivity and larger firms. This process of job reallocation supports industry-level wage and productivity growth.

Policy implications

On average, structural change requires considerable reallocation in exposed regions but leads to net job gains eventually. However, positive regional outcomes in the medium to long term can mask persistent negative effects on specific groups of workers due to limited geographical and sectoral mobility. From a policy perspective the main challenge is how to limit local vulnerabilities and anticipate change by fostering industrial diversification, investing in education and infrastructure and anticipating skills needs, while alleviating the social costs by supporting displaced workers, removing barriers to job mobility across sectors and regions and promoting job opportunities. This highlights the importance of combining employment and social policies with place-based industrial and regional policies.

Introduction

Labour markets are undergoing profound and rapid structural transformations driven by digitalisation, advances in artificial intelligence, shifts in global trade dynamics, as well as the energy transition in many countries. Both open trade and technological progress have been key drivers of economic growth, rising living standards and well-being improvements. However, the capacity of places (or regions) to adapt to these changes varies significantly, with some emerging stronger and more prosperous, while others experience persistent economic decline. These divergent trajectories carry important implications for the well-being of residents and contribute to growing geographic inequalities – see Chapter 2. Addressing this multifaceted challenge requires a policy framework that integrates regional and place-based industrial policies with employment and social policies that are equally place-sensitive. Such an approach is essential to promote inclusive growth and mitigate the uneven impacts of structural change.[1]

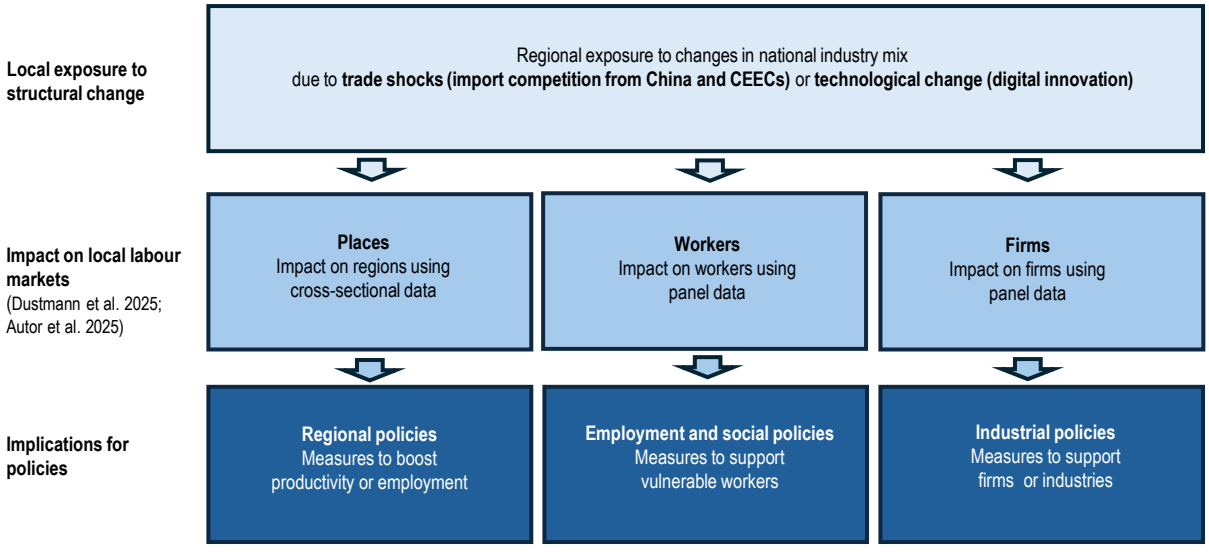
This chapter examines the labour market consequences of structural change across industries in local labour markets and their implications for policies and institutions. It focusses on regional exposure to major trade and technology shocks, including China's accession to the WTO, EU enlargement to Central and Eastern Europe, and the rapid diffusion of digital technologies such as artificial intelligence and robotics. These shocks have been central drivers of job reallocation between sectors, with effects that vary significantly across regions depending on their initial industrial composition and workforce characteristics.[2] Adaptable regions adjust to structural change by creating sufficient jobs to sustain high employment levels, limiting the social costs of adjustment through anticipation and effective support for displaced workers, and promoting the reallocation of jobs toward high-quality employers.

The effects of structural shocks are analysed separately for regions, individuals, and firms, drawing on recent work by Dustmann et al. (2025[1]) and Autor et al. (2025[2]). Since the composition of workers and firms can change over time, structural change can have qualitatively different implications at the regional, worker and firm level. For instance, Autor et al. (2025[2]) show for the United States that, although regional employment recovered within a decade after the China shock, incumbent manufacturing workers suffered persistent earnings losses. This divergence reflects responses by firms and workers: manufacturing firms contracted through job losses and retirements, while service firms expanded by hiring new labour market entrants. In other words, structural change was partly accommodated through a generational shift, while job mobility between declining and expanding industries or regions remained limited. A key contribution of the chapter is to assess whether similar patterns emerge across countries in response to trade shocks and to what extent the effects of digitalisation shocks differ.[3]

The empirical analysis in this chapter makes uses of linked employer-employee data for 14 OECD countries over the period 2000-2022. These include Canada, Norway, the United States, as well as 11 European Union countries (Austria, Denmark, Finland, France, Germany, Hungary, Italy, the Netherlands, Portugal, Spain and Sweden). Local labour markets are measured using small administrative units (TL3 regions) or commuting zones.

The chapter is organised in three parts consistent with the main building blocks of the conceptual framework visualised in Figure 3.1. It begins with a descriptive overview of the exposure of local labour markets to structural change in the form of trade and technology shocks (Section 3.1). The chapter then proceeds with an empirical analysis of the effects of trade and technology shocks on regions, workers and firms (Section 3.2). The chapter concludes with a discussion of the implications for policies (Section 3.3): i) regional policies that seek to promote regional employment or productivity (e.g. investments in infrastructure and education); ii) employment and social policies that provide support to vulnerable workers (e.g. income support policies, active labour market policies); iii) place-based industrial policies directed at industries or firms (e.g. policies to promote the adoption of AI or renewable-energy technologies).

Figure 3.1. Regional, industrial, employment and social policies are needed to address the local impact of structural change



3.1. Regional specialisation and regional exposure to structural change

Regional exposure to structural change is analysed by focussing on the degree of regional specialisation across industries and how this shapes a region's exposure to country-wide industry shocks due to trade and technology. In this section, local labour markets are defined using small administrative regions or, where possible, commuting zones. Small administrative regions (Territorial Level 3, TL3) typically correspond to the smallest subnational administrative units after municipalities, such as *départements* in France or *provinces* in Italy. Regions that are part of the same metropolitan area are combined following the OECD classification of metropolitan areas (Fadic et al., 2019[3]). Commuting zones are defined based on detailed information on the location of the workplace and the residence of the worker.[4,5]

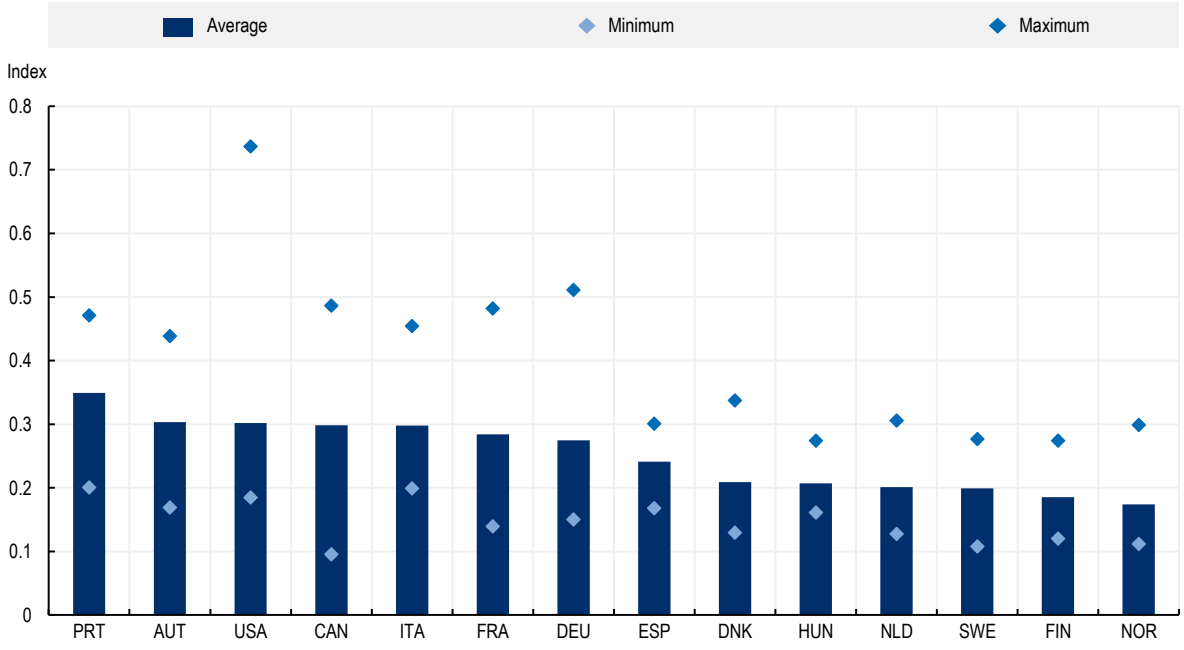
3.1.1. Regional specialisation

Economic activities tend to be spatially concentrated

Industrial restructuring is inherently a local process, driven by the spatial concentration of economic activities. The degree of industrial specialisation in a region is measured here using the Krugman index of regional specialisation (see Box 3.1 for details). On average across countries and regions, the index of regional specialisation is about 0.2 (Figure 3.2). This means that on average, 20% of employment would have to be reallocated across sectors for a region to mirror the sectoral structure of the national economy. However, there is substantial variation in the industrial specialisation across regions within countries, as indicated by the minimum and maximum levels of specialisation in each country. In some regions the industrial mix closely resembles that of the national economy, as indicated by the low minimum values of the Krugman index in the figure. In others, regional specialisation is much more pronounced, with maximum values around 0.5 or above.[6]

Figure 3.2. Industrial specialisation is very high in some regions

Rescaled Krugman index of regional specialisation averaged across regions by country [0-1]



Note: An index of "zero" measures zero regional specialisation, while an index of "one" measures complete specialisation. Values between [0.00 – 0.10] refer to very low specialisation, [0.10 – 0.20] to low specialisation, [0.20 – 0.30] to moderate specialisation, [0.30 – 0.50] to high specialisation, and [> 0.50] to very high specialisation. An index value of for example 0.2 would imply that to equalise the industry mix in the region to that of the rest of the country, 20% of the workforce would need to be shifted from overrepresented to underrepresented industries. The index is implemented using data by TL3 region/commuting zone and 3-digit industry (4-digit industries for the United States). See for Box 3.1 for details.

Source: Setzler (forthcoming[4]), "The local impact of structural change" (preliminary title), based on national linked employer-employee data. See Annex Table 3.A.1. for details.

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The spatial concentration of economic activities arises from a combination of locational and technological factors. Location-specific characteristics include natural resources, infrastructure and skills, as well as public services. For example, mining is concentrated in areas abundant in natural deposits and logistic services cluster in port cities. Tradeable sectors, including manufacturing and tradeable services, especially benefit from spatial specialisation, by exploiting economies of scale and agglomeration effects (Ellison and Glaeser, 1997[5]; Rosenthal and Strange, 2004[6]). Geographic proximity among firms in related industries facilitates interactions within supplier networks and fosters knowledge spillovers. At the same time, such spatial concentration also creates disproportionate vulnerabilities to global shocks and shapes local socio-economic conditions for extended periods in some places (Rice and Venables, 2021[7]).

Box 3.1. Methodology I: Measuring regional specialisation and exposure

The exposure of regions to structural change depends on the extent by which regions specialise in industries that are subject to country-wide industry demand or supply shocks.

Measuring regional specialisation

The Krugman index of regional specialisation quantifies how different a region's industry structure is from the national average (Krugman, 1992[8]). It is calculated as the sum of the absolute differences between the regional employment shares *s* of 3-digit industries *j* in region *r* and their national counterparts:

$$K_r = \frac{1}{2}\sum_{j=1}^{J}\left|s_{jr} - s_j\right|$$

The Krugman index ranges from zero to one, taking the value zero when a region's industrial structure matches the national average. When the national average includes the region itself, the index is strictly less than one, but under complete specialisation the maximum converges to one as the number of regions becomes large. An index value of for example 0.2 would imply that to equalise the industry mix in the region to that of the rest of the country, 20% of the workforce would need to be shifted from overrepresented to underrepresented industries. Suppose that the industries in which the region is specialised represent overall 40% of the workforce, against 20% in the rest of the country, which implies that the other industries represent 60% in the region and 80% in the rest of the country, then K=½*(0.4-0.2) +½*(0.8-0.6)=0.2. The employment-weighted average across regions provides an indication of the degree of regional specialisation of a country. To ensure that the index does not depend on the number of regions in a country and ensure its comparability across countries it is rescaled by R/(R-1).

Measuring local exposure to structural change

A region's exposure to country-wide structural change $\Delta X_r^{\square}$ is captured using a shift-share approach which weighs national-industry level shifts by a region's industry shares in employment in the base year:

$$\Delta X_r^{\square} = \sum_j s_{rj\tau} g_j$$

where $s_{rj\tau}$ refers to the employment share in region r of industry *j* in base year τ, and g_j is a national industry-level shift in a variable capturing the aggregate component of structural change that is common across regions using 2- or 3-digit industry-level information.

Trade shocks are measured based on country-wide changes in industry-level import penetration from China and Central and Eastern European Countries ("East") between 2000 and 2007 ($\Delta IP_{j2000-2007}^{Home \leftarrow East}$). A region's exposure to trade shocks is calculated using equation (2) with $g_j = \Delta IP_{j2000-2007}^{Home \leftarrow East}$. Import data for 2-digit industries is obtained from the OECD Trade in value-added (TiVA) database. Changes in import penetration are measured by dividing changes in import volumes by initial domestic industry absorption (domestic industry production plus imports minus exports) in 2000.

Technology shocks are measured based on global patent applications for digital technologies between 2012 and 2021 by 3-digit industry ($PatDigi_j$) following Prytkova and Petit (2025[9]) and Prytkova et al. (2024[10]). Patent applications linked to industries come from the TechXposure database. A region's exposure to technology shocks is calculated using equation (2) with $g_j = PatDigi_j$. The digital technological exposure score of an industry reflects semantic similarities between patents and the descriptions of industries. It is also possible to estimate digital exposure separately for routine-manual and non-routine occupations, as the TechXposure database includes exposure measures for both sectors and occupations.[1]

1. In practice, this is done by i) aggregating occupational exposure across occupational groups (routine-manual and versus other) for each technology; ii) retaining only the top 25% technologies to which each occupational group is most exposed; iii) calculating average exposure across the top 25% technologies for a given industry and occupational group. Regional exposure is measured by weighting sector-level exposure, on average across occupations or for a given occupational group, by regional sector employment shares.

3.1.2. Regional exposure to structural change

Differences in regional specialisation generate differences in the exposure of regions to country-wide structural change, including those driven by growing import competition from low-wage countries or digital innovation (see Box 3.1 for details).

Exposure to structural change varies strongly across regions

Regions are exposed very differently to import competition from low-wage countries and digital innovation due to the spatial concentration of economic activities (Figure 3.4). While the present analysis focusses on a region's exposure to import competition during the 2000s and that to digital innovation in the 2010s, its exposure to structural change may have changed significantly since then, as trade patterns and the nature of technological change have evolved, with potentially important consequences for regional outcomes, as discussed in Box 3.2.

Box 3.2. The effects of trade realignment and artificial intelligence

Recent OECD work and broader research highlight how trade realignment and technological change, especially artificial intelligence (AI), are shaping labour market outcomes across regions and workers in OECD countries.

Trade realignment

The effects of trade with China and Central and Eastern European countries may be changing importantly as their role in the world economy evolves. There are signs that China is reducing its imports from advanced economies as it is becoming increasingly self-reliant and, at the same time, competing more directly with exports from advanced economies. The latter is most apparent for the euro area, notably in automotives (de Soyres et al., forthcoming[11]). Similarly, OECD (forthcoming[12]) documents that Central and Eastern European countries are increasingly integrated in the supply chains of EU firms, notably in car manufacturing.

New or recent increases in tariff barriers and heightened trade tensions are forecast to slow economic activity and weigh on labour markets (OECD, 2025[13]). Along with increased policy uncertainty, increased tariffs act as a drag on trade flows, investment and output growth and ultimately may also dampen employment growth. While labour markets have shown resilience in the short term, these effects can become more visible with time as firms shift from absorbing increases in costs to making longer-term adjustments in production and investment, particularly in highly specialised regions dependent on international trade.

A recent multiregional input – output study simulating the increase in tariffs finds that it could lead to widespread employment losses, with cumulative global job losses exceeding 23 million in adverse scenarios, disproportionately affecting informal and low-skilled workers (Ernst, Michelena and Bertin, 2026[14]). Historical evidence further supports these findings: IMF research using long-panel country data from 1963 to 2014 shows that tariff hikes are associated with declines in domestic output and productivity, along with higher unemployment and rising inequality (Furceri et al., 2019[15]).

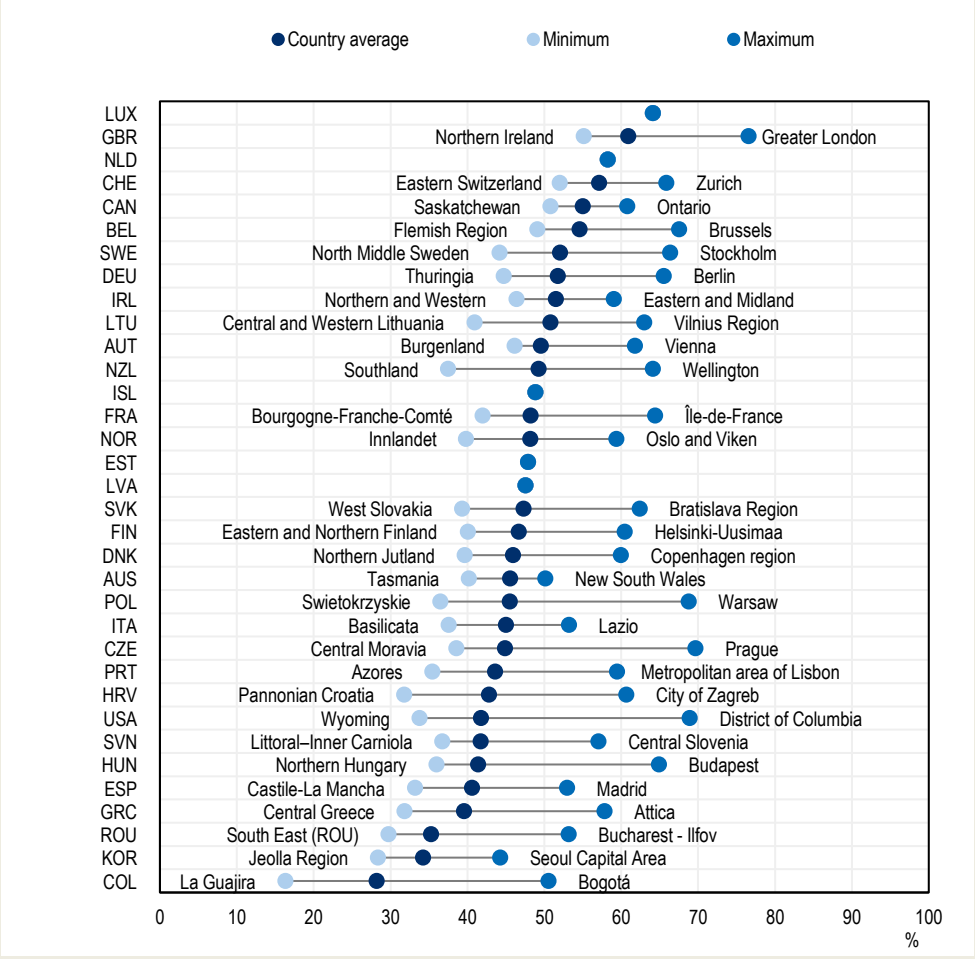
Artificial intelligence

The share of workers with jobs exposed to generative AI varies widely across places, with estimates ranging from about 16% in some regions to more than 70% in others, reflecting differences in industrial composition and occupational structures (Figure 3.3).[1] Regions with high concentration of employment in industries such as ICT, finance and education and occupations using cognitive and non-routine tasks tend to have higher AI exposure. Regional differences in AI exposure could exacerbate existing urban – rural divides in incomes and labour market outcomes (see Chapter 2).

Evidence on the effects of AI on local labour markets is only starting to emerge (see the discussion in Chapter 1 of this report). In a widely publicised study, Brynjolfsson et al. (2025[16]) finds that while overall employment continues to grow, employment among younger, early-career workers in occupations most exposed to generative AI has declined relative to less-exposed roles. Similarly, Hampole et al. (2025[17]) finds that AI adoption has not yet resulted in widespread job loss but instead is associated with productivity gains and employment growth in high-exposure occupations. Gal et al. (2024[18]) estimate that AI could increase annual aggregate productivity growth by between 0.25-0.6 p.p. over the next 10 years.

Figure 3.3. Regional exposure to generative AI

Share of employment highly exposed to Gen-AI now or in the near future, latest available year



1. Regional exposure to generative AI is measured by estimating the share of workers whose jobs include tasks that can be automated or augmented by generative AI technologies. Workers are considered to be highly exposed if the share of tasks in their occupation that can be done with Gen-AI (ChatGPT 3.5) exceeds 50%.

Note: Estimates for TL-2 regions except for Slovenia which is TL-3. Last available year: 2024 for Canada and Korea, 2023 for Australia, Colombia, Costa Rica, Mexico, New Zealand, the United Kingdom and the United States, 2022 for all others.

Source: OECD (2024[19]), *Job Creation and Local Economic Development 2024: The Geography of Generative AI* https://doi.org/10.1787/83325127-en.

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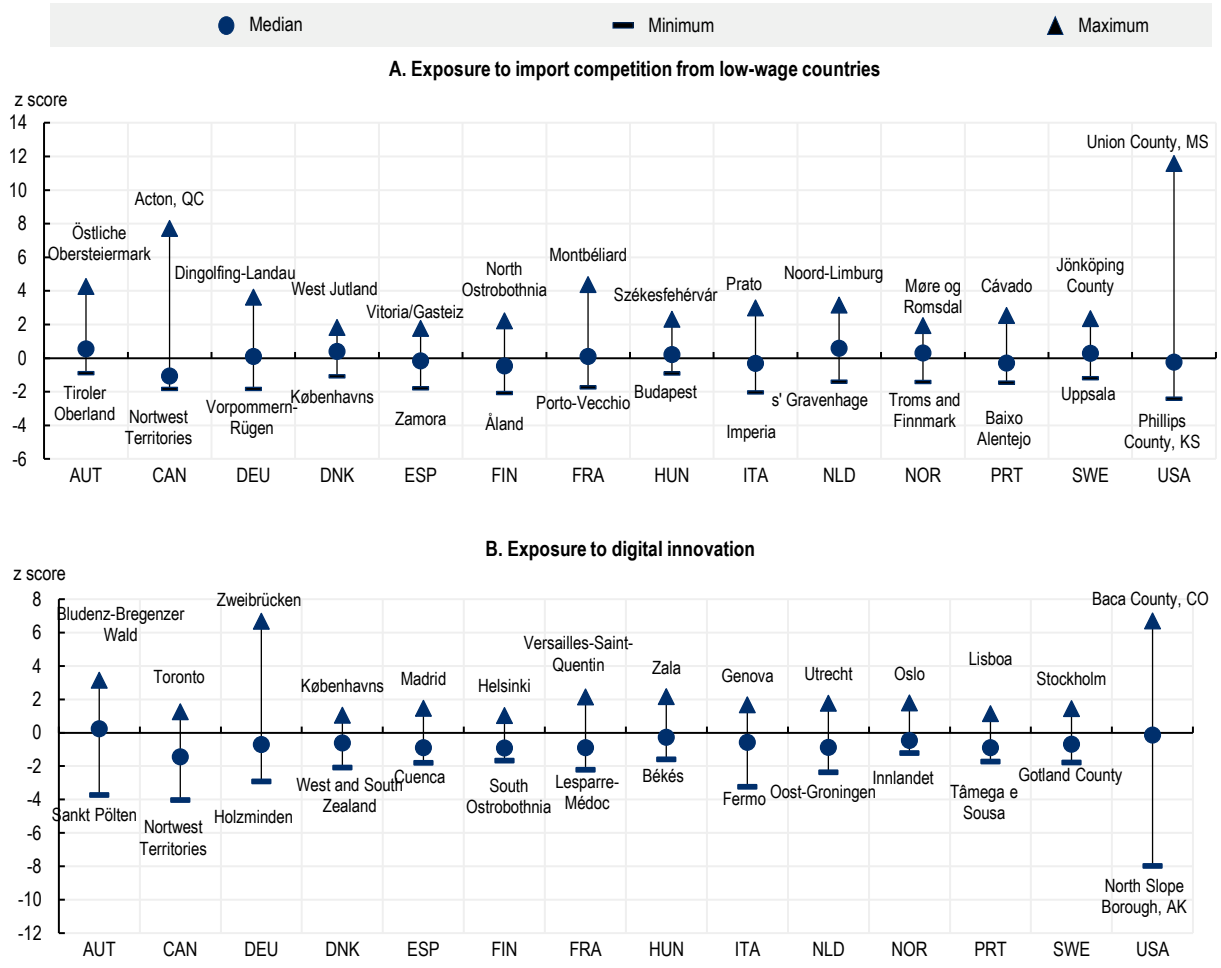
The impact of trade on regions is considered by focussing on sudden changes in import competition from low-wage countries, due to the admission of China to the World Trade Organisation (WTO) in 2001, or the expansion of the European Union to Central and Eastern European Countries (CEECs) in 2004-2007.[7] The local exposure of a region is measured by the rise in import penetration (i.e. the degree to which domestic demand is satisfied by imports rather than by locally produced goods) from both China and CEECs between 2000 and 2007 weighted by its industry shares in regional employment. To the extent that import competition leads to lower prices, profit margins, and employment in exposed industries, this is likely to disproportionately affect more exposed regions and particularly those where workers face barriers to switching industries or regions. Evidence from the "China shock" literature documents substantial job and income losses in more exposed local labour markets along with persistent scarring effects among incumbent workers (Autor, Dorn and Hanson, 2013[20]; Dorn and Levell, 2024[21]; Autor et al., 2025[22]). While all countries considered in this chapter have been exposed to a sharp rise in import competition during the early 2000s, it varied widely across regions within countries (Figure 3.4, Panel A).

The impact of technological change is examined by focussing on digital innovation during the 2010s. Digital technologies influence local labour markets through technology and scale effects, which depend on the way they complement or replace different groups of workers, the pattern of regional specialisation as well as other regional characteristics (e.g. intangible assets, universities). Digital technologies in the form of automation and software tend to reduce the demand for workers conducting routine tasks, while they complement workers specialisation in non-routine and interpersonal tasks (technology effect). Moreover, by raising productivity, they typically lead to lower prices and stronger product demand, with potentially positive effects for the overall demand for labour in an industry (scale effect). Regions with a high share of digitally complementary sectors, stronger skills bases, and greater intangible investment are more likely to benefit. Regional exposure to digital innovation is measured by global patent applications in 40 digital technologies from 2012 to 2021 linked to industries based on the semantic similarity of patent and industry descriptions weighted by regional employment shares in each industry at baseline in 2010 (Prytkova et al., 2024[10]; Prytkova and Petit, 2025[9]) (Panel B). Digital technology exposure is further broken down by the relevance of different digital technologies for different occupations (e.g. routine-manual vs. non-routine).

The present analysis of structural change in regions complements ongoing OECD work that identifies places exposed to intensified industrial restructuring pressure and maps their adjustment patterns across local labour markets in six OECD countries over the period 1975 to 2023, highlighting distinct trajectories of labour market adaptation. More than half of places showed resilience or bounced back within a decade. Nevertheless, three-quarters of all places experienced a decline in employment or productivity. Places with a stronger presence of higher education institutions, a broader service sector and younger populations were better equipped to absorb shocks and adapt to changing conditions (Ahrend et al., 2026[23]).

Figure 3.4. There are large differences in regional exposure to structural change

Regional exposure to import competition from low-wage countries and digital innovation by country, minimum, maximum and median z-scores



Note: Exposure to import competition from low wage countries refers to the increase in import penetration from China and Central and Eastern Europe over the period 2000-2007 multiplied by the share of each industry, whereas exposure to digital innovation refers to the semantic similarity between global patent applications of digital technologies over the period 2012-2021 and industry descriptions multiplied by the share of each industry. Exposure measures rare expressed as z-scores by subtracting the mean and dividing by the standard deviation. A value of one means that a region's exposure to structural change is one standard deviation above the average across regions in the country. See Box 3.1 for details.

Source: Setzler (forthcoming[4]), "The local impact of structural change" (preliminary title), based on national linked employer-employee data. See Annex Table 3.A.1. for details.

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3.1.3. Regional exposure across workers and firms

Regions do not only differ in their exposure to trade and technology shocks, but also in the composition of workers and firms. Geographical differences in exposure to trade and technology shocks, therefore, also translate into differences in exposure across workers and firms (Figure 3.5). Differences in worker composition in part reflect the fact that some groups of workers, e.g. the younger or more educated

workers, are more mobile than others. Differences in firm composition are to a large extent driven by initial location choice as firms' relocations are rare (OECD, 2023[24]).

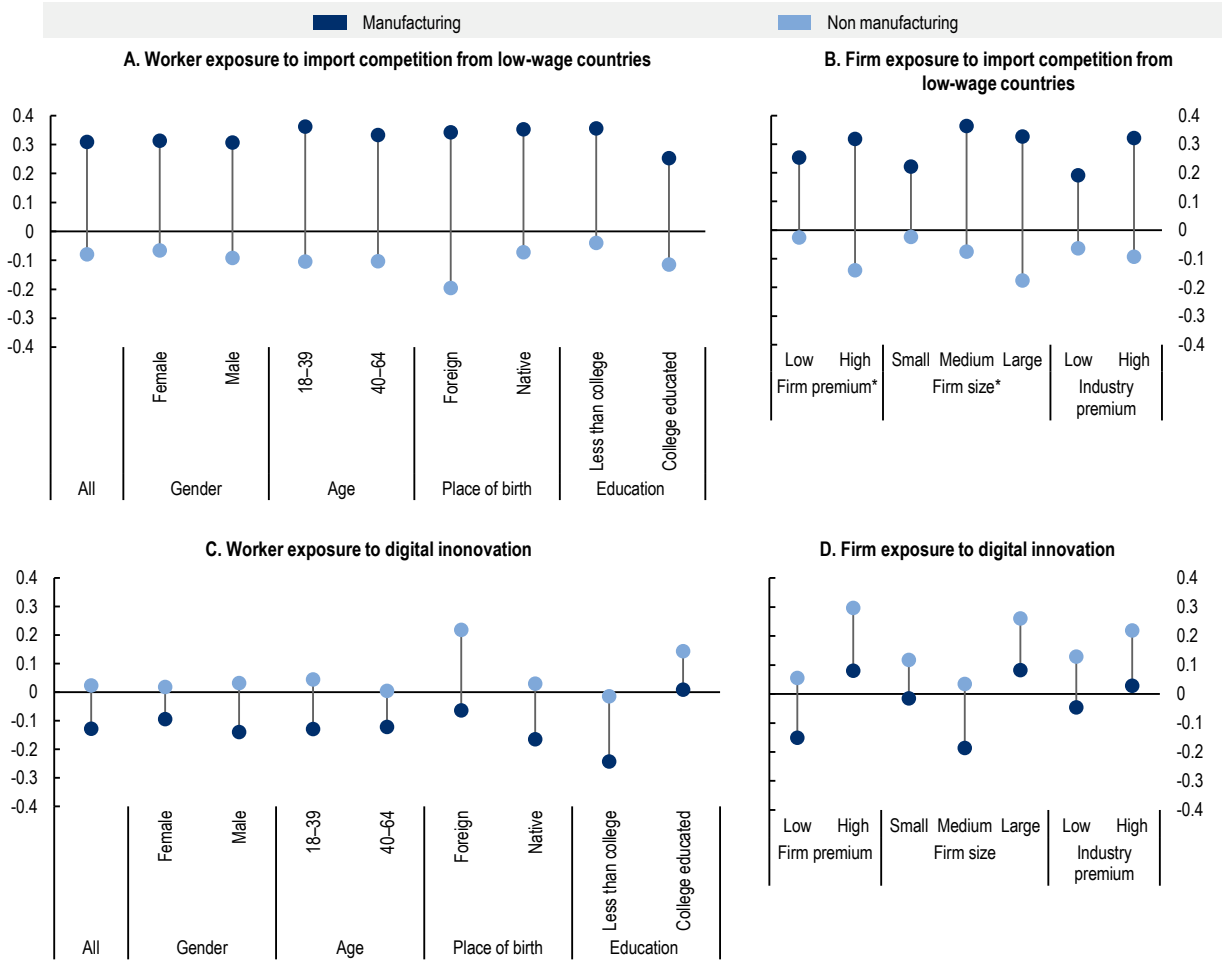
Manufacturing workers are concentrated in regions that are more exposed to trade shocks (as may be expected since trade shocks only exposed manufacturing workers by construction), while non-manufacturing workers are concentrated in regions that are more exposed to digital innovation. In 2000, the average manufacturing worker lived in a region with a trade exposure of +0.3 standard deviations above the average, compared to -0.1 standard deviations below the average for the average non-manufacturing worker (Figure 3.5, Panel A). Similarly, in 2011, the average manufacturing worker lived in a region with an exposure to technology shocks of -0.1 standard deviations below the average, while this was just above the average for the average non-manufacturing worker (Figure 3.5, Panel C).

College-educated workers are concentrated in regions that are more exposed to technology shocks and less exposed to trade shocks in both manufacturing and non-manufacturing (Figure 3.5, Panel A and C). The role of education is likely to reflect in part the tendency of more highly educated workers to move to urban areas, which tend to be less exposed to trade shocks. Similarly, foreign-born workers are concentrated in regions more exposed to technology shocks in both manufacturing and non-manufacturing and less exposed to trade shocks in non-manufacturing. The importance of migrant status reflects the fact that migrants tend to settle in urban centres which are more exposed to technology shocks and less to trade shocks. Differences by age and sex are negligeable as regional differences in the age and sex structure of employment tend to be small.

Manufacturing workers in firms and industries with more generous wage-setting practices (measured by wage premia, i.e. average wages conditional on workforce composition) as well as large firms are concentrated in regions more exposed to trade shocks, while the opposite is observed for non-manufacturing workers (Figure 3.5, Panel B). Manufacturing and non-manufacturing workers in large firms, high-wage firms and high-wage industries are concentrated in regions more exposed to technology shocks than their counterparts in smaller firms and lower wage firms and industries. Differences in exposure by firm type tend to be economically significant, suggesting that high-wage and high-productivity firms tend to locate in different locations from their low-wage, low-productivity counterparts. Moreover, the fact that they are somewhat more pronounced that those across groups of workers indicates that regional disparities primarily reflect the composition of firms rather than that of workers.

Figure 3.5. Exposure to structural change varies across firms and workers

Regional exposure to import competition from low wage countries and digital innovation by broad sector and worker/firm group in the base year, z-scores (standard deviations from the average)



Note: Exposure to import competition from low wage countries refers to the increase in import penetration from China and Central and Eastern Europe over the period 2000-2007 multiplied by the share of each industry, whereas exposure to digital innovation refers to the semantic similarity between global patent applications of digital technologies over the period 2012-2021 and industry descriptions multiplied by the share of each industry. The figure shows average regional exposure separately by worker and firm characteristics as measured in the initial year of the data. All exposure measures are expressed as z-scores by subtracting the mean and dividing by the standard deviation. A value of one means that a region's exposure to structural change is one standard deviation above the average across regions in the country. Firm-wage premia measure average firm wage wages conditional of worker composition estimated following the approach put forward by Abowd et al. (1999[25]). Industry wage premia reflect employment-weighted average firm wage premia as in Card et al (2025[26]). See Box 3.1 for details.
Unweighted average across the following countries: Austria, Canada, Denmark, Finland, France, Germany, Hungary, Italy the Netherlands, Norway, Portugal, Spain, Sweden, the United States.
*The United States is not included in the average for firm premium and firm size in Panel A and B and not included at all in Panels C and D.
Source: Autor et al. (2025[22]), "Places versus people: the ins and outs of labor market adjustment to globalization", in Handbook of Labor Economics, https://doi.org/10.1016/bs.heslab.2025.07.004 for the United States and Setzler (forthcoming[4]), "The local impact of structural change" (preliminary title), based on national linked employer-employee data. See Annex Table 3.A.1. for details.

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3.2. The impact of structural change on places, people and firms

The causal effects of structural change in local labour markets are analysed following the framework that was introduced by Dustmann et al. (2025[1]) and implemented by Autor et al. (2025[22]) for studying the local impact of the China shock across US labour markets (see Box 3.3 for details). The results are pooled across European Union countries plus Norway to allow including smaller countries with a limited number of regions in the analysis while doing statistical inference.[8] The estimates for the United States are taken from Autor et al. (2025[22]) who use the same empirical model with slightly more disaggregated industry and regional data. Regions either refer to small regions (TL3) or commuting zones.

Box 3.3. Methodology II: The effects of trade and technology shocks on places, people and firms

The empirical approach for analysing the impact of structural change on local labour markets is based on Dustmann et al. (2025[1]) and Autor et al. (2025[2]). The effects of structural change are analysed separately for local employment, the flows of workers across regions, sectors and employment statuses as well as different types of firms. Formally, it is based on the decomposition of employment changes in each region *r* between year *t* and a base year τ as a share of population in the base year ("places") into net worker flows ("people") and job reallocation between firms ("firms"):

$$\underbrace{\frac{E_{rt} - E_{r\tau}}{pop_{r\tau}}}_{places} = \underbrace{\sum_c \frac{inflow^c_{r,t-\tau} - outflow^c_{r,t-\tau}}{pop_{r\tau}}}_{people} = \underbrace{\sum_f \frac{E^f_{rt} - E^f_{r\tau}}{pop_{r\tau}}}_{firms} \quad (2)$$

where E_{rt} is regional dependent employment and $pop_{r\tau}$ the initial population in the region. The change in regional employment between a given year t and the initial year τ on the left-hand side is decomposed into the sum of net worker flows between different adjustment channels indexed by *c*. Workers may change sectors without changing regions (inter-sectoral mobility channel), change regions while remaining employed (geographic mobility channel),[1] transition in and out of working-age employment (employment mobility channel), and enter or leave the working-age population (age-related mobility channel).[2] The place effect can also be decomposed into net employment changes across different firm types indexed by *f*. Firms are differentiated according to the wage-setting practices of their industry, their firm wage practices relative to their industry average and their size. The decomposition is implemented using total regional employment as well as employment by broad sector (manufacturing, non-manufacturing).

To quantify the impact of structural change on places, workers and firms, long-difference models are separately estimated for each year *t*:

$$\Delta Y_{rt} = \alpha + \beta_t \Delta X_r + \delta_t W_{r\tau} + \epsilon_{rt} \quad (3)$$

where ΔY_{rt} is the regional net employment change since the base year, or alternatively its worker or firm components, ΔX_r refers to the local exposure to trade-induced or technology-induced structural change. The coefficient of interest β_t captures the effect of local exposure to structural change on places, workers or firms. $W_{r\tau}$ is a set of region-level control variables measured in the base year that account for pre-existing differences between regions such as the initial manufacturing share (trade) or the share of exposed industries and the regional employment-to-population changes between 2004 and 2012 (technology). Finally, ϵ_{rt} is the error term clustered at the region level. All regressions are weighted by total regional employment in the base year. When pooling regions from different countries (as when estimating results for Europe), we additionally control for country fixed effects to account for

between-country differences in time-invariant unobserved heterogeneity. As the regressions are estimated by year, time fixed effects are absorbed in the constant.

1. For the present purposes, being out of work is defined as being out of dependent employment in the country and may include being self-employed or employed in another country.
2. The panel dimension of the data allows defining inflow and outflow concepts based on an individual's age, region, employment status and sector in each year t compared to the initial year τ. Workers who are below the age of 18 in year τ and above the age of 64 in year t are always counted in the ageing channel.

3.2.1. The impact on trade and technology shocks on places

The estimated effects of trade on total regional employment and its contributions by manufacturing and non-manufacturing are presented in Figure 3.6 for Western Europe (9) (Austria, Denmark, France, Germany, Italy, Norway, Portugal, Spain and Sweden),[9] Canada, Germany and the United States. The effects of technology on total regional employment and its contributions by non-routine and routine-manual occupations are presented in Figure 3.7 for Europe (12) (Austria, Denmark, Finland, France, Germany, Hungary, Italy, the Netherlands, Norway, Portugal, Spain and Sweden), Canada Germany, and the United States. Regional employment is measured as the change in working-age employment over the period divided by the working-age population in the base year (to be consistent with the worker-level decomposition in Section 3.2.2).[10] Unlike studies that focus only on firms or specific industries, the regional approach employed here captures how changes spread within an entire area through spillover and other general equilbrium effects. These include amongst others higher demand from manufacturing companies for local services ("multiplier effect"), links between firms in the local supply chain ("input-output linkages"), and workers moving between local firms and industries ("reallocation"). The overall net effect is the combined result of these different forces in addition to its direct effects on firms and industries.[11]

The effects of trade shocks on places

Regional exposure to import competition from low-wage countries is associated with a persistent decline in the share of manufacturing in employment, but with important differences in its size between Western Europe (9) and the United States. A one standard-deviation increase in regional trade exposure, which corresponds to moving from a region with average exposure to one in the 80th-90th percentile, is associated with an average decline in manufacturing employment by 2018 of 0.4 p.p. in Canada, 0.5 p.p. in Western Europe (9), 1 p.p. in Germany and 1.4 p.p. in the United States. To put these effects in perspective, manufacturing employed 11% of working-age adults in the United States in 2000, 10% in Canada in 2001 and 5% in Western Europe in 2002. The documented declines per standard-deviation of trade exposure thus amount to the loss of about one in seven manufacturing jobs in the United States, one in ten in Western Europe and one in twenty-three in Canada.[12]

Growth in non-manufacturing employment eventually offsets job losses in manufacturing in most countries but with important differences in the timing of these effects. Cumulative job gains in non-manufacturing more than compensate any job losses in manufacturing from the start in Germany, but only from 2013 in the United States and 2015 in Western Europe (9). In Canada, where the adverse employment effect in manufacturing is small, there is no sign of offsetting job gains in non-manufacturing.[13] A one standard-deviation increase in regional trade exposure is associated with an increase in non-manufacturing employment of 0.7 p.p. by 2018 in Western Europe (mainly in producer services, see Box 3.4), 2.1 p.p. in Germany and 2.7 p.p. in the United States.[14] Although the empirical model does not establish a direct link between the rise in import competition and the growth in non-manufacturing employment,[15] this may in part be due to the relative price effects from import competition that make tradeable services more competitive, potentially supported by lower wage pressures due to the increase in effective labour supply following the contraction in manufacturing employment. The growth of non-manufacturing employment

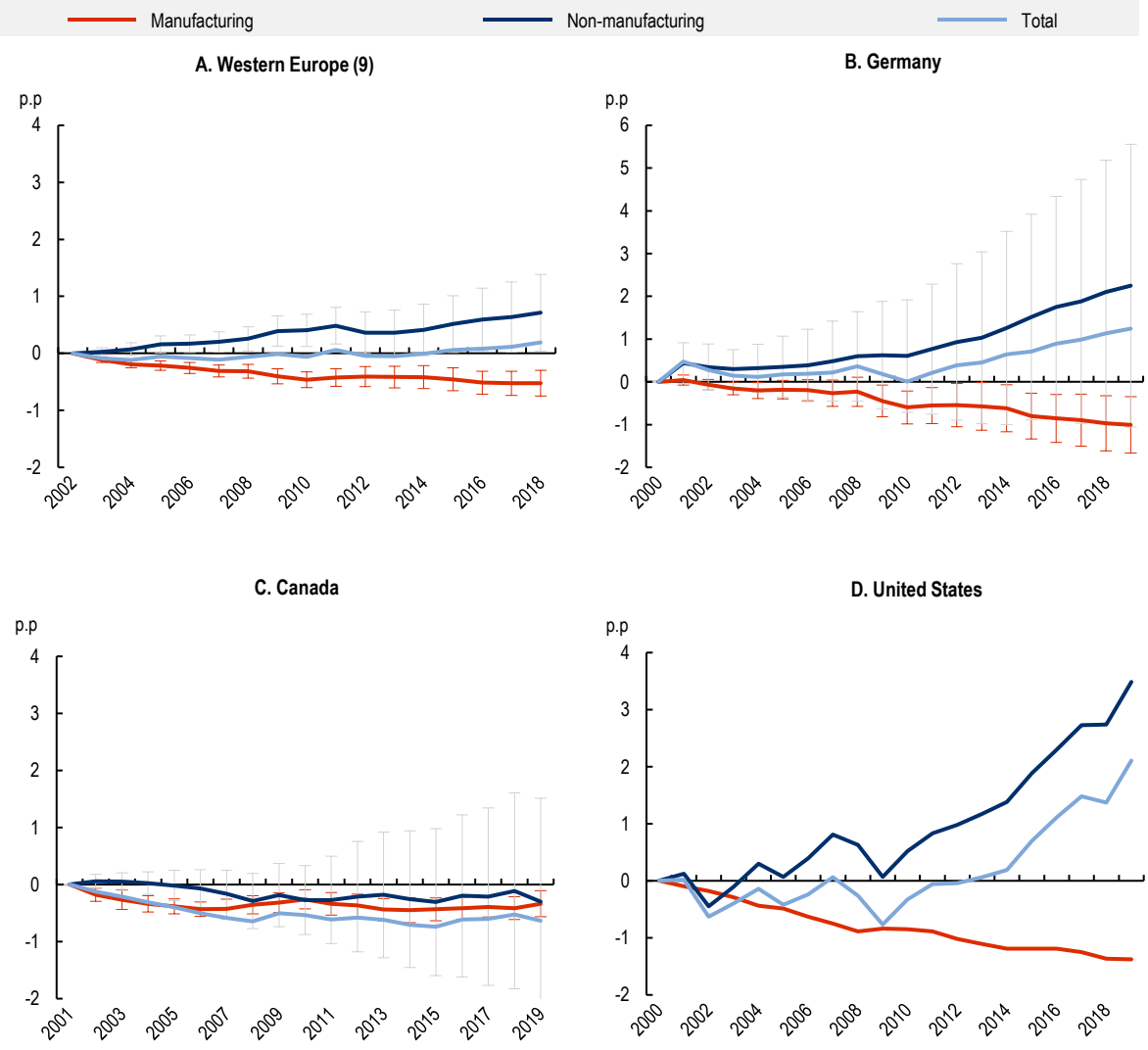
may also result from supportive policies as discussed in Section 3.3. On net, regional trade exposure is associated with an increase in total employment to the initial population by 2018 of 0.2 p.p. in Western Europe, 1.1 p.p. for Germany and 1.4 p.p. in the United States. Canada is an exception in that local employment remains depressed.

While for the United States the effects of low-wage competition are largely driven by the rise of China in world trade since 2001, for Western Europe, eastern enlargement of the EU between 2004 and 2007 is also important and its effect is somewhat larger than that of increased import competition from China (Annex Figure 3.B.1). For the United Kingdom, both sources of import competition matter for the decline in manufacturing employment but import competition from China is the main force (Foliano and Riley, 2017[27]). In Germany, imports from China mainly replaced imports from other low-wage countries and hence did not have much of an impact on manufacturing employment (Dauth, Findeisen and Suedekum, 2014[28]). Similarly, in Japan, cheaper imports of intermediate inputs supported firm productivity and led to increased job creation (Taniguchi, 2019[29]). By contrast, in the United States and Canada, imports from China competed more directly with domestic firms and workers (Autor, Dorn and Hanson, 2013[20]; Murray, 2017[30]). In recent years, the effects of trade may be changing as exports from China are becoming more similar to those from advanced economies, notably in the euro area, and Central and Eastern European countries are increasingly integrated in the supply chain in the EU (Box 3.2).[16]

It is important to note that the local labour market effects of trade with China and Central and Eastern Europe are not only driven by increased import competition in low-wage sectors but are also be shaped by new opportunities for exports. In Germany, increased imports from low-wage countries went together with increased exports. Indeed, taking account of the effects of increased exports suggests that overall international trade led to the creation of more manufacturing jobs than it destroyed in Germany (Dauth, Findeisen and Suedekum, 2014[28]). This partly reflects the importance of specialised machinery and equipment in German manufacturing, sectors that were both less directly exposed to Chinese competition and well positioned to benefit from rising demand by Chinese firms. German exporters may also have benefited from a prolonged period of wage moderation, supporting competitiveness. By contrast, the local labour market effects were more negative in countries such as the United States and the United Kingdom where manufacturing firms were more directly exposed to import competition from China and the growth in imports was not matched with a similar rise in exports (Dorn and Levell, 2024[21]).

Figure 3.6. The effects of trade exposure on regional employment

Percentage point effect of a one standard-deviation increase in regional exposure to import competition from low-wage countries on regional employment divided by the initial working-age population by broad sector



Notes: Exposure to import competition from low wage countries refers to the increase in import penetration from China and Central and Eastern Europe over the period 2000-2007 multiplied by the share of each industry. The figure shows the estimated effect of a one standard deviation increase in import competition exposure, using the specification in Equation (3) in Box 3.3. Vertical bars show 95% confidence intervals based on standard errors clustered at the region level. Employment rates are defined as working-age employment divided by the population in the base year. Shocks are normalised by subtracting the country mean and dividing by the country standard deviation. The regressions are weighted by regional employment in the base year.

Estimates for Western Europe are based on the following 9 countries: Austria, Denmark, France, Germany, Italy, Norway, Portugal, Spain, Sweden. The estimates for the United States are based on Autor et al. (2025[22])using the same empirical model but only focusses on imports from China along with slightly more detailed industry data. Regions refer to commuting zones in the case of France, Germany and the United States and small administrative regions elsewhere.

Source: National linked employer-employee data based on Autor et al. (2025[22]), "Places versus people: the ins and outs of labor market adjustment to globalization", in *Handbook of Labor Economics*, https://doi.org/10.1016/bs.heslab.2025.07.004 for the United States and Setzler (forthcoming[4]), "The local impact of structural change" (preliminary title), for the other countries. See Annex Table 3.A.1 for details.

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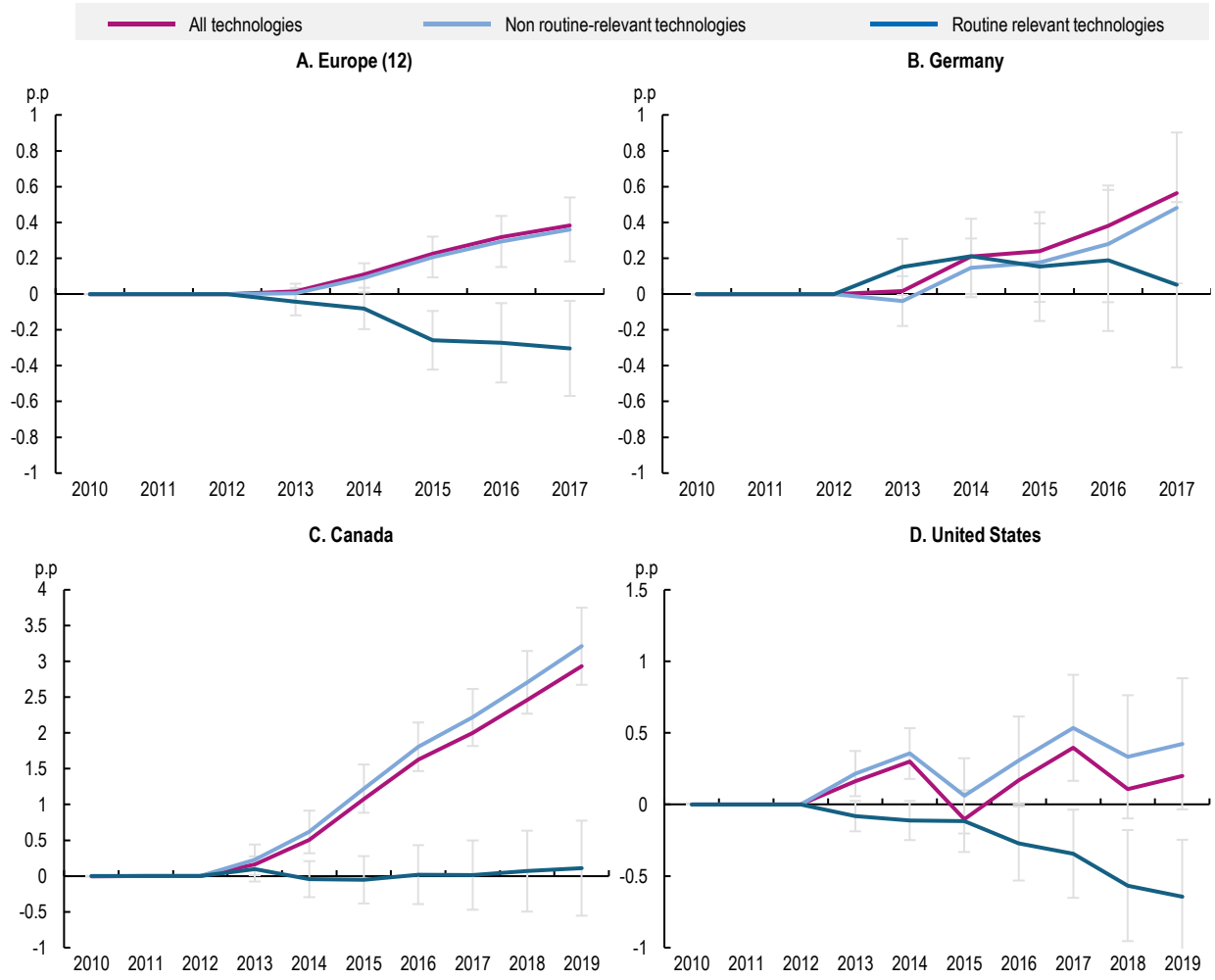
The effects of technology shocks on places

Regional exposure to emerging digital technologies is associated with a persistent increase in total employment. A one standard-deviation increase in a region's technology exposure is associated with an average increase in total employment between 2012 and 2017 of 0.4 p.p in Europe (12), Germany and the United States and 2.0 p.p. in Canada.[17] These effects are largely driven by producer services (see Box 3.4) and industries intensive in non-routine occupations. Regions exposed to innovation in digital technologies that are most relevant for industries with a strong focus on routine-manual occupations tend to see a decline in their employment share, except in Germany. In other words, exposure to digital innovation mainly augments labour, by boosting demand for workers in complementary tasks, but is labour-saving in routine-manual occupations, where tasks are more easily automated. These findings are broadly similar to those in Prytkova et al. (2024[10]) for Europe and Prytkova and Petit (2025[9]) for the United States. One possible explanation for the divergent findings for Germany is that routine manual workers may have been better able to adapt to technological change by transitioning into different roles within firms, supported by vocational training systems, internal labour markets and social dialogue institutions (Battisti, Dustmann and Schönberg, 2023[31]; Dauth et al., 2021[32]).

The present analysis of the effects of digital innovation complements the empirical literature that examines how the diffusion of industrial robots affects local labour market outcomes. For the United States, Acemoglu and Restrepo (2020[33]) show that commuting zones that are more exposed to robot adoption between 1990 and 2007 experienced declines in both total employment and wages, with job losses concentrated in manufacturing and only limited job gains in services. Their framework highlights how robots substitute for routine production tasks while productivity gains may not fully translate into local job creation when adjustment frictions and demand leakages are present. For Germany, Dauth et al. (2021[32]) find that robot exposure reduced manufacturing employment in more exposed regions but did not lower total employment because service-sector job growth offset losses in manufacturing. The burden of adjustment fell disproportionately on labour market entrants, while many incumbent workers transitioned to different roles within firms. The analysis does not capture recent developments in AI which may be particularly relevant for regions specialised in ICT and finance and may differ in its labour-saving and augmenting effects (Box 3.2).

Figure 3.7. The effects of technology exposure on regional employment

Percentage point effect of a one standard-deviation increase in regional exposure to digital innovation on regional employment divided by the initial working-age population by technology type



Notes: Exposure to digital innovation refers to the semantic similarity between global patent applications of digital technologies over the period 2012-2021 and industry descriptions multiplied by the share of each industry. Figures show the estimated effect of a one standard deviation increase in technology exposure, using the specification in Equation (3) in Box 3.3. Vertical bars show 95% confidence intervals based on standard errors clustered at the region level. Employment rates are defined as working-age employment divided by the population in the base year. Shocks are normalised by subtracting the country mean and dividing by the country standard deviation. The regressions are weighted by regional employment in the base year.

Estimates for Europe are based on the following 12 countries: Austria, Denmark, Finland, France, Germany, Hungary, Italy, the Netherlands, Portugal, Spain, Sweden. Regions refer to commuting zones in the case of France, Germany and the United States and small administrative regions elsewhere.

Source: National linked employer-employee data based on Autor et al. (2025[22]), "Places versus people: the ins and outs of labor market adjustment to globalization", in *Handbook of Labor Economics*, https://doi.org/10.1016/bs.heslab.2025.07.004 for the United States and Setzler (forthcoming[4]), "The local impact of structural change" (preliminary title), for the other countries. See Annex Table 3.A.1 for details.

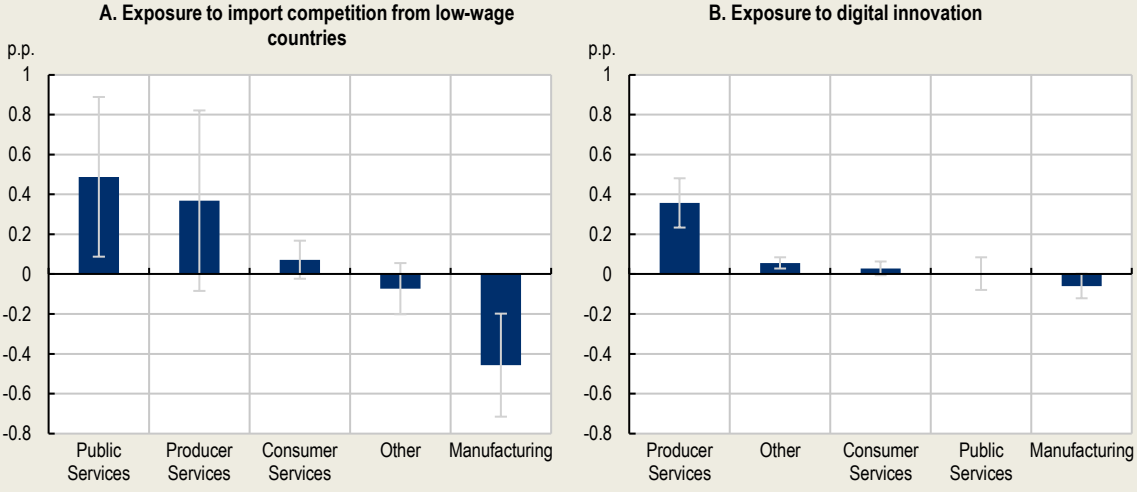
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Box 3.4. The effects of trade and technology shocks across sectors

Trade and technology-driven structural change tend to be associated with job creation in non-manufacturing. This box takes a closer look at where these new jobs are emerging (Figure 3.8). It shows that job creation in non-manufacturing is concentrated in public services e.g. health and education but also producer services, e.g. ICT, financial and legal services. By contrast, consumer services show little to no significant response to trade or technology shocks. This pattern suggests that the jobs created in the wake of trade and technological change tend to be relatively skill intensive. Section 3.2.3 examines whether these jobs are also concentrated in firms and industries characterised by more generous wage-setting practices.

Figure 3.8. The effects of exposure to trade and technology shocks on regional employment by sector

Percentage point effect of a one standard-deviation increase in regional exposure to import competition from low-wage countries and digital innovation and regional employment by sector in (Western) Europe



Note: Exposure to import competition from low wage countries refers to the increase in import penetration from China and Central and Eastern Europe over the period 2000-2007 multiplied by the share of each industry, whereas exposure to digital innovation refers to the semantic similarity between global patent applications of digital technologies over the period 2012-2021 and industry descriptions multiplied by the share of each industry. Figures show the estimated effect of a one standard deviation increase in import competition exposure, using the specification in Equation (3) in Box 3.3. Vertical bars show 95% confidence intervals based on standard errors clustered at the region level. Employment rates are defined as the working-age employment divided by the population in the base year. Shocks are normalised by subtracting the country mean and dividing by the country standard deviation. The regressions are weighted by regional employment in the base year.

Producer services refer to trade, transportation and utilities, information and communication, financial activities, professional and business services. **Public services** refer to public administration, health and education. **Consumer services** refer to leisure, hospitality and other service activities. **Other sectors** refer to construction, mining and agriculture. Figures exclude Hungary as the underlying data could not be cleared for confidentiality.

Estimates for Europe are based on the following 9 (12) countries for the trade (technology) shock: Austria, Denmark, (Finland), France, Germany, (Hungary), Italy, (the Netherlands), Portugal, Spain, Sweden.

Source: National linked employer-employee data based on Setzler (forthcoming[4]), "The local impact of structural change" (preliminary title), for the other countries.

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3.2.2. The impact on people

Trade and technology-driven structural changes have important effects on regional employment and its composition across industries (Box 3.4). This sub-section examines how this transformation takes place by focussing on worker flows between i) working-age employment and non-working-population ("age-related mobility channel"), ii) working-age dependent employment and working-age dependent non-employment ("employment mobility channel"),[18] iii) industries within regions ("inter-industry mobility channel"),[19] iv) employment in different regions ("geographical mobility channel"). The analysis of these flows exploits the longitudinal dimension of the underlying worker-level data, which allows tracking transitions in and out of national employment and across firms and regions of individual workers since the reference year.

The effects of trade shocks on people

Changes in regional employment by broad sector in response to low wage import competition are largely brought about by flows in and out of work. This is reflected in the combined contributions of the employment and ageing channels in Figure 3.7. In all countries considered, net flows in and out of work account for the bulk of the change in regional employment by broad sector due to regional trade exposure.[20] Importantly, this implies that workers that move out of manufacturing and move into non-manufacturing are by a large extent not the same individuals. However, the relative importance of the age-related and employment mobility channels differs across countries. In the United States, age-related mobility is the key channel for accommodating trade shocks, as older workers retire from manufacturing jobs and younger workers enter non-manufacturing jobs in more trade-exposed regions, while the role of employment mobility is small. Age-related mobility accounts for 65% of the decline in manufacturing employment between 2000 and 2019. By contrast, in Western Europe, Germany and Canada, both age-related and employment mobility tend to be important. The importance of employment mobility in Western Europe for job gains in non-manufacturing reflects to an important extent the role of migration from Central and Eastern European countries to Western Europe following the removal of restrictions on labour mobility from the early 2010s onwards (see Annex Figure 3.B.2 for France and Germany).[21,22]

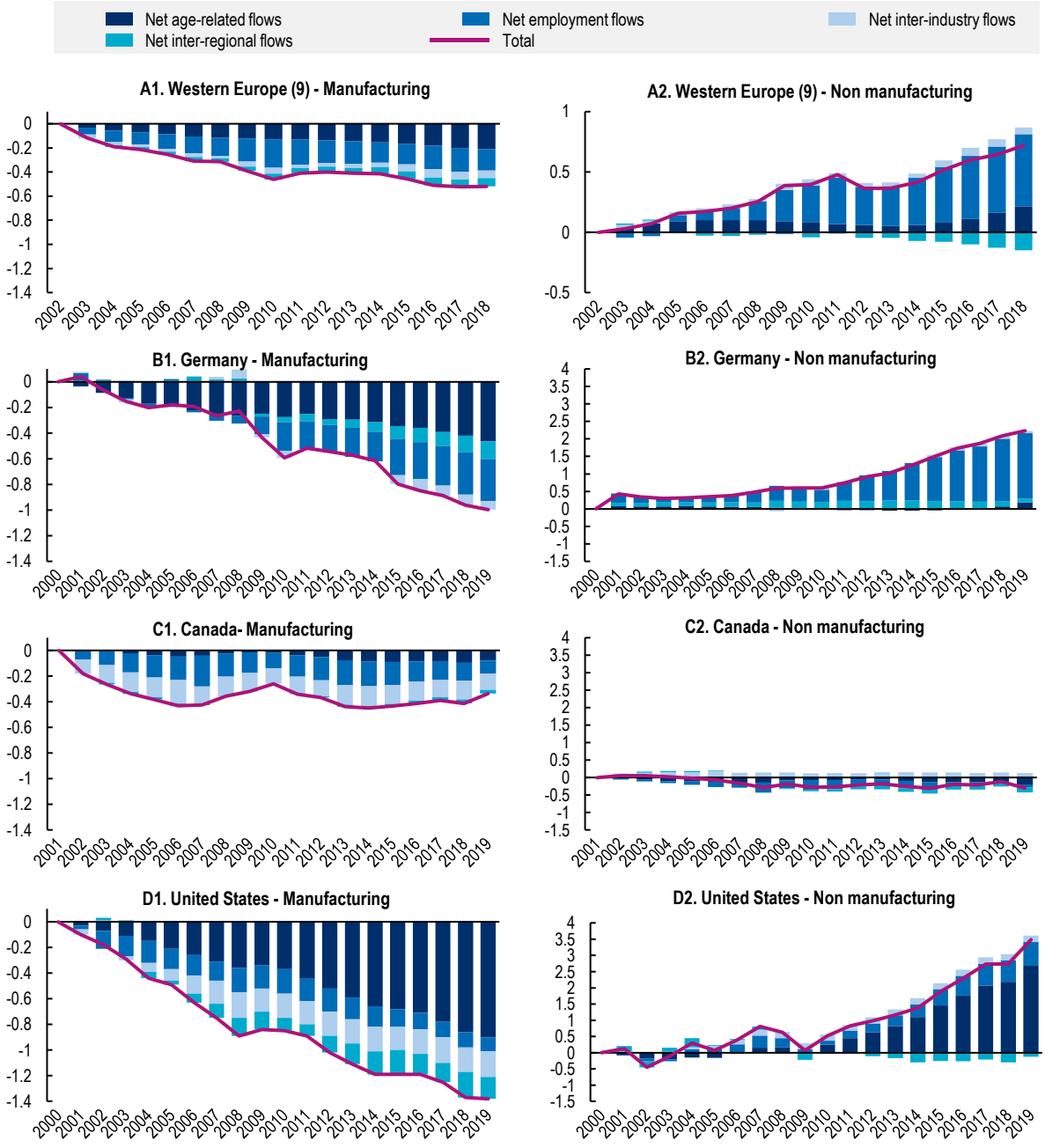
Mobility between regions and industries plays only a minor role in adjusting to low-wage import competition. Net sectoral outflows account for 12% of the decline in manufacturing employment between 2002 and 2018 in Western Europe and 14% between 2000 and 2018 in the United States, while net inflows account for even less of the increase non-manufacturing employment. Consequently, direct worker flows between industries account for rather little of the reallocation of employment between sectors.[23] There is evidence for the United States that manufacturing workers who earned higher wages before the China shock are more likely to move to jobs outside manufacturing and suffer smaller income losses. By contrast, lower-paid workers are less likely to change industry and suffer larger earnings losses as they remain exposed to the effects of import competition (Autor et al., 2014[34]). Net geographical mobility within countries accounts for a similarly small amount of the decline in employment in manufacturing (13% in Western Europe and 15% in the United States. Strikingly, in the United States, manufacturing employment declines in trade-exposed regions as a result of fewer migration inflows from other regions rather than more migration outflows to other regions as often suggested (Autor et al., 2025[22]). Net internal migration tends to dampen the expansion of employment in non-manufacturing in Western Europe and the United States but supports it in Germany.[24]

Overall, the analysis shows that place-based recovery and individual adjustment follow distinct trajectories. While total employment in local labour markets tends to recover from trade shocks after several years, manufacturing workers experience far more persistent effects. Adjustment is largely generational: older workers exit manufacturing, often permanently, while younger workers transition into jobs in non-manufacturing. This process can entail significant social costs. Evidence from the United States indicates that only a small share of lost earnings is offset by social transfers (Autor, Dorn and Hanson, 2013[20]) and

that the consequences of trade shocks go well beyond the loss of income, potentially contributing to reduced marriage and cohabitation rates, as result of an increase in NEET rates among young men (Autor, Dorn and Hanson, 2019[35]), and increases in crime and mortality, associated with drug and alcohol abuse (Feler and Senses, 2017[36]; Autor, Dorn and Hanson, 2019[35]).

Figure 3.9. The effects of regional trade exposure on net worker flows

Percentage point effect of a one standard-deviation increase in regional exposure to import competition from low-wage countries on net worker flows by broad sector



Notes: Exposure to import competition from low wage countries refers to the increase in import penetration from China and Central and Eastern Europe over the period 2000-2007 multiplied by the share of each industry. Figures show the estimated effect of a one standard deviation increase in import competition exposure, using the specification in Equation (3) in Box 3.3. The red line corresponds to the estimated employment effect in Figure 3.6.

Net age-related flows: The difference between i) the number of working-age workers who were below age 18 in the base year and were employed in manufacturing (non-manufacturing) in region r and year t, and ii) the number of working-age workers who were employed in manufacturing (non-manufacturing) in region r and the base year and were older than 64 in year t, divided by the working-age population in the base year.

Net employment flows: The difference between i) the number of working-age workers who were not in dependent employment in the same country in the base year and employed in manufacturing (non-manufacturing) in region r and year t, and ii) the number of working-age workers who were employed in manufacturing (non-manufacturing) in region r and the base year and were not in dependent employment in the same country in year t, divided by the working-age population in the base year.

Net inter-industry flows: The difference between i) the number of working-age workers who were employed in non-manufacturing in region r and the base year and employed in manufacturing in region r and year t, and ii) the number of working-age workers who were employed in manufacturing (non-manufacturing) in region r and the base year and employed in non-manufacturing in region r and year t, divided by the working-age population in the base year.

Net inter-regional flows: The difference between i) the number of working-age workers who were employed in a region other than r in the base year and were employed in manufacturing (non-manufacturing) in region r in year t, and ii) the number of working-age workers who were employed in manufacturing (nom-manufacturing) in region r and the base year and were employed in a different region in year t, divided by the working-age population in the base year.

Estimates for Western Europe are based on the following 9 countries: Austria, Denmark, France, Germany, Italy, Norway, Portugal, Spain, Sweden. The estimates for the United States are based on Autor et al. (2025[22]) using the same empirical model but only focusses on imports from China along with slightly more detailed industry data. Regions refer to commuting zones in the case of France, Germany and the United States and small administrative regions elsewhere.

Source: National linked employer-employee data based on Autor et al. (2025[22]), "Places versus people: the ins and outs of labor market adjustment to globalization", in *Handbook of Labor Economics*, Elsevier, https://doi.org/10.1016/bs.heslab.2025.07.004 for the United States and Setzler (forthcoming[4]), "The local impact of structural change" (preliminary title), for the other countries. See Annex Table 3.A.1 for details.

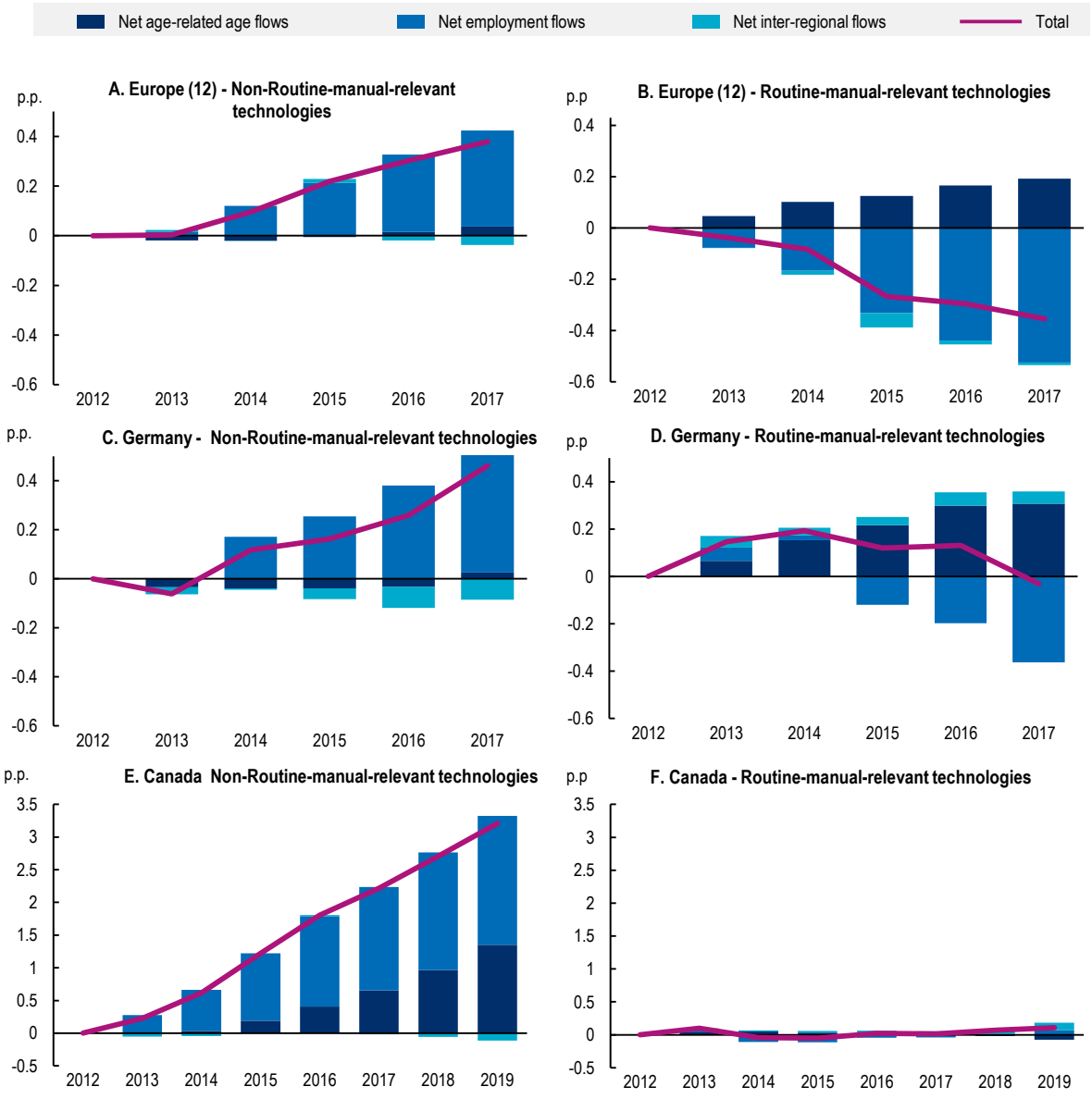
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The effects of technology shocks on people

As in the case of trade shocks, regional labour markets mainly adjust to digital innovation through transitions in and out of national employment, while transitions between regions play a minor role (Figure 3.10).[25] The increase in employment between 2012 and 2017 due to regional exposure to digital technologies is overwhelmingly driven by net inflows from non-employment, particularly from education. Similarly, the decline in employment in routine-manual occupations is entirely driven by net outflows to non-employment, and as in the case of trade shocks, resulting in persistent joblessness, with potentially important social and fiscal consequences. Empirical evidence further suggests that regions exposed to automation not only experience declines in routine manual employment but also increases in precarious employment, earnings in stability and labour force attachment (Acemoglu and Restrepo, 2020[33]; Graetz and Michaels, 2015[37]). In service-sector contexts, algorithmic management and job restructuring can heighten job strain and reduce worker autonomy, potentially affecting well-being even when employment is retained (Rosenblat and Stark, 2015[38]; De Stefano, 2015[39]).

Figure 3.10. The effects of regional technology exposure on net worker flows

Percentage point effect of a one standard-deviation increase in regional exposure to digital innovation on net worker flows by type of occupation



Notes: Exposure to digital innovation refers to the semantic similarity between global patent applications of digital technologies over the period 2012-2021 and industry descriptions multiplied by the share of each industry. Figures show the estimated effect of a one standard deviation increase in import competition exposure, using the specification in Equation (3) in Box 3.3. The dark line corresponds to the estimated employment effect in Figure 3.6.

Net age-related flows: The difference between i) the number of working-age workers who were below age 18 in the base year and were employed in manufacturing (non-manufacturing) in region r and year t, and ii) the number of working-age workers who were employed in manufacturing (non-manufacturing) in region r and the base year and were older than 64 in year t, divided by the working-age population in the base year.

Net employment flows: The difference between i) the number of working-age workers who were non in dependent employment in the same country in the base year and employed in manufacturing (non-manufacturing) in region r and year t, and ii) the number of working-age workers who were employed in manufacturing (non-manufacturing) in region r and the base year and were noy in dependent employment in the same country in year t, divided by the working-age population in the base year.

Net inter-regional flows: The difference between i) the number of working-age workers who were employed in a region other than r in the base year and were employed in manufacturing (non-manufacturing) in region r in year t, and ii) the number of working-age workers who were employed in manufacturing (non-manufacturing) in region r and the base year and were employed in a different region in year t, divided by the working-age population in the base year.
Estimes for the European Union are based on the following 12 countries: Austria, Denmark, Finland, France, Germany, Hungary, Italy, the Netherlands, Portugal, Spain, Sweden, Norway.
The estimates for the United States are based on Autor et al. (2025[22]) using the same empirical model but slightly more detailed industry and regional data.
Source: National linked employer-employee data based on Autor et al. (2025[22]), "Places versus people: the ins and outs of labor market adjustment to globalization", in *Handbook of Labor Economics*, https://doi.org/10.1016/bs.heslab.2025.07.004 for the United States and Setzler (forthcoming[4]), "The local impact of structural change" (preliminary title), for the other countries. See Annex Table 3.A.1 for details.

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3.2.3. The impact on firms

The impact of trade and technology shocks on local labour markets can also be analysed by examining how different groups of firms adjust. Three different firm splits are considered: i) across industries with wage premia above and below the median; ii) across firms with premia above and below the industry median; iii) across firms with more and less than 100 employees.

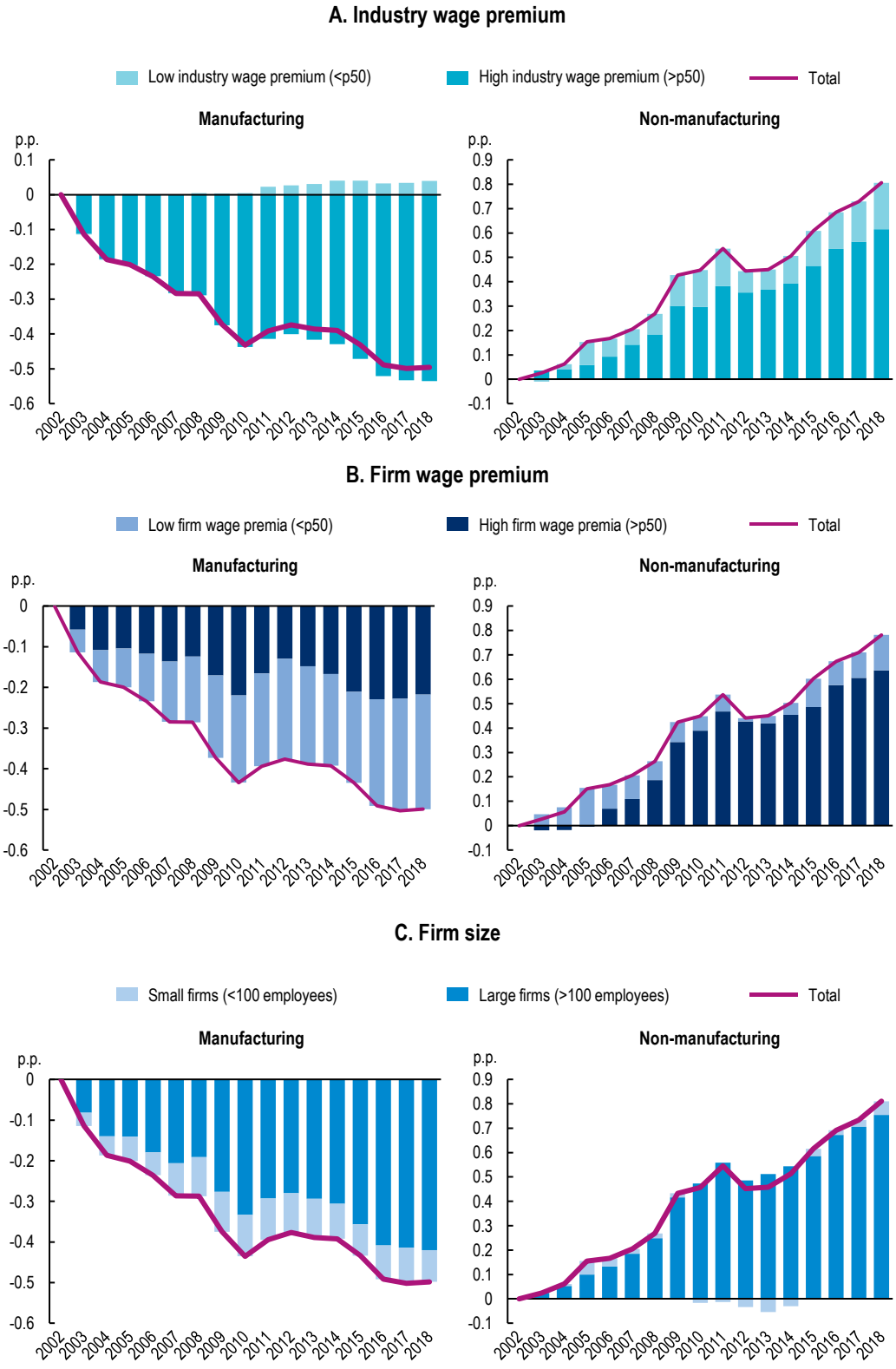
The effects of trade shocks on firms

Structural change differentially affects industries that differ in their wage-setting practices (Figure 3.11).[26] Regional exposure to import competition from low-wage countries reduces employment in manufacturing industries with more generous wage-setting practices (conditional on worker composition), while the corresponding increase in employment in non-manufacturing also tends to be concentrated in high-wage industries but not quite to the same extent (Panel A). This confirms the anecdotal evidence that the decline in manufacturing employment is associated with the destruction of quality jobs. The creation of new jobs in non-manufacturing, and in particular business services, is typically associated with more skilled employment but not always more generous wage setting-practices conditional on skills (Criscuolo et al., 2023[40]). In part, this is likely to reflect the lesser importance of collective bargaining beyond manufacturing.

Structural change also differentially firms that differ in their wage-setting practices within industries (Panel B). When industry employment contracts, this tends to be concentrated in firms with wage premia below the industry average. These are typically firms that have below-average productivity and are relatively small (Panel C). By contrast, when industry employment expands, this tends to be concentrated in firms with wage premia above the average in their industry, which are more likely to be high productivity and larger firms.[27] Consequently, employment shifts in both contracting and expanding industries from low-pay low-productivity firms towards higher paying and more productive firms. This process of job reallocation supports industry-level wage and productivity growth. These findings resonate well with those of previous firm-level studies that focus on the China shock. Using firm-level data for 12 European countries over the period 1996-2007, Bloom et al. (2015[41]) show that import competition from China increases productivity growth within firms and job reallocation towards more productive firms, together accounting for approximately 14% of productivity growth in Europe between 2000 and 2007.[28] Similarly, using firm-level data for France, Aghion et al. (2024[42]) show that employment contractions in response to import competition from China were concentrated in low productivity firms.

Figure 3.11. The effects of regional trade exposure across firms and industries

Percentage point effect of a one standard-deviation increase in regional exposure to import competition from low-wage countries on the composition of firms and industries, Western Europe (8)



Note: Exposure to import competition from low wage countries refers to the increase in import penetration from China and Central and Eastern Europe over the period 2000-2007 multiplied by the share of each industry. Figures show the estimated effect of a one standard deviation increase in trade or technology exposure, using the specification in Equation (3) in Box 3.3. Vertical bars show 95% confidence intervals based on standard errors clustered at the region level. Employment rates are defined as working-age employment divided by the population in the base year. Shocks are expressed in z-scores. The regressions are weighted by regional employment in the base year.
Low/high Industry wage premium: employment-weighted average firm wage premium below or above the median. **Low/high firm wage premium:** average firm wage conditional on workforce composition estimated with AKM in deviation from the industry mean below or above the median (Abowd, Kramarz and Margolis, 1999[25]). **Small and large firms:** firms with less than 100 employees or 100 employees and more.
Estimates for the European Union are based on the following 8 countries for the trade shock: Austria, Denmark, France, Germany, Italy, Norway, Portugal, Sweden. Spain is not included in the sample as the data sample is too small to obtain plausible estimates of AKM firm wage premia.
Source: National linked employer-employee data based on Autor et al. (2025[22]), "Places versus people: the ins and outs of labor market adjustment to globalization", in *Handbook of Labor Economics*, https://doi.org/10.1016/bs.heslab.2025.07.004 for the United States and Setzler (forthcoming[4]), "The local impact of structural change" (preliminary title), for the other countries. See Annex Table 3.A.1 for details.

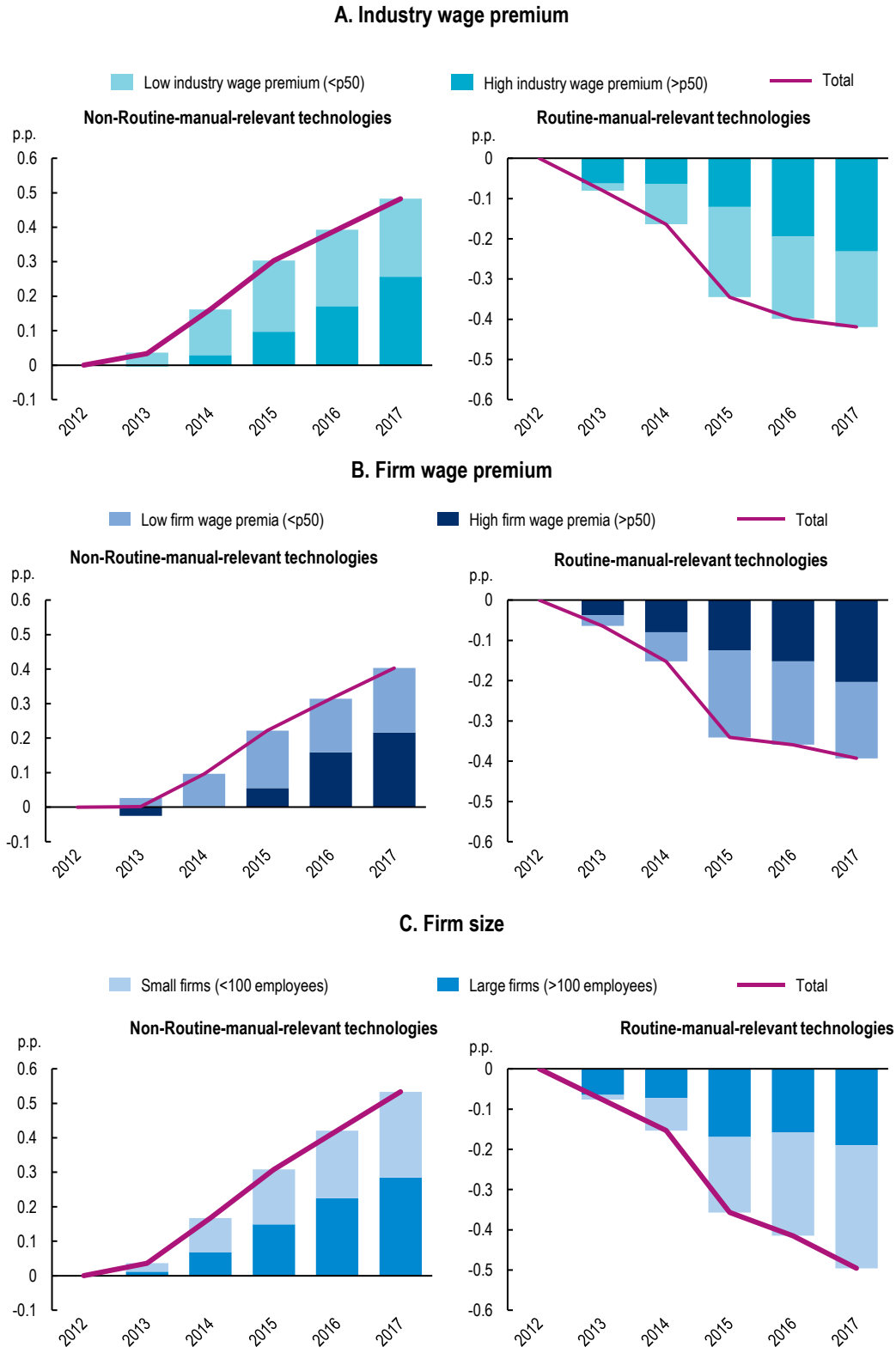
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The effects of technology shocks on firms

Regional exposure to digital innovation is associated with some important differences across firms and industries (Figure 3.12). Job creation in non-routine occupations and job destruction in routine-manual occupations is evenly split across high and low industries. Within industries, job creation and job destruction does not show important differences across firms according to their wage-setting practices. However, job destruction in routine-manual occupations tends to be concentrated in small and medium-sized firms, while job creation in non-routine occupations is split evenly between small and medium enterprises (SMEs) and larger firms. This pattern is consistent with evidence that smaller firms often face greater adjustment costs when adopting new technologies, making workforce restructuring a more important margin of adaptation, while larger firms may be better positioned to absorb technological change through internal reallocation and the creation of new non-routine jobs.

Figure 3.12. The effects of regional technology exposure across firms and industries

Percentage point effect of a one standard-deviation increase in regional exposure to digital innovation on the composition of firms and industries, Europe (11)



Notes: Exposure to digital innovation refers to the semantic similarity between global patent applications of digital technologies over the period 2012-2021 and industry descriptions multiplied by the share of each industry. Figures show the estimated effect of a one standard deviation increase in trade or technology exposure, using the specification in Equation (3) in Box 3.3. Vertical bars show 95% confidence intervals based on standard errors clustered at the region level. Employment rates are defined as working-age employment divided by the population in the base year. Shocks are expressed in z-scores. The regressions are weighted by regional employment in the base year.
Low/high Industry wage premium: employment-weighted average firm wage premium below or above the median. **Low/high firm wage premium:** average firm wage conditional on workforce composition estimated with AKM in deviation from the industry mean below or above the median (Abowd, Kramarz and Margolis, 1999[25]). **Small and large firms:** firms with less than 100 employees or 100 employees and more.
Estimes for the European Union are based on the following 11 countries for the trade shock: Austria, Denmark, Finland, France, Germany, Hungary, Italy, the Netherlands, Norway, Portugal, Sweden). Spain is not included in the sample as the data sample is too small to obtain plausible estimates of AKM firm wage premia.
Source: National linked employer-employee data based on Autor et al. (2025[22]), "Places versus people: the ins and outs of labor market adjustment to globalization", in *Handbook of Labor Economics*, https://doi.org/10.1016/bs.heslab.2025.07.004 for the United States and Setzler (forthcoming[4]), "The local impact of structural change" (preliminary title), for the other countries. See Annex Table 3.A.1 for details.

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3.3. Implications for place-based and national policies

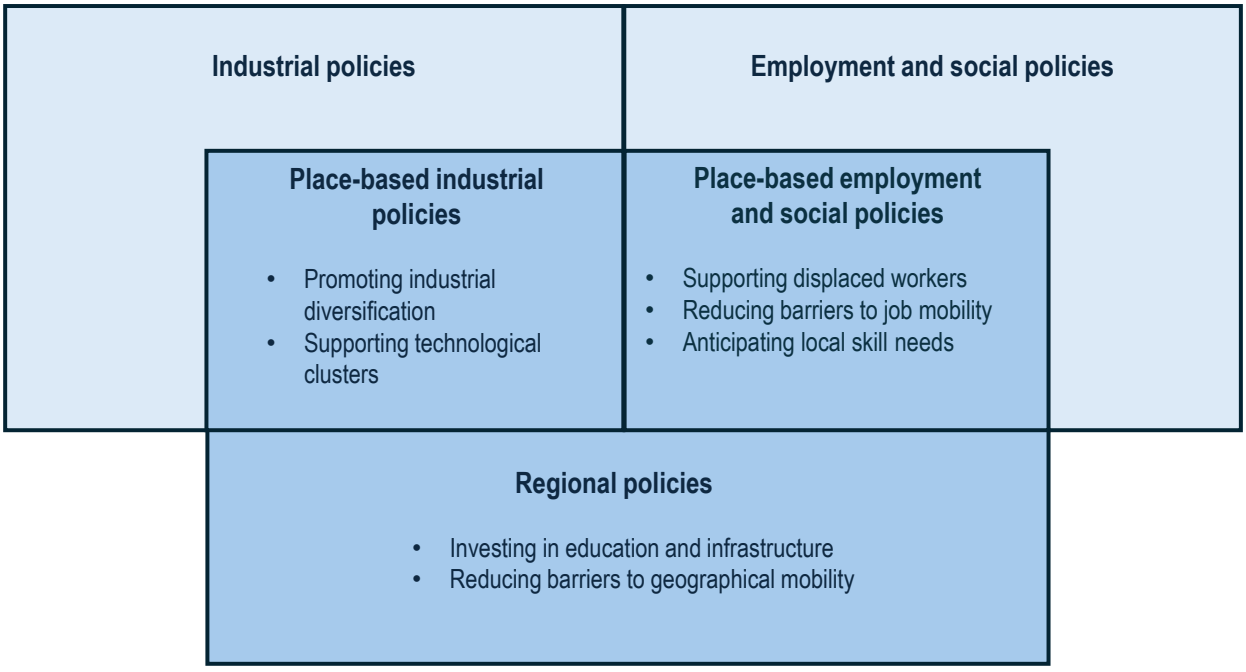
The persistent and place-specific effects of trade and technology shocks in many OECD countries highlight the importance of policies that help limiting local vulnerabilities and anticipating structural change, while alleviating its social costs by supporting transitions sectors and regions.

While labour mobility between regions and industries is often viewed as an important adjustment lever, the empirical evidence in this chapter shows that mobility responses play a modest role in attenuating the impacts of localised shocks.[29] Most OECD countries exhibit low internal migration rates, often below 3% annually, indicating that many workers, particularly older or lower-skilled ones, do not relocate when local job prospects decline (Causa and Pichelmann, 2020[43]). Job mobility between industries also tends to be relatively low (Elliot, 2003; Fluchtmann et al., 2026). Low mobility may reflect a variety of barriers related to lack of opportunities, the cost of moving across firms, occupations or regions and the personal circumstances of workers (OECD, 2025[44]). These include social ties, housing constraints and a desire to remain embedded in local communities – a notion often referred to as the "right to stay". Importantly, the less mobile workers are across regions and industries – that is, the steeper are local labour supply curves – the more adjustment to labour demand shocks occurs through changes in local wages and employment rates. Local labour markets exposed to adverse shocks therefore tend to experience persistently depressed earnings and employment rates, often lasting a decade or longer (Amior and Manning, 2018[45]; Rice and Venables, 2021[7]); Autor et al., 2022). Given the persistent effects of structural change and the resulting regional disparities, addressing them requires place-based policies supported by national policies (Venables, 2024[46]; OECD, 2025[47]).

Place-based policies are spatially targeted supply-side policies that are sensitive to local conditions and opportunities. They are designed to foster long-term local economic development and well-being, typically with the support of a higher-level government entity (OECD, 2025[47]). They usually aim at addressing market failures across different policy domains related to: (i) the local provision of *public goods* ("regional policies"); (ii) *externalities* of economic activities in particular locations ("place-based industrial policies"); and (iii) locational *frictions* to employment and labour mobility ("place-based employment and social policies").[30] While place-based policies often have an economic efficiency rationale, they can also be undertaken for non-economic reasons, including political, social, environmental or security objectives. The challenge for policymakers is to integrate these strands into coherent strategies, co-ordinated across different levels of government, that effectively respond to shocks and support people through transitions (Figure 3.1). Spatial targeting refers both to the allocation of resources – often requiring support from a higher-level government – and their place-sensitive implementation, which relies on locally embedded institutions.[31] The involvement of local and higher-level authorities underscores the importance of effective co-ordination across levels of government.

Place-based policies also face specific implementation and evaluation challenges. Multiple levels of government often share responsibilities, which can create co-ordination gaps and dilute accountability. Spatial targeting may also lead to spatial substitution effects, where economic activity relocates from neighbouring areas rather than generating net gains. Relatedly, spatial sorting may occur when mobile firms or workers move to benefit from targeted support, complicating the attribution of policy impacts. Limited administrative and technical capacity at the local level can further constrain effective implementation. These challenges highlight the need for robust evaluation frameworks tailored to spatially targeted interventions (OECD, 2017[48]). Embedding evaluation into programme design and adjusting or discontinuing measures that do not demonstrate effectiveness, can improve policy learning and ensure the cost-efficient use of public resources.

Figure 3.13. A framework for place-based policies



Box 3.5. Examples of place-based policies

Place-based policies have experienced a renewed interest in recent years. Although place-based policies are not new and have been an important part of government policy for many years, persistent and rising spatial economic disparities, together with the significant spatial impacts of structural change, have increased governments' focus on their potential (OECD, 2025[49]). In recent years, many OECD countries have adopted or scaled up place-based policies.

- The EU Cohesion policy plays a crucial source of funding for place-based policies in **EU countries** (OECD, 2025[47]). There are eight EU cohesion funds which are managed jointly by the European Commission and national and regional authorities in Member States, among which the European Regional Development Fund (ERDF), the European Social Fund Plus (ESF+) and the Cohesion Fund which are specifically designed to strengthen economic, social and territorial cohesion and correct imbalances between regions. Funds are primarily allocated based on the region's level of development. While 70% of the ERDF and ESF+ are concentrated on the EU's less developed regions, the Cohesion Fund is entirely allocated to low-income Member States (<90% of the EU average).
- The **United States** has a long tradition of place-based interventions, even in the absence of a formal regional policy framework. Federal programmes such as the Appalachian Regional Commission and the Delta Regional Authority target structurally disadvantaged regions through infrastructure, entrepreneurship and workforce development initiatives. In addition, the Economic Development Administration supports regional innovation strategies and cluster development in response to local economic shocks, including trade-related adjustment.
- In **Canada**, place-based policies support AI development and diffusion by concentrating investments in regions with existing research, talent, and industrial ecosystems. The Pan-Canadian Artificial Intelligence Strategy exemplifies this approach, anchoring world-class AI research hubs in Montréal, Toronto – Waterloo, Edmonton, and Vancouver, while regional development agencies and provincial governments support local AI adoption by firms through innovation vouchers, applied research partnerships, and cluster initiatives (such as SCALE.AI in Québec – Ontario).
- **Japan** has implemented comprehensive regional revitalisation policies to address population decline and economic concentration in Tokyo and surrounding areas. The "Comprehensive Strategy for Regional Revitalisation" promotes a stronger economy to improve well-being and make rural areas more attractive for young people and women. In addition, a "Strategy for the Future of Regions" is under consideration, aimed at promoting a growth-oriented regional development model centred on strategic industrial clusters.
- **Korea**'s balanced national development strategy includes the designation of innovation cities and enterprise cities outside the Seoul metropolitan area. Public institutions have been relocated to these areas to stimulate local economies. In parallel, regional innovation systems are supported through targeted R&D investment and collaboration between universities and local industry. The objective is to reduce spatial concentration and foster regionally embedded technological upgrading.
- **Australia**'s current approach to regional development is delivered through a national network of committees and a suite of regional policies co-ordinated by the national government. These initiatives emphasise place-based investment. In particular, the Regional Investment Framework highlights the importance of tailoring interventions to local contexts, valuing community input and priorities, and addressing diverse regional opportunities and challenges through co-ordinated, whole-of-government investment.

Source: OECD (2025[49]), "Place-based industrial policy: Lessons for place transformation", https://doi.org/10.1787/43edc0df-en.

3.3.1. Regional policies

Regional policies address market failures in the local provision of public goods by ensuring that regions have the capacity, resources, and co-ordination mechanisms needed to deliver essential services and infrastructure effectively (e.g. education, healthcare, and transport). These market failures arise when local authorities lack sufficient fiscal resources, when investment costs are high relative to local budgets, or when the benefits of public goods – such as transport networks, education and skills systems, digital infrastructure, health services, and environmental protection – extend beyond local boundaries. In practice, regional policies build on a region's existing strengths for economic development and address specific weaknesses that form bottlenecks. Public investments are therefore primarily driven by a development objective. However, by ensuring minimum levels of public services they can also strengthen social cohesion and reduce the perception of being "left behind" (see Chapter 2).

Structural change fundamentally reshapes the spatial distribution of economic activity, population, and fiscal capacity within countries, with significant implications for the provision of public goods. Rapidly growing regions – often driven by high-tech and knowledge-intensive services – benefit from expanding tax bases and innovation in service delivery, but also face acute pressures on housing, transport, education, and health systems, as well as risks of social and spatial exclusion. At the same time, deindustrialising regions experience job losses, population decline, and eroding local revenues, even as demand for public support, healthcare, and retraining increases. These contrasting trajectories strain sub-national systems of public goods provision and can deepen territorial inequalities.

Designing effective regional policy responses is challenging. Fiscal transfers and place-based investments must balance efficiency with equity, while avoiding long-term dependency or politically driven misallocation. Co-ordination across levels of government is often weak, administrative capacity varies sharply across regions, and policies typically follow rather than anticipate economic change. Addressing these challenges requires forward-looking governance, sustained investment in human capital, and institutions capable of redistributing resources and opportunities across regions, ensuring that public goods continue to support social cohesion and inclusive development in the context of ongoing structural transformation. Evidence from the Tennessee Valley Authority investment program (Kline and Moretti, 2013[50]) and the EU Structural Funds (Becker, Egger and von Ehrlich, 2012[51]; Becker, Egger and von Ehrlich, 2010[52]) suggests that infrastructure investment can be cost-effective in delivering productivity growth in targeted regions and can act as a redistributive tool across locations, but also that questions remain about how long-lasting these effects are and their underlying mechanisms (Neumark and Simpson, 2015[53]).

The empirical evidence also suggests that investments in education make regions better equipped to adjust to negative shocks. Cities with a higher initial share of college-educated workers were significantly more likely to recover from large deindustrialisation shocks, experiencing faster employment growth in the decades following manufacturing decline (Gagliardi, Moretti and Serafinelli, 2023[54]; Ahrend et al., 2026[55]). These results underscore that education is not only a long-term growth driver but also a key factor that enhances regional resilience, accelerates post-shock recovery and reduces the risk of becoming locked into structural decline.

The provision of local public services can also help to alleviate structural barriers to geographical mobility and consequently support structural change and inclusiveness (Box 3.6). These may be combined with employment and social policies that address individual barriers to geographical mobility, by improving access to information on job vacancies and relocation, providing financial support towards relocation expenses, facilitating access to local services (e.g. housing) in the destination location, and enhancing the portability of benefits and pensions.

Box 3.6. Policies to support geographical mobility

Geographical mobility can support structural adjustment and reduce regional disparities. When workers move from low-wage, high-unemployment regions to high-wage, low-unemployment regions, labour supply adjusts and regional gaps narrow. However, internal migration rates remain low in most OECD countries, often below 3% annually (Causa and Pichelmann, 2020[43]) – see also Chapter 2. This suggests that multiple barriers limit mobility. These barriers can be grouped into individual barriers to mobility and structural barriers to mobility.

Policies addressing individual barriers to geographical mobility

Individual barriers relate to social ties, access to services, financial constraints, and information gaps about job opportunities (see Chapter 2). Social ties include the personal and professional networks that could be highly valuable to workers in a variety of activity, such as childcare, leisure, and job search. Furthermore, many workers lack savings to cover upfront relocation costs, such as transport, housing deposits or temporary double housing. Financial support measures, including relocation grants and mobility allowances, can reduce these constraints. Several OECD countries, including Australia, Austria, Germany, New Zealand and Romania, provide such support to unemployed workers who accept jobs in other regions. For example, Austria provides commuting and housing allowances such as up to EUR 260 per month for travel and EUR 400 per month for secondary housing. Limited knowledge about job opportunities in other regions reduces effective job search. Public employment services can improve matching by providing vacancy information, relocation counselling and job-search assistance across regions.

Policies addressing structural barriers to geographical mobility

Inter-regional mobility rates differ significantly across countries, reflecting structural barriers that arise from housing markets, local service provision and institutional settings (Causa, Abendschein and Cavalleri, 2021[56]; Cavalleri, Luu and Causa, 2021[57]). Housing supply constraints, including restrictive land-use and planning regulations, can raise prices in high-demand regions and deter internal migration. Reforms that increase housing supply responsiveness, including social housing provision, can lower these barriers. Limited availability of childcare and other local services can further constrain mobility, especially for dual-earner households. Differences in regional policies can also reduce portability of benefits and create regulatory obstacles, such as non-recognition of qualifications. Enhancing portability of social benefits and priority rankings in accessing social services (e.g. social housing) and expanding mutual recognition of occupational licences can reduce these institutional barriers.

Integrated policy approach

An effective mobility strategy combines measures that address both individual and structural barriers, targeting especially the most vulnerable (see Chapter 2). Financial and informational support can enable workers to respond to opportunities. Housing, childcare and institutional reforms can ensure that people are willing to relocate and that destination regions can absorb migrants from other regions. Addressing only one set of barriers is unlikely to generate large mobility responses. A comprehensive approach can strengthen adjustment to structural shocks while supporting inclusive regional development.

Source: OECD (2025[44]), *Addressing Regional Labour Market Imbalances in Austria*, https://doi.org/10.1787/0cf6186b-en; OECD (2026[58]), *Reviving Productivity Growth in Canada*, https://doi.org/10.1787/773dcd00-en.

3.3.2. Place-based industrial policies

Industrial policies are typically justified based on the presence of externalities which drive a wedge between private returns and social benefits (Millot and Rawdanowicz, 2024[59]). These may be negative as in the case of carbon pricing policies to reduce environmental harm or positive as in the case of policies that seek to promote innovation through private-public partnerships. The case for industrial policies does not depend only on the presence of externalities but also the benefits of policy interventions relative to their costs. When done well industrial policies can help aligning market outcomes with broader economic, social and environmental objectives.

Traditionally, industrial policy focussed on supporting a limited number of strategic firms or "national champions", often in capital-intensive or high-technology sectors. Interventions typically took the form of direct subsidies, state ownership, or protection from competition, with the objective of achieving economies of scale, supporting international competitiveness, and boosting technological leadership at the national level. While this approach contributed to the development of key industries in some contexts, it often overlooked broader productivity dynamics, created risks of market distortion, and paid limited attention to territorial impacts.

More recently, industrial policy has evolved towards a broader, more forward-looking approach e.g. Criscuolo et al (2022[60]); OECD (2025[61]). Rather than targeting individual firms, the new generation of industrial policies focusses on strengthening entire sectors or value chains and enabling framework conditions such as skills development, innovation systems, access to finance, digital infrastructure, and regulatory environments. This approach places greater emphasis on anticipating global challenges, such as the renewable energy and digital transitions, and enhancing the adaptability of local economies to structural change. As a result, industrial policy is increasingly implemented through co-ordinated packages rather than stand-alone interventions.

This evolving perspective on industrial policy has increasingly blurred the distinction with regional policy. Many industrial policy measures are now delivered at the subnational level and tailored to local capabilities, institutional contexts, and spatial development goals (OECD, 2025[49]). This reflects a growing recognition that national-level interventions often fail to address local specificities. At the same time, regional policies increasingly incorporate industrial policy objectives, such as fostering regional innovation and supporting strategic value chains, also in the light of the important role of spatial proximity in facilitating knowledge diffusion within technological clusters. By aligning national sectoral priorities with local capabilities, place-based industrial policies mobilise underused assets across regions to create new sources of economic dynamism.

A good example are policies exploiting positive agglomeration effects by linking firms, universities, research centres and public authorities around shared regional specialisations. Examples include interventions in several OECD countries to support new or existing technological clusters, such as France's *Pôles de compétitivité*, Canada's Global Innovation Clusters and Germany's Leading-Edge Cluster Competition. Specialisation Strategies (S3) in the European Union (EU) are also seen as a clear example of place-based industrial policy because they explicitly tailor innovation and industrial priorities to the unique assets of each territory, using a participatory "entrepreneurial discovery" process and region-specific governance to direct investment toward locally grounded strengths. Another common example are cluster policies, which aim to create the conditions under which technological clusters can emerge and grow. This includes providing shared public goods, such as research facilities, specialised skills and infrastructure, as well as strengthening collaboration and aligning regional strategies with industry needs. Moretti and Yi (2024[62]) provide evidence for the United States showing that market thickness or agglomeration effects enhance the adaptability of local labour markets to structural change.

Place-based industrial policies should also promote sectoral diversification to limit local vulnerabilities and strengthen resilience to sector-specific shocks (OECD, 2025[49]). Diversification reduces dependence on a

single industry and limits the impact of downturns in specific sectors. Governments can support this objective through targeted investment in education systems that build transferable skills, enabling workers to adapt across industries. Policies to attract foreign direct investment can introduce new technologies and expand emerging industries.

3.3.3. Employment and social policies

Employment and social policies play a crucial role in supporting the adaptability of regions to structural change by anticipating skills needs, alleviating the social consequences of job loss and supporting transitions between industries and regions.

In deindustrialising or resource-dependent areas, active labour market policies – such as retraining, job-matching, and support for mobility – can complement regional and industrial policies that strengthen local demand, including support for small and medium-sized enterprises, social infrastructure, and public services. Active labour market policies provided by public (or private) employment services (PES) are central to this approach. By embedding employment support within the local context, providers of employment services help address specific local barriers, such as weak labour demand, specific skill needs and skill mismatches and limited transport connectivity). Evidence by Dorn and Lewell (2024[63]) suggests that active labour market policies can mitigate the impact of the China shock on employment in local labour markets.

Displaced workers in declining industries often face particular challenges, as industrial decline reduces local job opportunities. Chapter 3 of OECD (2024[64]) provides a detailed analysis of the challenges faced by workers in high-emission industries and discusses policies to support their transition. Well-designed out-of-work income support schemes, such as unemployment insurance and social assistance, can reduce earnings losses during periods of joblessness while supporting effective job search. Targeted measures, including in-work benefits and wage insurance schemes, can further facilitate transitions to new industries or regions where workers may initially face lower wages. Temporary wage supplements may also be linked to training investments to support longer-term upward mobility. Early intervention measures targeted at workers at risk of dismissal, alongside measures to manage collective redundancies, can further reduce the incidence and costs of displacement.

Beyond income support, structural transformation also increases the need for forward-looking upskilling and reskilling policies that prepare workers for emerging industries, occupations, and regions with stronger employment prospects (OECD, 2024[64]; 2025[65]). Strengthening skills anticipation systems is essential to identify evolving labour market needs early enough and ensure that training provision remains aligned with future demand. However, information about changing skills needs is often not communicated in a sufficiently accessible and actionable way, limiting participation in training. Career guidance plays a critical role in helping individuals understand both the opportunities and challenges associated with structural transformation. Flexible and modular learning programmes, combined with training leave and financial support, can help overcome barriers to adult learning (see Chapter 4). Training can also be made more accessible through work-based and on-site learning opportunities that provide practical experience alongside financial compensation. For example, initiatives in Australia and Canada provide targeted training pathways into growing sectors such as renewable energy and sustainable construction.

Structural change also affects the broader social fabric of local communities through rising joblessness, deteriorating health outcomes, social isolation, substance abuse, and family breakdown. Supporting declining regions therefore requires integrated support systems that combine employment services with mental health care, housing support, and childcare services (Fernandez et al., 2016[66]). Examples from Australia and South Korea, show how tailored well-being initiatives can help displaced workers rebuild purpose and reintegrate into the workforce (OECD, 2025[67]). Australia has implemented regional adjustment programmes in areas affected by industrial decline that combine training, peer support networks, and targeted mental health services with job placement assistance. In South Korea,

comprehensive reemployment programmes for displaced workers include counselling, career coaching, and psychological support. Such integrated support systems may work better when the social partners are effectively engaged (OECD, 2019[68]).

3.4. Concluding remarks

This chapter examines how major forces of structural transformation – notably import competition from low-wage countries and innovation in digital technologies – can have a very heterogenous effect across local labour markets in OECD countries, depending on their initial sectoral specialisation and the composition of the workforce. Using linked employer-employee data for 14 OECD countries, it analyses how regions differ in their exposure to trade and technology shocks and how these shocks affect employment, workers, and firms. The central finding is that, while regional employment tends to prove resilient to structural shocks on average, adjustment involves profound shifts across industries in the most exposed places. This entails substantial and persistent social costs for incumbent workers whose jobs are destroyed, reflecting limited mobility across sectors and regions. Although new activities generate jobs over time, many displaced workers do not seize these opportunities and instead face prolonged unemployment or even withdraw from the labour force altogether. From a policy perspective the main challenge is how to limit local vulnerabilities and anticipate change by fostering industrial diversification, investing in education and infrastructure and anticipating skills needs, while alleviating the social costs by supporting displaced workers, removing barriers to job mobility sectors and regions and promoting job opportunities.

More attention should be paid to the social costs associated with structural change. Policy debates have long emphasised that structural transformation is welfare-enhancing overall, with aggregate gains expected to outweigh losses and, in principle, allowing those adversely affected to be compensated. In practice, however, compensation and adjustment support have often fallen short. Moreover, models of structural change – particularly in the context of international trade – tend to adopt a long-run perspective in which workers are assumed to move smoothly across sectors and regions. This abstraction overlooks the reality that different activities require distinct skills and that many workers are strongly attached to their local communities, limiting their ability to consider a career change or willingness to relocate. As a result, adjustment costs are larger, more persistent, and more geographically concentrated than often anticipated. These gaps between theory and lived experience have contributed to a growing sense of discontent in some communities among those who felt “left behind” and may have undermined trust in government institutions and contributed to political polarisation (OECD, 2024[69]).

The work undertaken for this chapter represents an important investment in unlocking the regional dimension of linked employer-employee data. This progress opens multiple avenues for future research. One obvious possibility would be the development of a harmonised database on employment and wages – and, where feasible, productivity – at the level of commuting zones or small administrative units. Such a resource would enable secondary analysis of a wide range of policy-relevant questions, including the local labour market effects of other shocks such as natural disasters, the role of firms in shaping regional disparities, the dynamics and consequences of regional mobility, and the resilience of local economies to structural change. Strengthening the spatial granularity and comparability of microdata across countries would significantly enhance the evidence base needed to design policies that support workers and places through economic transformation.

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Annex 3.A. Data sources

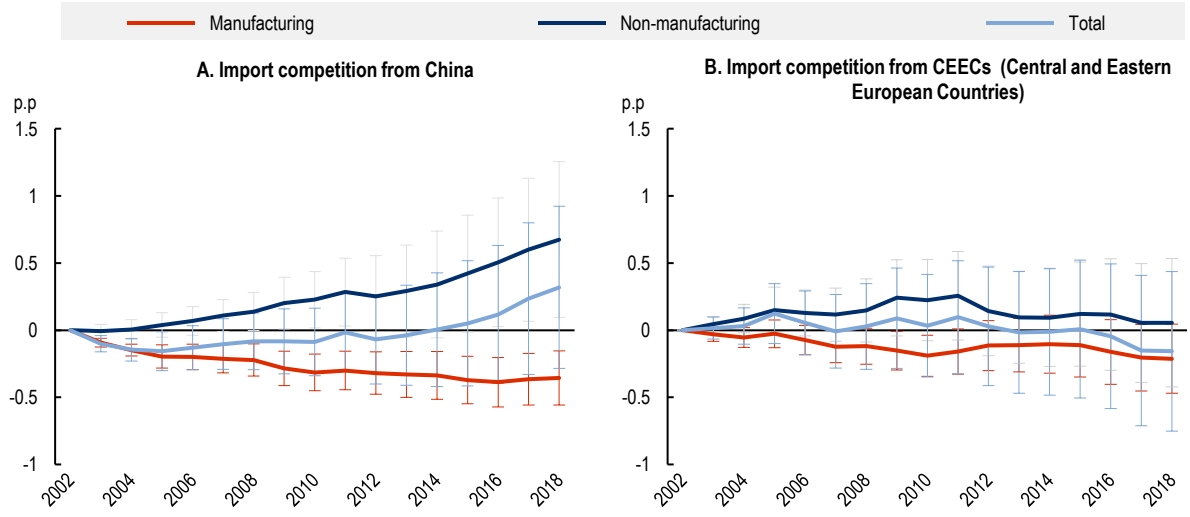
Annex Table 3.A.1. Data sources

Country	Name	Source	Sample	Period
Austria	AMS-BMASK Arbeitsmarktdatenbank	Social security administration	Universe	1997-2024
Canada	Canadian Employer-Employee Dynamics Database	Tax administration	Universe	2001-2019
Denmark	Integrerede Database for Arbejdsmarkedsforskning (IDA) and other data from Statistics Denmark	Tax administration	Universe	1995-2022
Finland	FOLK employment data from Statistics Finland, Employer Payroll Report from Tax Admin.	Tax administration	Universe	2004-2022
France	Panel DADS	Social security administration	8.5% random sample of workers	1994-2021
Germany	Integrierte Erwerbsbiographien (IEB)	Social security administration	10% random sample of workers	2000-2019
Hungary	ADMIN – I – Panel of administrative data (OEP, ONYF, NAV, NMH, OH)	Social security administration	50% random sample of workers	2003-2017
Italy	Italian Social Security (INPS)	Social security administration	6.7% random sample of workers	1995-2022
Netherlands	CBS Microdata from Statistics Netherlands	Tax administration	Universe	2006-2019
Norway	Arbeidsgiver- og arbeidstakerregister (Aa-registeret), Lønns- og trekkoppgaveregisteret (LTO)	Tax administration	Universe	2001-2019
Portugal	Quadros de Pessoal	Mandatory employer survey	Universe	2002-2023
Spain	Muestra Continua de Vidas Laborales con Datos Fiscales (MCVL-CDF)	Social security and tax administration	4% random sample of workers	1995-2023
Sweden	Longitudinell integrationsdatabas för sjukförsäkrings- och arbetsmarknadsstudier (LISA), Företagens ekonomi (FEK), Jobbregistret (JOBB)	Social security administration	Universe	2002-2018
United States	Longitudinal Employer Household Dynamics (LEHD)	Social security administration (UI administrative records)	Universe	2000-2019

Annex 3.B. Additional results

Annex Figure 3.B.1. The effects of trade exposure by import region-of-origin and broad sector

Percentage point effect of a one standard-deviation increase in regional exposure to import competition from low-wage countries on regional employment divided by the initial working-age population, by broad sector, Western Europe (9)

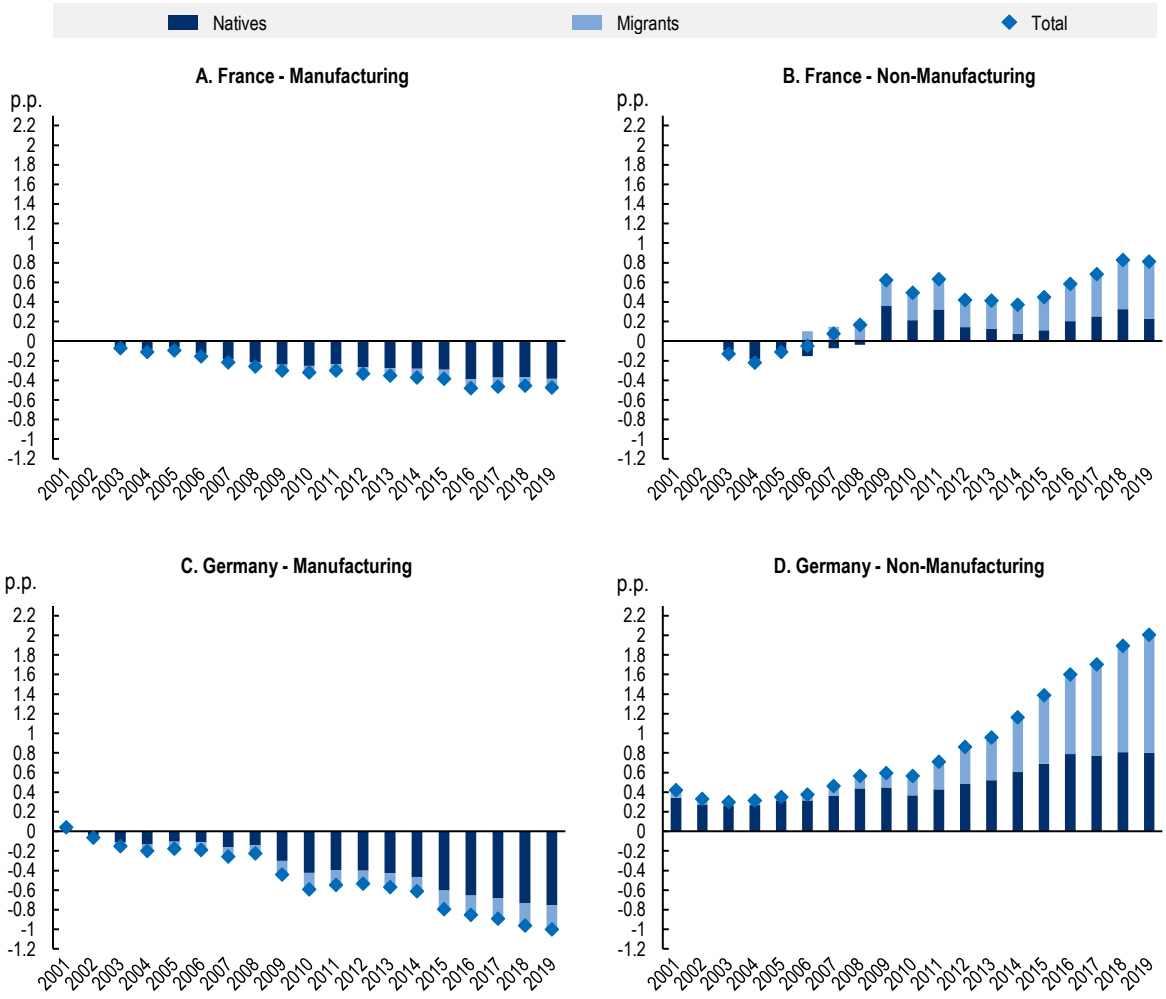


Note: Exposure to import competition from low wage countries refers to the increase in import penetration from China and Central and Eastern Europe over the period 2000-2007 multiplied by the share of each industry. The figure shows the estimated effect of a one standard deviation increase in import competition exposure, using the specification in Equation (3) in Box 3.3. Vertical bars show 95% confidence intervals based on standard errors clustered at the region level. Employment rates are defined as working-age employment divided by the population in the base year. Shocks are expressed in z-scores. The regressions are weighted by regional employment in the base year.
Source: National linked employer-employee data based on Setzler (forthcoming[4]), "The local impact of structural change" (preliminary title). See Annex Table 3.A.1 for details.

StatLink https://stat.link/i3ykmv

Annex Figure 3.B.2. The effects of trade exposure by migration status and broad sector

Percentage point effect of a one standard-deviation increase in regional exposure to import competition from low-wage countries on regional employment divided by of the initial working-age population, by migration status and broad sector, France and Germany



Note: Exposure to import competition from low wage countries refers to the increase in import penetration from China and Central and Eastern Europe over the period 2000-2007 multiplied by the share of each industry. The figure shows the estimated effect of a one standard deviation increase in import competition exposure, using the specification in Equation (3) in Box 3.3. Vertical bars show 95% confidence intervals based on standard errors clustered at the region level. Employment rates are defined as working-age employment divided by the population in the base year. Shocks are expressed in z-scores. The regressions are weighted by regional employment in the base year.
Source: National linked employer-employee data based on Setzler (forthcoming[4]), "The local impact of structural change" (preliminary title). See Annex Table 3.A.1 for details.

StatLink https://stat.link/jrm12e

Notes

[1] This chapter is the outcome of a collaboration between the Directorate of Employment, Labour and Social Affairs (ELS) and the Centre for Entrepreneurship, SMEs, Regions and Cities (CFE). The analysis using linked employer-employee builds on contributions of national experts from the OECD LinkEED 2.0 network (www.oecd.org/en/about/projects/linkeed-200.html): Patrick Bennett (University of Liverpool and IZA), Filipe Bento Caires (European University Institute), Dogan Gülümser (RF Berlin), Marie Kjeldsen (Aarhus University), Benjamin Lochner (FAU, IAB and IZA), Stefano Lombardi (VATT, IFAU, IZA and UCLS), Claudio Luccioletti (Bank of Italy), Tahsin Mehdi (StatCan), Jordy Meekes (Leiden University and IZA), Balázs Muraközy (University of Liverpool), Marco G. Palladino (Banque de France), Kjell Salvanes (NHH and IZA), Oskar Nordström Skans (Uppsala University, UCLS, IZA and IFAU), Rune Vejlin (Aarhus University and IZA) and Lennart Ziegler (University of Vienna). Bradley Setzler (Penn State) provided scientific guidance. The project is also part of the OECD Transforming Places project, funded by UKRI (https://www.oecd.org/en/about/projects/transforming-places.html). For additional information on the empirical analysis, please see the companion paper to this chapter by Setzler et al. (forthcoming[4]).

[2] Structural changes in the composition of employment between industries in advanced economies since the early 2000s are typically attributed to a combination of technological change, growing trade integration and changes in consumer demand (partly as a result of population ageing) (Herrendorf, Rogerson and Valentinyi, 2014[80]). The present chapter focusses on key supply-side factors related to trade and technology. While demand-side factors also played an important role, these cannot be readily analysed in the analytical framework adopted in this chapter.

[3] In a companion paper to this chapter by Setzler et al. (2026) differences in the adjustment response of regions to local exposure are examined as well as the factors driving them.

[4] In addition to having detailed information on the location of the employer and the employee, the use of commuting zones also requires corresponding information on population size in the base year, which is not always available, especially when user-based definitions of commuting zones are employed.

[5] A possible alternative to small administrative regions or commuting zones would be to make use of functional urban areas that connect cities with their surrounding commuting zones (Dijkstra, Poelman and Veneri, 2019[70]). However, functional urban areas do not cover rural areas.

[6] Differences in specialisation across regions are notably more pronounced in the United States. In part, this may be a data issue since for the US commuting zones and 4-digit NAICS industries are used, and sparsely populated regions may further contribute to this dispersion by amplifying concentration in a narrow set of industries. This also generates larger differences in regional exposure to trade and technology shocks, as shown in Figure 3.4.

[7] Following the enlargement of the European Union to Central and Eastern Union in 2004 and 2007, most countries maintained significant restrictions on the movement of labour until 2011 and 2014. Sweden and the United Kingdom are notable exceptions in that they all allowed for free movement immediately after enlargement. Since the trade shock is measured over the period 2000-2007, it largely preceded the wave of immigration from Central and Eastern Europe.

[8] The pooled regressions include country-fixed effects but are otherwise identical to the country-specific regressions.

[9] Finland, Hungary, and the Netherlands are excluded from the baseline analysis of the trade shock as the data do not allow starting from 2002. These countries are included when considering the technology shock.

[10] This is different from the change in the working-age employment rate. The latter takes account of both changes in working-age employment and changes in working-age population. Changes in working-age population may be important when trade exposure affects net migration between regions or countries. The effects on net migration are considered in Section 3.2.2 as part of the worker-level analysis. Results for the change in the working-age population are reported in Setzler et al. (forthcoming[4]).

[11] For studies taking a firm-level or industry-level, see for example De Lyons and Pessoa (2021[73]) for the United Kingdom, Utar (2018[72]) for Denmark and Nilsson, Hakkala and Huttunen (2016[79]) for Finland.

[12] While the magnitude of the effect in Canada may seem small, when expressing jobs lost as a share of the employment change in manufacturing between 2001-2018, our estimate implies that about 20% of the decline in manufacturing employment can be attributed to import competition from low-wage countries. This is very similar to the estimate reported by Murray (2017[30]).

[13] In fact, the effect on non-manufacturing is slightly negative. This may reflect spillovers effects from manufacturing to non-manufacturing due to input-output linkages, consistent with Murray (2017[30]).

[14] As shown in Annex Figure 3.B.2 for France and Germany, job gains in non-manufacturing reflect to an important extent job gains among migrants. This suggests that the workers who take up employment in expanding non-manufacturing sectors are not the same as those who lose their job in manufacturing.

[15] The empirical model relies on differences in industry shares *within* manufacturing across regions for identification.

[16] For other country studies, please see amongst others Malgouyres (2016[78]) for France, Donoso (2014[74]) for Spain and Citino and Linarello (2021[75]) for Italy.

[17] While the qualitative results for Canada are similar to those for other countries, the effect on employment in non-routine relevant technologies is much more pronounced. In part, this is likely to reflect data issues (e.g. regional definitions, missing values) and, in part, the higher regional concentration of ICT activities in places such as Monreal, Toronto and Vancouver with above-average employment growth. All in all, the quantitative estimates deserve to be interpreted with considerable caution.

[18] Non-dependent employment includes self-employment, joblessness or being out of the country (international migration).

[19] In the case of trade shocks, this is manufacturing versus non-manufacturing. In the case of the technology shock, we consider all industries in a region and, as a result, inter-industry flows do not contribute to net changes in regional employment. Inter-industry mobility is therefore not considered for the analysis of the technology shock.

[20] Autor et al. (2013[20]; 2021[76]) further find for the United States that the China shock significantly increased long-term receipt of disability and retirement benefits, and to a lesser extent unemployment benefits.

[21] The role of international migration for the decline in manufacturing employment is very small.

[22] For the purposes of the decomposition, it assumed that workers retire at age 65 everywhere. This may be more appropriate for the United States than for Western Europe where the effective retirement age tends to be lower and early retirement is more common. This may explain in part why the contribution of the employment channel is more important than the ageing channel in Western Europe, notably in manufacturing.

[23] By construction, net inter-industry outflows from manufacturing employment and net inflows into non-manufacturing employment are identical in absolute terms. Since non-manufacturing accounts for a large share of employment, inter-industry flows are even less important there.

[24] Evidence from the United States points to a broad-based decline in internal migration since the 1980s, including a sharp fall in interstate mobility, while evidence for other OECD countries suggests that inter-regional mobility is often too limited to offset regional labour market shocks, partly reflecting housing costs, institutional barriers and uneven access to high-productivity labour markets, see e.g. Causa et al. (2021[56]), Kaplan and Schulhifer-Wohl (2017[83]) and Molloy et al (2011[81]).

[25] The role of inter-industry mobility is not considered since the analysis of digital innovation differentiates between occupations rather than industries.

[26] The wage-setting practices of industries are measured by averaging firm wage premia – average firm wages conditional on workforce composition – across firms in the same industry following Card et al. (2024[77]).

[27] Firm wage premia are sometimes used as a proxy for productivity when information on productivity is not. The seminal model of trade with heterogenous firms suggests that trade liberalisation increases the size of the most productive firms by creating new export opportunities while increased import competition reduces the size of the least productive or may even force them out of the market (Melitz, 2003[71]). By reallocating resources toward more productive firms, this is expected to contribute to aggregate productivity and economic welfare.

[28] Using more recent data, Friesenbichler et al. (2023[82]) find these productivity effects may have become smaller or even negative as Chinese exports have gained in sophistication.

[29] The lack of mobility between industries and regions may reflect price rigidities that prevent prices of non-tradable goods and wages from fully reflecting local economic conditions but also barriers to job mobility that prevent labour demand and supply from adjusting to relative prices. To the extent that older workers tend to be less mobile, population ageing is likely to have depressed mobility between sectors and regions, with potentially important implications for the adaptability of regions to structural change.

[30] This characterisation of policies used in this section allow for separate discussions on regional, industrial and employment and social policies, consistent with the framework in Figure 3.1. Related policy discussions often make use of alternative definitions which either do not provide a neat delineation across policy domains, as in the case of more general discussions of place-based policies or tend to emphasise one of policy domain using a broad definition that also captures elements of other policy fields.

[31] Employment and social policies that are allocated according to local needs and delivered by local public employment services that tailor their policies to local conditions can be considered spatially targeted. By contrast, industrial policies aimed at specific industries may have a local dimension due to the existing industrial mix but are not considered spatially targeted unless they are designed and implemented in a place-sensitive manner.

4 Skills at work: New evidence on returns to skills and training

Julie Lassébie, Patricia Navarro-Palau and Roland Tusz

Labour market megatrends are reshaping labour demand and altering the value of different skills, contributing to a decline in returns to formal education and training. At the same time, participation in adult training is falling in many countries, and when undertaken, training is often very short in duration. These developments raise important questions about which types of skills and learning activities are most valued in today's labour market. Using data from the 2022-2023 wave of the Survey of Adult Skills (PIAAC), this chapter analyses the links between wages and information processing skills, educational attainment and training participation. It explores how the links between wages and information processing skills and formal education interact with non-cognitive skills and workplace practices, and how different training modalities and topics are rewarded in the labour market. The chapter concludes with policy implications to strengthen the reward of skills and enhance the labour-market value of adult learning.

In Brief

Key findings

Returns to education and training are declining. Rapid technological change is reshaping labour demand and altering the value of different skills. Tasks and roles once performed mainly by higher education graduates are increasingly carried out by workers without higher education. At the same time, the growing emphasis on skills-first approaches – hiring and workforce development practices that prioritise demonstrated competencies over formal credentials – suggests a shift in the relative importance of skills compared with formal education.

In parallel, recent evidence from the Survey of Adult Skills (PIAAC) indicates that participation in training is falling in many countries, and when training does occur, it is often very short, typically lasting less than one week or even less than a day. These changes raise important questions about which types of training – in terms of content and design – are most valued in today's labour market.

Drawing on the most recent Survey of Adult Skills data, collected in 2022-2023, this chapter analyses how wage returns to skills and education have evolved over the past decade, how they vary across occupations, and how skills interact with different workplace practices. It also examines how returns to training differ across training types, topics, and characteristics, shedding light on the kinds of learning that generate the greatest labour market benefits.

The key takeaways from the chapter are as follows:

- **Information processing skills (proxied by numeracy or literacy) and formal education remain important predictors of employment and wages, but their influence has declined in the last decade.** On average across OECD participating countries, a one-standard-deviation increase in years of education (around 3.1 years) is associated with a 1.2-percentage-point increase in the probability of being employed and a 15% increase in wages. A one-standard-deviation increase in numeracy (58 points in the Survey of Adult Skills) corresponds to a 0.65-percentage-point rise in employment probability and an 11% wage increase. However, associations of years of education and numeracy with the probability of being employed have weakened by about 1 percentage point (p.p.) relative to the first cycle of the Survey of Adult Skills (2011-2018), and the association of wages with years of education by 2.2 p.p.
- **Occupational sorting is a major driver of wage differences: education and cognitive skills raise wages largely because they improve access to higher-paying occupations and firms.** Once occupation is taken into account, the estimated associations between years of education and wages, and between numeracy and wages, fall by around 7 and 4 p.p., respectively, to 8% and 7%. The links between wages and education and skills also vary substantially across occupations, with the strongest links observed in high-skilled roles and declining steadily across the occupational spectrum.
- **Non-cognitive skills and workplace practices also play an important role in wage outcomes.** Higher levels of task discretion and greater co-operation at work are associated with higher wages – by 1% and 6% on average across participating OECD countries – reflecting the growing importance of human-centred work practices. Cognitive (information processing) and non-cognitive skills appear strongly complementary: the wage association with numeracy is

significantly larger for workers who enjoy greater autonomy and operate in co-operative work environments.

- **The evidence presented above underscores the importance of skills and the potential relevance of skills-first approaches**, which prioritise demonstrated capabilities over formal credentials. Governments have a central role to play in supporting talent recognition by embracing policies that make skills visible such as Recognition of Prior Learning (RPL) or skills signalling, using, for example, instruments like skills passports.
- **Some forms of training are unambiguously associated with higher wages.** Non-formal training – planned, short, institution-based learning that is not formally accredited – shows a clear positive association with wages. Adults who participated in non-formal learning in the 12 months prior to the survey earn, on average across participating OECD countries, 6.2% higher wages than those who did not. Evidence also suggests that the association between wages and training has declined over time. The data do not allow to provide conclusive evidence on other types of learning.
- **The relationship between non-formal training and wages appears to be partly driven by occupational selection.** Once occupation controls are included, the link between participation in non-formal training and wages declines by around 2 p.p. This indicates that individuals in higher-paying occupations are also more likely to participate in non-formal training.
- **Training topics matter. Courses focussed on teamwork, leadership, and project management are associated with the largest wages,** with the training wage premium exceeding 8.5%. These large associations are consistent with the finding that managers have larger wage associations with non-formal training participation, as these subjects are among the most common areas of training for this occupational group, and could be explained by selection into these training areas. However, overall, training in health and safety, which has a weak association with wages, is the most common.
- **The evidence suggests that flexibility in training delivery mode and timing does not diminish wage returns.** Online and hybrid learning formats are associated with wage benefits at least as large as traditional in-person training while offering greater flexibility and access. Similarly, the links between wages and non-formal training do not differ significantly between very short courses (completed within a day) and longer courses (lasting more than a week), nor between training delivered in a single block and training spread over several days or months. Flexible learning opportunities – which may help in addressing barriers to participation in training – can be supported and promoted by policy tools such as micro-credentials, RPL, and strengthened National Qualification Frameworks (NQFs).
- **Employer-financed training is associated with high wage returns.** This pattern suggests that employers may be better positioned to identify training that is closely aligned with job needs and likely to generate productivity gains – and thus higher wages – at least in the short run. It could also indicate that employers select their most promising employees to obtain higher returns from their training. Governments can encourage employer-provided training – particularly among small and medium enterprises (SMEs) – through financial support and measures that strengthen firm capacity, including skills assessment and anticipation services, shared learning and training networks, and managerial training.

Introduction

Returns to education and training are declining. Evidence suggests that, after several decades of growth, the "university wage premium" – the additional earnings university graduates receive relative to non-graduates – has recently stagnated and, in some economies such as the United States and the United Kingdom, has even begun to fall (Bengali, Valletta and Zhao, 2025[1]; Boero et al., 2024[2]). Evidence presented in Chapter 1 also suggests that the employment advantage of young college graduates has been on a shrinking trend for many years in several OECD countries.

Historically, skill-biased technological change resulted in significant wage premia for university graduates. In particular, advances in information and communication technologies increased the productivity of highly educated workers with specialised skills, thereby boosting their wages relative to others (Atkinson, 2007[3]; Autor, Katz and Krueger, 1998[4]; Autor, Katz and Kearney, 2008[5]; Katz and Murphy, 1992[6]).

Today's technological change, especially the rapid spread of artificial intelligence, is reshaping labour demand and the returns to different skills in new ways. Tasks and roles traditionally associated with university graduates are increasingly performed by workers without higher education. For example, computer use has become widespread across the workforce. Consistent with this shift, Bengali, Valletta and Zhao (2025[1]) provide evidence that the stagnation of the university wage premium in the United States is driven by labour-demand factors, including rising substitutability between university and high-school graduates.

Additionally, or alternatively, employers' demand for skills that are either not developed, or may not be developed effectively in university programmes could have increased. Recent studies indicate that AI adoption amplifies the importance of non-cognitive skills (Lane, Williams and Broecke, 2023[7]; Milanez, 2023[8]). However, there exists limited evidence on how these skills are best developed within education and training systems.

The increased popularity of skills-first approaches – hiring and workforce development practices that prioritise individuals' demonstrated skills and competencies over traditional credentials such as degrees or job titles – may also signal a shift in the relative importance of skills compared with formal education (Bone, González Ehlinger and Stephany, 2025[9]; OECD, 2024[10]; OECD, 2025[11]). This trend, particularly pronounced in certain sectors, suggests that employers may be placing increasing value on workers' skills rather than on the qualifications they hold, particularly for skills in emerging areas for which formal programmes are slow to adjust.

In parallel, recent evidence from the Survey of Adult Skills (PIAAC) shows that training participation is declining in many countries (OECD, 2025[12]). Participation in job-related formal education, for instance, has fallen by more than 2 p.p. between survey cycles, with only 8% of adults enrolled in formal learning programmes in Cycle 2, collected in 2022-2023. Non-formal job-related learning has also declined, by 3 p.p. on average, with 37% of adults participating in Cycle 2. Furthermore, short or very short training activities – i.e. lasting less than one week or less than one day, respectively – are the norm. Short training formats can lower barriers to participation and support meaningful skills development over time. However, if they are not well designed, they may offer limited opportunities for deeper or more transformative reskilling. Given that lack of time is the most commonly reported barrier to training participation (OECD, 2025[12]), it is essential to assess whether short and flexible training formats can generate returns comparable to those of more traditional forms of training.

To shed light on these labour market developments, the chapter draws on the most recent data from the Survey of Adult Skills. It examines how returns to skills and education have evolved over the past decade and how they differ by occupation. It also explores how individuals' education and skills interact with a range of workplace practices. Finally, the chapter analyses how returns to training vary across different types of learning – including formal, non-formal, and informal learning – as well as across other dimensions

such as training topics, which reflect the skills being developed, and training characteristics, such as the degree of flexibility and training duration.

Data from the Survey of Adult Skills is particularly well suited for this type of analysis, as it provides direct assessments of foundational skills together with extensive socio-demographic information, labour market outcomes, and detailed job characteristics. Importantly, the survey also contains rich information on participation in adult training – including the content of training activities, how they are implemented, and any barriers to participation. This breadth of information enables accurate identification of associations between education, skills, training, and wages, helps mitigate certain endogeneity concerns, and supports an exploration of heterogeneity across both job and training characteristics.

Furthermore, 31 countries and economies participated in Cycle 2 of the Survey of Adult Skills (2022-2023), with 27 of them also having taken part in Cycle 1 (2011-2018). This cross-country and over-time coverage makes it possible to examine how wage associations vary internationally and how the relationships between education, skills, and wages have changed in the past decade.

To better assess whether skills are becoming relatively more important in the labour market compared to education and to understand current returns to training, this chapter examines the association between education, skills, and training with wages. Generally, wage returns can be considered a lower-bound estimate of the productivity gains associated with higher skill levels or participation in training and therefore provide useful insights into the economic value of skills and training. They are also an important incentive for workers to invest in training, although training may have benefits beyond wage increases. For this reason, wage returns should not be interpreted as returns on investment as they capture neither the costs of acquiring skills or participating in training nor the broader benefits that may accrue to adults, firms or society as a whole.

Wage returns are estimated by regressing the logarithm of hourly wages on training participation (for returns to training), numeracy proficiency (for returns to skills), years of education, work experience, and a rich set of worker, firm and job characteristics, along with country fixed effects. The chapter also investigates the relationship between the probability of being employed (versus unemployed) and education level and skills. It is important to note that the term “returns” is adopted here for brevity. The analysis relies on cross-sectional data from Cycles 1, gathered between 2011 and 2018, and 2 of the Survey of Adult Skills, meaning individuals cannot be followed over time. While the richness of these data allows addressing several endogeneity issues highlighted in the literature (potential endogeneity concerns and the approaches used to address them are discussed in Annex 4.A), the results presented in this chapter should be interpreted as associations rather than causal effects, since changes in individuals’ labour market outcomes after participating in training cannot be observed.

Differences in the macroeconomic context prevailing during data collection for the two cycles must be considered when interpreting the results. Most countries participating in Cycle 1 of the Survey of Adult Skills collected data in 2011-2012, when economies were still recovering from the global financial crisis. Unemployment rates were high and wage growth was weak, with real wages stagnating or declining in many countries. By contrast, labour markets in 2022-2023 were historically tight, characterised by high employment rates and widespread labour shortages, which may have improved employment prospects for less-qualified or lower-skilled adults.

The remainder of the chapter is organised as follows. The first section examines the associations between skills, education and wages and assesses how they have evolved since Cycle 1 of the Survey of Adult Skills, conducted a decade earlier. It also explores how these associations vary across occupations and countries, and whether they are amplified by the frequent use of certain non-cognitive skills. The second section investigates associations between wages and job-related training, distinguishing between formal, non-formal and informal learning, and documents how these associations differ by occupation, country and training topic. It further considers whether other training characteristics influence the magnitude of training returns. The third and final section discusses the main policy implications resulting from the chapter’s findings.

4.1. Skills play a key role in shaping labour market outcomes beyond formal education

4.1.1. Cognitive skills continue to be an important determinant of labour market outcomes

The question of how skills are rewarded in the labour market is a long-standing one in the economic literature. Because skills are difficult to observe directly, seminal studies have traditionally relied on estimating the relationship between education and earnings (Card, 1999[13]; Griliches, 1977[14]; Juhn, Murphy and Pierce, 1993[15]). However, school attainment is an imperfect measure of an individual's actual human capital. More recent work extends traditional human-capital models by incorporating measures of occupation-specific tasks or skills proficiency. Ingram and Neumann (2006[16]) were among the first to propose an alternative measure of skills, based on the tasks that individuals perform in their occupations. Their findings show that between 1971 and 1997, returns to cognitive skills (mathematical and verbal ability) increased substantially, while rewards for routine and manual skills (including clerical skills, co-ordination, fine motor abilities and strength) declined or remained modest. They also found that returns to years of education remained constant over time once cognitive skills are accounted for.

Cycle 1 of the Survey of Adult Skills, conducted in three rounds between 2011 and 2018 in 39 countries, enabled a direct and precise measurement of individuals' skills and several studies have used these data to obtain reliable estimates of labour-market returns to skills. Regarding employment status, going up one (out of five) PIAAC proficiency levels in numeracy is associated with an average increase in the likelihood of being employed of about 8 p.p. on average across participating OECD countries (Hampf, Wiederhold and Woessmann, 2017[17]). Studies focussing on earnings (Hampf, Wiederhold and Woessmann, 2017[17]; Hanushek et al., 2015[18]) found statistically and economically significant wage returns to numeracy skills, averaging 18%. These returns vary considerably across countries, ranging from 12% in Finland to 28% in the United States.

A substantial body of literature has examined the relationship between returns to skills and inequality. In general, countries where skills are highly rewarded – such as the United States – tend to be characterised by higher wage inequality (Broecke, Quintini and Vandeweyer, 2018[19]; OECD, 2015[20]). At the individual level, socio-economic disparities in employment prospects and wages linked to parental background, notably parental education and occupational status, are largely driven by differences in educational attainment and skills across groups. Differences in educational attainment and skills also partly explain disparities in employment prospects and wages between individuals who grew up in urban areas and those raised in rural areas (OECD, 2025[21]).

Cycle 2 of the Survey of Adult Skills, conducted in 2022-2023, provides an opportunity to revisit the question of how skills are rewarded in the labour market. It offers new estimates of adults' proficiency in literacy, numeracy and adaptive problem solving – key information-processing skills that both individuals and societies need to thrive – as well as rich socio-demographic background, labour market outcomes, and job characteristics. Thirty-one countries and economies (mostly OECD Member countries) participated in the 2023 Survey of Adult Skills. As 27 of them also took part in previous rounds, the data additionally allow for examining how associations between education, skills and wages have evolved over the past decade.

Across participating countries, employment status (more specifically the probability of being employed rather than unemployed) is positively associated with both educational attainment and, independently of education, numeracy skills (Figure 4.1) – see Box 4.1 for the methodology. On average, for OECD participating countries, after controlling for individual characteristics and country-specific factors, a one-standard-deviation increase in years of education (approximately 3.1 years) is associated with a 1.18 p.p. increase in the likelihood of being employed, while a one-standard-deviation rise in average

numeracy scores (58 points) corresponds to a 0.65 p.p. increase in employment probability.[1] The positive and significant association with employment and wages also holds when literacy is used instead of numeracy.

Box 4.1. Empirical strategy to estimate associations of years of education and numeracy skill level with labour market outcomes

Association between years of education and numeracy skills with the probability of being employed

To examine the relationship between individuals' years of education and their numeracy skill levels with the probability of being employed, a linear probability model is used, as follows:

$$y_{ic} = \alpha + \beta\, Skills_i + \delta\, Education_i + \gamma\, x_i + \rho_c + \varepsilon_{ic}$$

where the dependent variable y_{ic} indicates the employment status of individual *i* in country *c*, being equal to 1 if individual *i* is employed and equal to 0 if individual *i* is unemployed. Inactive individuals are excluded from the sample. $Skills_i$ is the average of all ten plausible values for numeracy (or literacy) for individual *i* normalised to have an average value of 0 and a standard deviation of 1.[1] $Education_i$ refers to the individual's completed years of education normalised to have mean 0 and standard deviation equal to 1, x_i is a set of individual control variables including age, sex, immigrant background, parental education, whether one lives with a partner or has children, work experience and work experience squared, and ρ_c are country fixed effects. The coefficients of interest are β and δ, which capture the change in the probability of being employed associated with a one-standard-deviation increase in average numeracy scores (58 points) and in years of education (approximately 3.1 years), respectively.

Association between years of education and numeracy skills with wages

To analyse the relationship between individuals' years of education and their numeracy (or literacy) skill levels with wages, the following ordinary least squares specification is used:

$$ln(w_{ijfosc}) = \alpha + \beta\, Skills_i + \delta\, Education_i + \gamma\, x_i + \theta u_j + \delta\, z_f + \mu_o + \sigma_s + \rho_c + \varepsilon_{ijfosc}$$

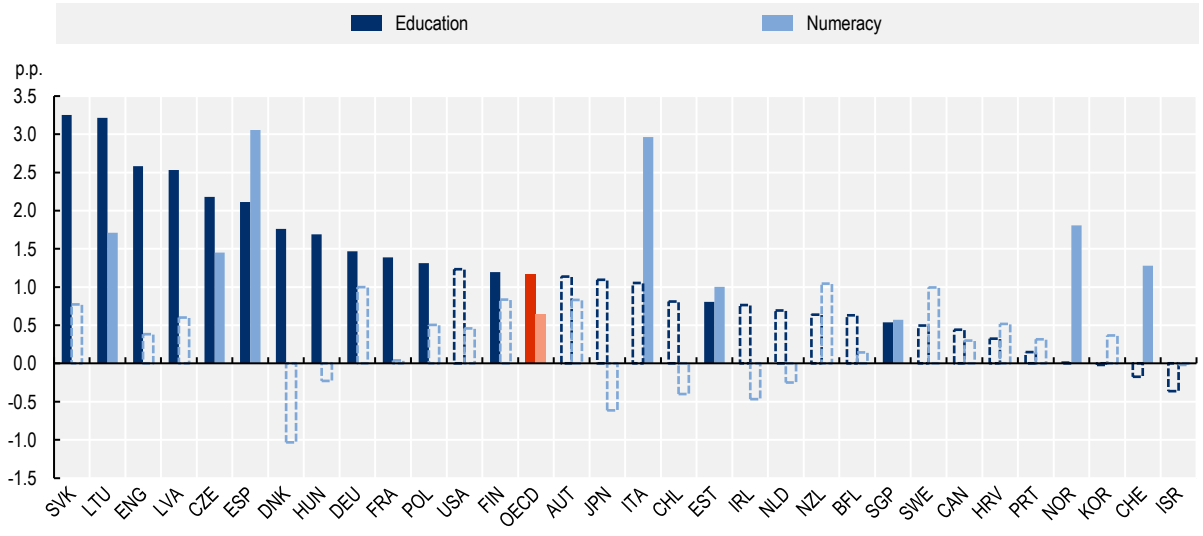
where w_{ijfosc} is the gross hourly wage of individual *i* employed in job *j*, firm *f*, occupation *o*, sector *s* and country *c*. $Skills_{\_i}$ is the average of all ten plausible values for numeracy (or literacy) for individual *i* normalised to have an average value of 0 and a standard deviation of 1. $Education_i$ refers to the individual's completed years of education normalised to have mean 0 and standard deviation equal to 1; x_i is a set of individual control variables including age, sex, immigrant background, parental education, whether one lives with a partner or has children, work experience and work experience squared; u_j is a set of job characteristics including whether the individual works part-time or with a temporary contract, such as a fixed term contract, seasonal contracts, a temporary employment agency contract, a zero-hour contract, a freelance, contractor and/or consultant contract, working as an apprenticeship or other training scheme or without a contract; z_f is a set of firm characteristics including whether the individual works in a small and medium enterprise (SME), in a growing firm (i.e. the number of employees increased over the past 12 months), and in a private sector firm; μ_o are occupation (ISCO 2 digits) fixed-effects; σ_s are sector (ISIC 1 digit) fixed-effects, and ρ_c are country fixed-effects. The coefficients of interest are β and δ, which reflect the percentage change in wages associated with a one-standard-deviation increase in average numeracy scores (58 points) and in years of education (approximately 3.1 years), respectively.

1. See OECD (2025[22]) for more technical details on plausible values for individuals' proficiency.

The relationship between years of education and employment status is positive and significant in half of the countries analysed. In the remaining countries, it is positive but not significant, except in Switzerland and Israel, where the coefficient is negative but close to 0 and not statistically significant. In the case of Switzerland, a strong Vocational Education and Training system, which leads to similar levels of employment than tertiary education, could explain the lack of association between years of education and employment status. Numeracy skills are also positively associated with employment status in most countries, above and beyond years of education, however, this relationship is statistically significant in only a quarter of the countries analysed. Interestingly, in six countries, numeracy shows a larger association with the probability of being employed than years of education.

Figure 4.1. Education and skills are positively associated with employment status

Percentage point change in probability of being employed (vs. unemployed) for a one-standard-deviation increase in numeracy proficiency or years of education, by country



Note: Adults aged 25-65 in the labour force. In addition to numeracy and years of education, estimates account for age, sex, immigrant background, parental education, whether one lives with a partner or has children, and work experience. Solid bars denote differences that are statistically significant at the 5% level, while bars with dashed borders indicate results that are not statistically significant. Countries are ordered from highest to lowest based on the magnitude of the numeracy proficiency coefficient. One standard deviation is equal to 58 points for numeracy and 3.1 years of education for education. OECD is a simple average of coefficients for member countries with available data. Estimates for Belgium refer to the Flemish Region of Belgium, the only Belgian region that participated in the Survey of Adult Skills.
Source: Survey of Adult Skills (PIAAC, 2023).

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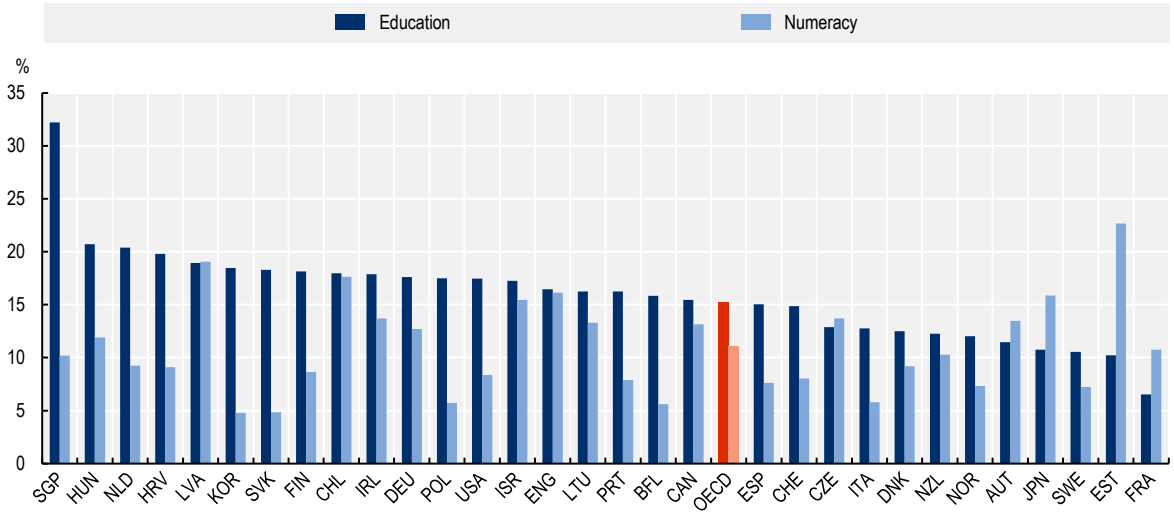
In addition to their link with employment status, both educational attainment and numeracy skills are also strongly associated with wages. While educational attainment has generally larger associations with wages, in several countries the association is stronger for numeracy skills (Figure 4.2). On average across participating OECD countries, after controlling for individual characteristics and country-specific factors, an additional 3.1 years of schooling is linked to a 15% increase in wages. There is substantial variation across countries participating in the Survey, with coefficients ranging from 7% in France to 32% in Singapore. The association between numeracy and wages is also strong and statistically significant: a one-standard-deviation (58-point) increase in average numeracy scores is associated with a 11% rise in wages on average for participating OECD countries. This association is stronger for more educated workers. As in the case of associations with years of education there is considerable cross-country variation. For example,

the rise in wages is equal to 5% in Korea and the Slovak Republic and reaches 23% in Estonia. In six countries, the association between numeracy and wages is stronger than between years of education and wages. In Estonia, numeracy show stronger associations with both labour market outcomes – employment status and wages – than years of education.

Cross-country variation in the strength of the associations between years of education or numeracy and wages appears to be correlated with country inequality: generally, countries with higher levels of wage inequality[2] tend to show larger associations between years of education or numeracy and wages.[3] Greater wage-setting flexibility at the firm level may allow employers to differentiate pay more sharply based on workers' skills or qualifications.

Figure 4.2. Education and numeracy are positively, and independently, associated with higher wages across virtually all participating countries

Change in hourly wages associated with a one-standard-deviation increase in numeracy or years of education, percentage, by country



Note: Employees aged 25-65. In addition to numeracy and years of education, estimates account for age, sex, immigrant background, parental education, whether one lives with a partner or has children, firm and job characteristics (not including occupation) and work experience. Wages refer to gross hourly wages in PPP-adjusted 2022 USD. One standard deviation is equal to 3.1 years for education and 58 points for numeracy. OECD is a simple average of coefficients for member countries with available data. Countries are ordered from highest to lowest based on the magnitude of the education coefficient. Estimates for Belgium refer to the Flemish Region of Belgium, the only Belgian region that participated in the Survey of Adult Skills.
Source: Survey of Adult Skills (PIAAC, 2023).

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4.1.2. Education and numeracy skills are associated with higher wages primarily by enabling access to occupations with larger wages

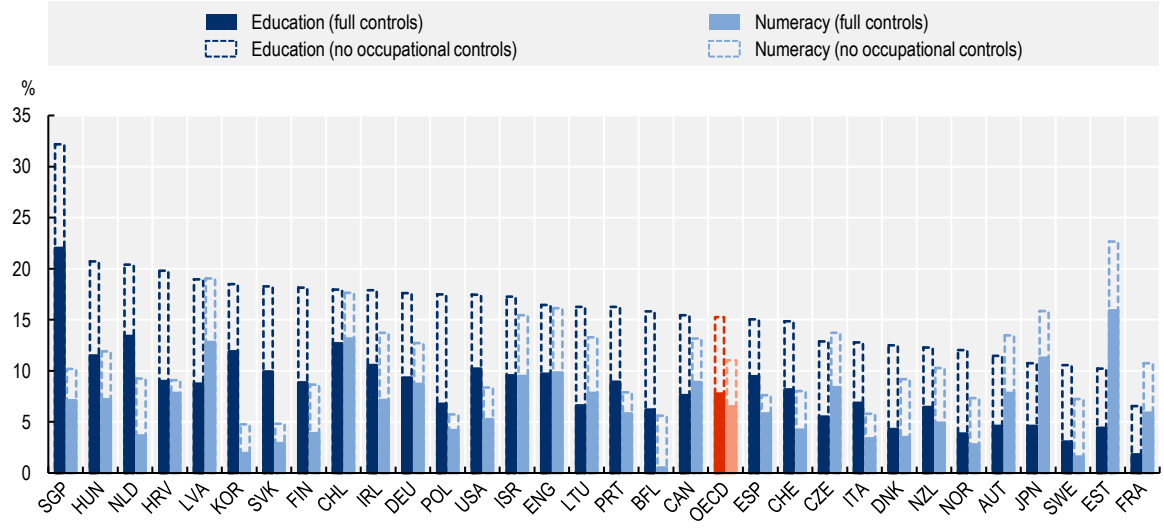
A substantial share of the association between education or cognitive ability and wages operates through sorting: more capable adults tend to select into jobs and firms that best reward their skills. Using data from the Cycle 1 of the Survey of Adult Skills, Heisig and Solga (2017[23]) found that there is a strong association between skills and occupational status. Furthermore, since occupations differ in their skills and education requirements and in the extent to which they reward these requirements, skills tend to have stronger

associations with earnings in occupations that rely on high-skill, non-routine and analytical tasks (Hanushek et al., 2015[18]; Hampf, Wiederhold and Woessmann, 2017[17]).

Using data from Cycle 2 of the Survey of Adult Skills, when controlling for occupational status, job and firm characteristics, the association between years of education or numeracy skills and wages weakens significantly in all countries analysed. Figure 4.3 illustrates this point by comparing the relationship between years of education or numeracy and wages when worker characteristics, occupation, job (temporary contract, part-time work) and firm characteristics (small and medium enterprise, private sector, growing firm) are included as control variables (solid colours). This compares individuals within the same occupations, types of jobs, and types of firms with the relationship observed when only worker characteristics are controlled for (entire bar with dashed borders), as in Figure 4.2. On average for participating OECD countries, a one-standard-deviation increase in years of education is associated with a 15% increase in wages when only worker characteristics are controlled for, but an 8% increase in wages when including all controls. For numeracy, the change is from a 11% to a 7% increase in wages, after including all control variables. Occupational sorting emerges as the key driver: in every country analysed, controlling for occupation results in by far the greatest attenuation of the regression coefficients (regression tables available upon request).

Figure 4.3. Occupational sorting accounts for a substantial share of variation in wages

Change in hourly wages associated with a one-standard-deviation increase in numeracy or years of education, percentage, by country, with and without controlling for occupations



Note: Employees aged 25-65. Entire bars (solid bars and bars with dashed borders) display the coefficient of the regression specification that does not control for occupations (as in Figure 4.2); solid coloured bars present the results including occupational controls; therefore, the dashed portion can be understood as the decrease in the estimated associated between numeracy or education and wages once occupational controls are included. In addition to numeracy and years of education, estimates account for age, sex, immigrant background, parental education, whether one lives with a partner or has children, firm and job characteristics and work experience. All results for this latter regression specification (with controls) are statistically significant at the 5% level, except for the estimates for numeracy for Flanders (Belgium) and the Slovak Republic. Wages refer to gross hourly wages in PPP-adjusted 2022 USD. One standard deviation is equal to 3.1 years for education and 58 points for numeracy. OECD is a simple average of coefficients for member countries with available data. Countries are ordered from highest to lowest based on the magnitude of the education coefficient without occupational controls. Estimates for Belgium refer to the Flemish Region of Belgium, the only Belgian region that participated in the Survey of Adult Skills.
Source: Survey of Adult Skills (PIAAC, 2023).

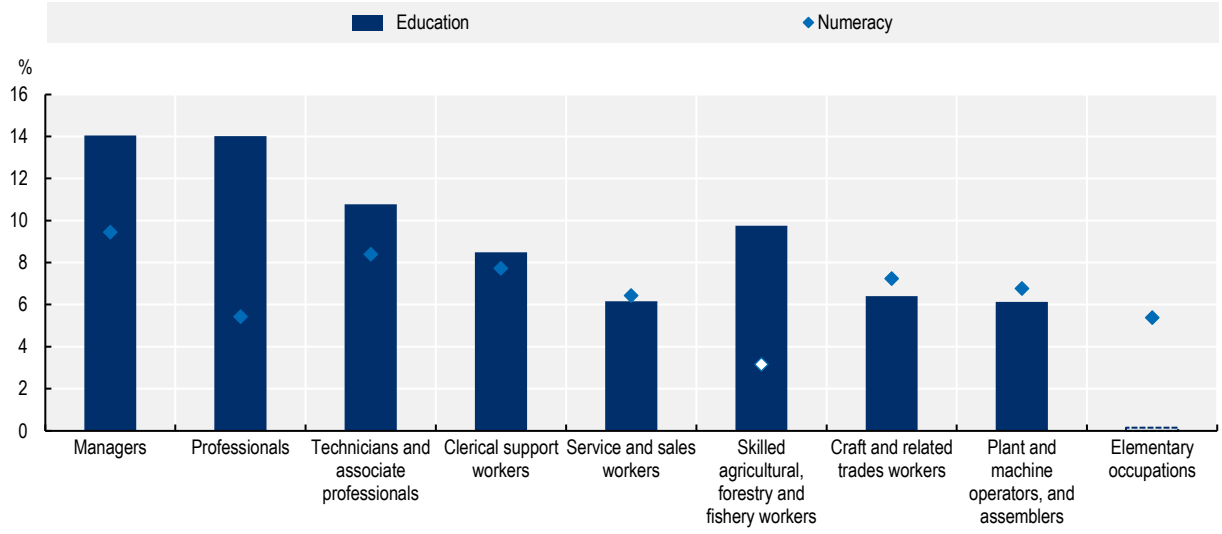
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Furthermore, the magnitude of the associations between education or numeracy and wages varies across occupations. Figure 4.4 shows wage associations with education and numeracy by occupation, with high-skilled occupations on the left of the figure and lower-skilled occupations appearing towards the right. The associations between years of education and wages are strongest in high-skilled occupations, occupations that require high levels of information processing skills, and generally decline moving down the occupational skill distribution. Returns to education are largest for managers and professionals (around 14% and statistically significant for an increase of one standard deviation), remain substantial and statistically significant for technicians (about 11%) and workers (between 6 and 10%), and drop to nearly zero for elementary occupations. By contrast, associations between numeracy and wages exhibit less heterogeneity across occupations, and the remaining variation is less systematically related to occupational skill requirements.[4] Numeracy premia are highest for managers (around 10%), for technicians and associate professionals, and clerical support workers (8-9%) but they remain positive even in elementary occupations (around 5%).

These differences are consistent with the idea that high-skilled occupations, characterised by abstract, analytical, or complex problem-solving tasks provide greater scope for workers to convert both formal education and information processing skills into higher productivity and wages. In lower-skilled occupations, weaker associations with wages – particularly for education – may reflect limited opportunities to deploy additional schooling, for instance because performance is driven by other types of proficiency, such as physical or technical precision, be the result of institutional wage-setting practices that compress returns, or both. The flatter profile for numeracy suggests that cognitive skills, and particularly numeracy, are rewarded across a broader range of tasks, even where formal qualifications carry little wage premium.

Figure 4.4. Higher-skilled occupations reward numeracy and, especially, education

Change in hourly wages associated with a one-standard-deviation increase in numeracy or years of education, percentage



Note: Employees aged 25-65 in all countries participating in the Survey of Adult Skills. In addition to numeracy and years of education, estimates account for age, sex, immigrant background, parental education, whether one lives with a partner or has children, firm and job characteristics and work experience. Solid colours denote differences that are statistically significant at the 5% level, while white colours and bars with dashed borders indicate results that are not significant. Wages refer to gross hourly wages in PPP-adjusted 2022 USD. One standard deviation is equal to 58 points for numeracy and 3.1 years of education for education.
Source: Survey of Adult Skills (PIAAC, 2023).

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4.1.3. The relationship between education and labour market outcomes has weakened over time

Recent empirical evidence suggests that the importance of cognitive skills as predictors of labour market success seems to have declined over the past decade, at least in some countries, even though the demand for college-educated labour grew over the same period. In the United States, Castex and Kogan Dechter (2014[24]) show that cognitive skills had a 30%–50% larger effect on wages in the 1980s than in the 2000s. In Sweden, economic returns to cognitive skills decreased modestly during the 2000s (Edin et al., 2022[25]), and in Finland, Izadi and Tuhkuri (2024[26]) find a reduction in the value of cognitive skills between 2001 and 2015.

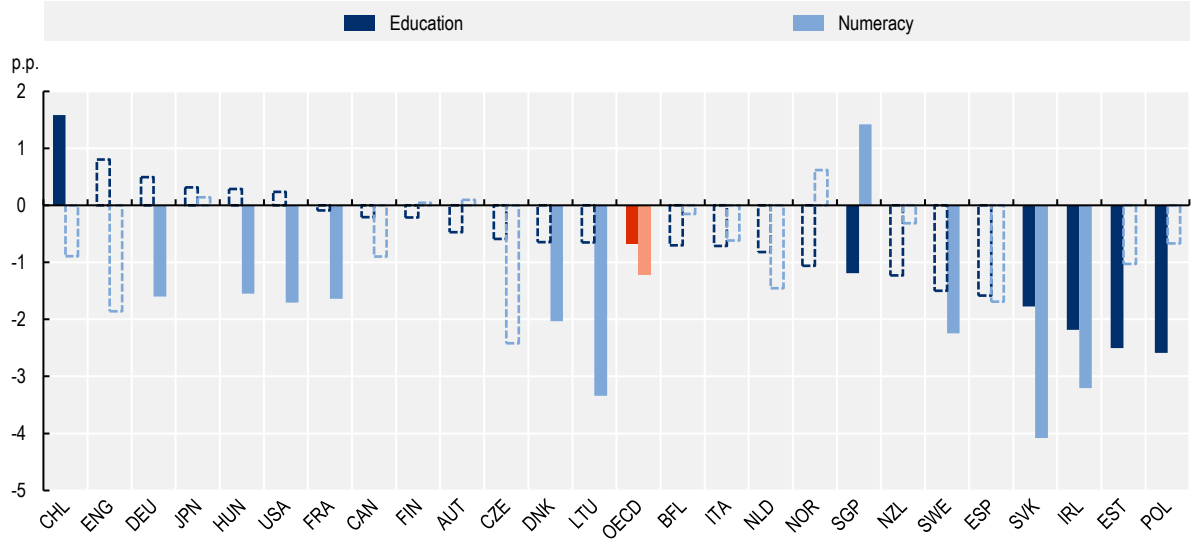
Results obtained using data from the Cycle 2 of the Survey of Adult Skills are consistent with these findings as they show that in participating OECD countries, the strength of the relationship between education, and even more so, skills, and employment prospects has weakened over time (Figure 4.5). On average across participating OECD countries, the association between years of education and an individual's probability of being employed (rather than unemployed) declined by 0.7 p.p. between Cycle 1 and Cycle 2. The reduction was even larger for numeracy, as the relationship between numeracy scores and employment status decreased by 1.3 p.p.

One possible explanation for this reduction in the association between numeracy, and to a lower extent education, and probability of being employed between the two cycles of data collection is that during the second cycle of data collection (2022-2023), labour markets in most OECD countries were tighter than during the first phase (2011-2018), and that as a consequence, low-skilled individuals were more likely to find a job (OECD, 2024[27]). Another, complementary explanation is that structural factors such as the rapid diffusion of digital technologies and, more recently, artificial intelligence in particular, are reshaping labour demand and the demand for skills. Some tasks, such as computer use, previously performed by high-skilled individuals only can now be undertaken by workers with lower levels of cognitive skills, thereby reducing the former's relative advantage in access to jobs. In the case of education, additionally, the continued expansion in tertiary educational attainment among younger cohorts (OECD, 2025[28]) may have moderated the employment premia associated with completing a tertiary degree, relative to the earlier period.

The decline in the relationship between years of education and employment status is particularly pronounced and significant at around 2 p.p. in Poland, Estonia, Ireland and the Slovak Republic and at about 1 p.p. in Singapore. One notable exception is Chile where the association increased by 1.6 p.p. In all other countries, the change is not statistically different from zero. The association between numeracy and employment status has decreased in nine countries: Ireland, the Slovak Republic, Sweden, Lithuania and Denmark where the decrease ranges from 2 to 4 p.p., and France, the United States, Hungary and Germany, where the decline is lower than 2 p.p. This association has only increased for one country, Singapore, where the association between numeracy and employment status has increased by 1.4 p.p.

Figure 4.5. In general, the associations between unemployment and education and skills have weakened over time

Percentage point change in association between numeracy or years of education and probability of being employed (vs. unemployed) between Cycle 1 (2011-2018) and Cycle 2 (2022-2023), by country



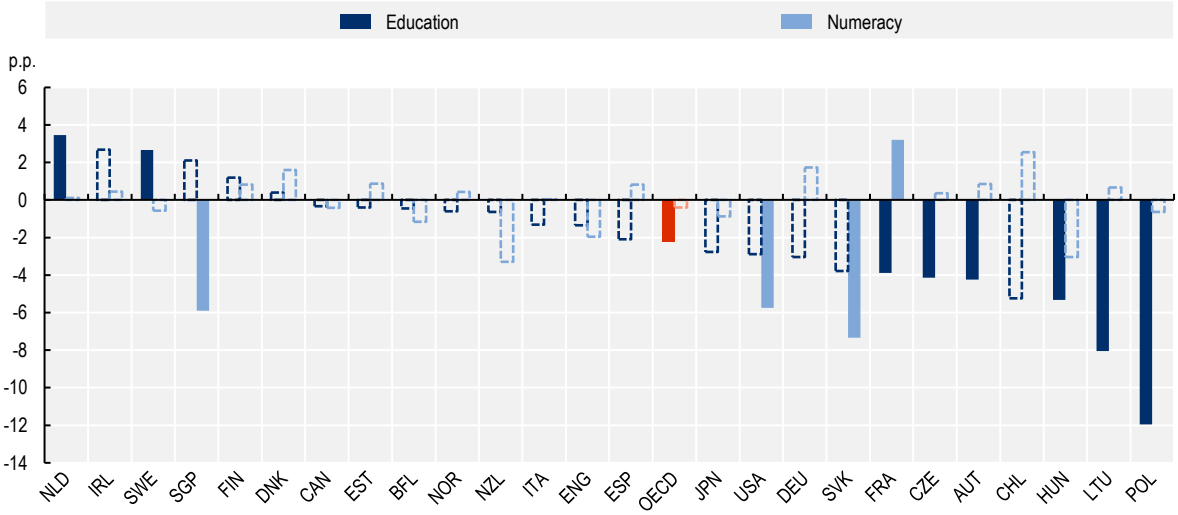
Note: Adults aged 25-65 in the labour force. In addition to numeracy and years of education, estimates account for age, sex, immigrant background, parental education, whether one lives with a partner or has children, and work experience. Solid coloured bars denote differences that are statistically significant at the 5% level, while bars with dashed borders indicate results that are not significant. OECD is a simple average of member countries with available data. Countries are ordered from highest to lowest based on the magnitude of change in the education coefficient. Cycle 2 data refer to 2023; data for Cycle 1 refer to 2012, except for Chile, Israel, Lithuania, New Zealand and Singapore (2015) and Hungary (2018). Estimates for Belgium refer to the Flemish Region of Belgium, the only Belgian region that participated in the Survey of Adult Skills.
Source: Survey of Adult Skills (PIAAC, 2012, 2015, 2018, 2023).

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Declines in the strength of the relationship between education and wages are observed in a number of countries, while it is globally stable for skills and wages (Figure 4.6). On average across participating OECD countries, the association between years of education and wages has decreased by 2.2 p.p. between Cycle 1 (2011-2018) and Cycle 2 (2022-2023), while the relationship between numeracy and wages has declined by 0.4 p.p., statistically insignificant at standard levels. The decrease for educational attainment is driven by changes in France, Lithuania, Austria, Czechia, Hungary and Poland, with magnitudes ranging from 3.9 p.p. (France) to 12 p.p. (Poland). In the Netherlands and in Sweden, the strength of the association between education and wages has actually increased rather than decreased. A possible explanation could be changes in the composition of workers, for example, through an influx of low qualified workers earning lower wages, which could have increased wage associations with education. The decrease for numeracy skills is concentrated in three countries, the United States and the Slovak Republic and Singapore. For all other countries, the change is not significant or even significantly positive (France).

Figure 4.6. The relationship between education, skills and wages weakened in the last decade for some countries

Percentage point change in association between numeracy or years of education and hourly wages between Cycle 1 (2011-2018) and Cycle 2 (2022-2023), by country



Note: Employees aged 25-65. In addition to numeracy and years of education, estimates account for age, sex, immigrant background, parental education, whether one lives with a partner or has children, firm and job characteristics (including occupation) and work experience. Solid coloured bars denote differences that are statistically significant at the 5% level, while bars with dashed borders indicate results that are not significant. Wages refer to gross hourly wages in PPP-adjusted 2022 USD. OECD is a simple average of member countries with available data. Countries are ordered from highest to lowest based on the magnitude of change in the education coefficient. Cycle 2 data refer to 2023; data for Cycle 1 refer to 2012, except for Chile, Israel, Lithuania, New Zealand and Singapore (2015) and Hungary (2018). Estimates for Belgium refer to the Flemish Region of Belgium, the only Belgian region that participated in the Survey of Adult Skills.
Source: Survey of Adult Skills (PIAAC, 2012, 2015, 2018, 2023).

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4.1.4. Labour market success depends not only on what workers know, but also on the non-cognitive skills they use in their jobs

Recent research has emphasised the importance of non-cognitive skills as determinants of labour market outcomes (Deming, 2017[29]; Edin et al., 2022[25]; Izadi and Tuhkuri, 2024[26]). These skills have gained importance partly because they are difficult to replicate through automation technologies, and because the adoption of ICT technologies in the 1990s increased the value of teamwork, where social interaction and co-ordination are essential (Bresnahan, 2002[30]). More recently there are indications that AI adoption is increasing the need for non-cognitive skills such as creative and social intelligence, reasoning, and critical thinking (Lane, Williams and Broecke, 2023[7]).

More specifically Deming (2022[31]) highlights the central role of collaborative and decision making practices in current labour markets. The literature on labour market returns to teamwork is still nascent and several studies have focussed on developing methodologies to identify individuals' contribution to team productivity (Bonhomme, 2021[32]; Weidmann and Deming, 2021[33]). Empirical evidence on the link between teamwork, productivity, and salaries exists, but it is limited to specific occupations. For instance, Devereux (2021[34]) looks at data on co-authorship of academic papers for economists and shows that co-authors' value-added is more closely tied to one author's salary than own value-added. Arcidiacono et al. (2017[35]) use data from US professional basketball to show how individual performance strongly affects peers' performance. Yet they also find that an individual's wage is largely determined by his own

performance with little weight given to his contribution to the performance of his peers. However, while informative, these findings are difficult to generalise given the highly specific nature of the occupations studied.

Evidence on decision making is also limited but growing. An important contribution is a recent paper by Caplin et al. (2023[36]), who develop a measure of decision making using a laboratory experiment and show that this measure strongly predicts income and income growth in representative samples of full-time workers in the United States and Denmark. The predictive power is particularly strong for individuals in management and other decision-intensive occupations.

The Survey of Adult Skills includes several variables related to the skills workers use in their jobs, including measures of co-operation and task discretion that are closely related to the collaborative and decision making practices discussed in recent literature. Using data from Cycle 1 of the Survey of Adult Skills, Quintini (2014[37]) shows that the inclusion of skills use variables weakens the effect of both education and proficiency on wages by about a third on average, and that co-operation and task discretion are positively and significantly correlated with wages in about half of the participating countries. Using Cycle 2 of the Survey of Adult Skills, a recent report (OECD, 2026[38]) shows that a more frequent deployment of skills in the workplace is associated with higher wages, after controlling for education and skills levels. The strongest association between skills use and wages is observed for influencing and information-processing skills such as reading, ICT and numeracy. Task discretion and co-operation show moderate but positive and statistically significant associations with wages, and dexterity and physical skills are, on the contrary, negatively correlated with wages (all else being equal, including qualification, skills proficiency and occupation).

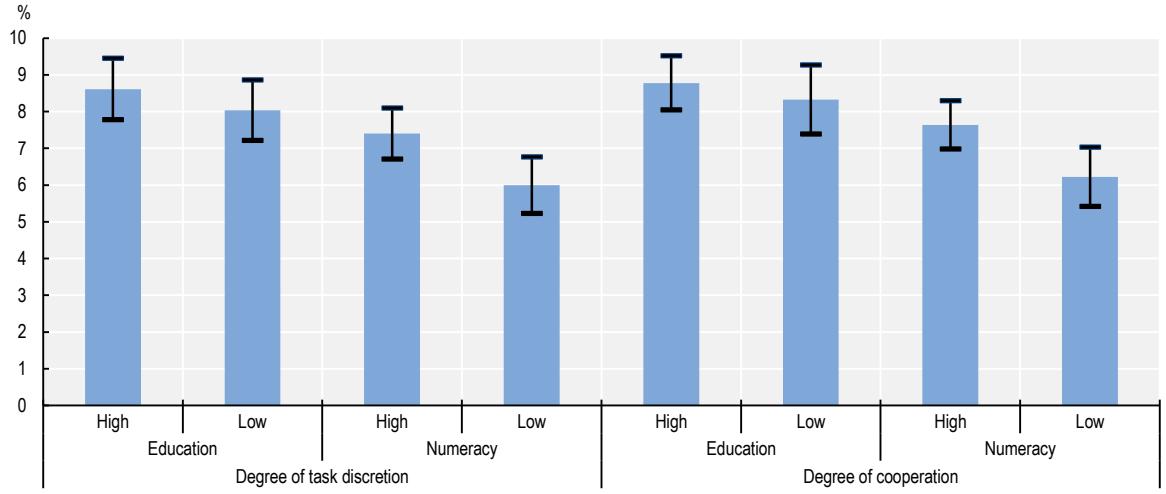
In fact, cognitive and non-cognitive skills should not be viewed in isolation but as mutually reinforcing dimensions. This complementarity, initially explored in the context of skill formation among children (Cunha et al., 2006[39]; Cunha, Heckman and Schennach, 2010[40]), has also been documented among working-age adults. For instance, in the United States, Weinberger (2014[41]) finds growing complementarity between cognitive and social skills between the 1980s and the 2000s. In the workplace, data from the Survey of Adult Skills show that in digital-intensive industries workers endowed with a high level of numeracy skills receive an additional wage premium if they also have high levels of self-organisation or managing and communication skills (Grundke et al., 2018[42]).

New analyses using Cycle 2 of the Survey of Adult Skills show that a higher degree of task discretion and co-operation in one's job is associated with higher wages (by 1% and 6%, respectively, on average across participating OECD countries), consistent with the growing importance of human-centred work practices. Including these variables does not significantly change the association between numeracy, years of education, and wages. In contrast to the declining returns to skills and education observed over the past decade, the associations between the degree of co-operation and task discretion with wages are strong and have remained stable over time.

Furthermore, the association between numeracy and wages is more pronounced among workers who exercise higher degrees of task discretion and co-operation in their jobs, suggesting strong complementarity between information processing and non-cognitive skills (Figure 4.7). The association between years of education and wages also tends to be stronger for workers who use high levels of task discretion and co-operation, although this difference is not statistically significant.

Figure 4.7. The association between numeracy and wages is more pronounced among workers with higher degrees of task discretion and co-operation

Association between numeracy or years of education and hourly wages, by degree of co-operation and task discretion



Note: Employees aged 25-65 in all countries participating in the Survey of Adult Skills. In addition to numeracy and years of education, estimates account for age, sex, immigrant background, parental education, whether one lives with a partner or has children, firm and job characteristics (including occupation) and work experience. Wages refer to gross hourly wages in PPP-adjusted 2022 USD. Vertical brackets indicate the estimated association's 95% confidence interval.
Source: Survey of Adult Skills (PIAAC, 2023).

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4.2. Training and learning are associated with positive labour market outcomes, particularly in the case of non-formal training

4.2.1. Associations between participation in job-related training and wages differ by the type of learning

The theoretical literature on the relationship between on-the-job training and wages dates back to Becker (1962[43]). Becker argued that, under conditions of perfect competition in the labour market, general training – i.e. training that develops skills transferable across all firms – should be financed by workers. Workers pay training by perceiving lower wages during the training period, since once trained, workers can move to another employer as the skills they have developed would be portable across jobs.

In the presence of labour-market imperfections – such as wage rigidities, search frictions or employers' market power over wage setting – firms may partially finance general training because they can be more confident of retaining workers after training (Acemoglu and Pischke, 1998[44]; Acemoglu and Pischke, 1999[45]; Stevens, 1994[46]). Firms may also finance general training when they need specific combinations of general skills that are valuable only to a limited set of employers (for example, a combination of knowledge of history and advanced digital skills, which are both general skills) (Lazear, 2009[47]). In all these cases, wages would lie above workers' productivity during training and below it afterwards. As a result, wages either rise or remain constant following training, depending on the productivity differentials between the two periods.

For job-specific training, neither the firm nor the worker have a strong incentive to pay the full cost of training. To avoid under-provision of specific training, a sharing mechanism is needed. In practice, such sharing typically results in wages being set below the worker's productivity after training, but above the wage received before training (Hashimoto, 1981[48]).

Since these seminal works, the empirical literature has sought to quantify the wage returns to on-the-job training. Evidence in this area, coming from different countries and periods and produced using diverse methodologies, points to robust, and in most cases statistically significant, positive effects of work-related training on wages (Duncan and Hoffman, 1979[49]; Veum, 1995[50]; Parent, 2003[51]; Bassanini et al., 2007[52]; Albert, Garcìa-Serrano and Hernanz, 2010[53]; Almeida and Faria, 2014[54]; Biesebroeck, 2008[55]). Most of these studies acknowledge that simply comparing trained and untrained workers' wages is misleading, as individuals who undertake training tend to have higher abilities and/or motivation. They therefore try to correct for this bias by comparing similar workers or track workers over time to address this selection issue. More recent studies, leveraging random or quasi-random assignment into training that enables a causal interpretation of estimates, also usually find substantial positive wage effects (Adhvaryu, Kala and Nyshadham, 2023[56]; De Grip and Sauermann, 2012[57]; Denzler, Ruhose and Wolter, 2025[58]; Leuven and Oosterbeek, 2008[59]; Osman and Speer, 2025[60]).

Using data from Cycle 1 of the Survey of Adult Skills, Fialho, Quintini and Vandeweyer (2019[61]) highlight the importance of distinguishing between formal, non-formal, and informal learning (see Box 4.2 for a definition of each learning type). After accounting for a number of socio-demographic and job characteristics and controlling for selection into employment, they find that participation in formal learning is associated with a small decline in wages. In contrast, participation in non-formal and informal learning is associated with higher wages, by 11% and 3.5% respectively. The study also suggests that employers benefit more from the training they provide than workers do, as the rise in value added per hour worked exceeds the increase in wages. Furthermore, the authors find that more costly training – potentially of better quality – is associated with greater productivity gains.

Box 4.2. Types and incidence of adult learning in Cycle 2 of the Survey Adult Skills

In this chapter adult learning comprises three types of learning:

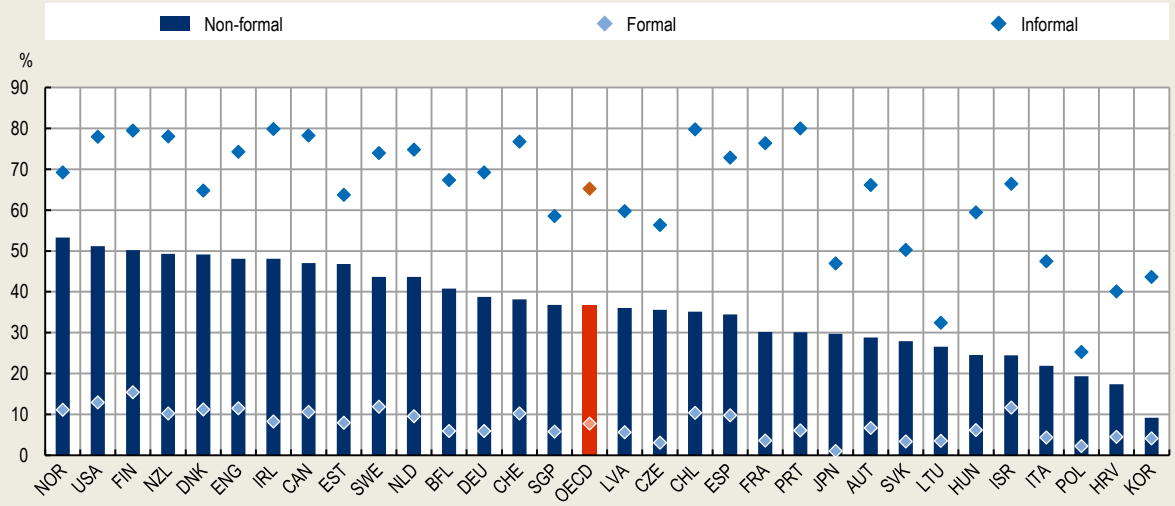
- *Formal training* refers to accredited education or training that is planned, delivered within an institutional setting, lasts at least one semester, and is officially recognised by the relevant authorities. In this chapter, formal training is defined as learning undertaken by adults aged 25 to 65 who: i) were studying towards a qualification at the time of the survey; ii) had completed a qualification in the 12 months preceding the survey interview; or iii) had interrupted studies towards a formal qualification in the 12 months prior to the survey interview.
- *Non-formal training* involves planned, institution-based education or training, but it is either shorter than one semester or not formally accredited. In this chapter, non-formal training is measured as having participated in organised learning activities that do not involve studying towards a qualification in the 12 months preceding the survey interview. These include courses, webinars, workshops, lectures, or private lessons aimed at acquiring skills for a current or future job.
- *Informal learning* is intentional but takes place outside institutional settings; it is less structured than formal or non-formal learning and can occur in any environment. In this chapter, informal learning is measured by the frequency with which adults engaged in activities such as learning from others, learning by doing, or learning about new products and services provided by their employer in the 12 months prior to the survey interview. Adults who engaged in any of these activities at least once per week are considered to have engaged in informal learning.

To exclude younger adults still in initial education and to concentrate on adults undertaking formal and non-formal learning that is more closely linked to jobs, the analysis focusses on job-related adult learning for the population aged 25-65, disregarding learning for other reasons.

On average, around 8%, 37% and 65% of adults in OECD countries participating in Cycle 2 of the Survey of Adult Skills took part in formal, non-formal and informal learning, respectively (Figure 4.8). Participation in formal training is relatively low across all countries – below 20% everywhere – whereas participation in non-formal and informal learning varies much more widely. For example, more than 53% of adults in Norway engage in non-formal training, compared with fewer than 10% in Korea. By definition, informal learning – having engaged in relevant learning activities at least once a week in the 12 months prior to the interview – tends to be more widespread. Still, countries differ substantially: about 25% of adults report engaging in informal learning in Poland, compared with 80% in Portugal. Despite these differences, participation rates across the three learning types are generally correlated. Countries with relatively high levels of one type of learning tend also to show higher levels of the other two.

Figure 4.8. Participation in adult learning varies by type of learning and country

Share (%) of adults who participated in adult learning, by type of learning



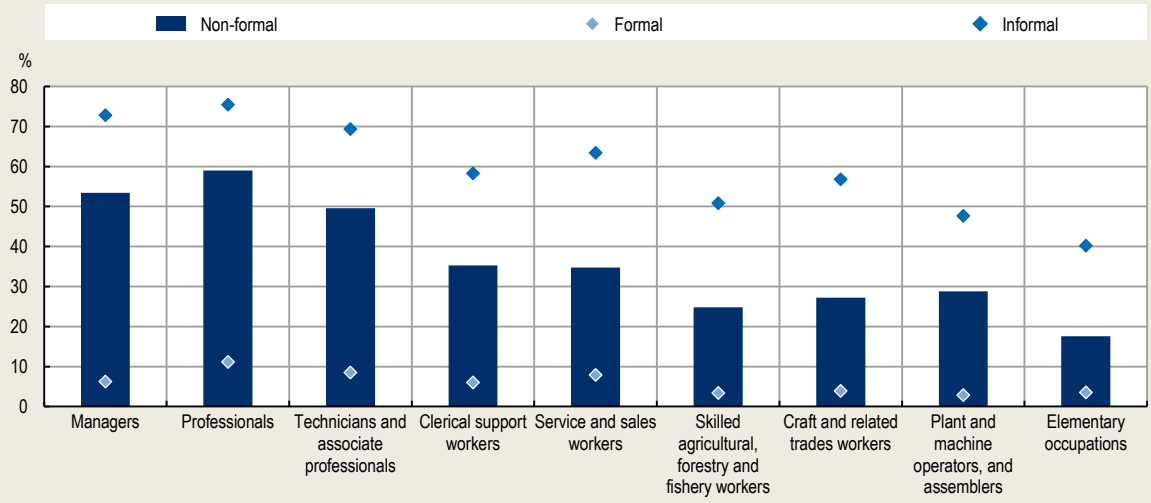
Note: Adults aged 25-65, formal, informal and non-formal job-related learning in the 12 months prior to the survey. OECD is an unweighted average of all participating member countries. Countries are ordered from highest to lowest based on the magnitude of non-formal training participation. Estimates for Belgium refer to the Flemish Region of Belgium, the only Belgian region that participated in the Survey of Adult Skills.
Source: Survey of Adult Skills (PIAAC, 2023).

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Participation in learning also varies by individuals' occupation (Figure 4.9). In general, adults in higher-skilled occupations – such as managers and professionals – are more likely to engage in learning activities. By contrast, those in lower-skilled roles, including elementary occupations, tend to have the lowest participation rates.[1]

Figure 4.9. Employees in higher-skilled occupations participate more in adult learning

Share (%) of employees who participated in adult learning, by occupation



Note: Employees aged 25-65 in all countries participating in the Survey of Adult Skills, formal, informal and non-formal job-related learning in the 12 months prior to the survey.
Source: Survey of Adult Skills (PIAAC, 2023).

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1. For a comprehensive discussion of how adult learning participation varies across additional dimensions – such as age, sex and qualification level – see OECD (2025[12]).
Source: Based on OECD (2025[12]). *Trends in Adult Learning: New Data from the 2023 Survey of Adult Skills*. https://doi.org/10.1787/ec0624a6-en.

The positive association between non-formal training and wages as well as the negative association between formal training and wages identified in Fialho, Quintini and Vandeweyer (2019[61]) also emerge when using data from Cycle 2 of the Survey of Adult Skills, collected in 2022-2023 (Figure 4.10). Adults who participated in non-formal learning in the previous 12 months in participating OECD countries earn, on average, wages that are about 6.2% higher than those of workers who did not participate. As in Fialho, Quintini and Vandeweyer (2019[61]), these estimates control for an extensive set of worker, job and firm characteristics, including occupation. However, despite the extensive list of controls, unobserved variables, such as attitudes towards learning or motivation, which are associated with both wages and participation in training, could bias the observed relationship. To address this concern, following Leuven and Oosterbeek (2008[59]), the comparison group was restricted to workers who wished to participate in non-formal training but were unable to do so for unexpected reasons, thereby offering a closer counterfactual. Results using this control group (shown in Annex Table 4.B.3) are qualitatively and quantitatively similar to the main results. While this approach does not address all endogeneity concerns, this result suggests that omitted variables correlated both with non-formal training participation and wages do not explain the association.

Box 4.3. Empirical strategy to estimate associations of training and learning participation with wages

To analyse the relationship between training and learning participation with wages, the following ordinary least squares specification is used:[1]

$$ln(w_{ijfosc}) = \alpha + \beta\, Training_i + \gamma\, x_i + \theta u_j + \delta\, z_f + \mu_o + \sigma_s + \rho_c + \varepsilon_{ijfosc}$$

where w_{ijfosc} is the gross hourly wage in purchasing power parity-adjusted 2022 USD of individual *i* employed in job *j*, firm *f*, occupation *o*, sector *s* and country *c*. $Training_i$ includes three dummy variables indicating whether an individual has taken part into a learning activity during the year preceding the survey interview. In the context of this chapter, the three indicators are defined as follows:

- $Formal\ training_i$ is equal to 1 if individual *i*: i) was studying towards a qualification at the time of the interview; ii) had completed a qualification in the 12 months preceding the interview; or iii) had interrupted studies towards a formal qualification in the 12 months preceding the interview.
- $Non-formal\ training_i$ is equal to 1 if individual *i* participated in organised learning activities that did not involve studying towards a formal qualification in the 12 months preceding the interview. These include courses, webinars, workshops, lectures, or private lessons aimed at acquiring skills for a current or future job.
- $Informal\ training_i$ is equal to 1 if individual *i* engaged in learning from others, learning by doing or learning about new products and services offered by their employer at least once per week in the 12 months preceding the interview.

x_i is a set of individual control variables including numeracy score and completed years of education as defined in Box 4.1, age, sex, immigrant background, parental education, whether one lives with a partner or has children, work experience and work experience squared; u_j is a set of job characteristics including whether the individual works part-time or with a temporary contract, such as a fixed term contract, seasonal contracts, a temporary employment agency contract, a zero-hour contract, a freelance, contractor and/or consultant contract, working as an apprenticeship or other training scheme or without a contract; z_f is a set of firm characteristics including whether the individual works in a SME, in a growing firm (i.e. the number of employees increased over the past 12 months), and in a private sector firm; μ_o are occupation (ISCO 2 digits) fixed-effects; σ_s are sector (ISIC 1 digit) fixed-effects; and ρ_c are country fixed-effects. The coefficient of interest is β, which captures the percentage change in wages associated with participating in formal or non-formal training or engaging in informal learning.

1. The Survey of Adult Skills is cross-sectional, meaning that individuals are observed only at one point in time. As a result, the data contain no information on respondents' wages prior to their participation in training. Thus, it is not possible to compare pre- and post-training wage levels for the same individuals.

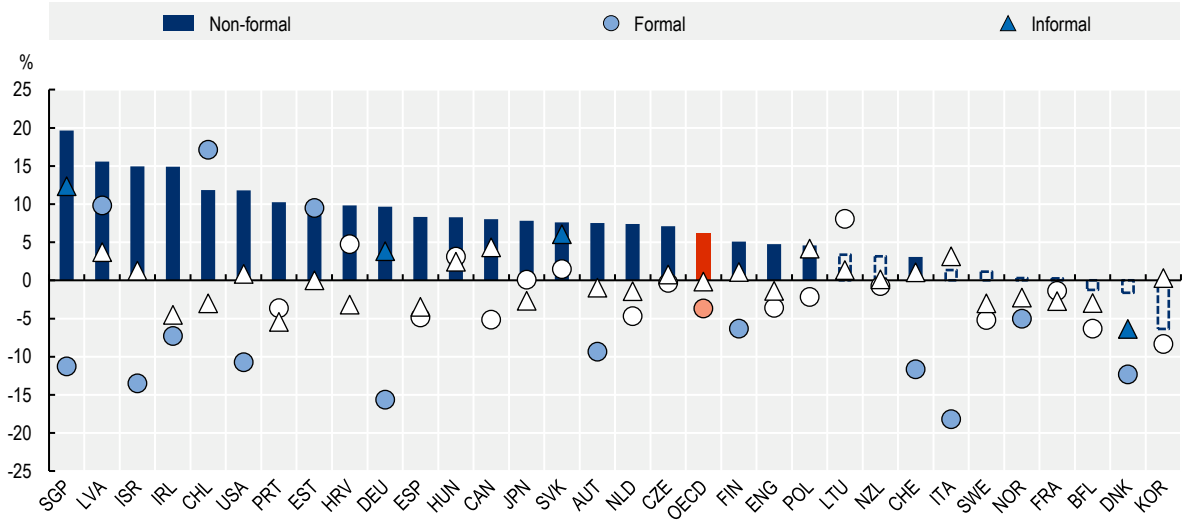
Participation in non-formal learning is associated with higher wages in nearly all countries participating in Cycle 2 of the Survey of Adult Skills, although the magnitude of the relationship differs (Figure 4.10). As with wage associations with skills, the link between non-formal training participation and wages tends to be greater in countries with higher levels of wage inequality and for workers with higher levels of education.[5] This pattern may reflect greater flexibility in wage-setting practices and may also capture differences in the characteristics of adults who engage in training. While job mobility is one of the main channels through which adults achieve wage gains (Topel and Ward, 1992[62]), this mechanism cannot be examined using Survey of Adult Skills data.[6]

Wages for adults who engaged in informal learning activities at least once per week in the last 12 months – such as learning from others, learning by doing or learning about new products and services offered by their employer – in participating OECD countries are, on average, not significantly different from those of workers who did not undertake these activities or did so less frequently. A high engagement in informal learning is linked to significant wage differences in only a limited number of countries (Figure 4.10). In Singapore, the Slovak Republic and Germany, more engagement in informal learning activities is associated with higher wages, whereas in Denmark it is associated with lower wages. The positive relationship observed in most of these countries appears to be driven largely by strong associations between informal learning and wages among individuals working in health-related occupations – such as health professionals and health associate professionals – and managers in hospitality, retail and other services. In these countries and occupational groups, associations between informal learning and wages were smaller in magnitude and generally not statistically significant in the Cycle 1 of the Survey of Adult Skills, suggesting that the more pronounced associations seen in Cycle 2 may be partly related to post-COVID-19 pandemic wage developments in these occupations and industries. On the other hand, the negative association observed in Denmark may be driven by adults with lower wages self-selecting into engaging in informal learning. However, these results should be interpreted with caution: the Survey of Adult Skills does not collect information on individuals' willingness and barriers to engage in informal learning, making it impossible to rule out endogeneity arising from omitted variable bias or reverse causality.

Finally, participation in formal training is associated with lower wages (Figure 4.10), although the robustness of this finding cannot be established. This negative association holds in most countries with a few exceptions – such as Chile, Latvia and Estonia. Unlike in Fialho, Quintini and Vandeweyer (2019[61]), this result is driven by workers who have already completed formal training, rather than by those earning lower wages while they are actively participating in training. It is also worth noting that the negative association between formal training and wages is statistically significant only for individuals (i) having started a new job within the past year, (ii) being hired under a contract other than an indefinite contract, or (iii) working part-time and that results seem driven by younger adults and, to some extent, migrants.[7] Workers under open-ended contracts, working full-time, and holding their position for more than a year do not experience such negative association of formal training with wages. Thus, this association could be capturing lower earnings received by younger workers, just entering the labour market or an occupation. As with informal learning, however, the interpretation of these patterns is limited by data constraints: the Survey of Adult Skills does not collect information on individuals' willingness to participate in, or barriers to accessing, formal training. Consequently, it is not possible to assess the extent to which these associations may reflect endogeneity arising from omitted variable bias or reverse causality.

Figure 4.10. On average in OECD countries, there is a clear and positive association between non-formal training and wages

Percentage change in hourly wages associated with participation in adult learning in the previous 12 months across countries, by training type



Note: Employees aged 25-65. In addition to numeracy and years of education, estimates account for age, sex, immigrant background, parental education, whether one lives with a partner or has children, firm and job characteristics (including occupation) and work experience. Solid non-white colours denote differences that are statistically significant at the 5% level, while white or bars with dashed borders indicate results that are not significant. Wages refer to gross hourly wages in PPP-adjusted 2022 USD. OECD is a simple average of coefficients for member countries with available data. Countries are ordered from highest to lowest based on the magnitude of the coefficient for non-formal training. Estimates for Belgium refer to the Flemish Region of Belgium, the only Belgian region that participated in the Survey of Adult Skills.
Source: Survey of Adult Skills (PIAAC, 2023).

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Although these findings point in the same direction as those in Fialho, Quintini and Vandeweyer (2019[61]), their magnitudes are smaller, to the point that associations of wages with informal learning are not significant anymore. Average associations of wages with training participation for countries that participated in both cycles of the Survey fell by 4.6, 5.6 and 3.7 p.p. for non-formal training, informal learning formal training, respectively. These results could suggest that returns to training have declined over time across all three types of learning. However, regarding non-formal training, this interpretation remains uncertain, as changes in how the question on non-formal training participation was administered between the two survey cycles could account for some of the observed differences.[8]

In addition, the relationship between non-formal training and wages appears to be partly driven by selection into occupations. Once occupational controls are included, the estimated wage premium declines by about 2 p.p. This suggests that individuals working in higher-paying occupations are also more likely to participate in non-formal training.

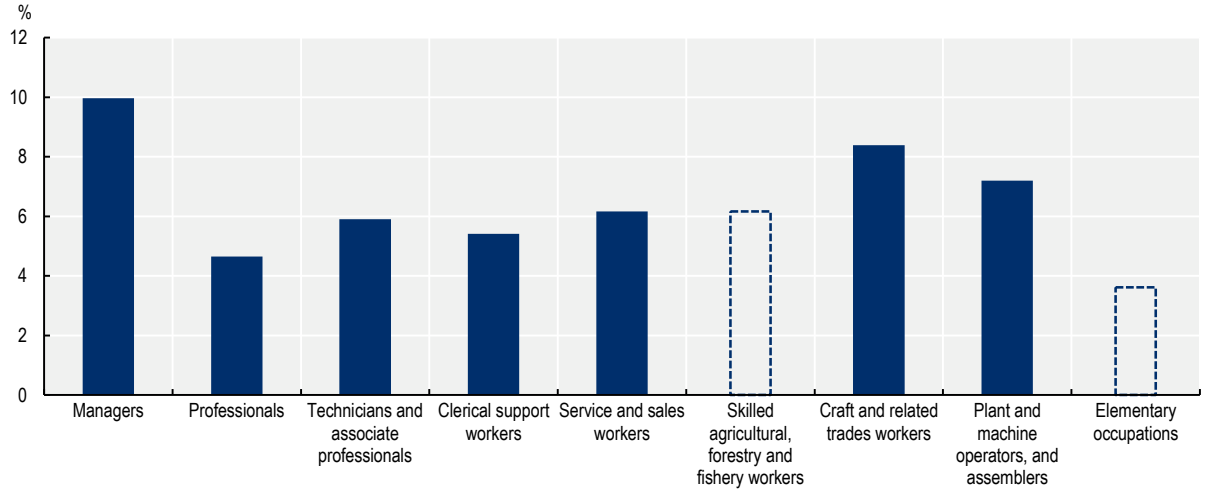
4.2.2. The relationship between training participation and wages is heterogeneous across occupations

The association of training participation and wages also varies substantially across occupations, as shown in Figure 4.11. Participation in non-formal training is associated with higher wages across all occupational groups, with managers and craft and related trades workers experiencing the largest wage premia. At the

other end of the spectrum, professionals and workers in elementary occupations exhibit slightly lower associations between non-formal training and wages. Taken together, the results suggest that non-formal training appears to be a relevant form of skill development for most occupations.

Figure 4.11. Managers and skilled trades have the strongest association between non-formal training and wages

Percentage change in hourly wages associated with participation in non-formal training in the previous 12 months across occupational categories



Note: Employees aged 25-65 in all countries participating in the Survey of Adult Skills. In addition to numeracy and years of education, estimates account for age, sex, immigrant background, parental education, whether one lives with a partner or has children, and work experience. Solid colours denote differences that are statistically significant at the 5% level, while bars with dashed borders indicate results that are not significant. Wages refer to gross hourly wages in PPP-adjusted 2022 USD.
Source: Survey of Adult Skills (PIAAC, 2023).

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4.2.3. Labour market outcomes depend on what, how, and who pays for training

Recent empirical work on the returns to training distinguishes between training for cognitive and noncognitive skills and seems to support the idea that training for noncognitive skills, such as communication, time management, decision making, and effective teamwork, is particularly effective. Adhvaryu, Kala and Nyshadham (2023[56]) randomly allocated workers in five garment factories in India into training for soft skills and found that trained workers were 13.5% more productive. Productivity gains were largest among workers who initially had low levels of leadership skills and were most pronounced when trainees worked alongside other coworkers in operation teams. This work is among the very few, if not the only, studies examining the causal impact of on-the-job training for soft skills for employed individuals.

Literature using randomised experiments concerning soft skills development for recent graduates has focussed in developing countries and reports mixed results. Groh et al. (2016[63]) find no employment impact of a training on interpersonal skills in either the short or medium term. By contrast, Brudevold-Newman and Ubfal (2024[64]) show that short-run employment prospects improve for individuals who receive training in effective communication, networking, interpersonal (teamwork, collaboration, trust, empathy, negotiation) and intrapersonal (self-awareness, personal initiative, and perseverance) skills.

Acevedo et al. (2020[65]) finds positive effects, but only for women. Osman and Speer (2025[60]) examine how soft-skills and technical-skills training interact and show that individuals who receive both types of training earn 20-27% higher incomes than those who participate in only soft-skills or only technical-skills programmes.

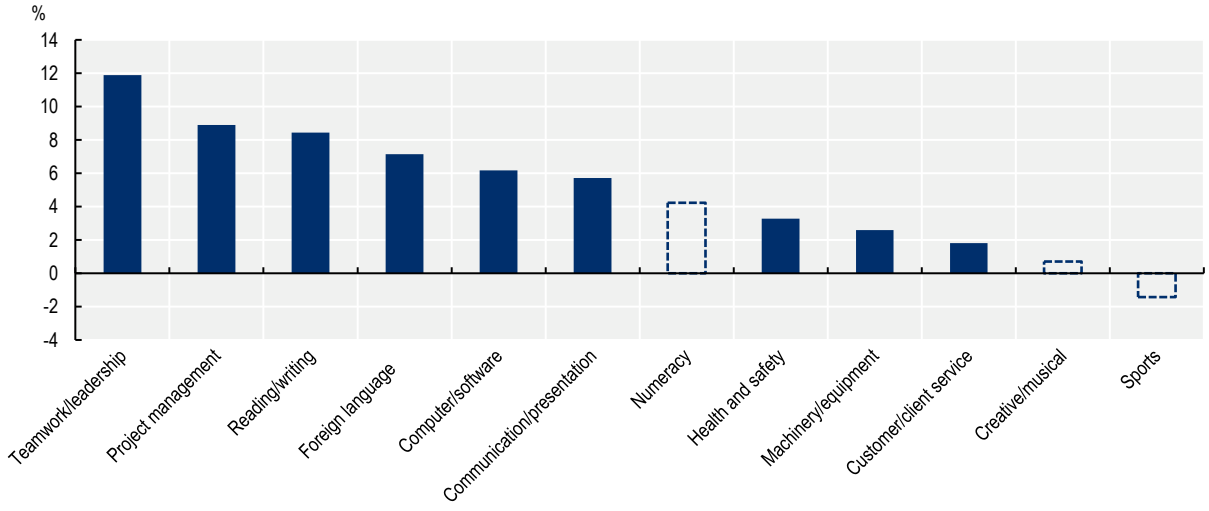
Another strand of the literature evaluates the effects of Active Labour Market Policies (ALMPs). Although a full review of this extensive body of work is beyond the scope of this chapter,[9] one recent paper analysing an intervention focussing on soft skills deserves particular attention. Schlosser and Shanan (2025[66]) study an ALMP that focusses on enhancing soft skills of welfare recipients in Israel and find that the programme increased participants' employment rates and decreased income-support recipiency. The impacts persist five to six years after the programme's implementation.

Results using Survey of Adult Skills data indicate that the associations of non-formal training with wages differ considerably by training topic (Figure 4.12). Consistent with the broader literature showing positive effects of non-cognitive skill development on labour-market outcomes, participation in training aimed at developing teamwork and leadership, and project management skills shows the largest association with wages, although the robustness of this result cannot be established given that the topic of training cannot be observed for adults who did not participate in training. Given evidence that such non-cognitive skills may be relatively easy to develop even later in life (Adhvaryu, Kala and Nyshadham, 2023[56]; Cunha et al., 2006[39]; Cunha, Heckman and Schennach, 2010[40]; Osman and Speer, 2025[60]), encouraging training in these areas could be particularly beneficial. The strong wage associations observed for these training topics also align with the finding that managers appear to benefit the most from non-formal training, as these areas, jointly with computer and software skills, are among the most common training subjects for this occupational group. This suggests that the stronger wage associations may partly reflect the higher participation of workers in better-paid occupations in such training. Trainings on reading and writing, foreign languages, computer and software and communication and presentation skills are associated with higher wages of about 5.5 to 8.5%. These types of training appear to be relatively more common among technicians and associate professionals, as well as among service and sales workers, compared with other occupational groups.

Finally, training on numeracy, health and safety, operating machinery or equipment, handling customers or clients, and job-related training on creative or musical skills and sports shows relatively weak associations with wages. Health and safety-related training is the most common type of training completed by adults and is particularly common among skilled agricultural, forestry and fishery workers, plant and machine operators and assemblers, and workers in elementary occupations, accounting for more than one-quarter of all training they undertake. Similarly, training on operating machinery or equipment is especially prevalent among plant and machine operators and assemblers and among workers in elementary occupations, again representing over a quarter of their completed training. These types of training are often mandatory for performing specific tasks in these occupations, which likely contributes to their lower observed wage differentials.

Figure 4.12. Training on teamwork, leadership and project management is associated with larger wages

Percentage change in hourly wages associated with participation in non-formal training in the previous 12 months by topic



Note: Employees aged 25-65 in all countries participating in the Survey of Adult Skills. In addition to numeracy and years of education, estimates account for age, sex, immigrant background, parental education, whether one lives with a partner or has children, firm and job characteristics (including occupation) and work experience. Solid colours denote differences that are statistically significant at the 5% level, while bars with dashed borders indicate results that are not significant. Wages refer to gross hourly wages in PPP-adjusted 2022 USD.
Source: Survey of Adult Skills (PIAAC, 2023).

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Training characteristics can also influence both the effectiveness of training and its association with wages. Although training flexibility is increasingly prominent in the current policy agenda – recently highlighted by an OECD publication underscoring its potential to expand participation and improve inclusiveness (OECD, 2023[67]) – limited evidence exists on whether flexible training modalities are as effective as traditional formats in developing workers' skills. Adult learning opportunities can offer flexibility across four key dimensions: time, place, mode, and content; and the small existing literature focusses primarily on delivery mode and its implications for skill acquisition. Evidence shows that participants in blended learning, where in-person instruction is combined with online components, report higher satisfaction and engagement, but also face challenges such as technological barriers and increased cognitive load (Bower et al., 2015[68]). Blended learning may lead to improved test performance, though part of this improvement reflects higher dropout rates among lower-performing learners (Deschacht and Goeman, 2015[69]).

Results from Cycle 2 of the Survey of Adult Skills indicate stronger wage associations for distance/online learning and blended/hybrid learning than for fully in-person training (Figure 4.13). These patterns partly reflect that low-return training topics, such as health and safety, operating machinery or equipment and handling customers or clients, are predominantly offered in person (they account for about 40% of in-person training). Nonetheless, the findings for distance learning are robust to including controls for training topic. This suggests that this training format does not yield lower wage benefits than traditional training. Similarly, wage associations for non-formal training do not differ significantly between shorter courses (completed within a day) and longer ones (lasting over a week), nor between training delivered in one or a few consecutive days and recurring courses spread over several days or months. Overall, these results indicate that flexibility in delivery mode and timing is not associated with lower wages.

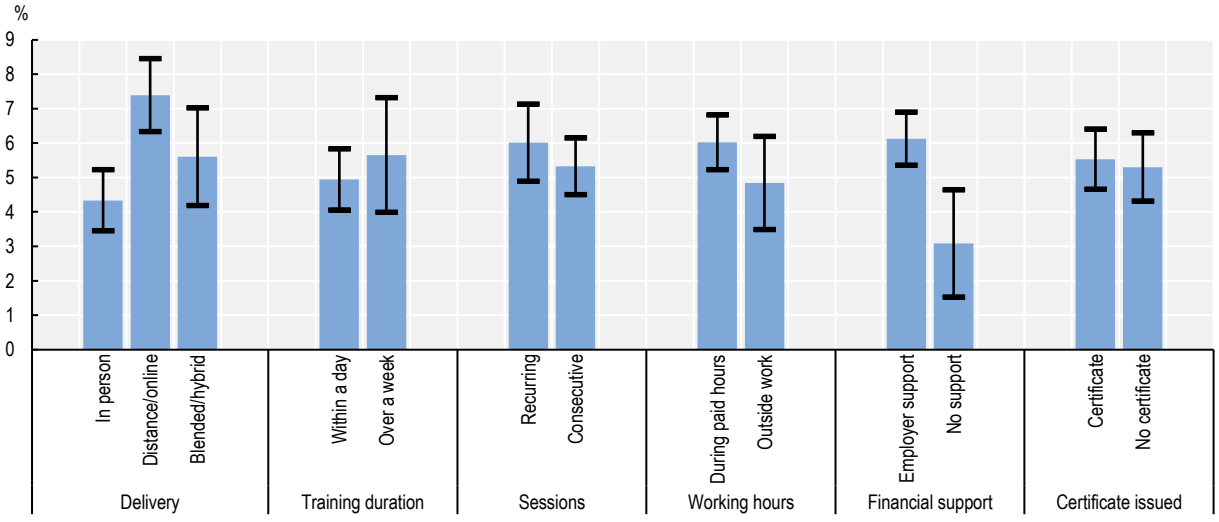
The relationship between training participation and wages also varies depending on who finances the training. The limited existing evidence comparing employer-sponsored training with training paid for by individuals suggest that, at least in the short run, formal training leads to higher wages when employers – rather than workers – bear the cost (Bishop, 1997[70]). This may indicate that employers are better able to identify effective formal training programmes. Alternatively, the results may reflect non-random selection by employers, who may tend to sponsor training for their most promising workers or for those they wish to retain or promote (Dietz and Zwick, 2020[71]).

Findings from the Survey of Adult Skills for non-formal training are similar: training financed by employers shows a stronger association with wages than training paid for by individuals, by other funders, or offered free of charge (Figure 4.13). Likewise, given that more than 85% of employer-funded training occurs during working hours, training undertaken during working hours is also more strongly associated with higher wages than training completed outside of working hours. These associations partly reflect differences in the topic of the training and in the characteristics of participating workers. Employer-funded non-formal training is more commonly targeted to job-specific needs or organisational processes. Topics such as security, computer and software, teamwork and leadership, project management, operating machinery or equipment and handling customers or clients account for over 70% of employer-funded training. Importantly, however, employer-funded training continues to display a stronger association with wages even after controlling for the topic of training. This pattern suggests that employers may be more effective at identifying training that is particularly relevant or likely to yield higher productivity and, consequently, returns. However, employers may select high-potential employees to reap greater returns from their training, as found in Dietz and Zwick (2020[71]), and higher wages could be explained, at least partly, by this selection, instead of training participation.

Furthermore, non-formal training that leads to a certificate is not associated with higher wages than comparable training without certification. More than 40% of workers who completed certificate-granting training did so in topics with relatively low associations with wages – such as health and safety, customer handling, or machinery and equipment operation. These courses are often mandatory, which may limit their impact on wages. In addition, many non-formal training certificates lack recognition or portability across employers, which likely contributes to the absence of a wage premium for certificate-based non-formal training.

Figure 4.13. Flexible learning and employer-funded training are associated with higher wages

Percentage change in hourly wages associated with participation in non-formal training by characteristic of the training



Note: Employees aged 25-65. In addition to numeracy and years of education, estimates account for age, sex, immigrant background, parental education, whether one lives with a partner or has children, firm and job characteristics (including occupation) and work experience. Wages refer to gross hourly wages in PPP-adjusted 2022 USD. Vertical brackets indicate the estimated association's 95% confidence interval.
Source: Survey of Adult Skills (PIAAC, 2023).

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4.3. Fostering skills development and high-return training requires renewed public policies

Signalling, rewarding and recognising skills are becoming increasingly central

Results presented in this chapter show that information processing and non-cognitive skills seem to have a direct and significant effect on wages beyond education, underscoring the value of skills. These results support the case for skills-first approaches, which refer to ways of designing hiring, education, and public policy that prioritise what people know and can do – their skills – over formal credentials such as degrees, job titles, or years of experience. These approaches should not replace traditional credential-based systems, but rather complement them.

The skills-first readiness and adoption index developed by the OECD and SUSS-IALS in 2025 provides a structured way of analysing measures to foster skills signalling, rewarding and recognition (OECD/SUSS-IAL, 2025[72]). This framework suggests that governments have a central role to play in supporting talent recognition by embracing policies that make skills visible such as Recognition of Prior Learning (RPL) or skills signalling. Government initiatives to advance skills-first approaches should, wherever possible, align with existing skills-first practices already adopted by employers.

Through RPL, individuals can have knowledge and skills acquired through non-formal or informal learning formally validated and certified, allowing these competences to be recognised and rewarded in the labour market. France has a long-standing RPL tradition, with its system in place for more than 20 years. The French RPL framework is closely linked to the National Directory of Professional Certifications (RNCP),

ensuring transparency and comparability of qualifications and guaranteeing that RPL awards carry the same status as those obtained through traditional education and training pathways.

Other skills-signalling policies, such as skills passports, also help make individuals' competences more visible, thereby facilitating the hiring of adults with relevant skills and supporting their recognition and reward in the labour market. One example is Japan's Job-Card System, which documents individuals' skills, work history and career aspirations. While its primary purpose is to support individuals in understanding and planning their career development, the Job-Card can also be used to demonstrate acquired skills to prospective employers (OECD, 2026[73]).

4.3.1. Enhancing training flexibility can raise participation and deliver benefits comparable to traditional formats

Many adults face multiple, multifaceted, and interrelated constraints, including limited time due to work or family responsibilities, as well as training opportunities offered at inconvenient times or locations. By reducing these constraints, more flexible training arrangements can make participation feasible for a wider range of learners. Flexible training refers to adult learning provision that adapts to learners' individual circumstances by allowing greater choice over how, when, where, and what they learn (OECD, 2023[67]).

The evidence presented in this chapter indicates that short training, training delivered at least partly online, or training offered over multiple sessions are not associated with lower returns than less flexible learning formats, indicating that it may have a similar labour market value than longer and less flexible training. If flexible training delivers at least comparable outcomes to in-person or longer programmes – while also boosting participation – flexible training could be promoted. At the same time, in-person training, should be maintained to ensure that adults with limited digital skills and those living in areas with poor connectivity can participate.

Policymakers can use different measures to increase the flexibility of adult learning provision. One common approach is modularising adult learning programmes – that is, breaking longer programmes into a number of shorter modules that can be completed individually. These modules often lead to micro-credentials, which are short, targeted learning certifications that recognise specific skills or competencies and certify the successful completion of individual learning modules that stand alone or that can be combined to build toward larger qualifications. The short duration of these learning opportunities enhances their accessibility compared with traditional pathways, making them especially appealing to time-constrained individuals. They also allow for personalisation across delivery mode, location, and content (OECD, 2025[12]). Denmark's well-established modular approach to adult learning shows how flexible, stackable learning pathways can expand opportunities for adults. By documenting every module, learners and providers are enabled to easily track progress and combine modules across institutions. This supports flexible participation and contributes to a high share of adults achieving further qualifications (OECD, 2023[67]). Higher education students can also benefit from the modularisation of programmes through time and cost savings, for example by receiving credit towards a qualification for prior relevant education or training.

RPL can support flexible adult learning pathways in different ways. It may allow learners to skip selected subjects and reduce duplication of learning, leading to shorter training duration and alleviating time constraints. When exemptions from admissions processes exist, it may also reduce application costs, thereby reducing cost-related barriers to training (OECD, 2023[74]). In Norway, RPL procedures can be used to access post-secondary and tertiary education, broadening opportunities by allowing adults aged 25 and over to have their formal, non-formal and informal learning recognised for entry (OECD, 2023[67]).

Other initiatives, such as National Qualifications Frameworks (NQFs), credit transfer systems, and regularly updated national qualification standards, play a key role in supporting modularisation and, consequently, RPL. NQFs are instruments by which countries organise, recognise, and assign value to qualifications and place them within a hierarchy based, ideally, on learning outcomes (Cedefop, 2017[75];

European Training Foundation, 2017[76]). They facilitate modularisation and RPL by helping institutions locate prior learning within the qualifications' hierarchy and foster learning flexibility by supporting learner mobility across institutions, programmes, and levels. Strong NQFs encompass and link different types of learning (formal, non-formal and informal) at different levels (basic skills and qualifications, vocational education and training, higher education). However, many countries operate separate frameworks for academic and vocational education and training (Martin and Godonoga, 2020[77]). NQFs should be complemented with and linked to credit transfer systems that allow learning outcomes or credits earned in one programme or institution to be recognised and used in another. In addition, the qualifications that are organised within NQFs, national qualification standards, should be up to date. These standards define the core competences or learning outcomes required to obtain a formal qualification, describing what learners are expected to know, understand, and be able to do upon completion, and are crucial to establish a shared reference for competences and to foster RPL across providers (Cedefop, 2017[78]).

4.3.2. Quality and information are essential to increase returns to training

While making training more flexible, it is important to ensure that it remains of high quality. To this end, appropriate quality assurance procedures should be put in place, ensuring high-quality implementation and supporting continuous improvement.

Furthermore, as adult learning systems become more flexible, they generally become increasingly complex for individuals to navigate. Policymakers should consider expanding and improving existing career guidance services that can help individuals make better choices about education, training, and employment. (OECD, 2023[67]).

4.3.3. Capacity-building measures can be used to encourage employer-provided training

Employer-provided training is highly related to employees' jobs and generally shows high associations with wages. Yet, small and medium enterprises (SMEs) face significant barriers to training their workforce. In addition to financial constraints, they often lack information on training opportunities or available support mechanisms and on the benefits of investing in training, and they are usually less able to identify their skills needs than larger companies. Public intervention is therefore interesting to facilitate and encourage employer-provided training in SMEs (OECD, 2021[79]).

Financial constraints often limit employers' ability to invest in training, particularly among SMEs. To address these barriers, direct subsidies are a common policy tool to reduce the costs borne by employers when training their workforce (OECD, 2021[79]). An alternative approach is the use of sectoral training funds, through which firms pool resources to finance training that meets the specific needs of their sector, as is the case in Flanders (Belgium).

Capacity-building measures such as skills assessment and anticipation services, learning and training networks to share planning and costs, and training managers to develop a learning culture within the firm, are promising instruments to support and expand employer-provided training in SMEs. Skills assessment and anticipation services help firms identify skills gaps in relation to current and future needs. In France, the Advance Management of Skills (*Gestion prévisionnelle des emplois et des compétences* – GPEC) helps organisations anticipate and adapt jobs, workforce levels and skills to evolving economic, technological, social and legal environments. It is a structured method to analyse future skill needs, manage career development, prevent recruitment difficulties, address ageing-workforce issues, and support organisational change (Ministère du Travail et des solidarités, 2024[80]). These services may be provided by public employment services, by employer associations, by learning networks, or by private firms. In addition, collaboration among companies allows them to pool resources, achieve economies of scale, and create a critical mass in training demand, lowering per-worker costs. Learning and training networks can also directly support companies through guidance on available financial instruments or

offering directly skills assessments services, for instance (OECD, 2021[79]). Ireland's Skillnet Business Networks are collaborative clusters of private-sector businesses that come together by sector or region to address shared skill needs. There are 70 Skillnet Business Networks through which their members can identify skill gaps and provide upskilling programmes (Skillnet Ireland, 2026[81]).

Managers' and entrepreneurs' attitudes towards learning within the firm play a critical role in shaping investments in skills. Strengthening their competences and fostering an understanding of human capital as a productive investment can therefore support SMEs' workforce upskilling and skills development. Coaching, mentoring, and peer learning among managers are interesting programmes that can facilitate knowledge sharing and strengthen managers' and hence SMEs' capacity and learning culture. Approaches that combine peer learning with individualised support – such as subsidised consulting or coaching services – appear particularly effective. These programmes should be delivered in a flexible manner, for example through modular courses and online formats (OECD, 2021[79]) A notable example is Enterprise Ireland's Mentor Network, a government-supported programme that connects SMEs with experienced entrepreneurs and industry experts. Through 5-10 one-to-one mentoring sessions delivered over 6-12 months – typically online – SME managers can discuss key operational and strategic challenges with their mentors (Enterprise Ireland, 2026[82]).

More broadly, firms could be encouraged to adopt High Performance Work Practices (HPWPs), organisational practices that promote employee autonomy, collaboration, and effective use of skills in the workplace. Existing evidence suggests that HPWPs are conducive to increased opportunities for on-the-job training (OECD, 2021[83]). The findings in this chapter also indicate that cognitive skills, such as numeracy, are strongly rewarded in the labour market but even more so in collaborative work environments and when employees have some autonomy over task sequencing. Adaptive organisational structures that give workers discretion to respond to context-specific conditions create an environment in which cognitive skills can be fully leveraged and translated into higher performance. In practice, the promotion of HPWPs typically involves measures such as guidance, knowledge sharing, and the dissemination of best practices (OECD, 2021[79]).

4.4. Concluding remarks

This chapter shows that both cognitive skills and formal education remain an important determinant of labour market outcomes – both employment status and wages. However, their importance has declined over time. Occupational sorting plays a key role, as education and cognitive skills are associated with higher wages primarily because they facilitate access to high-paying occupations. Furthermore, the strength of the association between education, skills, and wages varies substantially across occupations and is especially pronounced in high-skilled occupations. The chapter also highlights the important role of non-cognitive skills and work practices in shaping labour market success, as greater task discretion and co-operation at work are associated with higher wages. Finally, the relationship between numeracy and wages is stronger among workers with higher levels of task discretion and co-operation, pointing to a strong complementarity between cognitive and non-cognitive skills.

Results presented in this chapter also show that participation in non-formal training is consistently associated with higher wages, whereas the relationship between wages and other forms of learning – namely formal training and informal learning – is less clear. As with education and skills, the association between non-formal training and wages appears to be partly driven by the fact that high-paying occupations are also the ones where individuals participate more in training and learning activities. Beyond the type of learning activity, several training characteristics also matter. Training aimed at developing teamwork, leadership, and project management skills is associated with the largest wage premia. Online learning – whether delivered fully online or in hybrid format – also shows strong associations with wages, suggesting

that flexible training formats can deliver wage benefits comparable to traditional modes while potentially increasing participation. Non-formal training financed by employers is also strongly associated with wages.

While this chapter employs several strategies to address potential endogeneity, the findings remain non causal and only show associations with wages. More research is therefore needed to establish the causal impact of skills, education and training on labour market outcomes. In particular, studies that use random allocation of adults into training programmes help expand the causal evidence base on training returns. Strengthening this evidence is essential for designing more effective skills policies.

Nevertheless, the findings in this chapter suggest that policies which improve the visibility of skills – such as RPL and other skills-signalling tools – can have positive effects on wages by providing clearer information on what individuals are able to do, in addition to allowing to shorten the time necessary to obtain qualifications and potentially reduce costs of education and training. Since associations with wages of online, short, or otherwise flexible forms of training are not lower than those of traditional formats, enhancing the flexibility of adult learning should be a priority where it increases participation. Key strategies include modularising longer programmes, using RPL to shorten training pathways or facilitate access, and strengthening NQFs, all backed by robust quality assurance and supported by high-quality career guidance. Given the strong wage associations of employer-provided training, such training should be further encouraged – particularly among SMEs – through measures that strengthen firm capacity, including skills assessment and anticipation services, shared learning and training networks, and managerial training.

Effective skills policies also depend on robust systems for monitoring, evaluating, and learning to ensure that public investments generate value in the labour market. Governments are increasingly expected to demonstrate what their interventions achieve, not only in terms of implementation but also in terms of outcomes. Comprehensive results-based monitoring and evaluation frameworks can help determine whether a project, programme, or policy has achieved its intended medium- and long-term objectives, and can provide valuable evidence on the labour-market impacts of training.

Such frameworks can also help explain how progress has been made, identify challenges encountered along the way and highlight areas for improvement. Programmes that prove ineffective should be adapted based on evaluation findings or, when necessary, discontinued so that resources can be redirected toward initiatives that deliver greater impact. However, modifying or terminating established programmes can be politically challenging. Launching interventions on a smaller scale – such as through pilots or staggered implementation across regions or sectors – can help address this challenge. These approaches allow for testing, learning and refining before scaling programmes up, making it easier to adjust, or discontinue programmes based on clear evidence of their effectiveness.

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Annex 4.A. Methodological annex

Discussion of potential endogeneity issues and strategies adopted to address them

A number of potential endogeneity issues affect the estimation of the effect of skills on employment status and wages. The table below lists these concerns and the different strategies adopted in this chapter to address them.

Annex Table 4.A.1. Endogeneity issues and remedies

Analysis	Type of endogeneity	Description	Strategy to mitigate the problem
Returns to skills and to training – employment status and wages	Measurement error	Because skills are inherently difficult to measure, imprecise measurement is likely to generate attenuation bias, biasing estimates of the relationship between skills and employment outcomes towards zero.	The fact that the Survey of Adult Skills measures skills in several domains diminishes the risk of measurement error. The main analyses use numeracy proficiency, but robustness checks were conducted using literacy proficiency.
Returns to skills and training – employment status and wages	Reverse causation	This happens if employment patterns directly affect test scores over the lifecycle. The literature has shown that employment breaks could lead to skills depreciation. Besides, some jobs may lead to skills reinforcement (better use of skills and/ or participation into training).	Main regressions with wages as a dependent variable control for occupational status. Robustness checks were conducted adding controls for employment breaks, skills use and training participation.
Returns to skills and training – employment status and wages	Omitted variable bias	Individual characteristics such as family background, health, or personality traits could influence earnings and skills and lead to an overestimation of the link between skills and wages if not included in the regression.	Main regressions control for family background (parental education). Robustness checks were conducted adding controls for health status and personality traits.
Returns to skills and training – wages	Sample selection	Wages observed for employed workers only. If workers whose skills are obsolete or that do not participate in training become unemployed, the relationship between skills or training and wages would be underestimated.	If anything, the relationship between skills or training participation is underestimated and the coefficients can be interpreted as a lower bound of the true effect.
Returns to training	Sample selection	There might be selection into training based on unobserved characteristics such as ability, motivation, or employer's practices (e.g. if they select into training individuals they would like to retain or promote or else if they select for training newly hired workers with insufficient skills).	Regressions control for skills (literacy). One robustness check was conducted by restricting the "control" group to individuals that wanted to undertake training but did not for an unexpected reason as in Leuven and Oosterbeek (2008[59]).

Yet, it is important to note that these solutions suffer from their own limitations. The list of additional covariates is limited and may not allow us to control for all the sources of endogeneity. The method consisting in restricting the control group to individuals that wanted to undertake training but did not for an unexpected reason cannot be used to estimate interaction effects (i.e. association between different training characteristics – topics, training flexibility, employer-sponsored training, training usefulness and certificated training – and wages) because it suffers from low power. Moreover, it would not neutralise all possible sources of selection bias if the unexpected reason inducing workers to give up training opportunities affects also their earnings potential, for example if they drop out from employment for the same reason. Hence the relationships presented in this chapter should not be interpreted as causal estimates.

Annex 4.B. Robustness checks

Annex Table 4.B.1. Association between wages and skills, controlling for employment characteristics

	(1) Baseline	(2) Break in employment	(3) Skill use	(4) Non-formal training	(5) All controls
Skills and education					
Numeracy (one-standard-deviation)	0.0678***	0.0677***	0.0670***	0.0660***	0.0652***
	(0.00279)	(0.00278)	(0.00279)	(0.00279)	(0.00278)
Years of education (one-standard-deviation)	0.0867***	0.0863***	0.0847***	0.0847***	0.0824***
	(0.00331)	(0.00329)	(0.00330)	(0.00331)	(0.00329)
Additional controls					
Break in employment		-0.0696***			-0.0683***
		(0.00545)			(0.00542)
High co-operation at work			0.00769**		0.00482
			(0.00379)		(0.00377)
High task discretion at work			0.0640***		0.0608***
			(0.00421)		(0.00420)
Non-formal training participation				0.0553***	0.0534***
				(0.00381)	(0.00379)
N	62 973	62 952	62 852	62 973	62 831
R-squared	0.605	0.606	0.608	0.607	0.611

Note: The table presents four specifications including various robustness checks relative to the baseline model (1). Model 2 controls for adults who reported a break in employment of at least three months over the past five years. Model 3 controls for the extent to which adults exercise task discretion and co-operation at work. Model 4 controls for those who participated in non-formal adult learning activities. Model 5 includes all controls. In addition to the variables presented, all estimates control for worker characteristics (work experience, sex, age, marital status, whether one has children, parental education, and whether one is a native speaker), job and firm characteristics (contract type, firm size and growth, private sector), and includes fixed effects for country, occupational category, and industrial sector. Standard errors in parentheses. * p<.1; ** p<.05; *** p<.01.

Annex Table 4.B.2. Association between wages and skills, controlling for worker characteristics

	(1) Baseline specification	(2) Health	(3) Personality	(4) All controls
Skills and education				
Numeracy (one-standard-deviation)	0.0678***	0.0662***	0.0688***	0.0675***
	(0.00279)	(0.00277)	(0.00266)	(0.00266)
Years of education (one-standard-deviation)	0.0867***	0.0838***	0.0859***	0.0842***
	(0.00331)	(0.00330)	(0.00303)	(0.00303)
Additional controls: Self-reported health				
Excellent		0.0586***		0.0407***
		(0.00592)		(0.00582)
Very good		0.0334***		0.0269***
		(0.00429)		(0.00441)
Fair		-0.0409***		-0.0328***
		(0.00558)		(0.00590)
Poor		-0.0313**		-0.0175
		(0.0136)		(0.0147)
Additional controls: Personality traits				
Agreeableness			-0.00640***	-0.00774***
			(0.00198)	(0.00198)
Conscientiousness			0.0104***	0.00934***
			(0.00212)	(0.00212)
Emotional stability			0.0192***	0.0138***
			(0.00206)	(0.00212)
Extraversion			0.0230***	0.0206***
			(0.00202)	(0.00203)
Open-mindedness			-0.00231	-0.00217
			(0.00197)	(0.00197)
N	62 973	62 950	58 018	58 003
R-squared	0.605	0.607	0.614	0.616

Note: The table presents three specifications including various robustness checks relative to the baseline model (1). Model 2 controls for adults' self-reported health (ref. category: Good). Model 3 controls for individuals' personality traits. Model 4 includes all controls. In addition to the variables presented, all estimates control for worker characteristics (work experience, sex, age, marital status, whether one has children, parental education, and whether one is a native speaker), job and firm characteristics (contract type, firm size and growth, private sector), and includes fixed effects for country, occupational category, and industrial sector. Standard errors in parentheses. * p<.1; ** p<.05; *** p<.01.

Annex Table 4.B.3. Association between wages and job-related non-formal adult learning

	(1) Participation relative to all non-participants (baseline)	(2) Relative to those facing unexpected barriers to participation	(3) Relative to all other non-participants
Non-formal job-related training within past year	0.0550***	0.0584*	0.0547***
	(0.00383)	(0.0349)	(0.00384)
Other adult learning controls			
Formal training within past year	-0.0406***	-0.0388***	-0.0409***
	(0.00724)	(0.00914)	(0.00723)
Informal learning at least once a week	0.0137***	0.00812	0.0137***
	(0.00403)	(0.00594)	(0.00404)
Skills and education			
Numeracy (one-standard-deviation)	0.0668***	0.0782***	0.0668***
	(0.00280)	(0.00390)	(0.00280)
Years of education (one-standard-deviation)	0.0844***	0.110***	0.0845***
	(0.00332)	(0.00449)	(0.00333)
N	62 669	29 782	62 442
R-squared	0.607	0.592	0.608

Note: Each model presented shows the estimated change in wages associated with participation in non-formal job-related adult learning. Model 1 shows the effect relative to all adults who did not participate; Model 2 presents results relative only to those adults who reported that they wished to participate in non-formal training, but were unable to do so due to unexpected barriers; Model 3 presents results relative to all other non-participants (i.e. those who did not report any unexpected barriers). In addition to the variables presented, all estimates control for worker characteristics (work experience, sex, age, marital status, whether one has children, parental education, and whether one is a native speaker), job and firm characteristics (contract type, firm size and growth, private sector), and includes fixed effects for country, occupational category, and industrial sector. Standard errors in parentheses. * p<.1; ** p<.05; *** p<.01.

Testing the null hypothesis that the estimated penalty for workers who wished to participate in non-formal training but were unable to do so for unexpected reasons is equal to the estimated penalty for workers who did not participate in non-formal training for other reasons, both relative to workers who completed non-formal training, leads to a p-value of 0.9127. This means that we cannot reject the null hypothesis that the two penalties are equal and suggests that the estimated association of participating in non-formal training with wages when using as a control group adults who wanted to participate but could not due to unexpected reasons is qualitatively and quantitatively similar to the associations using the full sample.

Notes

[1] Respondents to the Survey of Adult Skills are scored according to their assessed performance in three skill domains. For numeracy (and literacy), there are six levels – from Below Level 1 to Level 5 – and the gap between each level is 50 points. See OECD (2024[84]) for more information.

[2] Measured as the ratio of the 90th to the 10th percentile of the wage distribution.

[3] Using data on earnings from the Survey of Adult Skills, the correlation between the estimated association of years of education and earnings at the country level with countries' inequality measure is 0.72. This correlation is 0.46 when using the association between numeracy and earnings. This correlation is about 0.50 for both associations when using data from OECD (2026[86]), which excludes information for non-OECD Members, as Singapore and Croatia.

[4] Heterogeneity in the associations of wages with literacy across occupations is less pronounced than with numeracy.

[5] Wage inequality is measured as the ratio of wages at the 90th and 10th percentiles using wages information from the Survey of Adult Skills.

[6] While the Survey of Adult Skills allows identification of whether an individual changed jobs and whether they completed training within the past year, it does not provide information on the temporal order of these events.

[7] The stronger negative association between wages and formal training participation for migrants is statistically significant only at the 10% level.

[8] In the Cycle 1 of the Survey of Adult Skills, conducted between 2011 and 2018, respondents were asked sequentially about their participation in each type of training activity. In Cycle 2 (2022-2023), however, they reported all training activities undertaken in the past 12 months in a single question. Although the underlying content of the questions remained identical across cycles, this change in administration may have influenced how some respondents reported their participation. For further details, see Box 1.3 in OECD (2025[12]).

[9] See for instance Card, Kluve and Weber (2010[85]) for a meta-analysis of ALMP evaluations.

5 Non-compete and related agreements: Hoarding talent, holding back growth?

Dan Andrews, Andrea Garnero and Sara Holttinen

This chapter examines various contractual clauses and agreements that restrict workers' activities after leaving their employer, with a particular focus on non-compete clauses. It provides an overview of how non-compete clauses are regulated across OECD countries. It then introduces the first harmonised cross-country evidence – based on novel employee- and employer-level surveys for 15 OECD economies – on the prevalence of non-compete and related clauses and (firm-to-firm) no-poaching and wage-fixing agreements. The chapter also presents empirical results on the association between non-compete clauses, wages and productivity. Finally, it discusses policy options to better balance the protection of legitimate business interests with the need to support worker mobility and market dynamism.

In Brief

Key findings

Over the past 20 years, the productivity slowdown – underpinned by low rates of job mobility, firm entry and knowledge diffusion – has been accompanied by rising concerns over wage bargaining power in many OECD countries. One factor that could contribute to explaining these headwinds is the rising use of post-employment restraint clauses, which prevent workers from joining (or starting) a competing firm (non-compete clauses); the disclosure of confidential information; or the poaching of former co-workers or clients. While the use of such restraints was originally justified on the basis that they protect legitimate business interests, such as trade secrets, there are concerns that they are increasingly being deployed to stifle job mobility and competition.

In fact, this chapter finds that the prevalence of non-compete clauses is surprisingly high and rising, and that such clauses have spread well beyond knowledge-intensive activities to jobs where access to confidential information is limited. The evidence in this chapter – while preliminary – suggests that such clauses tend to reduce productivity growth – by impeding the forces of growth-enhancing job reallocation and knowledge diffusion – and wage growth – by limiting workers' outside options. In countries where non-compete clauses are more tightly regulated, there is some evidence to suggest that the economic "bite" on productivity may be more modest, but still negative. This is consistent with the tendency for such clauses to exert a chilling effect on worker mobility, even when their use is restricted, to the extent that workers may lack awareness of the legitimacy of such clauses.

The chapter provides new harmonised cross-country evidence into the prevalence and economic impacts of non-compete and related clauses. The empirical analysis is based on surveys of firms and employees for 15 OECD countries: Belgium, Canada, France, Germany, Italy, Japan, Korea, Mexico, New Zealand, Poland, Portugal, Spain, Sweden, Switzerland and the United Kingdom. The chapter also features a new policy index for all OECD countries that measures: i) the regulatory framework (who regulates non-compete clauses – the law, courts, or collective agreements – and what is regulated); ii) the terms of exchange (e.g. any compensation requirements for signing non-compete clauses); and iii) the procedural requirements, judicial modification powers, validity after dismissal and sanctions for overly broad agreements.

The prevalence of non-compete and related clauses is high and rising

- Firms are increasingly deploying a variety of contractual devices to restrict an employee's activity after they leave their current job. The most common is a non-disclosure agreement (NDA), which covers around one-half of private-sector employees in the 15 OECD countries analysed in the chapter, while between one-fifth and one-third of the workforce are bound by non-compete clauses. At the same time, between one-tenth and one-fifth of employees are subject to clauses that prohibit the solicitation of clients and co-workers and/or provisions for the repayment of bonuses or training costs when they depart a firm.
- Non-compete clauses typically receive most attention in economic policy debates since they directly limit the ability of workers to join (or start) a competing firm. The prevalence of non-compete clauses is higher than expected based on two benchmarks. First, contrary to the original intent, non-compete clauses have spread well beyond knowledge-intensive occupations to cover many low-skilled employees who lack access to confidential information. There is little

variation in the use of non-compete clauses by training, growth or innovation activity of firms. Non-compete clauses are also applied indiscriminately and are rarely a bargained outcome. Second, the duration and scope of such clauses is often broader than one would expect based on national regulatory frameworks, partly reflecting lack of awareness of firms regarding the legal requirements. Meanwhile, firms have increased their use of non-compete clauses over the past five years – a pattern that is also evident for other restraint clauses.

- Unlike non-compete clauses – which are included in individual employment contracts and have been regulated for centuries – firm-to-firm agreements that restrict competition for labour through co-ordination among employers are typically considered an illegal practice by antitrust authorities. Yet, this chapter presents evidence that (firm-to-firm) no-poaching and wage-fixing agreements may be more widespread than previously assumed. Almost one-half of firms surveyed report being aware of no-poaching, wage-fixing or both practices within their industry. One-sixth of employees report being prevented from joining another firm due to a no-poaching agreement and one-quarter report having heard of such practices.

Non-compete clauses slow down job mobility, wage and productivity growth

- A range of empirical studies demonstrate the adverse effects of non-compete clauses on job mobility and firm entry. Consistent with this, evidence from new OECD surveys shows that a meaningful share of all private-sector employees have been stopped from moving jobs (5%) or starting a new business (3%) due to having a non-compete clause.
- By reducing the number of outside options and reducing workers' bargaining power, non-compete clauses also suppress wages. New OECD evidence finds that workers bound by non-compete clauses move up the earnings distribution more slowly – on average about three percentiles less over a 25-year career – than comparable workers without such restrictions.
- In addition, such clauses could reduce productivity by impeding reallocation and the spread of leading ideas. But evidence on this question has been scarce outside of the United States, which in turn motivates a cross-country firm-level econometric analysis of the links between non-compete clauses and productivity performance. A 10-percentage point (p.p.) increase in the prevalence of non-compete clauses at the industry level is associated with a decline in the level of aggregate (business sector) labour productivity of 1.9%. While not identifying a purely causal relationship, this reflects two key channels:
  - **Weaker labour reallocation**: the extent to which labour flows to more productive firms could decline by one-sixth, which would be associated with a reduction in aggregate productivity by an estimated 0.3%.
  - **Slower knowledge diffusion**: the rate of productivity convergence of laggard firms to the global frontier could decline by an estimated 5%. This would imply a reduction in labour productivity growth of 1.8% for the median firm, which would correspond to a reduction in the level of aggregate productivity by 1.6%.
- By contrast, the link between non-disclosure agreements (NDAs) and productivity is much weaker than for non-compete clauses, suggesting that there may be less distortive alternatives to protect firm's business interests than mobility-sapping non-compete clauses.
- Finally, in industries where the share of firms aware of non-poaching agreements being deployed is higher, the extent of productivity-enhancing reallocation tends to be weaker, consistent with the adverse effects of non-poaching agreements on job mobility.

Policy can reduce the adverse growth consequences of restraint clauses but more action may be required

- The regulation of non-compete clauses varies significantly across OECD countries, ranging from Colombia and Mexico where such clauses are prohibited (but unsanctioned) to a group of countries (e.g. Korea, Australia and New Zealand) that currently adopt a more permissive stance. These latter regimes rely largely on judicial reasonableness tests, limited mandatory compensation requirements, and relatively flexible rules.
- While the prevalence of non-compete clauses does not vary systematically across regulatory regimes, the economic bite of non-compete clauses appears to be larger in countries where they are easier for firms to use. In such countries, a 10-p.p. increase in the prevalence of non-compete clauses is associated with a 2% decline in aggregate productivity. Though the precision of the estimates is lower when comparing countries with different regulatory regimes, the results suggest that the productivity cost may be lower in countries where non-compete clauses are harder to use, though still material at around 1.5%. This illustrates the potential for non-compete clauses to exert a chilling effect on worker mobility even when their use is restricted.
- The high and rising prevalence of non-compete clauses coupled with evidence of the adverse consequences for productivity and wages – even in countries where they are more tightly regulated – raises questions about whether current policy frameworks are fit for purpose. Proposals to restrict the use of non-compete clauses have recently emerged in some countries, ranging from outright bans to targeted safeguards that aim to limit abuse while preserving legitimate business interests (e.g. sector-specific prohibitions, exemptions for certain workers, or monetisation). But questions also emerge regarding the clarity and transparency of current legal frameworks and whether sanctions and enforcement actions by authorities are required to prevent the unlawful use of non-compete clauses by firms.
- Finally, evidence of (firm-to-firm) no-poaching and wage-fixing agreements and their attendant consequences for productivity and wages underscores the importance and continued relevance of recent enforcement actions by competition authorities.

Introduction

Since the late 1990s, growth in potential output per capita has declined by about 1 p.p. across the OECD, underpinned by a pronounced slowdown in labour productivity growth (OECD, 2025[1]). While a range of structural headwinds have contributed to the productivity slowdown, perhaps the most prominent is the decline in economic dynamism, which encompasses all the ways in which firms and workers have become less likely to explore new patterns of economic activity: starting new, innovative firms; switching jobs; and moving residence (Shambaugh, Nunn and Liu, 2018[2]; OECD, 2025[3]). Declining dynamism has reduced aggregate productivity growth by hindering the matching of skills to jobs, the reallocation of workers to more productive firms, and the diffusion of knowledge associated with firm entry and job mobility. It has also reduced worker wage bargaining power by limiting the frequency with which workers receive outside offers and make wage-enhancing job transitions.

While economic dynamism has declined due to a number of structural reasons (e.g. population ageing or the rising importance of firm-specific human capital in the intangible economy that could lengthen job matches), there is a sense that growing barriers to labour mobility have also sapped the vitality of OECD economies. The decline in economic dynamism could reflect a rise of adjustment frictions that rein in the creative destruction process (Decker et al., 2020[4]) which is instrumental to economic growth (Aghion and Howitt, 1992[5]). While recent analysis has also linked declining dynamism to a growing regulatory

environment (OECD, 2025[1]), the spread of non-compete and related clauses – which prevent workers from joining (or starting) a competing firm (non-compete clauses); the disclosure of confidential information (non-disclosure clauses); or the poaching of former co-workers or clients (non-solicitation clauses) – is also consistent with declining dynamism.

A focus on non-compete and related clauses is further motivated by a growing body of evidence documenting widespread employer monopsony power in many OECD labour markets – a condition where limited competition for hires allows employers to secure higher profits by keeping employment and wages lower than what would prevail in an efficient market (Azar and Marinescu, 2024[6]; OECD, 2019[7]; OECD, 2022[8]; OECD, 2022[9]). Frictions such as search and information costs, non-wage job preferences and limited employer competition within local or occupational labour markets can give firms substantial wage-setting power. Non-compete clauses and related contractual restrictions can play a similar role by directly limiting workers' outside options and reducing their ability to secure better wages and working conditions by changing jobs or credibly threaten to leave for alternative employers (OECD, 2019[7]).

This chapter contributes to OECD work on declining economic dynamism and widespread monopsony power by taking a deep dive into restraint clauses that may unduly restrict workers' outside options and labour market dynamism. While such clauses can serve legitimate purposes (i.e. by protecting trade secrets or client relationships), non-compete and related clauses may stifle workers' ability to move to jobs where their skills are most productively used, the diffusion of knowledge across firms and market competition. Drawing on two novel surveys of employers and workers, this chapter provides the first systematic harmonised cross-country evidence on the incidence and characteristics of non-compete and related clauses across 15 OECD countries. In addition, this chapter provides some first evidence on the spread of no-poaching and wage-fixing arrangements. Unlike non-compete clauses – which are included in individual employment contracts and have been regulated for centuries – no-poaching and wage-fixing arrangements are firm-to-firm agreements which restrict competition for labour through co-ordination among employers and are increasingly scrutinised by competition authorities as illegal practices related to collusion.

The chapter proceeds as follows. Section 5.1 reviews the economic rationale for non-compete clauses, setting out both the arguments in favour of their use and the related potential efficiency costs and distributional issues. Section 5.2 describes the regulatory frameworks governing non-compete clauses across OECD countries and introduces a new index capturing cross-country differences in their design and regulation, which is subsequently used in the empirical analysis. Section 5.3 presents the main findings from the employee and employer surveys on the prevalence, characteristics and use of non-compete and related clauses. Section 5.4 builds on the existing literature to present new cross-country evidence on wages and productivity, drawing on the survey and firm-level data. Section 5.5 discusses policy options and highlights the importance of effective enforcement in aligning the use of non-compete clauses with their legitimate objectives, while Section 5.6 offers some concluding remarks.

5.1. The economics of non-compete and related clauses

Non-compete and related clauses – see Box 5.1 for the list of the most typical clauses that can be found in employment contracts in OECD countries – are contractual provisions that restrict employees' activities after the termination of an employment relationship. These provisions may prohibit workers from joining a competing firm, starting a competing business, or soliciting former clients or colleagues, typically for a defined period of time and within a specified geographic or occupational scope. Such clauses may be included in initial employment contracts or introduced later during the employment relationship.

In most OECD countries, non-compete and related clauses are permitted under statutory law or case law and were originally justified as instruments to protect legitimate employer interests, such as trade secrets, confidential information,[1] client relationships, or firm-specific investments in training (Starr, Prescott and

Bishara, 2021[10]). From this perspective, such clauses are intended to address a "hold-up problem" that can arise when firms make costly and partially irreversible investments in workers (e.g. specialised training or the sharing of proprietary knowledge) that departing employees may otherwise expropriate absent contractual protections.[2] Thus, by limiting post-employment job mobility for a defined period after separation, non-compete clauses may allow firms to internalise a larger share of the returns to such investments, thereby incentivising investments in training, knowledge sharing, and innovation. In principle, if these clauses improve joint surplus, firms would be expected to compensate workers for the associated restrictions, for example through higher wages or training opportunities. According to this original "efficient contracting" perspective, non-compete clauses are potentially welfare-enhancing arrangements that emerge from voluntary agreement between informed parties and operate primarily to protect specific assets rather than to suppress competition (Rubin and Shedd, 1981[11]).[3]

Box 5.1. Contractual clauses regulating post-employment activity

The literature typically distinguishes between six clauses included in individual employment contracts which are usually permitted and regulated in most OECD jurisdictions (see Section 5.2 below):

- *Non-compete clause*: a stand-alone agreement or a clause of a contract which prevents an employee from working for a competitor or starting a new company after they separate from their employer for a predetermined period of time.
- *Non-disclosure agreement*: a contract (or stand-alone agreements) or clause that prohibits an employee from sharing or using confidential or proprietary information obtained during the employment relationship.
- *Non-poaching of co-workers or non-recruitment/non-solicitation of colleagues*: a contract or clause that prevents a former employee from soliciting or hiring former colleagues.
- *Non-solicitation of clients*: a contract or clause that prohibits a former employee from soliciting business from the employer's clients or customers.
- *Repayment of training costs clause*: a contract or clause that requires an employee to repay employer-provided training costs upon departure from the firm.
- *Repayment of benefits and bonuses clause*: a contract or clause that requires an employee to repay certain benefits or bonuses, such as a signing bonus, if the employee ceases employment within a certain period of time.

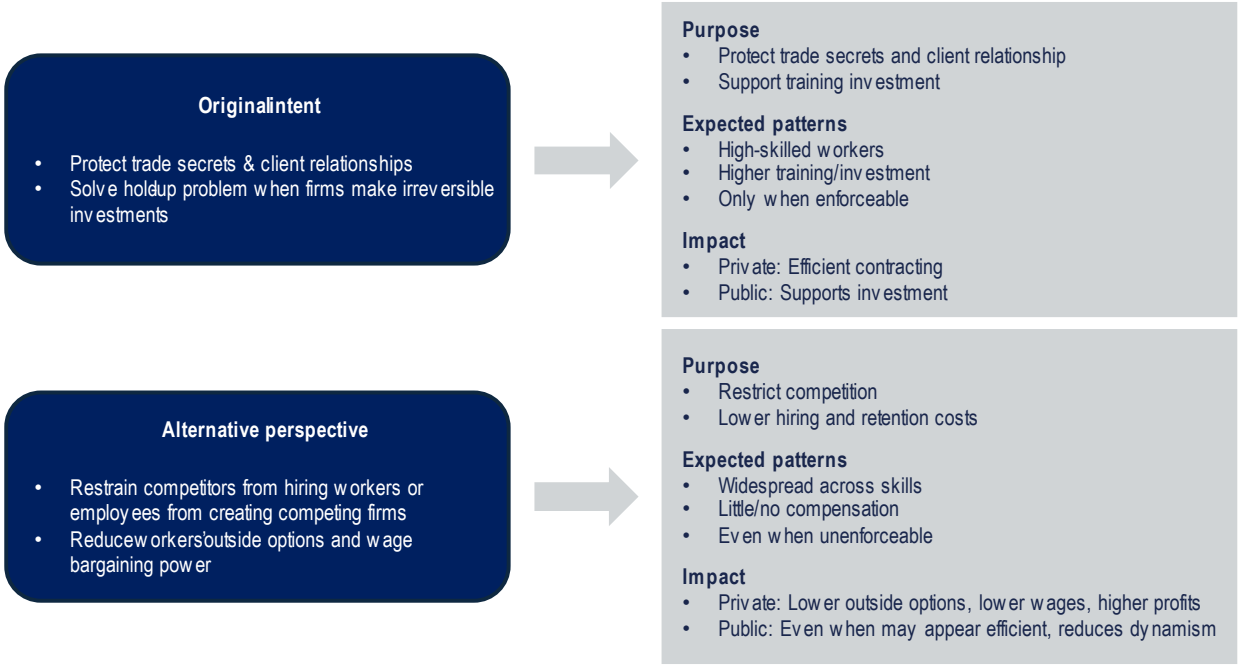
A second type of agreements consists of *firm-to-firm* practices that restrict competition for labour:

- *No-poaching agreements*: agreements between employers not to recruit each other's employees. These may take the form of (i) no-hire agreements, where employers agree not to hire workers from other parties to the agreement, either actively or passively; or (ii) non-solicitation (or no-cold-calling) agreements, where employers commit not to actively approach another firm's employees with job offers.
- *Wage-fixing agreements*: agreements between employers to set wages or other forms of compensation or benefits at specified levels. These should not be confused with collective bargaining agreements signed between employers and trade unions.

Wage-fixing agreements constitute a violation of antitrust law in most OECD countries. No-poaching agreements are also generally regarded as anticompetitive practices but, in some cases, a distinction must be made as to the purpose for which they are concluded. For example, in the case of mergers, they are permissible for a certain period of time among merging employers. These practices have only recently come under closer scrutiny by competition authorities in OECD countries, as awareness has grown that labour market competition can also be restricted through co-ordination among employers.

At the same time, to the extent that they restrict job-to-job mobility (see Figure 5.1), non-compete clauses can impose substantial economy-wide costs, even in the case when the clauses are used in line with the original intent and are privately efficient. First, since job mobility is a key driver of aggregate wage growth – both for workers who move and for those who remain with their employer – restrictions on mobility can weaken workers' bargaining power, even for those not subject to non-compete clauses (Moscarini and Postel-Vinay, 2016[12]; Johnson, Lavetti and Lipsitz, 2025[13]). Second, job mobility supports aggregate productivity growth (OECD, 2025[3]) by fuelling knowledge diffusion across firms and the reallocation of scarce resources to their most productive use. From this perspective, non-compete clauses may not only work to shift surplus from workers to firms but also raise an efficiency concern, which would be reinforced if such clauses dampen product market competition (Lipsitz and Tremblay, 2024[14]) by discouraging spin-offs and the formation of new firms.[4] This product market dimension extends to commercial relationships more broadly: Patault and Lenoir (2024[15]) show that competition between firms in recruiting a sales manager is not a zero-sum game but expands the total number of buyer-supplier connections rather than merely redistributing them.

Figure 5.1. Two perspectives on non-compete clauses



Some scholars have begun to question the primary purpose of non-compete clauses themselves. Greenwood, Kobayashi and Starr (forthcoming[16]) show that bans on non-compete clauses in US states have not led to an increase in trade-secrets litigation, and Cowgill, Freiberg and Starr (2024[17]) show, in a randomised control trial, that removing non-compete clauses does not result in a greater disclosure of sensitive professional information.

Related clauses (see Box 5.1) are sometimes viewed as less distortive substitutes but also carry risks, prompting growing policy scrutiny in recent years.[5] For example:

- Non-disclosure agreements (NDAs) are often considered more benign than non-compete clauses because they aim to protect specific information rather than restrict job mobility. But broadly drafted NDAs may act as *de facto* non-compete clauses, discouraging worker mobility by creating legal uncertainty about what constitutes prohibited disclosure (Hrdy and Seaman, 2024[18]).

- Non-solicitation of co-worker clauses have come under increased scrutiny given that there is little evidence to support the notion that they protect trade secrets, customer goodwill or investments in training (Graves, 2022[19]).
- Repayment of training agreements are often portrayed as a more targeted alternative than non-compete clauses, as they apply only when a worker leaves before the employer has recouped its training investment. Yet, since firms can inflate training costs or workers may not fully understand repayment obligations, such clauses can impose high exit costs that deter job changes even when no competitive harm is involved (Harris, 2021[20]).

The tension around non-compete clauses between the original intent and the alternative economic perspective and between private and public interest has long been reflected in evolving legal doctrines and a patchwork of policy approaches across OECD countries. Since the first known case in the United Kingdom in 1414 which saw the employee winning, later jurisprudence adopted a more permissive stance, allowing non-compete clauses when deemed "reasonable" and necessary to protect legitimate interests – see Box 5.2 for a brief history of non-compete clauses. What constitutes "reasonableness," however, has varied widely across countries and over time (Bishara, 2011[21]). Jurisdictions differ, for example, in whether non-compete clauses are valid also after dismissal, whether courts may modify overly broad clauses, and whether additional compensation is required when restrictions are introduced during employment. Notably, a small number of states in the United States, such as California, North Dakota and Oklahoma, prohibited employee non-compete clauses altogether in the late nineteenth century, while others have pursued more recent reforms, including Minnesota's comprehensive ban adopted in 2023.

These two perspectives generate distinct empirical predictions. If non-compete and related clauses primarily serve to protect trade secrets or to support investment in training, their use should be concentrated among workers with access to confidential information or in occupations where firm-specific or industry-specific human capital is particularly important. If, instead, non-compete and related clauses are used at least in part to limit worker mobility and bargaining power, they are likely to be more pervasive across occupations, including among lower-skilled workers with limited access to trade secrets. Under this scenario, such clauses may be introduced without meaningful negotiation, offer little or no compensation, and sometimes be used even when they are unlikely to be upheld in court, yet deter job mobility through their chilling effect.

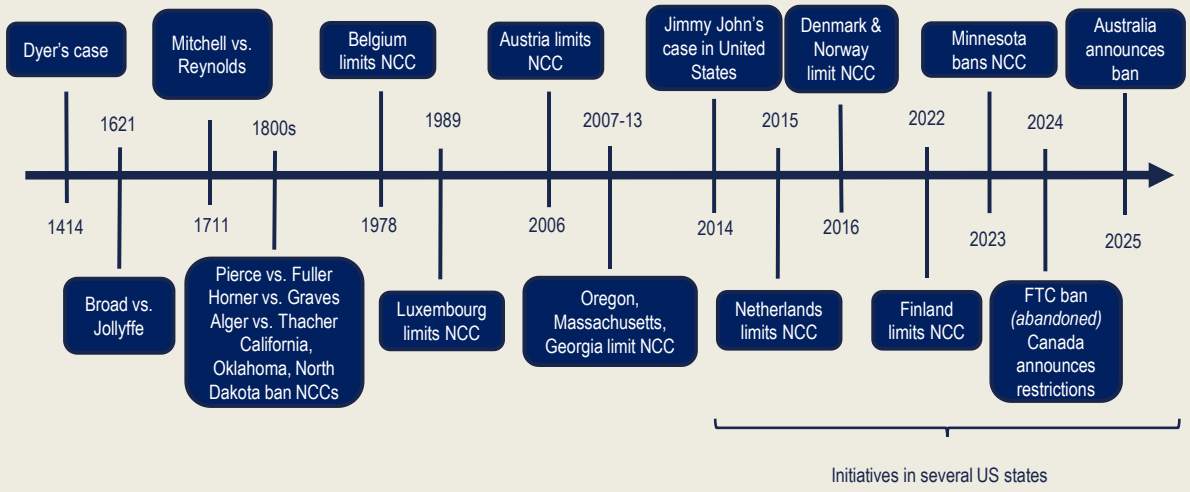
Box 5.2. The debate on the regulation of non-compete clauses goes back to the middle-ages

Although non-compete and related clauses have attracted renewed attention in recent years – particularly following numerous state and federal initiatives in the United States – their origins stretch back several centuries (Blake, 1960[22]). Figure 5.2 summarises key legal and policy milestones.

The earliest recorded dispute dates to 1414, when an English apprentice, John Dyer, was sued for breaching a promise not to practise his trade in the town where he had been trained. The court refused to uphold the restriction, considering it incompatible with common law principles of economic freedom. Over time, however, attitudes began to shift. In 1621, the English courts upheld a restraint in *Broad v. Jollyffe*, and the landmark judgement in *Mitchel v. Reynolds* (1711) established the foundational principle that only "reasonable" clauses can be considered legally valid. This reasoning shaped the evolution of non-compete doctrine in many jurisdictions and still underpins contemporary approaches.

During the nineteenth century, courts continued to refine the criteria for assessing the legitimacy of non-compete clauses, and US states began introducing statutory rules. Some jurisdictions chose to prohibit such clauses altogether – California (since 1872), North Dakota (since 1865), and Oklahoma (since 1 890) remain notable examples.

Figure 5.2. A brief history of non-compete clauses



Note: The chart does not provide a comprehensive overview of policy initiatives in OECD countries. In particular, several countries introduced or updated their civil or labour codes during the 20th century, thereby introducing or formalising statutory rules regarding non-compete clauses and this is not represented in the chart.
Source: Building on and extending the information available at https://faircompetitionlaw.com/2021/10/11/a-brief-history-of-noncompete-regulation/ (accessed on 8 December 2025).

In the early 2000s, several OECD countries and US states revisited the regulation of non-compete agreements, introducing new limits or procedural safeguards. The debate intensified around 2014, sparked by high-profile cases – such as fast-food workers in the United States being required to sign non-compete clauses – and by emerging evidence showing that these clauses were far more prevalent than previously understood (Starr, Prescott and Bishara, 2021[10]). As policy momentum grew, reforms proliferated across multiple US states and in several European countries (Bishara and Luisetto, 2025[23]).

5.2. How do OECD countries regulate non-compete clauses?

The regulation of non-compete clauses varies widely across OECD countries, reflecting differences in legal traditions, labour market institutions, and policy priorities. At a broad level, countries can be positioned along a spectrum ranging from those where non-compete clauses are banned (such as Mexico, Colombia, or California in the United States), to those where such clauses are permitted only under strict conditions (including most EU member states and Japan), and finally to those where courts are generally more willing to uphold non-compete agreements (notably Israel, and several US states). National regimes differ not only in their overarching legal stance but also with respect to the scope of protectable employer interests, compensation requirements, maximum duration, the validity of such clauses in case of dismissal, and the role of collective agreements. As a result, workers in similar occupations can face markedly different restrictions on post-employment mobility depending on the country in which they are employed.

To capture these differences in a systematic way, a new OECD regulatory index builds on and extends the methodology originally developed by Bishara (2011[21]) to capture cross-state variation in the United States – see Box 5.3. The resulting OECD non-compete regulation index captures national regimes along nine key dimensions, covering the regulatory level, the role of collective bargaining, the content of the clauses (duration, geographical and sectoral scope, compensation), the possibility of judicial

modifications and the presence of sanctions. Figure 5.3 presents the results of the new index, which by construction ranges from 0 to 700 and is increasing in the ability of firms to deploy non-compete clauses. Before proceeding, however, it should be stressed that this metric reflects the state of play in 2025 and thus reforms currently being discussed to restrict the use of non-compete clauses (such as in Australia, Canada, the Netherlands and the United Kingdom) are not included but would impact country scores and rankings if implemented.

Box 5.3. The OECD index of non-compete regulation

The OECD non-compete index adapts and substantially extends the methodology first introduced by Bishara (2011[21]) to measure the stringency of regulation of non-compete clauses across US states. Whereas the Bishara index was limited to seven legal dimensions relevant to US jurisdictions, the OECD index expands the framework to capture the broader institutional diversity of OECD countries and to reflect regulatory features not present in the United States when the index was developed.

The OECD index scores nine legal dimensions: (1) Statutory regulation (whether legislation governs non-competes and, if so, the maximum duration, and geographic and sectoral scope); (2) Collective agreements (whether sectoral or firm-level agreements add limits or conditions beyond law); (3) Employer's protectable interest (how broadly "legitimate interests" are defined); (4) Compensation (if monetary compensation is required and any minimum threshold); (5) Changes during employment (whether a new clause after hiring needs fresh consideration); (6) Burden of proof (the elements that an employer needs to bring an employee to court); (7) Judicial modification, also called "blue pencilling" (courts' power to narrow overbroad clauses); (8) Dismissal (if the clause can be used even in the case of dismissal); (9) Sanctions (whether employers face penalties for using invalid clauses).

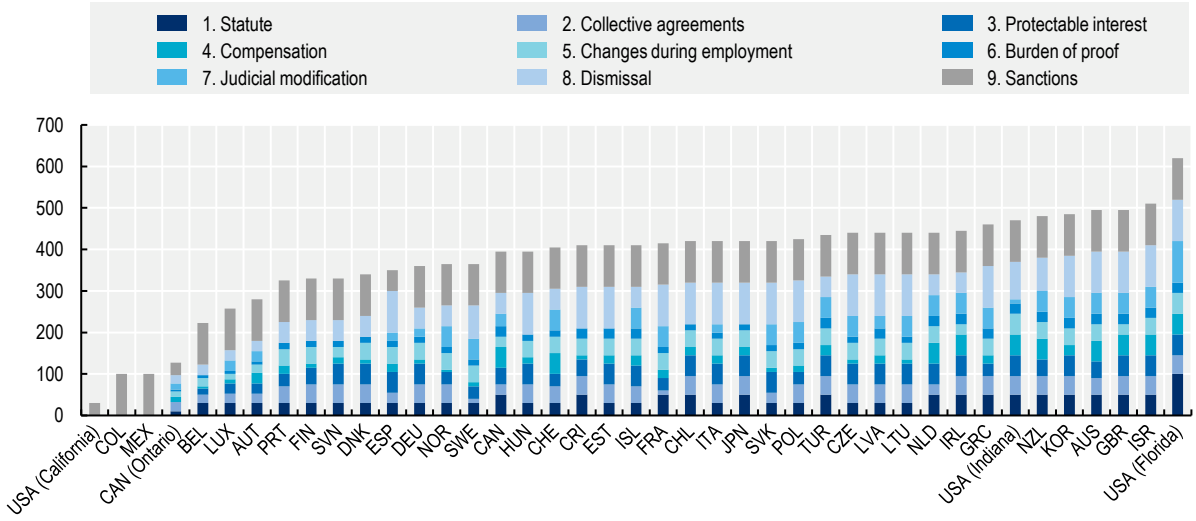
Each dimension is scored on a 0-10 scale, with higher values indicating lower stringency and therefore a more employer-friendly regime. These scores are weighted (weight 5 or 10), based on their practical importance. The methodology incorporates wage thresholds, halving relevant dimension scores when non-competes are permitted only for higher-earning employees. Data collection relied on a three-step process: (i) detailed review of national statutes, case law, regulatory guidance and academic sources, (ii) validation via questionnaires sent to relevant government bodies in member countries, and (iii) systematic legal coding using an updated and transparent scoring rubric.

The OECD index preserves the conceptual core of Bishara's original framework but introduces two new dimensions – the role of collective agreements and the presence of sanctions – which are essential in many OECD jurisdictions but absent in the US context. It also refines the scoring rubric to accommodate a wider set of regulatory options, such as statutory compensation thresholds, sector-specific rules, and the validity in case of dismissal. While the OECD index remains highly correlated with Bishara's original methodology (rank correlation 0.93), some countries shift rank position due to these added dimensions and the greater granularity of the OECD scoring methodology. Using the same weight for all components also delivers a very similar ranking (rank correlation 0.97). Overall, the OECD index provides a richer, more internationally comparable measure of regulatory strictness, enabling analysis of regimes that differ fundamentally from the US in the design, purpose and regulation of non-compete clauses. More details are available in Andrews et al. (2026[24]).

With these caveats in mind, there is significant cross-country heterogeneity in national regulatory frameworks, with three broad groups emerging. First, at the lower end of the distribution, Mexico and Colombia stand apart as clear outliers, reflecting constitutional prohibitions of restraints on work combined with the absence of sanctions against employers who nonetheless include non-compete clauses in contracts. A second group of countries, including several EU member states such as Belgium, Germany, Poland and Sweden, cluster at relatively low-to-middle scores. These jurisdictions typically allow non-compete clauses only under strict statutory conditions, frequently mandate minimum compensation, and often limit their use following dismissal. Finally, at the upper end of the distribution, Israel, the United Kingdom, Australia[6] and New Zealand adopt a more permissive stance, relying largely on judicial reasonableness tests, limited mandatory compensation requirements, and relatively flexible rules. The figure also reveals significant cross-country dispersion, which has parallels with the variation previously documented across US states by Bishara (2011[21]). Overall, the regulation in most OECD countries is more stringent than in the majority of US states. For example, Indiana, which was the median state in terms of regulation according to Bishara (2011[21]) in 2025 scores higher than most OECD countries.[7]

Figure 5.3. The freedom to use non-compete clauses varies a lot across OECD countries

Higher values indicate that non-compete clauses are more likely to be upheld in court (i.e. a regime more favourable to companies)



Note: The index measures the restrictiveness of non-compete clause regulations on a 0-700 scale, where higher scores indicate more employer-friendly (less restrictive) environments. The OECD index scores nine legal dimensions: (1) Statutory regulation (whether legislation governs non-compete clauses and, if so, the maximum duration, and geographic and sectoral scope) with weight 10; (2) Collective agreements (whether sectoral or firm-level CBAs add limits or conditions beyond law) with weight 5; (3) Employer's protectable interest (how broadly "legitimate interests" are defined) with weight 10; (4) Compensation (if monetary compensation is required and any minimum threshold) with weight 5; (5) Changes during employment (whether a new clause after hiring needs fresh consideration) with weight 5; (6) Burden of proof (the elements that an employer needs to bring an employee to court) with weight 5; (7) Judicial modification, also called "blue pencilling" (courts' power to narrow overbroad clauses) with weight 10; (8) Dismissal (if the clause can be used even in the case of dismissal) with weight 10; (9) Sanctions (whether employers face penalties for using invalid clauses) with weight 10. The score for Canada excludes the province of Ontario which is evaluated separately.

Source: Andrews et al. (2026[24]), "The regulation of non-compete clauses across OECD countries", https://doi.org/10.1787/88e3eb6e-en.

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Beyond the aggregate scores, Figure 5.3 provides insight into the sources of cross-country variation by disaggregating the index across its nine dimensions. Three broad patterns emerge:

- First, there is considerable convergence across countries in terms of the substantive legal standards governing non-compete clauses. In two OECD countries (Colombia and Mexico) and five US states, non-compete clauses are banned. In Austria, Belgium and Luxembourg as well as Ontario in Canada and 11 US states[8] non-compete clauses are banned for workers earning less than a given wage threshold or not in top executive positions (Australia has announced a similar ban for 2027 while Canada put forward a proposal to restrict the use of non-compete clauses to executive positions in federally regulated sectors such as banking, telecommunications and transport). Where non-compete clauses are legal, courts and regulators – whether they apply statutory provisions or developing case law alone – tend to rely on similar reasonableness and proportionality tests. There is also relatively little variation in how legitimate employer interests are defined. Similarly, the burden of proof is typically placed on employers and often extends beyond a general reasonableness assessment to include compliance with procedural or substantive requirements. These common features suggest a shared baseline understanding of the need to justify the use of non-compete clauses across OECD countries.
- Second, substantial heterogeneity arises in the mechanisms used to protect workers, particularly with respect to compensation, collective bargaining, and dismissal-related rules. Countries with more extensive statutory frameworks – predominantly, but not exclusively civil law jurisdictions – are more likely to require explicit compensation for non-compete clauses and, in several cases, to impose minimum compensation thresholds (some civil law jurisdictions such as the Netherlands, Switzerland and Türkiye do not require separate compensation). By contrast, in common law countries (e.g. Australia, Canada, Ireland, New Zealand and the United Kingdom) the acceptance of employment is generally considered sufficient consideration for the inclusion of a non-compete clause, meaning that employers are not required to provide separate compensation for such restrictions. Similarly, collective agreements play no role in many countries but substantially limit the use of non-compete clauses in others, most notably France and Sweden, where sectoral bargaining introduces additional limitations beyond statutory or judicial rules.
- Third, procedural rules to define when a non-compete clause can be considered as valid are an important driver of divergence. Countries differ sharply in whether courts may modify overbroad non-compete clauses, whether their validity depends on the circumstances of dismissal, and whether employers face any sanctions for using invalid clauses.[9] Judicial modification practices range from a strict invalidation approach (Belgium, Chile, Costa Rica, Denmark, Estonia, Finland, Hungary, Japan, Portugal and Slovenia) to broad discretionary adjustment (Australia, Austria, Czechia, France, Greece, Iceland, Ireland, Israel, Korea, Lithuania, Luxembourg, the Netherlands, New Zealand, Norway, Poland, the Slovak Republic, Sweden, Switzerland, Türkiye and the United Kingdom). Likewise, some countries allow non-compete clauses to remain valid regardless of who initiates termination, while others restrict their use following dismissal without good cause. Remarkably, sanctions against employers are almost entirely absent: with the exception of Spain, Ontario (Canada) and some US states, no OECD country penalises employers for attempting to use invalid or overly broad non-compete clauses.

Concerning the other post-employment clauses, countries generally apply similar reasonableness standards, requiring that they be proportionate in scope and duration and protect legitimate business interests – see Andrews et al. (2026[24]) for the details. Gardening leave arrangements – where employees remain on payroll while being excused from duties and prohibited from working for competitors – are permitted in most countries, though several jurisdictions (Belgium, Costa Rica, Italy, Mexico, Portugal and Spain) prohibit requiring employees to abstain from work during notice periods, even with full pay, as this would infringe on the constitutional right to work. Concerning training cost repayment, while most countries allow employers to recoup investments in employee development, some impose specific statutory

requirements: Belgium, Czechia, Denmark, Germany, Latvia, Lithuania, the Netherlands, Poland, Portugal, the Slovak Republic and Spain regulate these clauses to ensure they cover only non-mandatory training that provides genuine career advancement, apply reasonable repayment periods, and remain proportionate to the benefit received by the employee.

Taken together, these results show a significant difference in the regulation of non-compete and related clauses, ranging from full bans like in Colombia and Mexico to partial bans in Austria, Belgium, Luxembourg and Ontario (Canada) to more tailored regulations concerning the scope of the clauses, their compensation and procedural rules. This analysis as well as the index specific to non-compete clauses provide a key input for the remainder of the chapter, informing the cross-country benchmarking of non-compete prevalence, and the empirical analysis of whether and how these clauses affect economic outcomes.

5.3. The incidence and characteristics of non-compete clauses

This section presents new evidence on the use of non-compete and related clauses in 15 OECD countries – Belgium, Canada, France, Germany, Italy, Japan, Korea, Mexico, New Zealand, Poland, Portugal, Spain, Sweden, Switzerland and the United Kingdom. It draws on two surveys, an employee-level and a firm-level one, developed by the OECD and Bocconi University and fielded by Ipsos, a professional survey company – see Box 5.4 for more detail. Combining a large, detailed online survey of employees with a complementary phone-based survey of firms provides a robust empirical framework for analysing the incidence and characteristics of non-compete and related clauses. The use of both employee- and firm-level data helps address well-known limitations of online survey instruments and potential measurement error arising from incomplete awareness or recall of contractual terms.

The 15 countries covered span co-ordinated market economies with strong collective bargaining systems (e.g. Belgium and Sweden), labour markets characterised by limited employment protection (e.g. the United Kingdom and New Zealand), and mixed systems combining statutory protections with varying degrees of social partnership (e.g. France, Italy, Spain). The sample also includes countries with distinct institutional settings in Asia, such as Japan and Korea, where firms and workers often engage in more long-term, structured employment relationships than in many other OECD countries, as well as Poland, which is representative of Central and Eastern European labour markets which have undergone major structural and regulatory adjustment. Federal countries, such as Canada and Mexico, further illustrate how regulatory competencies are shared across levels of government.

It could be expected that different labour market models may influence both the prevalence and the impact of non-compete clauses. In labour markets with strict employment protection, lower labour mobility may reduce employers' incentives to use non-compete clauses, although stronger hold-up concerns[10] around training and job-specific investments may increase their appeal. In systems with high reliance on fixed-term contracts, non-compete clauses may be less common due to shorter employment relationships. The presence of sectoral collective bargaining can limit the unilateral imposition of mobility restrictions, but co-ordination among employers may also facilitate such practices. In reality, the results below show that, notwithstanding some variation across countries, non-compete and related clauses are present in all types of labour markets with a striking degree of similarity. This cross-country convergence is reflected in five central findings emerging from the survey data.

Box 5.4. The OECD-Bocconi employee and employer surveys on non-compete and related clauses

The OECD and Bocconi University jointly developed two surveys – one for employees and one for employers – to study the prevalence and characteristics of non-compete and related clauses in 15 OECD countries, which represent a variety of labour market and social models. The surveys follow methods used in earlier studies in the United States (Prescott, Bishara and Starr, 2016[25]), Australia (Andrews and Jarvis, 2023[26]; Andrews, Brennan and Buckley, 2024[27]) and Italy (Boeri, Garnero and Luisetto, 2025[28]) and were fielded by Ipsos – see Annex 5.A.

Employee-level survey

The worker-level survey targeted private-sector employees aged 18-64 in Belgium, Canada, France, Germany, Japan, Korea, Mexico, New Zealand, Poland, Portugal, Spain, Sweden, Switzerland and the United Kingdom. It combined: (i) a 2 000 private-sector employee sample to estimate incidence of non-compete clauses; and (ii) a boost sample to reach 1 000 observations of employees with such clauses, enabling more detailed analysis. Sampling used online panels, with mixed selection methods. Panels applied quality checks to ensure valid, unique responses. The sample was stratified by age, sex and region (following official statistics), and balanced by education and sector. Post-stratification weights were constructed to align the sample with population characteristics. A pilot test preceded fieldwork. Data collection ran from July to mid-September 2025, yielding 31 762 completed interviews – country-specific information is available in Table 5.1.

As with any survey, selection bias may arise from: incomplete internet coverage, self-selection into online panels, and survey non-response. In practice, these risks appear limited. Internet access exceeds 90% in all countries except Mexico (72% in 2023). Panel bias is unlikely as panels are broadly representative and designed for general research. Non-response remains a concern, but the neutral framing of the survey invitation and the very low dropout rates (about 1%) suggest that selective attrition is limited.

Employer-level survey

The employer-level survey targeted individuals responsible for hiring and contracts in for-profit firms with five or more employees in the aforementioned countries plus Italy. Non-profits, micro-firms and some sectors (public administration and defence, education, health and social work, household services, and extraterritorial organisations) were excluded. The sampling frame used Dun & Bradstreet, complemented with Orbis, based on NACE Rev 2 codes and firm size. A stratified random sampling design was applied across 16 cells, defined by four firm-size classes (5-9; 10-49; 50-249; 250+) and four top-level NACE sector groups.

Given that most firms are very small, a mixed approach combined employee-proportional and firm-proportional sampling. The former weights by employment size; the latter treats firms equally. Depending on the size of the available sampling frames (in particular of large firms), a 75% employee-proportional / 25% firm-proportional allocation was used in Belgium, Canada, France, Germany, Italy, Japan, Korea, Mexico, Poland, Spain and the United Kingdom, while a 33% employee-proportional / 67% firm-proportional allocation in Portugal, a 20% employee-proportional / 80% firm-proportional allocation was used in Switzerland, an 18% employee-proportional / 82% firm-proportional allocation was used in New Zealand and a 15% employee-proportional / 85% firm-proportional allocation in Sweden.

A pilot test preceded fieldwork, which ran from June to September 2025 yielding 6 112 completed interviews with firms employing over 1.4 million employees in total – country-specific information is

available in Table 5.1. Final weights were constructed based on the stratification cells (industry and firm size) to reflect the employee distribution in each country. Since the employer survey took place by telephone based on random sampling, internet and panel biases do not apply. Non-response bias may remain, but the neutral framing of the survey invitation and the low dropout suggest limited impact.

Table 5.1. Number of observations per country

Country	Nb. of employees	Nb. of companies
Belgium	2 321	410
Canada	2 165	411
France	2 184	406
Germany	2 300	408
Italy*	-	403
Japan	2 096	413
Korea	2 016	409
Mexico	2 258	406
New Zealand	2 240	406
Poland	2 474	403
Portugal	2 441	406
Spain	2 441	405
Switzerland	2 146	408
Sweden	2 289	409
United Kingdom	2 391	409
Total	31 762	6 112

Note: Italy is not covered in the employee-level survey because the OECD-Bocconi survey has been designed to be comparable to the one run in Italy by Boeri, Garnero and Luisetto (2025[28]), "Noncompete agreements in a rigid labor market: the case of Italy", https://doi.org/10.1093/jleo/ewae012.

The two surveys were made possible thanks to financial support from Coefficient Giving (formerly Open Philanthropy), Canada, New Zealand, Switzerland and the United Kingdom. Bocconi University, through funding from the European Research Council (ERC-MARKINDOWN, Grant Agreement No. 101 097 687) and the MUR PRIN 2022 programme (Project No. 2022JYY7SA), covered the costs for Belgium, Italy, Poland, Portugal and Sweden.

5.3.1. The prevalence of non-compete and related clauses is high and rising

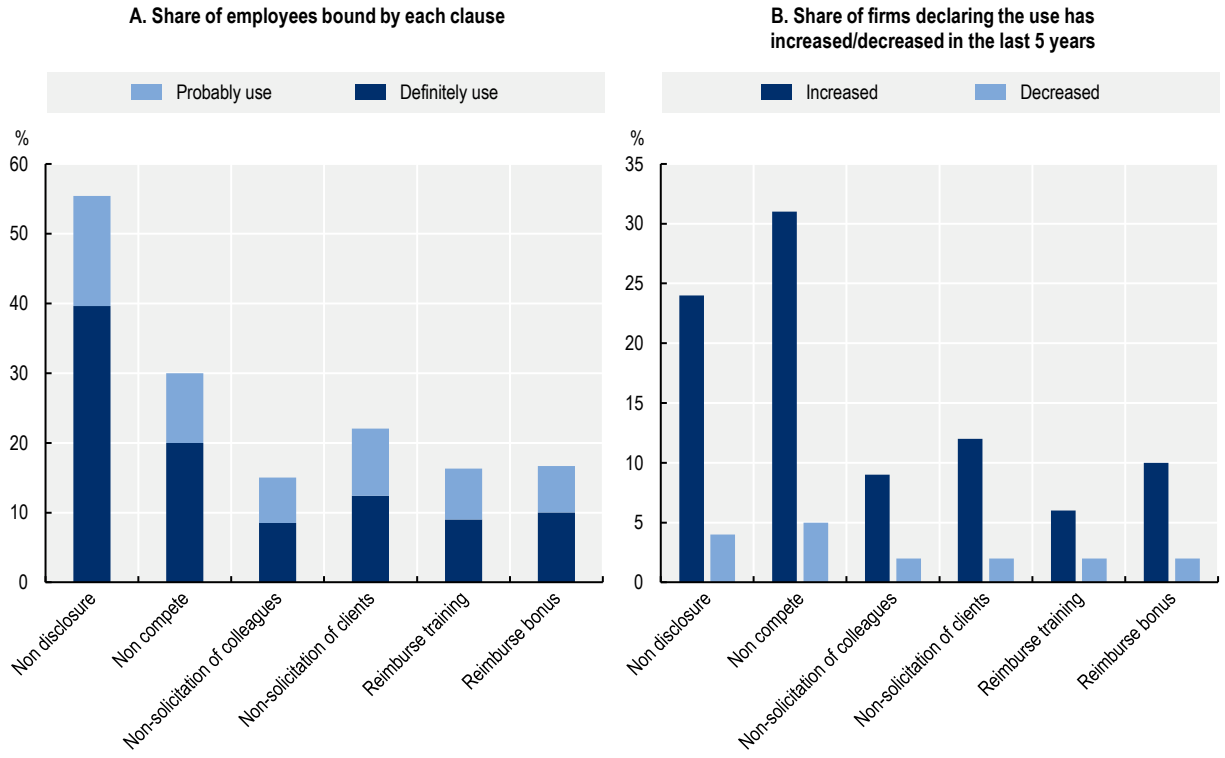
Figure 5.5 provides new evidence on the average prevalence of six clauses across the 15 countries covered – country specific results are available in Annex 5.B. Based on employers' responses, four key stylised facts emerge from the employer survey:

- Non-disclosure agreements (NDAs) are by far the most prevalent form of clause (Panel A in Figure 5.5).[11] Employers report that about 40% of private-sector employees are (definitely) covered by an NDA, going up to more than a half when including cases where firms report that employees are "probably" covered[12] – country specific estimates are available in Annex Figure 5.B.4.
- Non-compete clauses are the second most used clause with around one-fifth of private-sector employees currently bound by a non-compete clause, going up to one-third when including cases where firms report that employees are "probably" covered.
- Other restrictive clauses are also relatively common: 12-22% of employees are covered by non-solicitation of clients clauses, 10-17% by repayment of bonuses clauses, 9-16% by training-cost repayment clauses, and 9-15% by non-solicitation of colleagues clauses. Employee-reported

prevalence is generally higher, though accompanied by greater uncertainty, but shows a similar ranking across clause types (Annex Figure 5.B.5 to Annex Figure 5.B.8 display the prevalence of other clauses by country).

- Non-compete and related clauses also appear to be on the rise (Panel B in Figure 5.5). In all countries, a larger share of employers report having increased their use of post-employment clauses over the past five years than report a decrease, suggesting a growing reliance on contractual restrictions.

Figure 5.4. All types of clauses are relatively common and are on the rise



Note: For the employer-level survey, respondents were asked whether selected clauses were included in any employment contracts in their company (non-disclosure, non-compete, non-solicitation of colleagues and clients, training repayment, and reimbursement clauses). Interviewers could provide explanations if needed. In the employee-level survey, workers were asked whether, to their knowledge, they had agreed to similar restrictions in their current job (covering confidentiality, non-compete, non-solicitation of clients and colleagues, training repayment, and reimbursement clauses). Both employees and employers were offered graded response options ("definitely yes" / "probably yes" / "probably no" / "definitely no") alongside a distinct "don't know" category, allowing respondents to express uncertainty. Employee-level incidence is estimated by weighting firm-level responses by employment and sampling weights. Firm size brackets are converted into point estimates using midpoints (e.g. 5-9 employees: 7; 10-49: 29.5; 50-249: 149.5; 250-999; 1 000+: 2 000). The share of employees covered is similarly estimated using midpoint values of percentage ranges (e.g. 1-10%: 5.5%; …; 76-99%: 87.5%; 100%). Within each firm, the estimated share covered is multiplied by employment and the sector-size weight. The national incidence rate is then computed as a weighted average of these within-firm shares, ensuring representativeness of the workforce rather than firms. As a conservative assumption, "don't know" responses on coverage are treated as zero.
Source: OECD-Bocconi employer surveys on non-compete and related clauses.

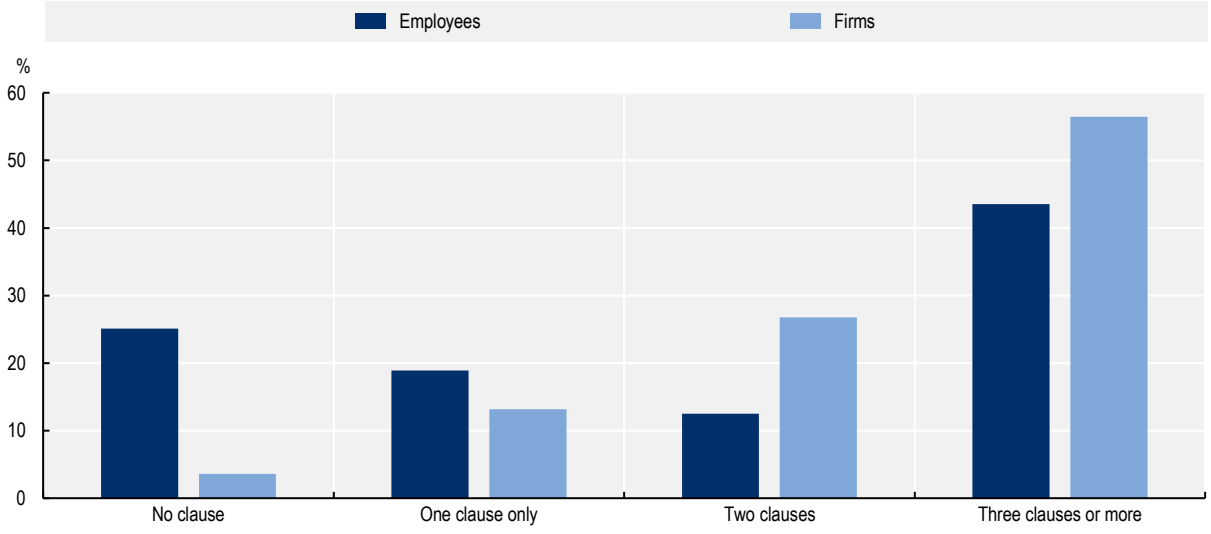
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Post-employment restraint clauses are rarely used in isolation. Figure 5.5 shows that among private-sector employees, 25% of employees report not being covered by any clause, while 19% are covered by a single clause only, typically an NDA (20% for those definitely bound by a clause). By contrast, 12% report being covered by two clauses (10% for those definitely bound by a clause), and a striking 44% report being covered by three or more clauses (17% for those definitely bound by a clause). Firm-level evidence reinforces this finding. Only around 4% of firms report using no clause at all, while 15% rely exclusively on NDAs. The majority of firms combine several types of clauses.

This pattern closely mirrors previous evidence from Australia, Italy and the United States, where bundling of contractual clauses is also common. In Australia, for example, 21% of the workforce is covered by a non-compete clause, 58% by an NDA, 29% by a non-solicitation of clients clause and 23% by a non-solicitation of co-workers clause (Andrews, Brennan and Buckley, 2024[27]). In Italy, 16% of private-sector employees are bound by a non-compete clause, compared to 39% by an NDA and smaller but non-negligible shares by non-solicitation and repayment clauses (Boeri, Garnero and Luisetto, 2025[28]). In the United States, 57% of employees are covered by an NDA, 28% by a non-solicitation of clients clause, 24% by a non-recruitment of co-workers clause and 22% by a non-compete clause, with similar bundling patterns reported by firms (Balasubramanian, Starr and Yamaguchi, 2024[29]).

Figure 5.5. Non-compete and related clauses are frequently grouped together

Share of employees and firms bound by or using post-employment restraint clauses (probably and definitely yes), by number of clauses, average across countries



Note: Dark blue bars show the share of employees bound by post-employment restraint clauses (probably and definitely yes), by number of clauses, average across countries. See note in Figure 5.4 for more information on how the incidence is calculated. The light blue bars show the proportion of firms by number of clauses used, weighted by number of employees.
Source: OECD-Bocconi employee and employer surveys on non-compete and related clauses.

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Overall, firms appear to deploy a portfolio of contractual tools to protect perceived business interests, with substantial heterogeneity in the number and combination of clauses used. Among these various restrictive clauses, non-compete clauses are those that have attracted the most attention in economic and policy debates because they directly limit workers' ability to join or start competing firms.

5.3.2. Non-compete clauses can be found in all countries, even in those where they are tightly regulated

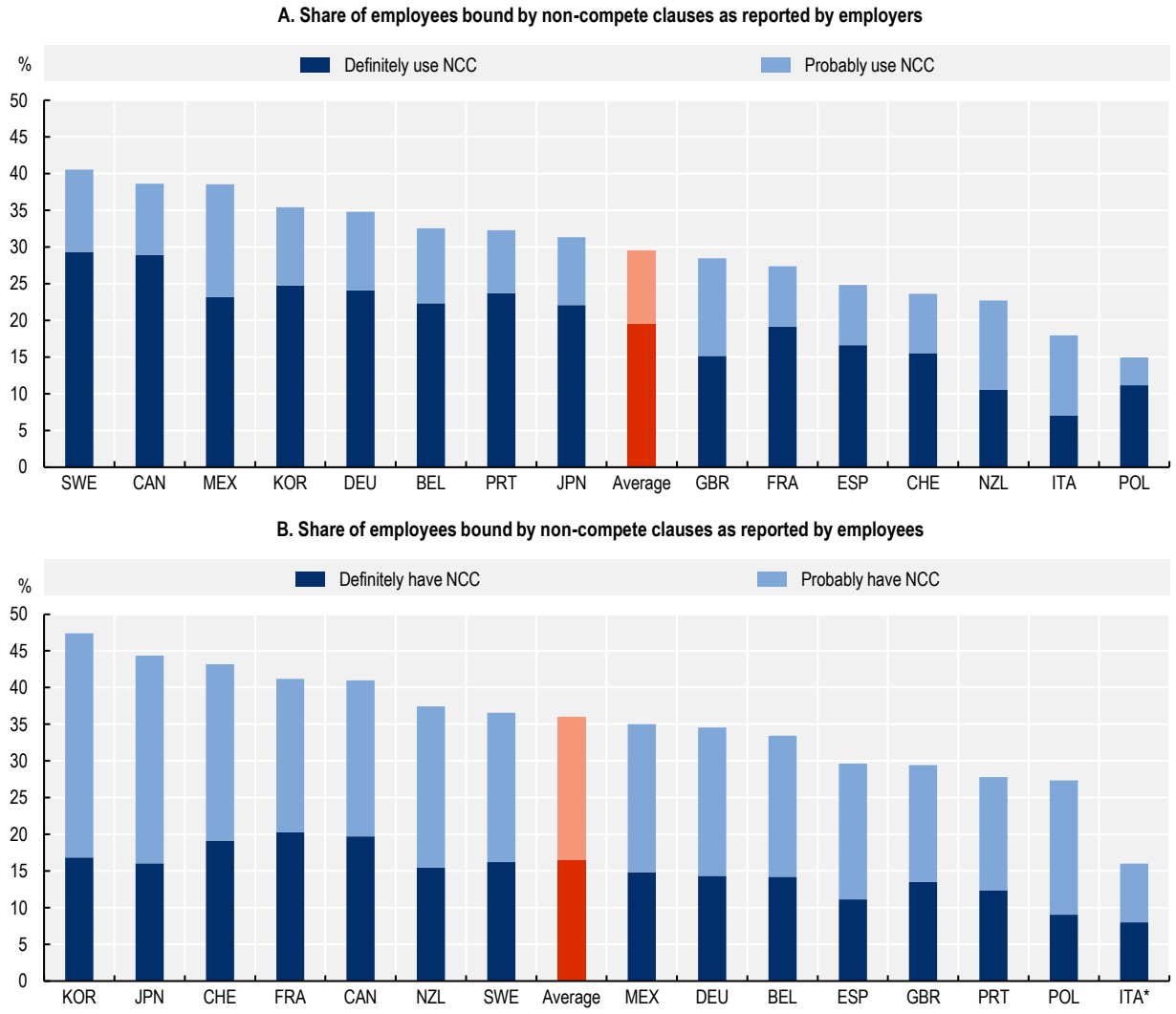
According to the employer survey (Panel A in Figure 5.6), the prevalence of non-compete clause varies, across countries but is relatively common in all, ranging from around 11-15% in Poland and 7-18% in Italy, to close to 30% in Canada and between 29% and 41% in Sweden. Results from the employee survey corroborate this picture: overall, 15% of employees report being definitely bound by a non-compete clause, with an additional 21% reporting that they are "probably" bound (Panel B in Figure 5.6). While levels of uncertainty are (unsurprisingly) significantly higher among employees than employers, the overall prevalence implied by the two surveys is remarkably similar.[13]

Comparing the two sources, prevalence estimates are closely aligned in Belgium, Canada, Germany, Mexico, Portugal, Spain, Sweden and the United Kingdom, despite differences in respondents (CEOs, HR or legal officers for employers, all employees for the employee-level one) and survey modes (online for employees and telephone for employers). In France, Japan, Korea, New Zealand, Poland and Switzerland, employee-reported prevalence is higher, driven mainly by a larger share of respondents indicating that they are "probably" covered. This greater uncertainty on the employee side may reflect differences in survey design, limited recall of contract details, some degree of employer under-reporting or unclear contract-terms – either from employees lacking the knowledge to understand, or deliberate vagueness in the contract. Notably, uncertainty persists even among recent hires: among employees who joined their employer within the past two years, on average across the 14 countries, 15% report being bound by a non-compete and a further 17% report that they are probably bound (Annex Figure 5.B.2).

Even when focussing on the most conservative estimates – employees or firms who state with certainty that they are subject to or use a non-compete – the prevalence observed in the OECD-Bocconi surveys is fully consistent with findings from other OECD countries using comparable data sources.[14]

Interestingly, cross-country differences in non-compete prevalence do not clearly reflect differences in legal frameworks (see Annex Figure 5.B.3).[15] Despite non-compete clauses being unconstitutional (i.e. effectively banned) in Mexico, reported prevalence remains relatively high, suggesting that such clauses may still exert a chilling effect on worker mobility even when the probability that they would be upheld in court is weak. More generally, the prevalence patterns observed do not map neatly onto differences in labour market institutions. Non-compete clauses are widespread not only in flexible labour markets characterised by employment-at-will, limited employment protection (see Chapter 6) and low collective bargaining coverage, but also in more regulated labour markets where job mobility is typically lower. But as discussed below, prevalence alone is not sufficient to assess the economic effects of non-compete clauses for a few reasons. First, the scope and breadth of such clauses – such as their duration, geographic reach, and occupational coverage – can differ significantly across countries. Second, the economic "bite" of non-compete clauses will be partly shaped by how easily they can be used in practice – including the availability of remedies, procedural costs, and the degree of judicial scrutiny – even if the regulatory framework does not influence overall levels of prevalence.

Figure 5.6. Non-compete clauses are relatively common in OECD countries



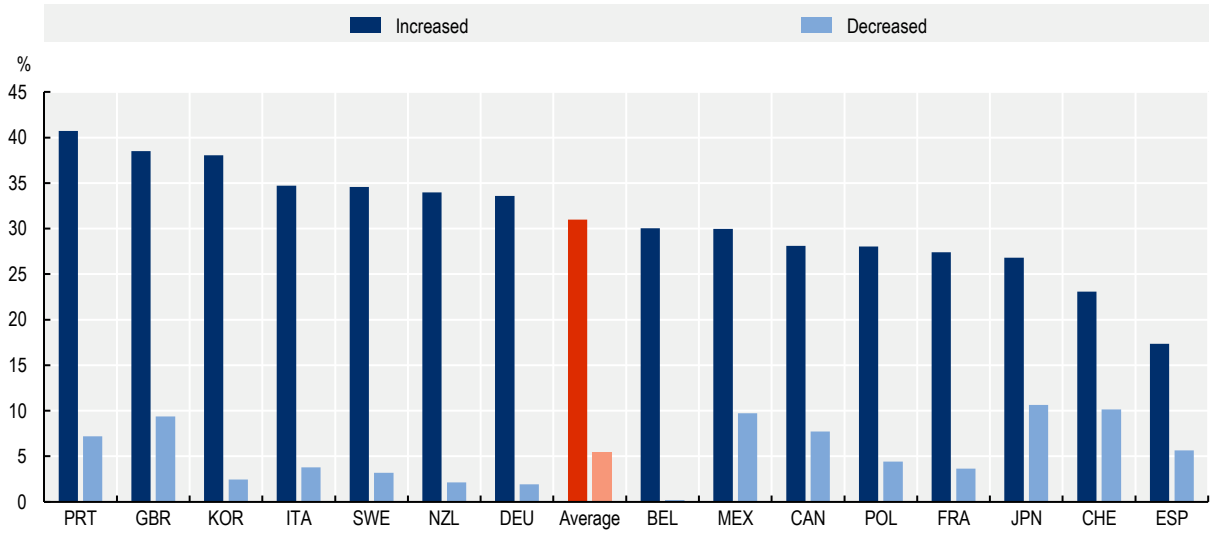
Note: See note in Figure 5.4 for more information on how the incidence is calculated. Estimated incidence rates are similar across many countries, and differences between countries with comparable estimates fall well within the associated margins of error. As a result, the precise country ranking should not be interpreted as definitive. Nevertheless, meaningful cross-country variation does emerge: using 95% confidence intervals, the estimated incidence in the top three countries is significantly higher than in the bottom three, indicating robust differences at the extremes of the distribution. * For Italy, employee-level incidence is based on Boeri, Garnero and Luisetto (2025[28]).
Source: OECD-Bocconi employer and employee surveys on non-compete and related clauses.

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Finally, in all surveyed countries, firms report that the use of non-compete clauses has been increasing over time (Figure 5.7). On average across countries, over 30% of firms surveyed report having increased their use of non-compete clauses over the past five years, compared to just 6% reporting that they have decreased their use. This points to a growing reliance on contractual restrictions on worker mobility across OECD labour markets.

Figure 5.7. The use of non-compete clauses is rising

Share of companies declaring that the use of non-compete clauses has increased or decreased over the last 5 years



Note: Answer to the question "Has your company's use of these conditions in employment contracts increased, remained the same or decreased over the past 5 years?". Reply options given included: "It has increased" / "It has remained about the same" / "It has decreased" / "I don't know" / "I prefer not to answer".
Source: OECD-Bocconi employer survey on non-compete and related clauses.

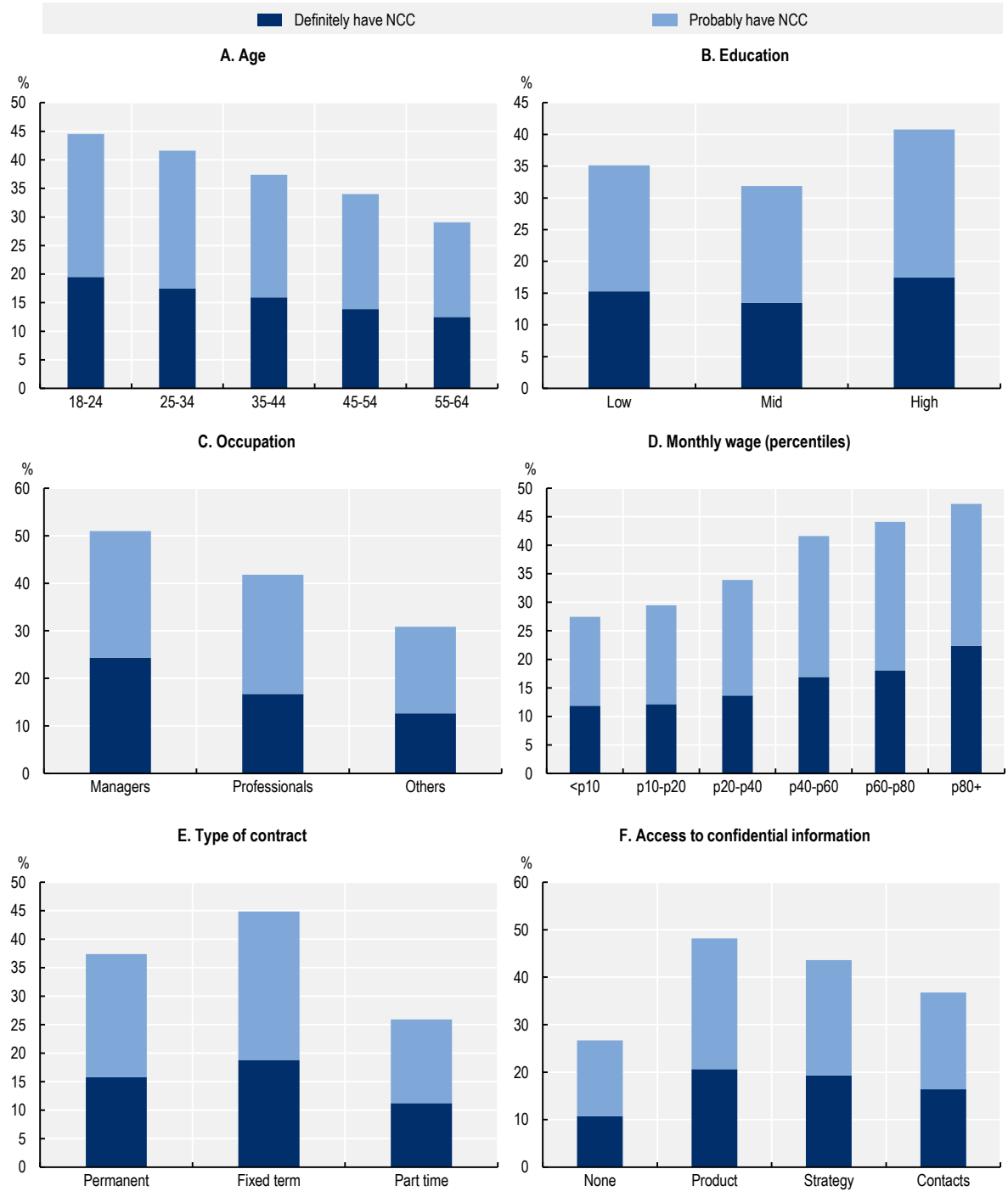
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5.3.3. Non-compete clauses are often deployed in ways that are difficult to reconcile with the original intent

The breadth at which non-compete clauses have diffused across OECD labour markets is notable. Figure 5.8 shows that, in line with the original intent, non-compete clauses are indeed more prevalent among managers, professionals, highly educated and higher-earning employees. But they are also widespread among groups for whom the standard justifications based on the protection of trade secrets or high-value investments appear substantially weaker. Across OECD countries, 14-35% of employees with less than secondary education report being currently bound by a non-compete clause (Figure 5.8, Panel B). Prevalence ranges between 12% and 26% among employees in the bottom decile of the labour income distribution (Figure 5.8, Panel D), 13-31% among non-managerial and non-professional employees (Figure 5.8, Panel C), and 18-42% among employees on fixed-term contracts, higher than for open-ended contracts[16] (Figure 5.8, Panel E). These patterns suggest that non-compete clauses are not confined to highly skilled or strategically sensitive roles. Higher incidence amongst young employees (Figure 5.8, Panel A) is also consistent with rising prevalence over time.

Figure 5.8. The use of non-compete clauses extends well past executives and specialised professionals

Share of employees bound by non-compete clauses, average across countries



Note: See notes in Figure 5.4 for more information on how the incidence in the employee-level survey is calculated. Panel B, education: low (ISCED 2011 levels 0-2), mid (ISCED 2011 levels 3-4), high (ISCED 2011 levels 5-8). Panel C, occupation: managers (ISCO-08 group 1), professional (ISCO-08 groups 2 and 3), others (remaining ISCO-08 groups).
Source: OECD-Bocconi employee surveys on non-compete and related clauses.

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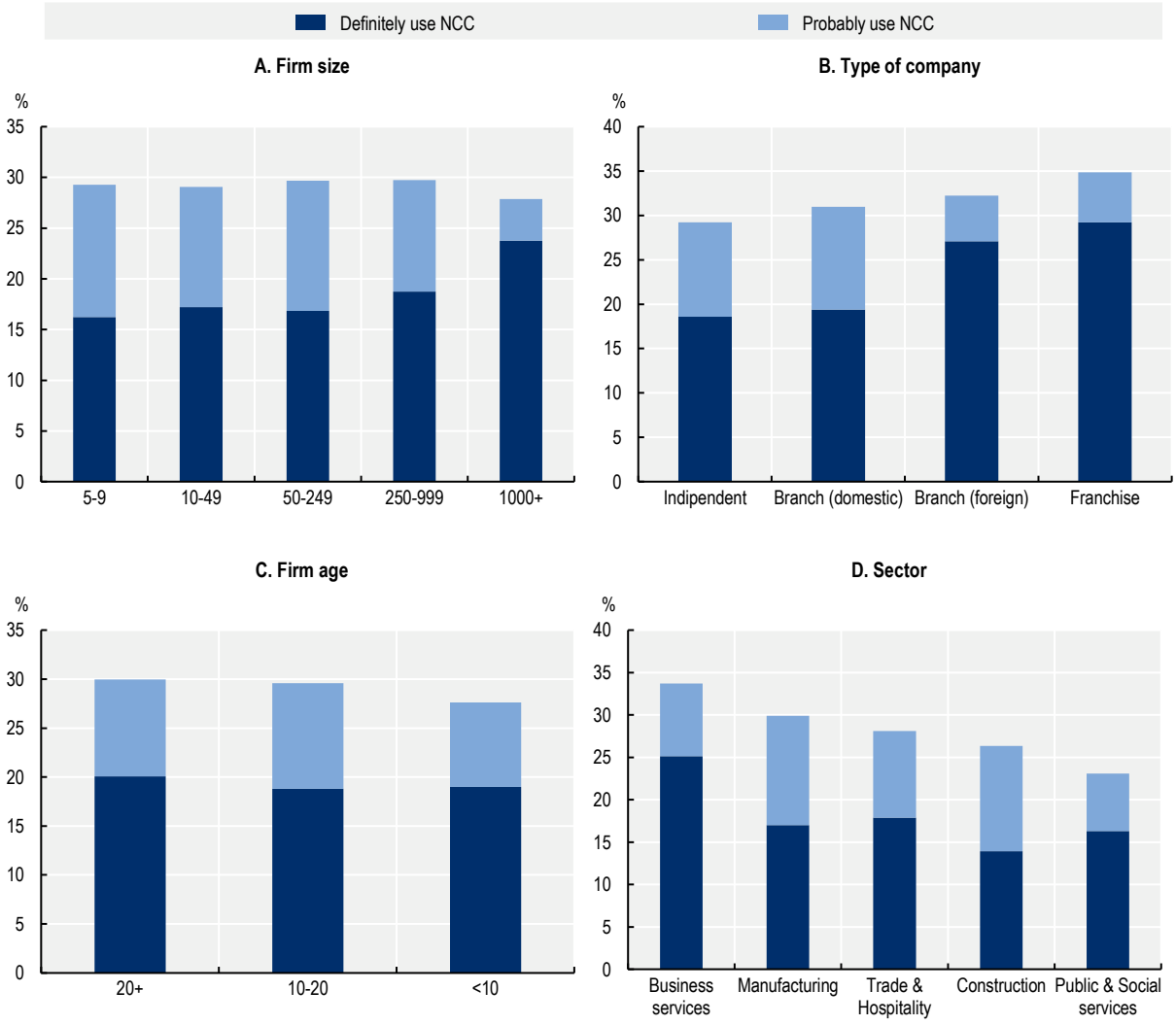
The diffusion of non-compete clauses beyond knowledge-intensive occupations is further illustrated by employees' reported access to confidential information. While non-compete clauses are more common among employees who report access to trade secrets or commercially sensitive information such as strategic plans, new product development, or key client and supplier lists, a substantial share of employees without such access are nevertheless covered. Between 11% and 27% of employees who report no access to confidential information are bound by a non-compete clause (Figure 5.8, Panel F).

These findings are consistent with previous evidence from other countries. In the United States, non-compete clauses have been found among entry-level employees in fast-food restaurants, and fewer than half of all employees with a non-compete report access to trade secrets (O'Connor, 2014[30]; Starr, Prescott and Bishara, 2021[10]). In Australia, a substantial share of low-wage workers with limited bargaining power are bound by non-compete clauses, including community and personal service workers and clerical and administrative workers, with such clauses increasingly applied to outward-facing roles such as childcare workers, yoga instructors and health-related occupations (Andrews and Jarvis, 2023[26]). In Italy, non-compete clauses are frequently observed among employees in manual and unskilled occupations and among low-educated and lower-earning employees, including employees without access to any form of confidential information (Boeri, Garnero and Luisetto, 2025[28]). In Austria, survey evidence suggests that prior to the 2006 reforms, around one-third of low-wage employees had a non-compete clause in their employment contract (Klein and Leutner, 2006[31]). In Denmark, despite the 2016 reforms that restricted the use of non-compete clauses, still 20.8% of unskilled workers in companies that use non-compete clauses were covered by a non-compete clause in 2025 (VIVE, 2025[32]).

The use of non-compete clauses also varies systematically across employers. Incidence is higher in firms with more than 1 000 employees than in small firms, and higher in multinational enterprises than in domestically owned firms (Figure 5.9, Panels A and B). As to be expected, non-compete clauses are most prevalent in knowledge-intensive services such as information and communication, finance and insurance, real estate, and professional and administrative services, but they can also be found in lower-paying service sectors including retail trade, transport, and hotels and restaurants (Figure 5.9, Panel D).

Figure 5.9. Non-compete clauses can be found in all types of firms and sectors

Share of employees bound by non-compete clauses, average across countries



Note: See notes in Figure 5.4 for more information on how the incidence in the employer-level survey is calculated.
Source: OECD-Bocconi employer surveys on non-compete and related clauses.

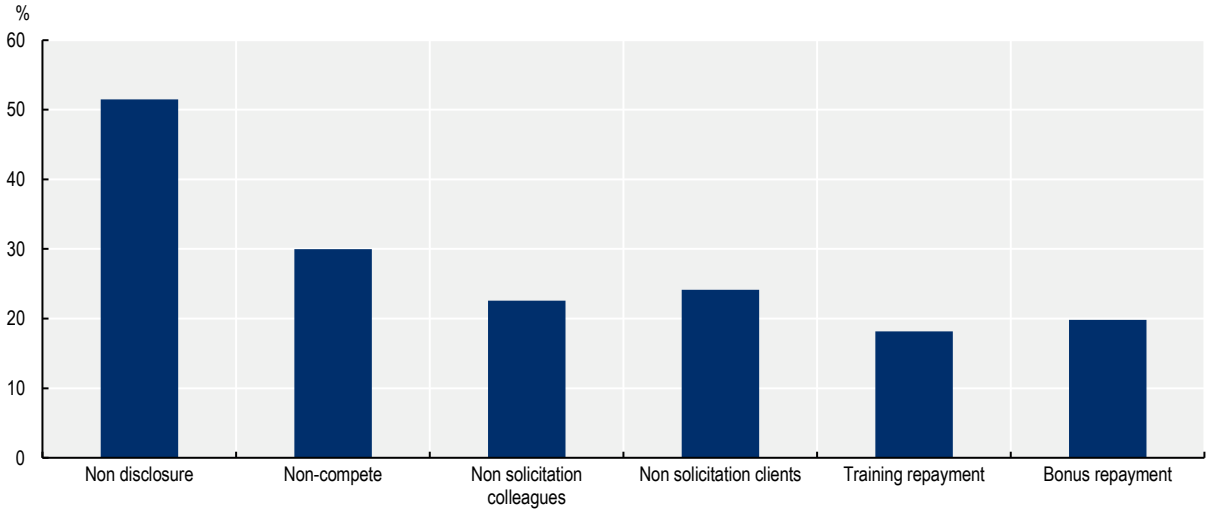
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These patterns indicate that in OECD countries non-compete clauses have spread into parts of the labour market where the original justification of protecting sensitive information or safeguarding large firm-specific investments appears weak or absent. One explanation is that non-compete clauses are frequently applied indiscriminately across the workforce. Among firms that use non-compete clauses, 31% report applying them to all employees regardless of role or seniority. The corresponding share is even higher for non-disclosure agreements, while other restraint clauses are somewhat more targeted but still widely applied on a uniform basis (Figure 5.10). Evidence from the United States and Australia shows that while larger firms are more likely to use non-compete and related clauses, they tend to apply them more selectively, whereas smaller firms that use such clauses often apply them to a much larger share of their workforce (Colvin and Shierholz, 2019[33]; Andrews, Brennan and Buckley, 2024[27]). Similar findings emerge for the

Netherlands, where around one-third of employers use non-compete clauses almost universally as standard contract terms, including for employees without access to knowledge or relationships that could plausibly harm the employer's competitive position (Bartsch, Grijpstra and Houweling, 2021[34]).

Figure 5.10. Non-compete and related clauses are often applied to all employees

Share of clause-using firms that apply the respective clause to *all* their employees, average across countries



Note: See notes in Figure 5.4 for more information on how the use and incidence of the various clauses are calculated in the employer-level survey.
Source: OECD-Bocconi employer surveys on non-compete and related clauses.

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Beyond their breadth of application, the way non-compete clauses are introduced and agreed upon also raises questions about their consistency with efficient contracting. Based on the original intent, such clauses would be expected to emerge from negotiated employment arrangements and to be accompanied by compensation, training opportunities, or higher expected earnings. The survey evidence suggests this is often not the case. Using the boosted sample to increase statistical precision (see Box 5.4 on methodology), Figure 5.11 shows that 21% of employees bound by a non-compete became aware of the clause only at the moment of signing the contract, when meaningful negotiation is typically limited and their outside employment options have been extinguished. A further 18% of employees found out about the non-compete clause before signing the contract but after accepting the job, potentially reducing their negotiation position. In some cases, the non-compete was introduced after the employment contract had already been signed, without any change in role or responsibilities.

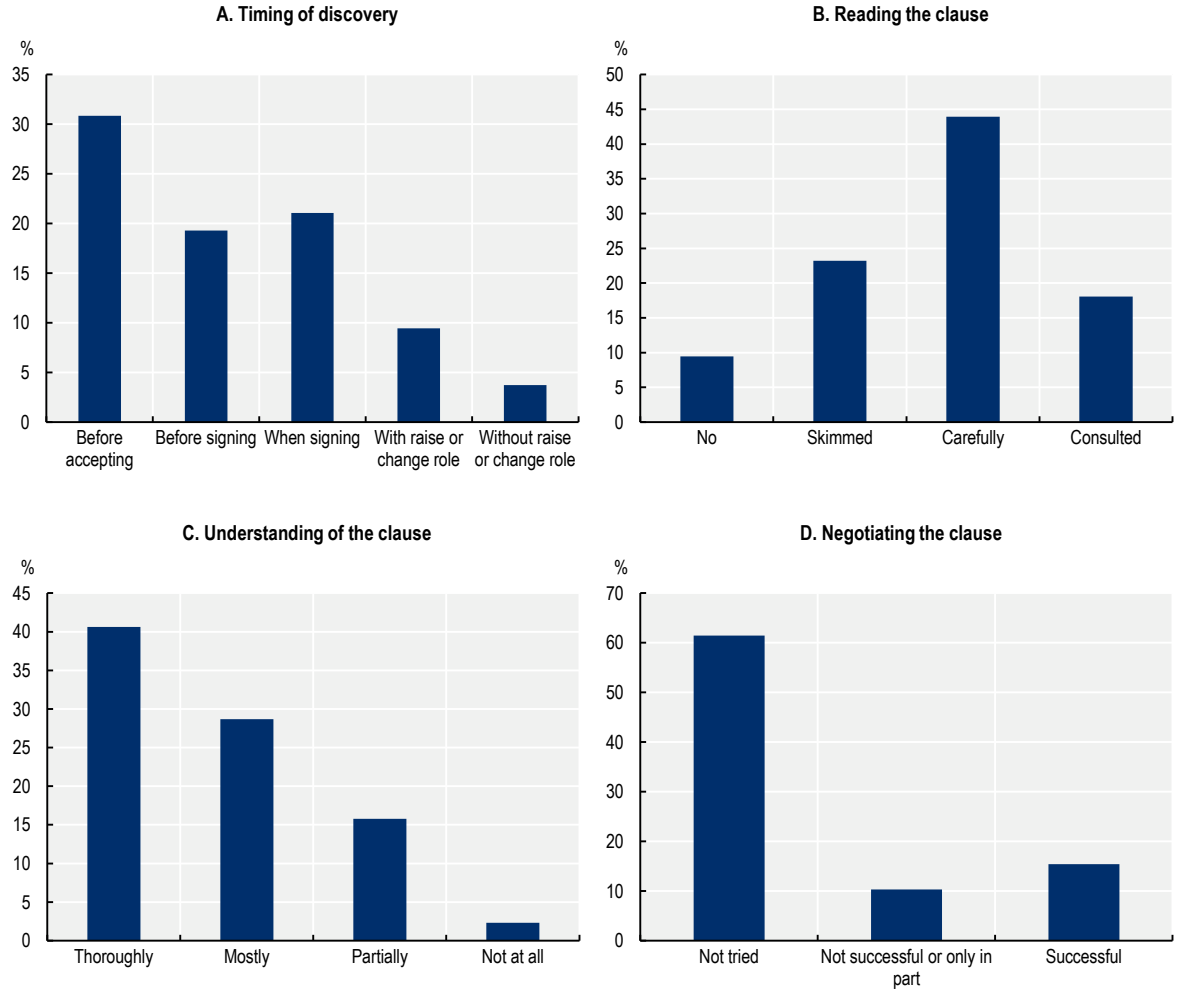
Engagement with the content of the clause also appears far from perfect. Among employees with a non-compete, 44% report having read the clause carefully, while 23% skimmed it and 9% signed it without reading it. Even among those who read the clause, 47% report that they did not fully understand it, often citing legal or technical complexity.

Consistent with this, only 25% of employees attempted to negotiate their non-compete clause (Figure 5.11). Among those who did not negotiate, the most common reasons were perceiving the clause as reasonable, believing it was non-negotiable, or being explicitly told by the employer that negotiation was not possible. Others refrained from negotiating out of concern that doing so might create tensions with the employer. A smaller share reported not negotiating because they believed the clause would not be really used by the employer or upheld by a court, or because they lacked alternative job offers or expected to face similar

clauses elsewhere. Similar patterns have been documented in the literature for the United States, Italy and Sweden (Starr, Prescott and Bishara, 2020[35]; Boeri, Garnero and Luisetto, 2025[28]; Akavia, 2021[36]).

Figure 5.11. Non-compete clauses are not necessarily presented before the start of the employment relationship and are rarely negotiated

Share of the employees bound by a non-compete clause, average across countries



Note: The charts in the figures are based on the "boost" sample, i.e. the sample which includes only employees with a non-compete clause – see Box 5.4. See notes in Figure 5.4 for more information on how the incidence in the employee-level survey is calculated.
Source: OECD-Bocconi employee surveys on non-compete and related clauses.

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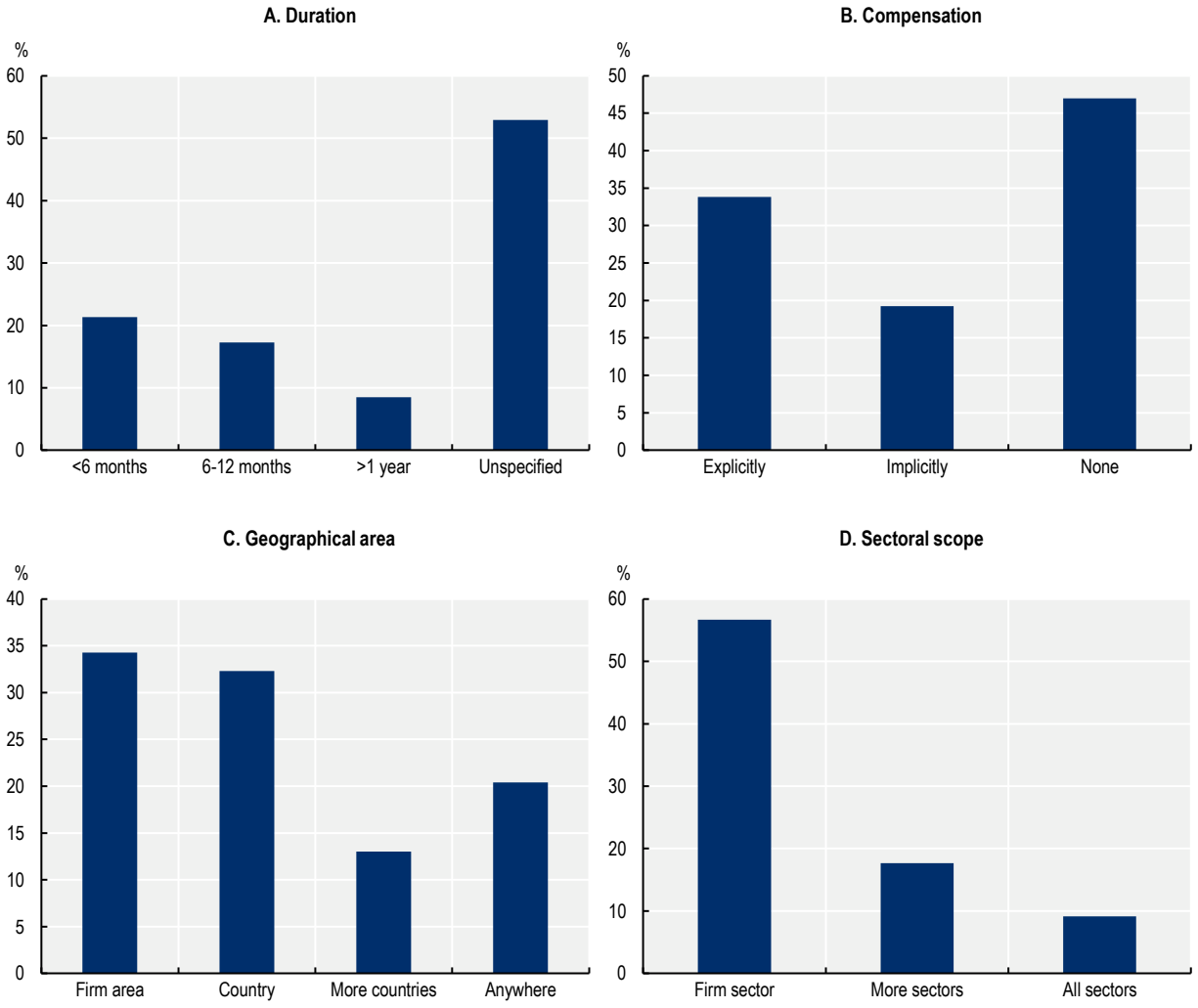
5.3.4. Non-compete clauses can be broad in scope and not comply with legal requirements

While, as discussed in Section 5.2, regulatory frameworks governing non-compete clauses vary significantly across OECD countries, a common legal principle is that such clauses must be reasonable in their duration, geographic and sectoral scope, and, in many jurisdictions, accompanied by financial compensation.

According to employees' reports, when the duration is specified, non-compete clauses most frequently last one year or less and apply to the area where the firm operates. However, a non-trivial share of clauses can last for more than one year (or do not have a specified duration) and apply to very broad geographic areas, including the entire country or even international territories. Similarly, a sizeable number of clauses extend beyond the employer's main sector of activity. Although not all countries require employers to provide financial compensation for a non-compete clause, compensation is generally one of the elements considered by courts when assessing the reasonableness and validity of the restriction. In this context, it is noteworthy that almost one-half of employees report receiving no compensation at all, despite the breadth of the restrictions imposed (Figure 5.12).

Figure 5.12. Non-compete clauses can be broad in scope

Share of non-compete clauses specifying duration, compensation, geographical area and sector scope, average across countries

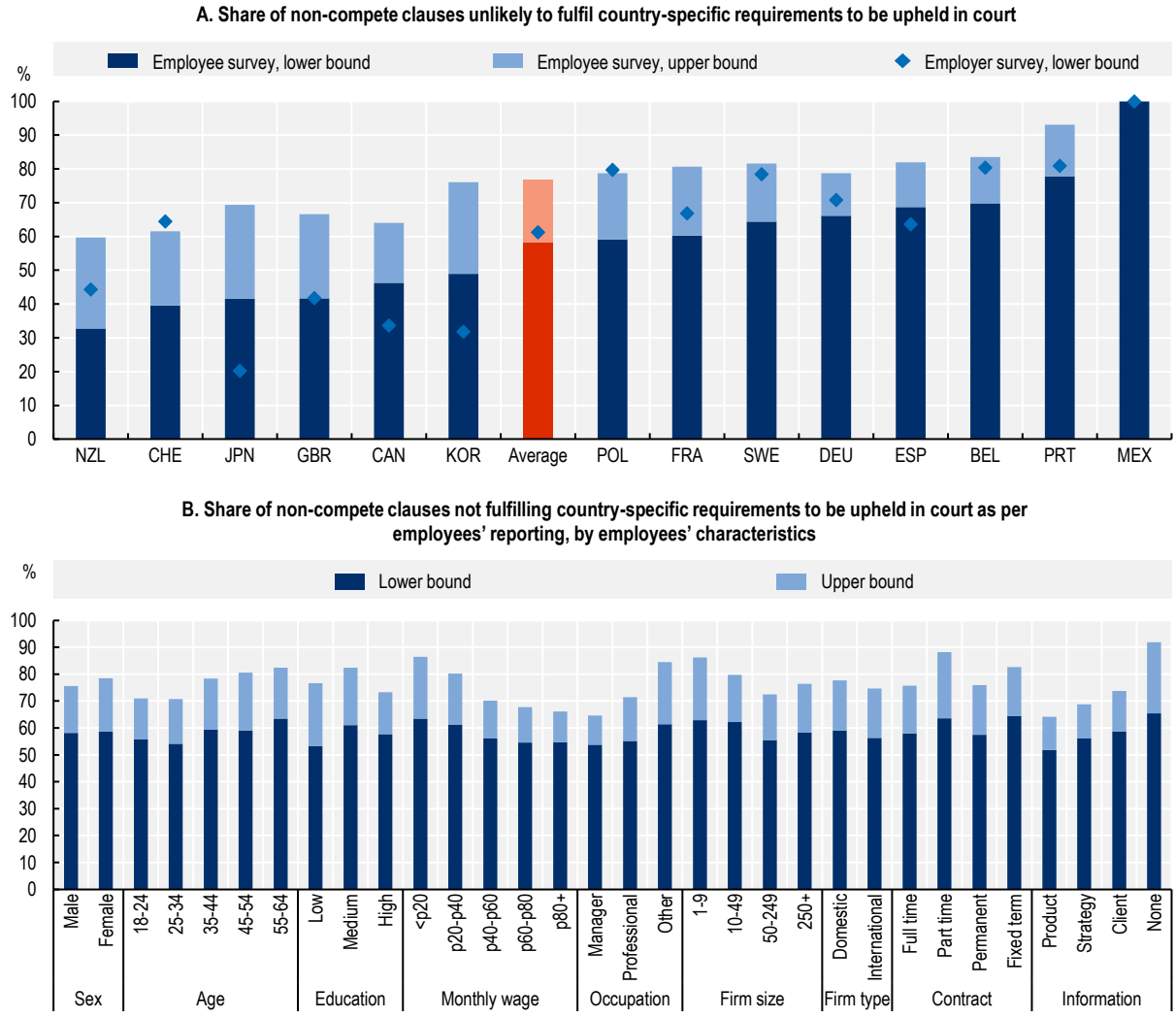


Note: This figure is based on the "boost" sample, i.e. the sample which includes only employees with a non-compete clause – see Box 5.4. See notes in Figure 5.4 for more information on how the incidence in the employee-level survey is calculated.
Source: OECD-Bocconi employee surveys on non-compete and related clauses.

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The breadth of these non-compete clauses raises concerns regarding their alignment with national legal frameworks and, consequently, the actual probability that they will be upheld in court. As discussed in Section 5.2 and summarised in Table 5.2, non-compete clauses must satisfy a number of conditions relating to duration, sectoral and geographic scope, compensation and other criteria in order to be upheld by courts. When these conditions are not met, clauses may be deemed null and void. In some countries, courts may rewrite overly broad clauses under so-called blue-pencil or judicial modification rules (OECD, 2019[7]), although such practices are not uniformly available across jurisdictions (Andrews et al., 2026[24]).

Figure 5.13. A large share of non-compete clauses appears to fall short of legal requirements



Note: For the employee survey, lower/upper bound differ in how an employee saying "don't know" or "prefer not to answer" on questions on the duration/compensation/scope is considered. For the lower bound, answering "don't know" or "prefer not to answer" does not make the clause invalid, while it does for the upper bound. For employers, the figures reflect lower bound estimates, classifying all clauses used by a firm as likely to be upheld by courts if the firm "sometimes" includes the required conditions. These estimates should be interpreted with caution: not only may employees not fully recall the precise terms of the non-compete clauses they have signed, but also the scope for such measurement error is likely to be correlated with the complexity of the legal framework. Therefore, cross-country differences in the share of apparently non-compliant clauses also reflect differences in regulatory complexity as well as reporting noise. The country-specific requirements to be upheld in court are listed in Table 5.2.
Source: OECD-Bocconi employee and employer surveys on non-compete and related clauses.

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Figure 5.12 shows that many clauses fail to specify a duration or do not clearly define their geographic or sectoral scope, omissions that substantially reduce the likelihood that the clause would be upheld in court.[17] The presence of potentially non-compliant clauses is not limited to countries with particularly complex regulatory frameworks. Even in jurisdictions where the legal requirements governing non-compete clauses are relatively few and clearly defined, a non-negligible share of clauses appears misaligned with statutory or case-law standards. In addition, even when restricting the sample to workers who report to definitely have a non-compete clause, to have read the clause carefully and have understood it well, the share of clauses that are unlikely to be upheld in court remain very similar (Annex Figure 5.B.10). The results are confirmed by the employer-level survey. Although the measures are not directly comparable due to differences in survey design, the proportion of clauses that are unlikely to be upheld in courts is high and often similar in magnitude to the incidence derived from the employee survey. The high share of clauses that do not meet legal requirements is therefore unlikely to be solely driven by poor reporting and awareness of employees.[18]

Table 5.2. Main conditions under which non-compete clauses are unlikely to be upheld in court

Selected OECD countries included in the OECD-Bocconi surveys

Country	Criteria
Belgium	Unlikely to be upheld in court if the duration exceeds 12 months or is undefined; if compensation is below 50% of salary or absent; if no geographic or sectoral scope is specified; banned if annual gross salary is below EUR 43 106 (January 2025). For salaries between EUR 43 106 and EUR 86 212, non-compete clauses are banned unless otherwise provided by a collective bargaining agreement.
Canada	Unlikely to be upheld in court if no duration is specified; if no geographic or sectoral scope is specified. Specific rules apply in Ontario, where employee non-compete clauses were banned in 2021 (with the exception of top executives occupations) and sanctions apply.
France	Unlikely to be upheld in court if no duration is specified; if no compensation is provided; if no geographic or sectoral scope is specified.
Germany	Unlikely to be upheld in court if the duration exceeds 24 months or is undefined; if compensation is below 50% of salary or absent; if no geographic or sectoral scope is specified.
Japan	Unlikely to be upheld in court if no duration is specified; if no geographic or sectoral scope is specified.
Korea	Unlikely to be upheld in court if no duration is specified; if no geographic or sectoral scope is specified.
Mexico	Non-compete clauses are banned.
Poland	Unlikely to be upheld in court if no duration is specified; if compensation is below 25% of salary or absent; if no geographic or sectoral scope is specified.
Portugal	Unlikely to be upheld in court if the duration exceeds 24 months (this period may be extended to 36 months in cases of a special relationship of trust or access to particularly sensitive information) or is undefined; if no compensation is provided; if no geographic or sectoral scope is specified.
Spain	Unlikely to be upheld in court if the duration exceeds 24 months for technical employees or 6 months for other employees, or if no duration is specified; if no compensation is provided; if no geographic or sectoral scope is specified.
Sweden	Unlikely to be upheld in court if the duration exceeds 9 or 18 months or is undefined, although longer durations may be allowed under special circumstances; if compensation is below 60% of salary or absent, with lower compensation permitted if the employee earns income from non-competing work; if no geographic or sectoral scope is specified.
Switzerland	Unlikely to be upheld in court if the duration exceeds 36 months or is undefined; if no geographic or sectoral scope is specified.
United Kingdom	Unlikely to be upheld in court if no duration is specified; if no geographic or sectoral scope is specified.
New Zealand	Unlikely to be upheld in court if no duration is specified; if no geographic or sectoral scope is specified.

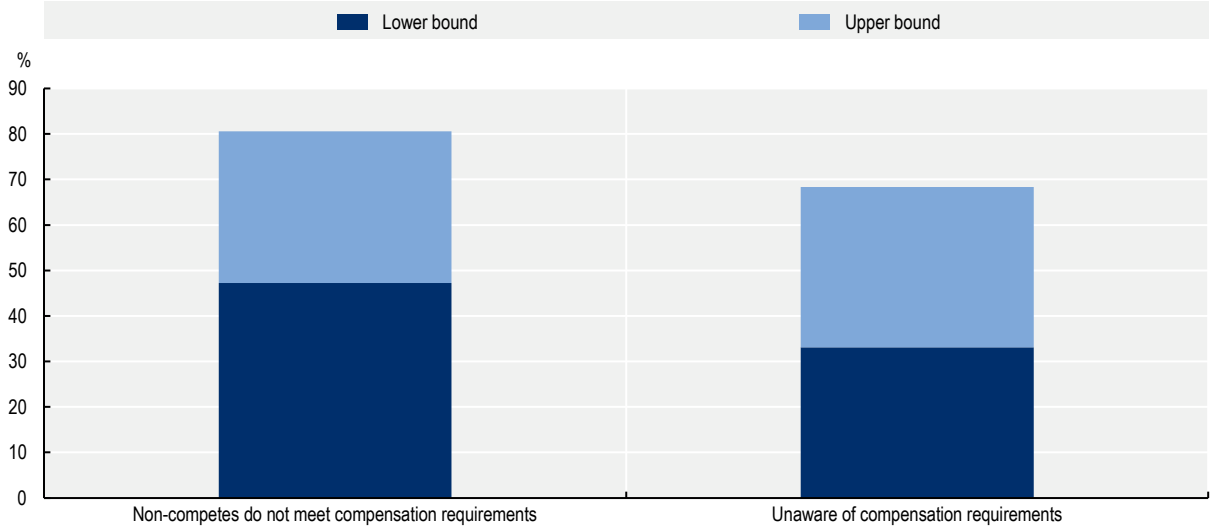
Source: Based on national laws or case law – see Andrews et al. (2026[24]), "The regulation of non-compete clauses across OECD countries", https://doi.org/10.1787/88e3eb6e-en.

The incidence of clauses that are unlikely to be upheld in court shows some systematic variation. In particular, such clauses are more common among small firms, low income employees, employees in non-managerial/professional positions and employees with no access to confidential information. This pattern suggests that firms may be less attentive to legal compliance when the clause is unlikely to be needed to protect legitimate business interests. Rather than really intending to ask courts to uphold these clauses,

firms may include broad or legally weak non-compete clauses due to limited resources to draft tailored contracts or as a result of limited understanding of the regulation in place. Indeed, Figure 5.14 shows that in countries where compensation for non-compete clauses is a legal requirement, almost one-half of firms using non-compete clauses do not provide compensation for any of their workers who are bound by such a clause. This could partially reflect lack of awareness: around one-third of firms are unaware that compensation is required for any workers, and a further one-third believe it is required only in some cases. At the same time, low-skilled employees may be less aware of their rights or struggle to understand the content and implications of the clauses they have signed.

Figure 5.14. Limited understanding of legal requirements could explain lack of compliance

Proportion of firms (%), average across countries where compensation is required by law



Note: Average across countries where compensation is required by law: France, Germany, Spain, Belgium, Poland, Portugal, Sweden and Italy. The lower bound for meeting compensation requirements classifies firms indicating that they "sometimes include" compensation as complying with compensation requirements; the upper bound only classifies firms that "always" include compensation as meeting the compensation requirements. For awareness, the lower bound classifies firms as unaware if they responded that compensation is not required by law or if they selected that they do not know. The upper bound also includes firms who respond that compensation is required for some workers (instead of "all workers" which would correctly characterise the requirements by national law).
Source: OECD-Bocconi employer survey on non-compete and related clauses.

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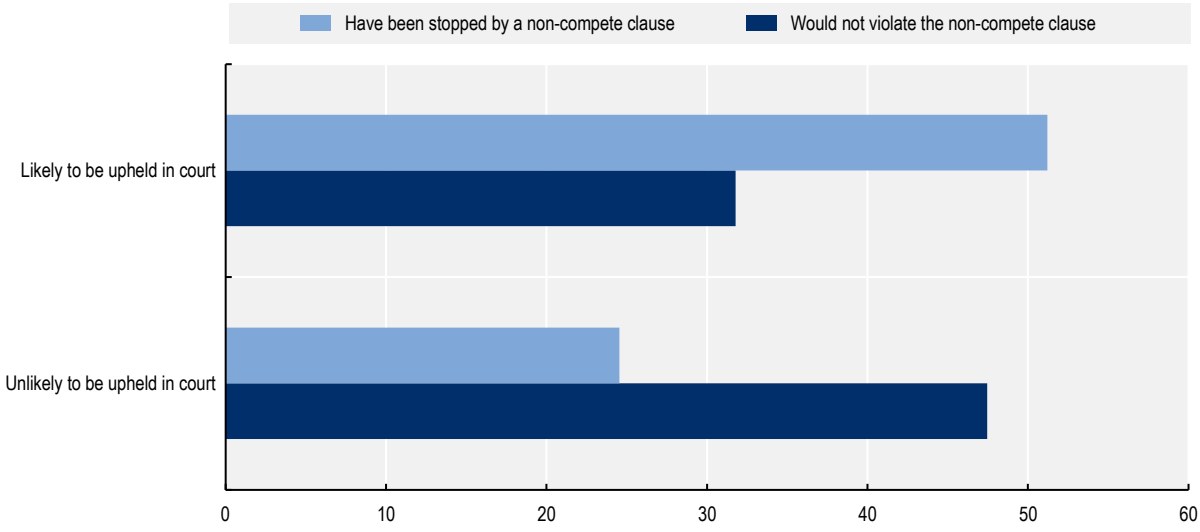
Previous evidence places these findings in a broader context. In the United States, non-compete clauses are common even in states where they are formally banned, indicating widespread use of clauses with limited legal validity (Starr, Prescott and Bishara, 2021[10]). In Italy, a large share of non-compete clauses appear unlikely to be upheld in court under existing legislation, yet remain prevalent in employment contracts (Boeri, Garnero and Luisetto, 2025[28]).

Crucially, employee behaviour is often shaped more by the perceived validity of non-compete clauses than by their actual validity, giving rise to an *in terrorem* or chilling effect: even clauses that are unlikely to be upheld in courts can deter employees from changing jobs if they fear legal action or reputational consequences (Starr, Prescott and Bishara, 2020[35]; Prescott and Starr, 2021[37]). Consistent with this, Figure 5.15 shows that, when asked whether they would be willing to accept a job offer violating their non-compete clause, the share of employees who report that they would not do so is even higher among those covered by a clause that is unlikely to be upheld in court than among those covered by a potentially valid

one. At the same time, Figure 5.15 shows that employees with valid clauses are much more likely to report having been prevented from moving to another job. As already highlighted in the case of Italy, Sweden and the United States,[19] this evidence suggests that the economic impact of non-compete clauses cannot be assessed solely based on their formal validity because employees may interpret them differently and act accordingly. This highlights the need for a closer examination of the practical effects of such clauses on mobility, wages and productivity.

Figure 5.15. Employees often believe non-compete clauses are binding even when they fall short of legal requirements

Share of employees bound by a non-compete clause, by the likelihood of the clause to be upheld in court, average across countries



Source: OECD-Bocconi employee surveys on non-compete and related clauses.

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Three main mechanisms may help explain why firms continue to use non-compete clauses that are unlikely to be upheld in court:

- First, as discussed above, non-compete clauses are frequently applied indiscriminately across the workforce using standardised contract templates not tailored to each specific case.
- Second, non-compete clauses are often embedded within broader contractual bundles – including non-disclosure, non-solicitation, confidentiality, or training-related provisions – which may already provide firms with alternative means of protecting business interests. In this context, the marginal benefit of carefully tailoring the scope and legal robustness of non-compete clauses to individual employees may be limited, particularly when drafting costs are non-trivial and the clause is unlikely to be tested in court.
- Finally, firms may not need to rely on formal court intervention for such clauses to affect employee behaviour. The chilling effect of non-compete clauses per se – whereby employees refrain from changing jobs due to perceived legal risks, uncertainty, or reputational concerns, even when the clause would not ultimately be upheld in court – may be enough:
    - Consistent with this interpretation, an empirical review of US state court decisions identifies only 514 cases between 1998 and 2022 in which courts substantively assessed the validity of

employee non-compete clauses under the rule of reason, despite the widespread use of such clauses, suggesting that most non-compete clauses exert their effects without judicial adjudication (Crane, 2024[38]). Similarly, evidence from Minnesota shows that only a very small share of non-compete agreements ever result in litigation, despite an estimated one in nine workers being covered by such clauses (Boesch, Narayan and Nunn, 2025[39]).

- Empirical evidence from the United States shows that firms place little value on the formal legal validity of non-compete clauses for employees near statutory thresholds (Hiraiwa, Lipsitz and Starr, 2024[40]), indicating that deterrence, rather than litigation, may be the primary channel through which such clauses operate.

5.3.5. There is evidence of (firm-to-firm) no-poaching and wage-fixing agreements

In contrast to non-compete clauses which pertain to contractual arrangements between workers and firms, firms may engage in no-poaching and wage-fixing agreements with other firms to explicitly restrict labour market competition. No-poaching agreements are akin to a buyers' cartel between employers whereby employers agree not to hire or solicit (including cold-call) each other's employees, primarily with an aim to reduce wages (OECD, 2022[8]). Wage-fixing agreements, by contrast, involve co-ordination between employers on wages, bonuses, or other elements of compensation, typically with the aim of limiting upward wage pressure.[20] Both practices operate by weakening outside options for workers, thereby reinforcing employer monopsony power and enabling firms to pay wages below workers' marginal product, even in the absence of formal mergers or high measured concentration (Gottfries and Jarosch, 2025[41]; OECD, 2022[8]; OECD, 2020[42]). For example, studies (Sharma, 2025[43]; Delabastita and Rubens, 2022[44]; Callaci et al., 2024[45]; Gibson, 2025[46]) have documented substantial wage losses in the range of 5-15% following the creation of no-poaching or wage-fixing agreements.

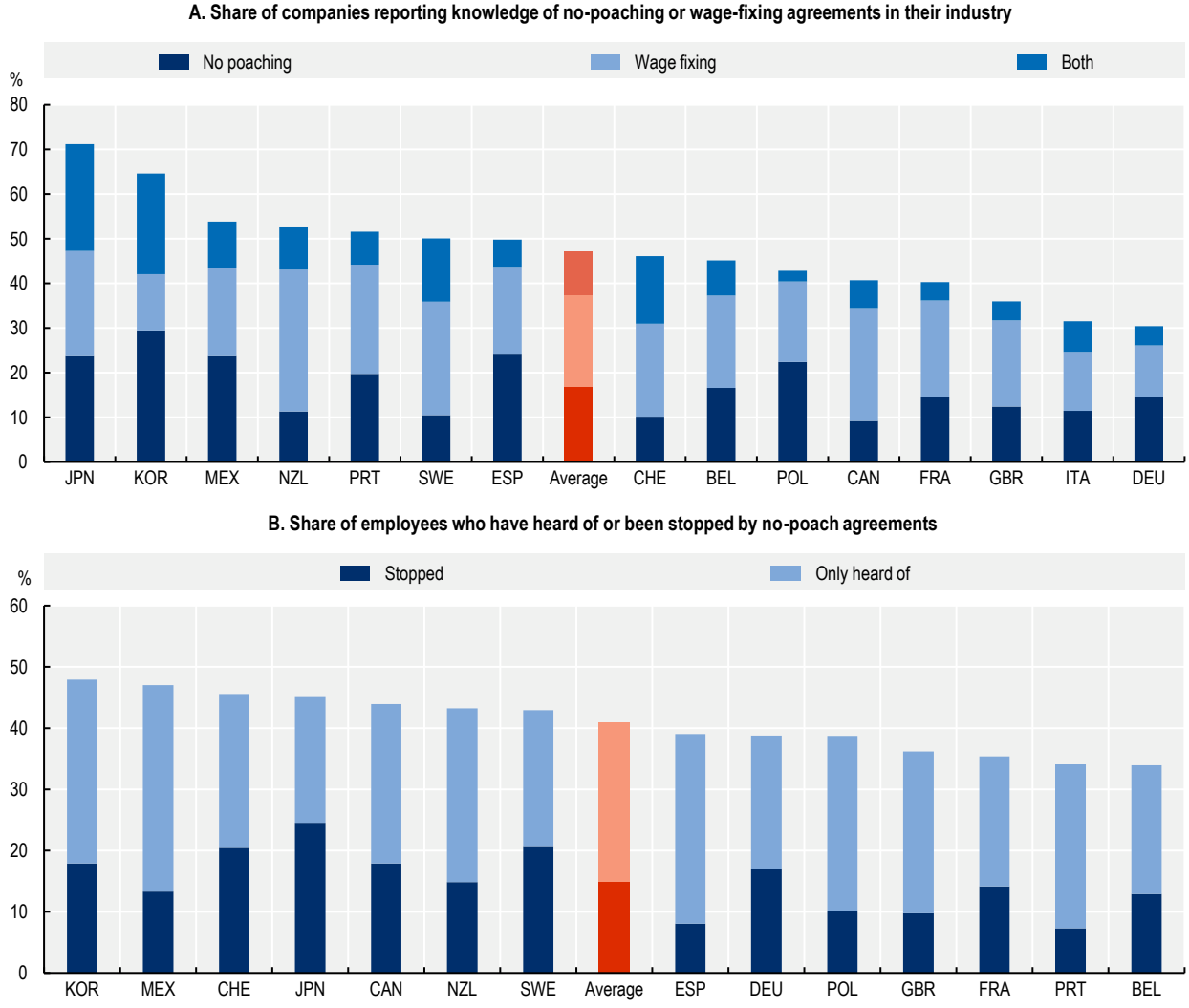
In most OECD countries, no-poaching and wage-fixing agreements are treated as analogous to price-fixing or market-sharing arrangements in product markets (Aresu, Erharter and Renner-Loquenz, 2024[47]) and are thus considered *per se* illegal.[21] Indeed, such conduct is viewed as a serious restriction of competition because "collusion is the most detrimental anticompetitive practice in labour markets," including agreements to fix wages or working conditions (OECD, 2020, p. 28[42]). Because such conduct is illegal, the employer survey asked firms whether they were aware of no-poaching or wage-fixing agreements occurring in their industry, as opposed to whether they engaged in such practices directly.

The results in Panel A of Figure 5.16 suggest that these practices may be more widespread than often assumed: almost one-half of surveyed firms report knowledge of either no-poaching, wage-fixing, or both within their industry.[22] This does not imply that one-half of firms participate in such conduct; however, the pattern is consistent with the idea that labour-market collusion is difficult to detect directly, yet even a small number of well-known cases can influence wage-setting norms and competitive behaviour across an entire sector (Prager, 2025[48]). The employee survey provides complementary evidence from the employee perspective. Panel B of Figure 5.16 shows that around 15% of employees report having been prevented from moving to another company because of a no-poaching agreement between their employer and another firm, while 26% report having heard of such practices. Taken together, these findings suggest that firm-to-firm agreements may play a non-negligible role in shaping workers' outside options, even in jurisdictions where individual non-compete clauses are tightly regulated.

While these survey results are suggestive, they help contextualise the growing attention that competition authorities have devoted to labour market conduct over the past decade. Historically, antitrust enforcement focussed almost exclusively on product and service markets, with labour market outcomes regarded as falling outside the remit of competition policy. This view has shifted markedly as economic research has highlighted the prevalence of employer market power in labour markets and its potential role in suppressing wages and degrading working conditions. Since the early 2010s, competition authorities have increasingly treated no-poaching and wage-fixing agreements as hard-core restrictions of competition (Posner and

Volpin, 2023[49]). Early landmark cases in the United States – most notably those involving technology firms in Silicon Valley agreeing not to cold-call each other's engineers – marked the beginning of a sustained enforcement effort. More recently, several US authorities have pursued cases across healthcare, aerospace, poultry processing and packaging, professional sports, and digital services, with mixed but increasingly precedent-setting outcomes, including the first successful criminal trial conviction for wage-fixing in April 2025 ("*United States v. Eduardo Lopez*").[23]

Figure 5.16. Knowledge of no-poaching or wage-fixing agreements is widespread among firms and employees



Note: Panel A: Responses to the questions "Are you aware of any companies in your industry entering into agreements not to hire each other's employees?" (interviewer could specify "also known as no-poaching agreements") and "Are you aware of any companies in your industry entering into agreements to fix employees' salaries or other employment benefits?" (interviewer could specify "also known as wage-fixing agreements"). Panel B: response to the question "Have you ever been prevented from moving to another company because of a no-poaching agreement between your employer and another company? A no-poaching agreement is when companies agree not to hire each other's employees" with answer options Yes, I have experienced this / No, but I have heard of such agreements in my industry / No, I have not experienced or heard of such situations.
Source: Panel A: OECD-Bocconi employer survey on non-compete and related clauses. Panel B: OECD-Bocconi employee survey on non-compete and related clauses.

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National competition authorities in Europe and elsewhere have launched investigations and imposed fines in a wide range of sectors, including healthcare, professional sports, engineering and consultancy services, construction, fashion and modelling, media, automotive, and digital services. The first EU-level investigation into a concerted practice not to hire or actively approach each other's employees (no-poaching agreement) between two well-known food-delivery companies, was settled in June 2025.[24] These cases underscore that no-poaching and wage-fixing agreements are not isolated cases or confined to certain types of markets but can arise wherever labour represents a key input and turnover is high. The survey evidence presented here suggests that the renewed enforcement focus of competition authorities is well founded and should be maintained.

5.4. Non-compete clauses, wages and productivity

Previous sections have shown that non-compete and related clauses are prevalent across OECD countries with very different labour market institutions and regulatory frameworks, and that their incidence does not appear to be strongly correlated with the overall strictness of regulation. In addition, a significant share of non-compete clauses do not appear likely to be upheld in courts. This raises a key question: do these clauses constrain employees' behaviour and firms' outcomes in practice, or are they rather obscure and largely neutral contractual provisions? Accordingly, this section explores whether non-compete clauses truly "bite" in terms of economic performance – by affecting job mobility, wages and productivity – and assesses the extent to which regulatory interventions can shape the economic effects of such clauses.

5.4.1. Job mobility, firm entry and wages

Estimating the economic effects of non-compete clauses is challenging because their use is not random: firms and workers that adopt them differ systematically from those that do not. As a result, simple correlational studies often find that workers with non-compete clauses earn more than workers without them (Starr, Prescott and Bishara, 2021[10]; Rothstein and Starr, 2022[50]; Kodama, Kambayashi and Izumi, 2025[51]), but those studies also reflect unobserved firm, job and worker characteristics.

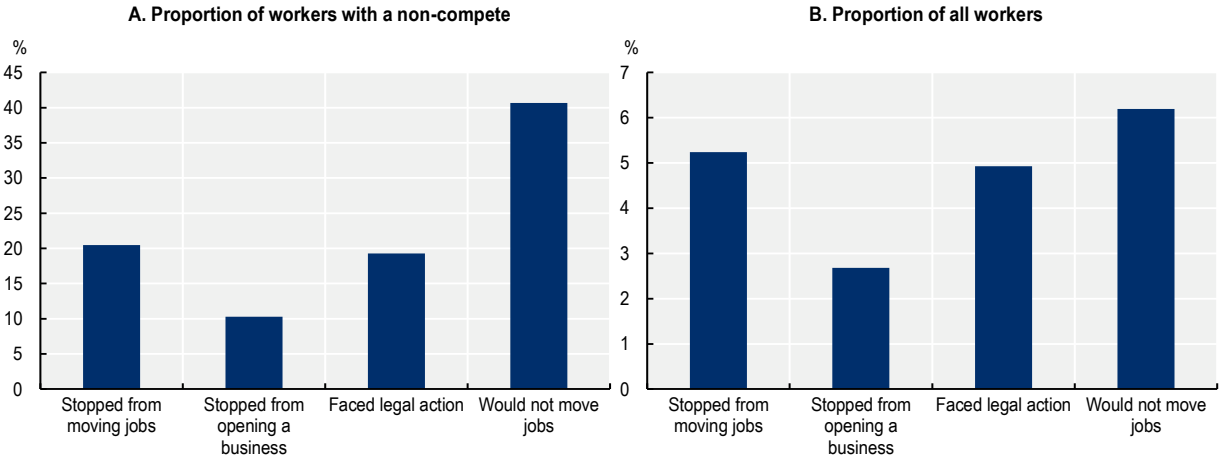
However, studies exploiting field or natural experiments such as policy reforms or differences across neighbouring jurisdictions consistently find that non-compete clauses are associated with lower job mobility and lower wages (Garmaise, 2009[52]; Marx, Strumsky and Fleming, 2009[53]; US Treasury, 2016[54]; US Treasury, 2022[55]). Recent evidence (Engbom, Baksy and Caratelli, 2026[56]) shows that the long-run decline in job-to-job mobility – linked to reduced outside offers and weaker employer competition – has materially slowed wage growth in the United States (around 0.7 p.p. per year). A back-of-the-envelope calculation suggests that rising employer concentration and the use of non-compete clauses may account for roughly 60% of the decline in on-the-job search efficiency between the 1980s and 2010s.

In addition to constraining job-to-job mobility, non-compete clauses directly prohibit employees from starting competing businesses. Babina (2019[57]) finds that new start-up creation of employees in existing companies subject to adverse financial shocks is significantly reduced in states where non-compete clauses are more easily enforced. Samila and Sorenson (2011[58]) show that an increase in the local supply of venture capital results in a significantly stronger increase in the number of new firms in US states where non-compete clause use is restricted. Echoing these findings, non-compete enforceability is linked with fewer within-industry spin-outs (Starr, Balasubramanian and Sakakibara, 2018[59]).

Consistent with these findings, the employee survey demonstrates that non-compete clauses often appear binding, with potentially important implications for job mobility and firm entry. Panel A in Figure 5.17 shows that across survey countries, over 20% of workers who have had a non-compete clause have been stopped from moving jobs; and over 10% have been stopped from opening a business. Around 19% have faced legal action and 41%would not move jobs if the job offer violated their non-compete clause. Expressing

these figures as a share of all workers, Panel B of Figure 5.17 shows that a meaningful share of all private-sector employees surveyed have been directly affected by a non-compete clause at some point during their careers. Over 5% of *all* workers surveyed report having been stopped from moving jobs by a current or past non-compete clause and almost 3% have been stopped from opening a business, and around 5% have faced legal action. Around 6% of all workers would not accept a competing job offer out of fear of violating a non-compete clause. The magnitude of these figures is meaningful in the context of overall job-to-job transition rates (close to 10% per year[25]) and new business formation (around 5.7 per 1000 working age people per annum[26]). These results are supported by the employer surveys: two-thirds of firms say they would enforce their non-compete clauses if workers tried to join a competitor.

Figure 5.17. Workers report meaningful effects on job mobility and business entry



Note: Averages across survey countries. The charts display the proportion of employees who have ever been stopped from moving jobs, from starting a business or have faced legal action due to a current or a past non-compete clause. The fourth column shows the proportion of employees that would not accept a job offer if it violated their current non-compete clause. Panel A displays these statistics as a proportion of workers that definitely have a non-compete clause or have definitely had one in the past, except for the rightmost column that displays the proportion of workers who would not violate their non-compete clause as a proportion of workers that currently have a non-compete clause. Panel B shows the statistics as a proportion of all surveyed workers.
Source: OECD-Bocconi employee survey of non-compete and related clauses.

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Importantly, the effects on job mobility, firm entry and wages are observed not only where non-compete clauses are lightly regulated, but also in jurisdictions where they are partially or fully banned, as workers often forgo job offers because of non-compete clauses which would not be upheld in court (see discussion around Figure 5.15 above). This "chilling effect" implies that analyses based solely on the legal framework may understate the economic impact of non-compete clauses.

At the same time, studies exploiting changes in regulation across and within US states find that restricting non-compete clauses for various types of workers increased job mobility and wages (Lipsitz and Starr, 2022[60]; Balasubramanian et al., 2022[61]; Hiraiwa, Lipsitz and Starr, 2024[40]). Studies exploiting the large differences in regulation across US states find that limiting non-compete use increases wages by around 3-4% on average and substantially raises employee mobility (Greenwood, Kobayashi and Starr, forthcoming[16]; Johnson, Lavetti and Lipsitz, 2025[13]). Beyond the United States, Young (2021[62]) finds that Austria's 2006 reform banning non-compete clauses for low-wage employees increased transitions to better-paying jobs. More recently, Bartelsman, Dobbelaere and Zona Mattioli (2024[63]) show that reforms

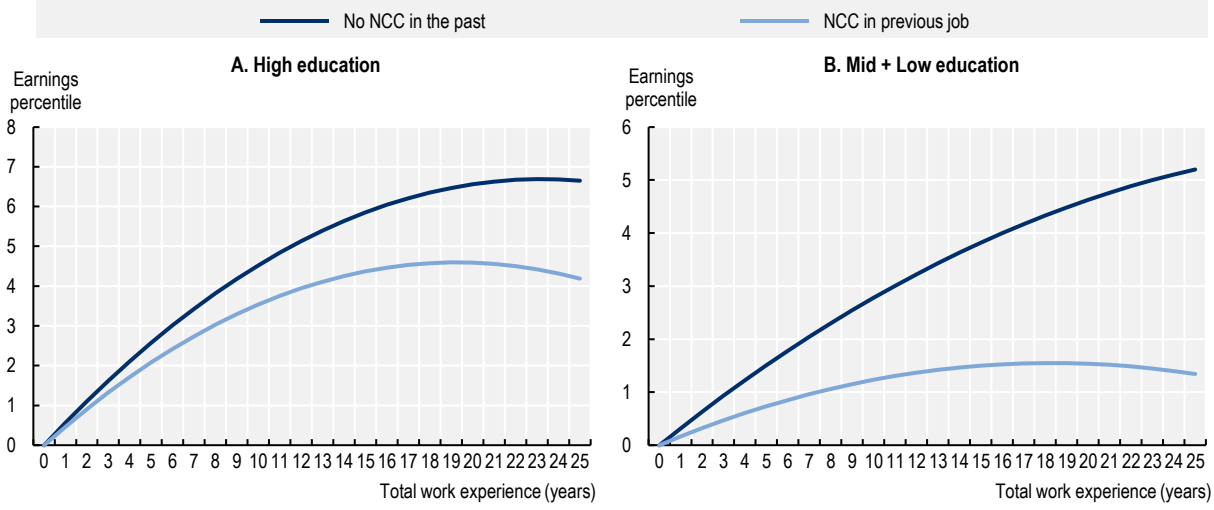
introduced in the Netherlands in 2015 were associated with higher wages and increased mobility, particularly in firms intensive in intangible assets.

New descriptive evidence based on the OECD's employee-level survey indicates that amongst the pool of employees with NDAs,[27] the mobility up the annual earnings distribution over a 25-year career of employees with a non-compete clause is around 3 percentiles lower than for employees with an NDA only (Figure 5.18). The difference is even larger among lower-educated employees (Panel B). As discussed in Box 5.5, this analysis controls for various confounding factors and the comparison is restricted to employees who currently have an NDA to attenuate selection concerns. This result is aligned with evidence from Australia and the United States, which shows that firms that combine non-compete clauses with non-disclosure agreements tend to pay wages that are 3-7% lower than similar firms that only employ NDAs (Buckley, Rankin and Andrews, 2024[64]; Balasubramanian, Starr and Yamaguchi, 2024[29]). Similarly, Potter, Kurmann and Hobijn (2026[65]) find that signing a non-compete clause is associated with significantly slower wage growth for low-education workers. In contrast, they find that signing a non-compete clause is associated with faster wage growth for high-education workers suggesting that non-compete clauses potentially support firm-specific investment in higher-skill jobs. A similar finding is reported by Lavetti, Simon and White (2019[66]) for physicians under profit-sharing pay schemes.

Additional analysis reveals that the association between non-compete clauses and weaker earnings growth is particularly strong for workers whose non-compete clauses are likely to be upheld in court, based on the regulatory framework of the workers' country (Annex Table 5.B.2). This highlights the role that regulation can play in shaping the economic "bite" of non-compete clauses. Again, this result is driven by workers without tertiary education.[28] [29]

Figure 5.18. Returns to experience are weaker among low-educated employees bound by a non-compete clause

Earnings-experience profiles for employees without a non-compete clause (NCC) in the past, and for employees with a non-compete in a previous job, by level of education



Note: The results are based on an OLS regression of employee earnings quintiles on past non-compete status, work experience (age adjusted for educational attainment), and experience squared. The model is estimated on a sample of employees who currently have NDAs, controlling for employee, job, and firm characteristics, alongside country and industry-occupation fixed effects. Annex Table 5.B.1 shows the regression results, Box 5.5 provides detail on the methodology.
Source: Calculations using the OECD-Bocconi employee-level survey.

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Box 5.5. Methodology: Non-compete clauses and earnings growth

This box summarises the empirical methodology used to estimate the link between non-compete clauses and earnings growth.

The analysis uses the OECD-Bocconi employee-level survey where workers are asked to report their annual gross earnings in brackets of local currency (split by earnings quintiles[1] to ensure country comparability) and if they are currently bound by a non-compete clause and/or a non-disclosure agreement as well as if they have been bound by a non-compete clause in the past. Even though the survey only provides a snapshot of current earnings and past and present non-compete use, this cross-sectional information can be used to study the relationship between earnings and experience, using the following baseline specification:

$$earnings_{i,j,o,c} = \beta_0 + \beta_1 experience_{i,j,o,c} + \beta_2 experience_{i,j,o,c} * NCCcurrent_{i,j,o,c} + \beta_3 experience_{i,j,o,c} * NCCpast_{i,j,o,c} + controls_{i,j,o,c} + \vartheta_{j,o} + \mu_c + \varepsilon_{i,j,o,c}$$

- Earnings is the earnings quintile[1] of worker *i* in industry *j*, occupation *o* and country *c*
- Experience is the total work experience in years, computed as age minus 18 for those with "low" education, age – 20 for those with "mid" education, and age – 25 for those with "high" (tertiary) education[2]
- NCCcurrent is a dummy variable, equal to 1 if the worker reports having a non-compete in their current job (they responded yes or probably yes in the survey)[3]
- NCCpast is 1 if the worker has ever had a non-compete in a previous job (yes or probably yes)
- Controls include worker-controls (education, sex), job controls (part-time job, tenure, fixed-term contract, short-term contract), firm controls (firm size, multinational firm). Experience squared is also included as a control, to capture decreasing returns to experience. Current non-compete and past non-compete are also included as controls.
- $\vartheta_{j,o}$ is industry x occupation fixed effect
- μ_c is country fixed effect

In the baseline analysis, the sample of employees is restricted to those with a non-disclosure agreement (NDA) in their current job.[4] This approach has previously been used in the literature, as it provides a more reliable comparison when some of the selection into having any post-employment restraints is netted out. For example, if the employee's employer has something valuable to protect (e.g. trade secrets, IP), then their first response will be to deploy some form of restraint, but they may well be neutral to the exact instrument or combination of instruments used. Nevertheless, the estimation strategy employed can only identify associations between non-compete clauses and earnings growth, and the evidence should not be interpreted as causal.

The baseline results are displayed in Annex Table 5.B.1 and are robust to a wide range of alternative specifications, including additional controls (training, access to confidential information, other post-employment restraints), alternative measures of experience, different fixed effect structures (including interacted occupation x industry x country fixed effects) and clustering strategies, changes in sample composition, and alternative definitions of non-compete status (past or present).[5]

1. To convert the results from income quintiles into percentiles, the coefficients are simply multiplied by 20, as one quintile equals 20 percentiles.
2. The results are robust to using an alternative experience measure, computed as age minus 16 for those with "low" education, age minus 18 for those with "mid" education, and age minus 22 for those with "high" education.
3. Past and current non-compete status is also allowed to interact with the squared experience term in one of the robustness checks. These interaction terms are not statistically significant, but the precision of the other coefficient estimates is reduced when they are included. Hence, these additional interaction terms are not included in the baseline specification.
4. The estimates are also robust to including all workers in the sample instead of restricting the analysis to those with NDAs only.
5. Results are available upon request from the authors.

Recent field experimental evidence further clarifies the mechanisms through which non-compete clauses affect worker outcomes. Cowgill, Freiberg and Starr (2024[17]) conducted a large-scale experiment in which the inclusion, salience and duration of non-compete clauses were randomised in approximately 14 000 job offers for short-term contractors in the finance sector. Although many employees did not read the non-compete clause when it appeared deep in the contract, its presence reduced subsequent employment with competing firms by 57%. The experiment shows that including a non-compete clause in a job offer reduces total compensation paid by the original firm and its competitors by around 12%, suggesting that the employer gains leverage while the overall number of job applicants shrinks. Individuals who sign a non-compete receive 4-8% lower compensation, regardless of their likelihood of being upheld in courts.[30]

The effects of non-compete clauses also extend beyond workers who are directly bound by them. As discussed in Section 5.1, when non-compete clauses are widely used within a local labour market, they can weaken wage competition and reduce mobility for all workers. Starr, Frake and Agarwal (2019[67]) find that labour markets characterised by widespread non-compete clauses exhibit lower wages and slower mobility, including among workers not subject to such clauses. Johnson, Lavetti and Lipsitz (2025[13]) document spillovers across state borders, showing that making non-compete clauses easier to use in one state suppresses wages in neighbouring states.

5.4.2. Productivity – reallocation and knowledge diffusion

An important policy question raised by the evidence on wages and mobility is whether non-compete clauses merely redistribute surplus between firms and workers, or whether they also constrain productivity-enhancing labour reallocation. While a growing literature documents the negative effects of non-compete clauses on job mobility and earnings, their implications for productivity remain largely unexplored. To date, there are only two exceptions: Anand et al. (2017[68]) who show that where non-compete clauses are more likely to be upheld in courts they stifle worker mobility and innovation, ultimately reducing productivity. The second is a recent paper by Chang et al. (2026[69]), which uses newly assembled manufacturing data for the United States and finds that increases in the likelihood of non-compete clauses being upheld in court – creating a legal environment more favourable to firms – are accompanied by reductions in output and productivity.[31] This section aims at providing a contribution to fill this gap by showing cross-country evidence on the relationship between non-compete prevalence, regulation and productivity outcomes. While the results are robust to a wide range of controls and specifications, unobserved factors correlated with non-compete prevalence may still play a role. Therefore, the findings should be seen as associations and not causal effects. However, the consistency of the results with established mechanisms in the productivity literature lends support to the findings.

From a conceptual perspective, non-compete clauses may affect productivity through several, potentially offsetting, channels. By limiting worker mobility, non-compete clauses can reduce productivity growth by impeding the reallocation of labour from less productive to more productive firms, thereby weakening allocative efficiency. This mechanism has been highlighted as a key driver of aggregate productivity differences across countries and over time (Bartelsman, Haltiwanger and Scarpetta, 2013[70]; Andrews and Cingano, 2014[71]). Reduced worker mobility may also slow knowledge diffusion across firms, limiting within-firm productivity growth, particularly for laggard firms for which catch-up to the technological frontier is a central source of productivity gains. Mobility restrictions may also worsen the quality of job matching if workers are prevented from moving to jobs that better fit their skills and experience. Against this, stronger clauses limiting what employees can do after they leave their job may encourage firms to invest more in training, research and development, or other intangible assets, and facilitate the sharing of proprietary information within firms.

To examine these issues, this section combines industry-country level measures of non-compete prevalence derived from the OECD – Bocconi employer survey with firm-level productivity and employment data from Orbis.[32] Box 5.6 provides a brief overview of the methodology and key results, while Andrews, Garnero and Holttinen (2026[72]) provides a more detailed description.

Box 5.6. Methodology: Non-compete clauses and productivity

This box summarises the empirical methodology used to estimate the link between non-compete clauses and productivity via two key mechanisms: productivity-enhancing labour reallocation and knowledge diffusion across firms.[1] Full details and results are provided in Andrews, Garnero and Holttinen (2026[72]).

Labour reallocation

To study the link between non-compete clauses and productivity-enhancing labour reallocation, the analysis builds on established approaches in the productivity literature (Decker et al., 2020[4]) to assess whether employment growth responds less strongly to firm-level productivity in environments where non-compete clauses are more prevalent. Using firm-level panel data where *i* indexes firms, *j* industries, *c* countries, and *t* years, the baseline specification is:

$$Employment\ growth_{i,j,c,t} = \beta_0 + \beta_1 LP_{i,j,c,t-1} + \beta_2 LP_{i,j,c,t-1} * NCC_{j,c} + Controls_{i,j,c,t} + \mu_{j,c} + \theta_t + \varepsilon_{i,j,c,t}.$$

LP is firm-level log-labour productivity, NCC is the industry-country-level non-compete incidence using the OECD-Bocconi employer survey.[2] If the estimated coefficient β_1 is positive, then higher productivity firms are more likely to expand and lower productivity firms are more likely to contract, consistent with productivity enhancing labour reallocation. But if the estimated coefficient on the interaction term β_2 is negative, then higher prevalence of non-compete clauses at the industry level is associated with weaker productivity-enhancing labour reallocation.

Knowledge diffusion: Catch-up growth with the productivity frontier

To assess potential links between non-compete clauses and firm-level catch-up growth to the global productivity frontier, the analysis follows a widely used empirical methodology derived from neo-Schumpeterian growth theory (Aghion and Howitt, 1998[73]; Aghion et al., 2005[74]). The baseline specification is:

$$LP\ growth_{i,j,c,t} = \beta_0 + \beta_1 Frontier\ Growth_{j,t} + \beta_2 Gap_{i,j,c,t-1} + \beta_3 Gap_{i,j,c,t-1} * NCC_{j,c} + Controls_{i,j,c,t} + \mu_{j,c} + \theta_t + \varepsilon_{i,j,c,t}$$

where LP growth is the growth rate of firm-level labour productivity, frontier growth captures the productivity advances of the global productivity frontier (the top 5% of the productivity distribution in each industry), and gap is the difference between the firm's productivity and the mean productivity level of the global frontier. The regression is run on firm-level data, excluding frontier firms. A positive β_2 indicates catch-up growth: firms further from the frontier have the potential to grow faster, given a larger stock of unexploited technologies at their disposal for adoption. A negative coefficient on the interaction term, β_3, would be consistent with the view that non-compete clauses slow down knowledge diffusion and hence reduce catch-up growth. In both specifications (reallocation and catch-up growth), controls include firm age and size, and industry × country and year fixed effects.

Data sources

The analysis uses firm-level data from Orbis, a comprehensive global database maintained by Bureau van Dijk (Moody's Analytics) containing financial statements, ownership structures, and operational information for millions of firms worldwide. These firm-level data are matched with prevalence estimates of non-compete clauses at the country × industry level from the OECD-Bocconi employee surveys. To improve representativeness and firm coverage, the analysis combines data for 2022 and 2023 (latest years available in Orbis). For 2023, full coverage of firms was not yet available at the time of the analysis. For the 2022 period, the coverage of firms is better; however, the gap between the firm-level

data and the non-compete survey data is larger, and firm-level outcomes may still partially reflect the impacts of the COVID-19 pandemic. Combining the two years increases the coverage and representativeness of the sample, while also allowing for time-fixed effects to capture some of the potential impact of the pandemic, but the results are robust to using a single year of Orbis data.[3]

While the results are robust to a wide range of specifications and controls – including prevalence of non-disclosure agreements and labour market tightness measures – unobserved factors correlated with non-compete prevalence may still play a role. This includes any lingering effects of the COVID-19 pandemic which may still be present in the latest available years of the Orbis sample. Therefore, the findings should be seen as associations and not causal effects. However, the consistency of the results with established mechanisms in the productivity literature and across multiple specifications lends support to the findings.

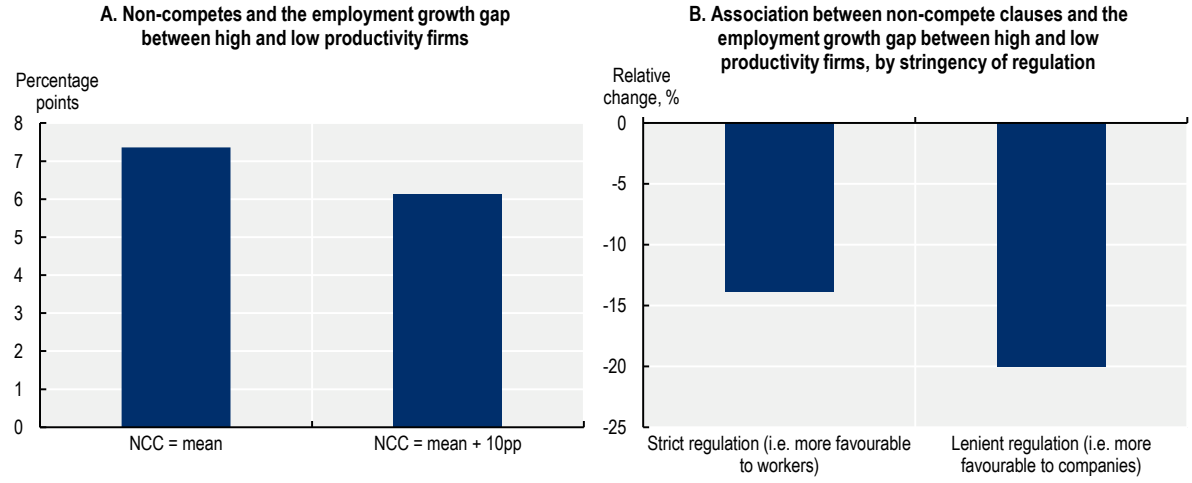
As post-employment restraints are often bundled together, robustness of the results was also tested by controlling for the prevalence of other clauses. However, multiple restraints could have stronger effects than what is revealed when clauses are considered in isolation. Future work could investigate if non-compete and related clauses are more damaging when bundled together.[4]

1. The analysis presented does not aim to estimate the direct association between non-compete prevalence and other drivers of firm productivity growth, including innovation. This is because of data limitations: firstly, the firm-level data does not capture these investments very reliably, and second, analysing the direct relationship between industry x country -level non-compete prevalence and firm productivity growth would be subject to further confounding factors as it would not be possible to include interacted industry x country fixed effects.
2. The non-compete prevalence is de-meaned by deducting the average non-compete incidence in the industry-country-level non-compete data. In most specifications, the industry x country interacted fixed effects absorb the non-compete clause prevalence. However, it is included as an additional control in any specification where it is not fully absorbed by the fixed effects, for both the reallocation and catch-up regressions.
3. As catch-up growth and the process of labour reallocation are dynamic relationships, the estimation would ideally be conducted using a longer time series dimension. However, the OECD-Bocconi non-compete survey provides mainly cross-sectional evidence of non-compete use, which is the reason why the analysis is restricted to only using the most recent years in the Orbis database.
4. The analysis undertaken for the chapter briefly explored whether the negative association between non-compete clauses and productivity is exacerbated when awareness of no poach agreements is higher (and vice versa), via a triple interaction term. The results were inconclusive, possibly because of the imperfect nature of the measurement of no-poach agreement prevalence, which captures awareness rather than incidence.

Productivity-enhancing labour reallocation

Well-functioning economies are characterised by a process of continuous reallocation whereby high productivity firms are more likely to attract workers and grow, and low productivity firms are more likely to contract (and exit). On average, high productivity firms grow faster than less productive firms, consistent with an efficient reallocation process (see Box 5.6). But this relationship is significantly attenuated in industries where non-compete clauses are more widespread (Panel A in Figure 5.19). A 10 p.p. increase in the prevalence of non-compete clauses – this corresponds closely to the share of workers covered by a non-compete clause despite having no access to confidential information (9.5%) – is associated with a reduction of roughly one-sixth in the responsiveness of employment growth to productivity differences. In practical terms, a 10 p.p. increase in non-compete prevalence is associated with a decline in the employment growth gap between high- and low-productivity firms from about 7.4 p.p. to around 6.1 p.p.

Figure 5.19. Non-compete clauses are associated with weaker productivity-enhancing labour reallocation



Note: Panel A: The employment growth gap is the difference in employment growth between firms at one standard deviation below the mean productivity level, compared to firms with a productivity level of one standard deviation above the mean. Panel B: The chart depicts the change in the employment growth gap when the non-compete incidence increases by 10 p.p., relative to the employment growth gap when non-compete incidence is at the average level. Strict regulation refers to countries where the OECD Non-compete regulation index is below the median value, meaning non-compete clauses are less likely to be upheld in courts. Lenient regulation refers to countries where the regulation index is above the median, meaning that non-compete clauses are more likely to be upheld in court.
Source: OECD-Bocconi employer survey on non-compete and related clauses; Orbis firm-level data; Andrews, Garnero and Holttinen (2026[72]), "Non-compete clauses and productivity: New cross-country firm-level evidence", https://doi.org/10.1787/079fcd4f-en.

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Interestingly, while the stringency of the regulation – measured using the index developed in Section 5.2 – does not appear to determine the incidence of non-compete clauses, it seems to shape their economic "bite". For example, there is suggestive evidence that the dampening effect of non-compete prevalence on labour reallocation is stronger in countries where non-compete clauses are more likely to be upheld in court or subject to fewer legal constraints (Panel B in Figure 5.19). In these countries, a 10-p.p. increase in non-compete prevalence is associated with a larger drop in productivity-enhancing reallocation.[33] Nevertheless, the analysis also shows that regulation does not eliminate the negative association altogether. Even in countries with tighter non-compete regulation, higher prevalence is still linked to weaker labour reallocation. This finding is consistent with earlier evidence in the chapter showing that non-compete clauses may affect employee behaviour even when they are unlikely to be upheld in court, due to information frictions and chilling effects.

Additional analysis in Andrews, Garnero and Holttinen (2026[72]) suggests that these effects are much stronger for non-compete clauses in comparison to less restrictive non-disclosure agreements (NDAs). While there is evidence of a negative association between NDAs and efficient labour reallocation, the effect is smaller and less robust to including broader controls (such as an indicator for product market regulation and employment protection legislation). This pattern is consistent with the idea that non-compete clauses, by directly restricting job mobility, are particularly distortive for labour reallocation, whereas more targeted tools such as NDAs have more limited aggregate effects.

Firm-to-firm no-poach agreements (NPAs) also hinder the efficient reallocation process. Box 5.7 illustrates that a higher awareness of no-poach agreements by firms is associated with weaker productivity-enhancing labour reallocation, supporting the position that many competition authorities have taken regarding their harmful effects on labour markets and the economy.

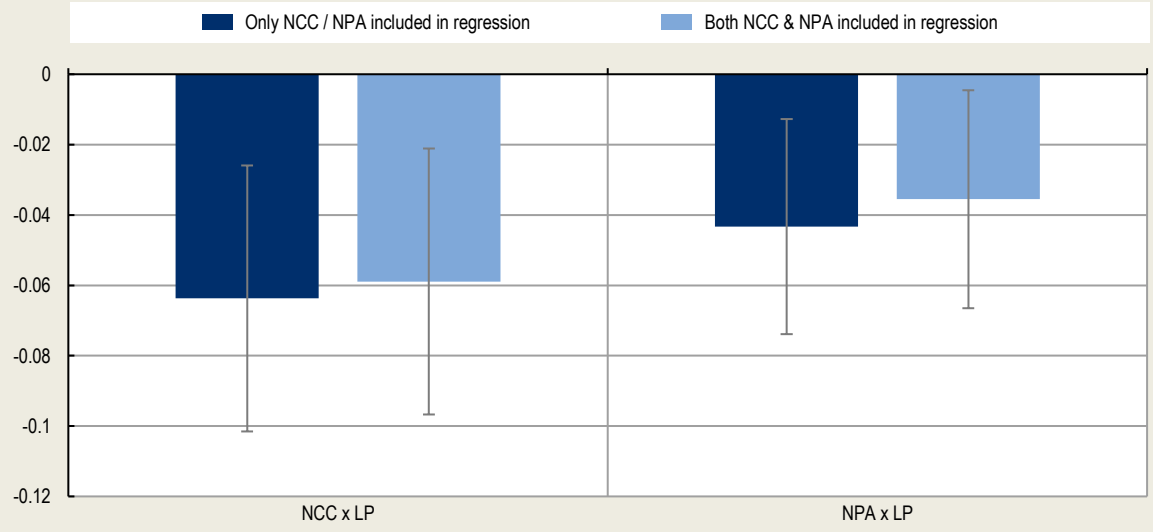
Box 5.7. No-poach agreements and productivity

No-poach agreements may also play a role in slowing down productivity-enhancing labour reallocation. This box replicates the analysis done for non-compete clauses using the share of firms that report being aware of no-poach agreements in their industry, following the specifications described in Box 5.6.

Figure 5.20 presents the regression results. The interaction term between no-poach agreement awareness and lagged labour productivity is negative and significant: no-poach agreements are associated with significantly less productivity-enhancing labour reallocation. When both non-compete clauses and no-poach agreements are included in the same specification (light blue bars), both remain negative and significant, suggesting that these two types of restrictions operate through distinct channels or affect different segments of the labour market.

Figure 5.20. Non-compete clauses, no-poach agreements and labour reallocation

Results from regression analysis



Note: Relationship between employment growth and labour productivity, by industry x country-level prevalence of non-compete clauses and awareness of no-poach agreements. Dependent variable is employment growth at the firm level. The bars show the regression coefficients, 95% confidence intervals are displayed by the error bars. LP denotes the log of firm-level labour productivity (value-added to number of employees), lagged by one period. The non-compete incidence (NCC) is de-meaned by the average non-compete prevalence in the industry-country-level data; hence, NCC=0 corresponds to mean level of non-compete prevalence. NPA is the share of firms that report being aware of no-poach agreements in their industry. All regressions include the following controls: firm employment in year t-1 and firm age; as well as industry x country and year fixed effects. The regressions pool data from 2023-2022 period and 2022-2021 period. Firms with less than 10 employees are excluded in the baseline analysis. Standard errors are clustered at industry x country level.
Source: OECD-Bocconi employer survey on non-compete and related clauses; Orbis firm-level data; Andrews, Garnero and Holttinen (2026[72]), "Non-compete clauses and productivity: New cross-country firm-level evidence", https://doi.org/10.1787/079fcd4f-en.

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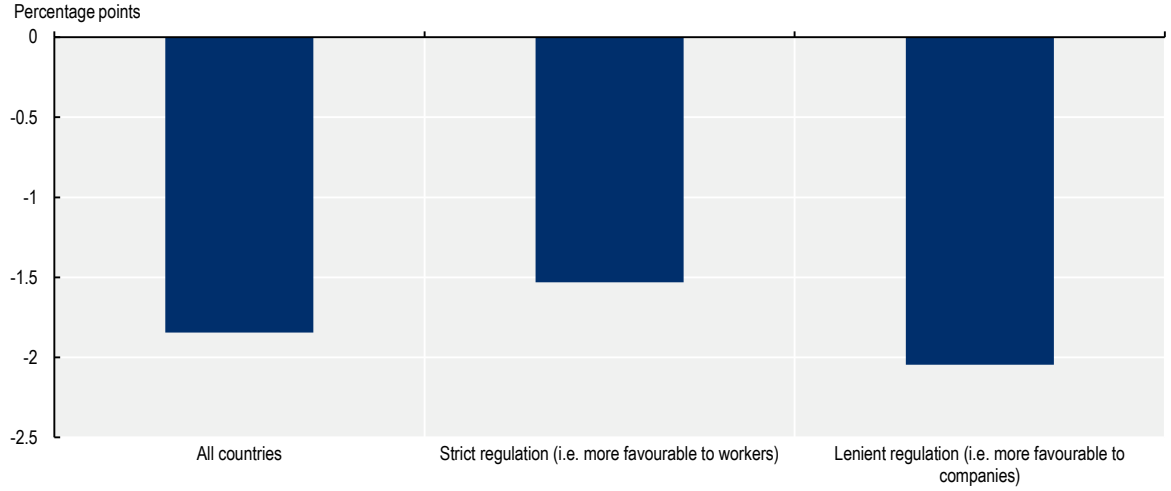
The point estimates for non-compete clauses cannot be directly compared to those for no-poach agreements because the measures have different definitions: the former is the share of workers covered by a non-compete clause, while the latter is the share of firms that are aware of no-poach agreements in their industry. The relative magnitude of the coefficients should therefore not be taken as an indicator of their relative impact on the efficiency of labour allocation.

Catch-up to the productivity frontier

Non-compete clauses can also affect productivity by stifling knowledge diffusion through reduced job mobility. The empirical results in Andrews, Garnero and Holttinen (2026[72]) illustrate the potential for firms further behind the global productivity frontier to experience higher productivity growth, consistent with the larger stock of unexploited technologies that they have at their disposal for adoption. But a higher prevalence of non-compete clauses weakens this scope for catch-up growth, consistent with the idea that widespread use of non-compete clauses can hinder knowledge diffusion. An increase in non-compete prevalence by 10 p.p. is associated with a slowdown of technological convergence by 5%, which implies a decline in firm-level annual labour productivity growth by 1.8 p.p. for firms at the median productivity gap to the frontier, as displayed by the bar on the left in Figure 5.21.

Figure 5.21. Non-compete clauses are associated with slower catch-up growth to the productivity frontier

Fall in firm-level labour productivity growth associated with an increase in non-compete clause incidence by 10 p.p., for the median non-frontier firm



Notes: The bars show the p.p. decline in firm-level labour productivity growth associated with a 10 p.p. increase in the non-compete incidence, at the median productivity gap to the frontier. Labour productivity growth is defined as the difference in the logarithm of labour productivity between the current and the previous year. Gap to the frontier is the difference between the average log labour productivity of the top 5% of firms in each industry and the log labour productivity of the firm. Strict regulation refers to countries where the OECD Non-compete regulation index is below the median value, meaning non-compete clauses are less likely to be upheld in courts. Lenient regulation refers to countries where the regulation index is above the median, meaning that non-compete clauses are more likely to be upheld in courts.
Source: OECD-Bocconi employer survey on non-compete and related clauses; Orbis firm-level data; Andrews, Garnero and Holttinen (2026[72]), "Non-compete clauses and productivity: New cross-country firm-level evidence".

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This mechanism extends beyond technical knowledge to commercial relationships: Patault and Lenoir (2024[15]) show, using matched employer-employee and firm-to-firm trade data for France, that recruiting a sales manager from a competing firm increases the probability of exporting to that firm's buyers by around 32%, and that these transitions are not zero-sum – they expand the total number of buyer-supplier connections rather than merely redistributing them.

As in the reallocation analysis, there is suggestive evidence that the economic "bite" of non-compete clauses seems to be larger in countries where they are more likely to be upheld in courts. The relative fall

in catch-up growth associated with a higher non-compete incidence is almost two-thirds larger in countries with more lenient non-compete regulation, resulting in a fall in labour productivity growth by 2 p.p. for the median non-frontier firm, compared to 1.5 p.p. in countries where non-compete clauses are more stringently regulated (Figure 5.21, middle and right bars). This suggests that regulation shapes the extent to which non-compete clauses translate into real constraints on knowledge diffusion – nevertheless, the negative association between non-compete clauses and catch-up growth persists even in countries with more stringent non-compete regulation. It should be noted that, compared to the reallocation results, the catch-up growth analysis by regulatory framework is less robust to the addition of further institutional controls. The challenge arises partly from the limited number of countries once the sample is split by non-compete regulation. The results should therefore be interpreted with more care.

Additional analysis, presented in Andrews, Garnero and Holttinen (2026[72]), suggests that the impact of NDAs on knowledge diffusion is more limited. Similar to non-compete clauses, a higher NDA prevalence is associated with slower catch-up growth, however, the relationship is weaker and less robust than the link between non-compete clauses and reduced technological convergence. These results reinforce the view that instruments which directly restrict labour mobility are particularly detrimental to knowledge diffusion.

Aggregate labour productivity

So far, the analysis has documented that higher non-compete prevalence is associated with weaker productivity-enhancing labour reallocation and slower technological catch-up among non-frontier firms. Taken together, these findings point to potentially non-trivial implications for aggregate productivity. This section uses the empirical estimates to compute the implied effect of non-compete clauses on aggregate labour productivity, isolating the reallocation and catch-up growth channels.[34,35]

The scenario considered is a 10 p.p. increase in industry-level non-compete incidence.[36] To estimate the aggregate productivity impact, changes in aggregate productivity are decomposed following a well-established approach in the literature (Foster, Haltiwanger and Krizan, 2001[75]), which distinguishes between within-firm productivity growth and productivity gains arising from the reallocation of labour across firms. Further details are available in Andrews, Garnero and Holttinen (2026[72]).

Figure 5.22 illustrates the economically material productivity losses associated with the spread of non-compete clauses. Across the sample of countries, a 10-p.p. increase in non-compete incidence is associated with a 1.9 p.p. decline in aggregate productivity. Most of this effect reflects slower catch-up growth among non-frontier firms (around 1.6 p.p.), while worsening labour allocation across firms contributes a further 0.3 p.p. These results suggest that the productivity costs of non-compete clauses operate primarily through weaker knowledge diffusion and slower convergence, but reduced allocative efficiency also plays a role.[37]

In line with the previous discussion, the aggregate productivity impact of non-compete clauses is more pronounced in countries where they are less regulated or more likely to be upheld in courts. In these countries, the increase in non-compete incidence is associated with a reduction in aggregate productivity of more than 2 p.p. In relative terms, this loss is over one-third larger than in countries with more stringent non-compete regulation, highlighting the role of the regulatory framework in shaping the economic bite of these clauses. Nevertheless, even in countries where regulation already places tighter constraints on non-compete use, the implied productivity costs are material – at 1.5 p.p. – suggesting that further restrictions in the use of non-compete clauses could still yield meaningful efficiency benefits.[38]

Figure 5.22. Aggregate productivity effects of non-compete clauses

p.p. decline in the level of aggregate productivity associated with an increase in non-compete incidence of 10 p.p.



Notes: This figure displays the change in different components of the aggregate productivity index, in p.p., associated with a 10-p.p. increase in the industry-level non-compete incidence. The aggregate productivity decomposition builds on widely used methodology in the productivity literature (Foster, Haltiwanger and Krizan, 2001[75]), more detail is provided in Andrews, Garnero and Holttinen (2026[72]). As these estimates are obtained excluding the data on frontier firms, the productivity of frontier firms is set to remain the same in the baseline and the counterfactual. The total effect is slightly attenuated by the presence of an interaction term between reallocation and within-firm productivity in the decomposition, hence the total effect is not exactly equal to the sum of the reallocation and within-firm components.
Source: OECD employer-survey on non-compete and related clauses; Orbis firm-level data; Andrews, Garnero and Holttinen (2026[72]), "Non-compete clauses and productivity: New cross-country firm-level evidence", https://doi.org/10.1787/079fcd4f-en.

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5.4.3. Productivity – other channels

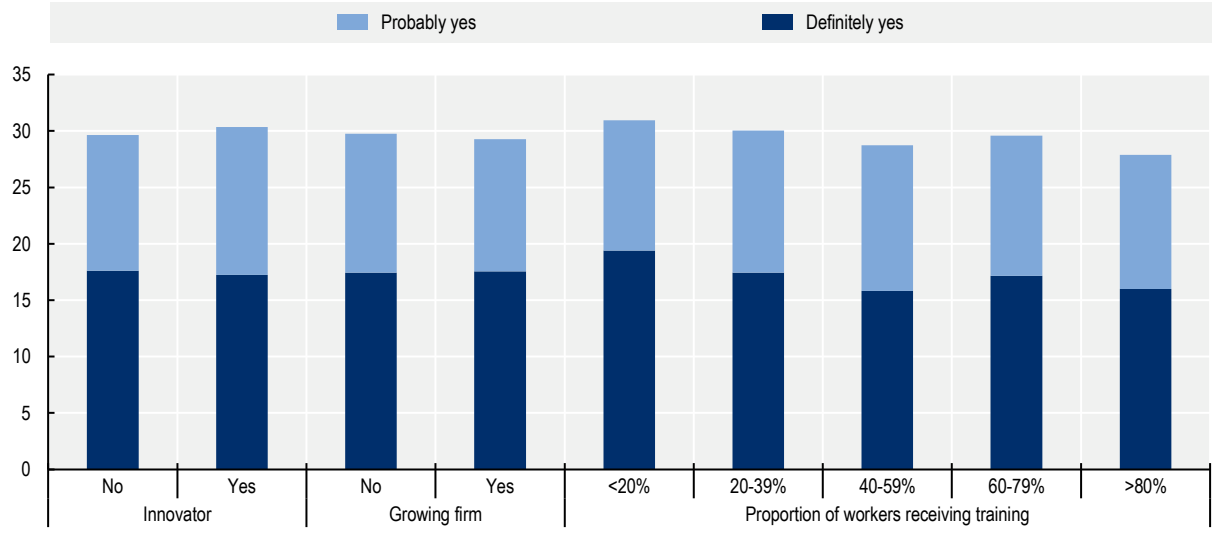
Besides their impact on labour reallocation and knowledge diffusion, non-compete clauses could affect aggregate productivity through other channels. For example, the negative impact on within-firm productivity growth could be attenuated by increased investments in training and other intangible assets, which could boost innovation. But the empirical evidence on this point is mixed. Some studies find that a stronger use of non-compete clauses is associated with higher training intensity, particularly in occupations where such clauses are common (Starr, Prescott and Bishara, 2021[10]; Starr, 2019[76]; Kodama, Kambayashi and Izumi, 2025[51]). But there is little evidence that employees benefit from this training in the form of higher long-term earnings (Starr, 2026[77]). Other work suggests that increased training may partly reflect substitution effects: when firms cannot hire experienced workers because mobility is restricted, they hire less experienced workers and train them instead (Starr, Ganco and Campbell, 2018[78]).

When looking into the responses to the OECD-Bocconi employer survey, no significant differences in the use of non-compete clauses appear across firms based on their past innovation activity, growth or training.[39] Figure 5.23 shows the average incidence of non-compete clauses based on past innovation activity (proxied by the introduction of new products, services or processes to the market in recent years), firm growth (increase in the number of employees over the last couple of years) and the reported share of firm employees that received training in the previous year. The use of non-compete clauses appears similar along these dimensions. In addition, when looking at the extensive margin only, over 40% of firms do not use non-compete clauses on *any* of their employees despite having introduced new products, services or

processes, or training a large share of their workforce. While the data on innovation, training and use of non-compete clauses is purely descriptive, it does not appear to be the case that non-compete clauses are a pre-requisite for such activities, at least not in all companies.[40]

Figure 5.23. Use of non-compete clauses does not appear to vary much by past innovation activity, training and growth

Proportion of employees covered by a non-compete clause, as reported by employers, by firm characteristics



Note: Average firm-level non-compete incidence (workers covered by non-compete clauses), by firm characteristics. Innovator firms are those that have introduced new products, services or processes to the market since 2022. Growing firms are firms that report having increased their number of employees since 2022.Source: OECD-Bocconi employer level survey of non-compete and related clauses.

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If anything, evidence supports the view that a regulatory framework that favours the use of non-compete clauses actually *hinders* aggregate innovation. By restricting mobility, stronger non-compete use is associated with lower entrepreneurship (Marx, 2022[79]; Starr, Balasubramanian and Sakakibara, 2018[59]; Jeffers, 2023[80]), lower aggregate innovation (Samila and Sorenson, 2011[58]), misallocation of inventive talent across firms (Johnson, Lipsitz and Pei, 2023[81]), and adverse effects on consumers (Lipsitz and Tremblay, 2024[14]).[41] Reinmuth and Rockall (forthcoming[82]) provide further evidence for this, finding that making non-compete clauses easier to use significantly reduces innovation – particularly for the most novel patents – by restricting the flow of knowledge between firms. By analysing the trade-off between reduced worker mobility and increased firm investment, Shi (2023[83]) finds that the costs imposed by non-compete clauses are socially excessive and that regulatory approaches close to a full ban would deliver outcomes closest to the social optimum.

From a policy perspective, narrower instruments – such as non-disclosure agreements, non-solicitation clauses and trade secret protections – appear sufficient in many cases. Field experimental evidence shows that while non-compete clauses reduce mobility, they do not reduce unauthorised information sharing beyond what non-disclosure agreements already prevent (Cowgill, Freiberg and Starr, 2024[17]). Consistent with this, Greenwood, Kobayashi and Starr (forthcoming[16]) find that non-compete bans increase mobility while trade secret litigation remains flat in the short run and declines in the long run. Firms do not appear to raise wages following reforms introducing wage threshold suggesting that they do not value the ability to actually activate the clause (Hiraiwa, Lipsitz and Starr, 2024[40]). Surveys of legal practitioners indicate

that alternative tools are generally viewed as adequate (Hiraiwa, Lipsitz and Starr, 2024[40]). Reflecting this assessment, one big tech company announced in 2022 that it would eliminate the use of non-compete clauses for most employees.[42]

5.5. Policy discussion

Countries have taken a number of measures to restrict the use of non-compete clauses over the last decade. The most far-reaching initiative was the proposed federal ban adopted by the Federal Trade Commission (FTC) in the United States in 2024, which was subsequently challenged in court and ultimately abandoned. While the blanket ban has been vacated, the US FTC is still actively targeting anticompetitive non-compete clauses that constitute "unfair methods of competition" under Section 5 of the FTC Act. The current stance is that non-compete clauses will be challenged if they are anticompetitive; such clauses that are overly broad, apply to low-level workers, or are used by a dominant firm to stifle competition will face particular scrutiny. For instance, in September 2025, the FTC filed a major enforcement action against a large pet cremation company, alleging their use of non-compete clauses for nearly all employees (including low-wage workers) was anticompetitive. The same month, the FTC Chairman sent a series of warning letters to major healthcare employers and staffing companies, urging them to review any non-compete clauses or other restrictive employment-related agreements for compliance with the antitrust laws. At subnational level, the state of Minnesota in the United States enacted a near-total ban in 2023 joining California, North Dakota and Oklahoma where non-compete clauses have been banned for over a century. From 30 June 2026, a ban is also in force in the state of Washington.

While outright bans represent one policy extreme, they are far from the only option available. Most OECD countries have instead adopted more tailored approaches, combining restrictions on scope and procedural requirements with safeguards aimed at protecting workers while preserving legitimate business interests – see Andrews et al. (2026[24]) for an overview of OECD countries and Bishara and Luisetto (2025[23]) for an overview of state initiatives in the United States. These approaches can be grouped into six broad categories:

- **Earnings thresholds and income-based exemptions:** An increasing number of jurisdictions include earnings thresholds below which non-compete clauses are banned. For instance, since 2006, and reinforced by another reform in 2015, Austria has banned non-compete clauses for employees with below EUR 4 300 gross monthly earnings (which corresponds, broadly, to the 75th percentile of the wage distribution). Before that, Belgium and Luxembourg introduced similar thresholds in 1978 and 1989. In the United States, 11 states (see Section 5.2) have adopted income-based bans, with thresholds that have been progressively increased over time. In Australia, the Federal Government announced in March 2025 a ban on non-compete clauses for employees earning less than the high-income threshold, currently AUD 183 100 per year, to take effect from 2027.[43] The rationale for earnings thresholds is twofold. Lower-paid employees are less likely to have access to sensitive information, weakening – or even lifting – the justification for restricting their post-employment mobility. At the same time, these employees tend to have less bargaining power and fewer resources to negotiate contractual terms, making them more vulnerable to employer monopsony power.[44]
- **Industry- and occupation-specific carve-outs**: Another approach consists of banning non-compete clauses for specific industries or occupations. In many US states, non-compete clauses are prohibited for physicians, reflecting public policy concerns about patient access to healthcare providers. Similar long-standing bans apply to lawyers in many jurisdictions.[45] While occupation- or contract-based exemptions can be effective in addressing clear misalignments between contractual restrictions and legitimate business needs, they also raise concerns about their overall coherence. Similar arguments regarding worker choice, mobility and public interest could apply

across a wide range of professions, making narrowly defined carve-outs difficult to justify on economic grounds alone. Beyond individual occupations, some jurisdictions have focussed on particular segments of the workforce. In the Netherlands, non-compete clauses were banned for employees on temporary contracts in 2015, following evidence that such clauses were disproportionately used in fixed-term employment relationships. In Canada, the province of Ontario in 2021 has limited the use of non-compete clauses to senior executives (defined as individuals holding "Chief" titles – CEO, CFO, COO, etc. – or the title of President).[46] A similar rule is now being proposed by the Canadian Federal Government for federally regulated sectors such as banking, transport and telecommunications.

- **Compensation and consideration requirements:** Many OECD countries require employers to compensate employees for the duration of a non-compete clause. Some have gone further by introducing minimum compensation rates. In Denmark, for example, compensation must amount to at least 40% of prior remuneration for clauses lasting up to six months and 60% for longer clauses, with stricter rules when multiple clauses apply. Finland introduced similar requirements in 2022. In Norway, the minimum compensation goes up to 100% if the employee does not get re-employed. Minimum requirements exist also in Belgium, Germany, Poland and Sweden. Mandatory compensation internalises part of the cost of restricting mobility, discouraging the use of non-compete clauses when their benefits are limited, while providing income protection to affected employees. However, compensation requirements alone may be insufficient if clauses are poorly specified or there is limited compliance. Evidence from Finland shows that while the reform on compensation requirements seems to have resulted in more targeted use of non-compete clauses, significant challenges remain regarding the limited awareness of non-compete clauses amongst workers (Mahonen and Lyly-Yrjanainen, 2024[84]). Moreover, it cannot address the negative spillovers that non-compete clauses may generate for the workers and firms that are not part of the pact but suffer from reduced labour market fluidity.
- **Duration limits and proportionality:** Setting maximum durations for non-compete clauses is another common policy tool. Several OECD countries have duration limits for non-compete clauses, ranging from six months in Spain to three years in Italy and Switzerland, and Denmark capped maximum duration to one year in its 2016 reform. In the United States, several jurisdictions – including Massachusetts, Oregon and Utah – limit the duration of a non-compete clause to 12 months, while others allow longer durations subject to heightened scrutiny. Duration limits offer clarity and predictability for both parties and help align restrictions with the time horizon over which sensitive information or competitive advantage is likely to remain relevant. In many industries, the value of such information depreciates rapidly, making longer restrictions difficult to justify.
- **Procedural safeguards:** An increasing number of jurisdictions have introduced procedural requirements aimed at improving transparency. These include advance notice obligations,[47] written disclosure requirements and explicit rights to legal consultation. For example, in the United States, Oregon and Colorado require employers to disclose non-compete clauses before employment begins, while Massachusetts mandates that employees be additionally informed of their right to consult legal counsel. Procedural safeguards are aimed at ensuring that non-compete clauses, where used, reflect genuine agreement rather than default inclusion in standard contracts.
- **Validity following termination:** Finally, several countries condition the validity of non-compete clauses on the circumstances under which employment ends. In Belgium, Germany, Portugal[48] and Switzerland, employers are generally prevented from activating non-compete clauses following dismissal without cause. In other jurisdictions, including Sweden, New Zealand and the United Kingdom, courts may take termination circumstances into account when assessing reasonableness. Such rules help prevent non-compete clauses from compounding the economic costs of involuntary job loss.

Policy approaches that focus only on the formal regulatory framework of non-compete and related clauses are unlikely to fully address their economic effects. As discussed in the chapter, even clauses that do not meet legal standards – because they are overly broad, lack compensation, or fail to satisfy procedural requirements – may nonetheless influence employee and firm behaviour. Therefore, enforcement institutions play a critical role. This includes competition authorities, which are responsible for detecting and sanctioning anticompetitive agreements between employers, such as wage-fixing and no-poaching arrangements, that restrict labour market competition independently of contractual non-compete clauses. In fact, for such agreements, the issue is not one of additional regulation but essentially one of detection and enforcement, as such practices are generally illegal per se. Strong involvement of competition authorities, credible sanctions and clear guidance have been central to recent enforcement efforts in this area.

For non-compete and related clauses, enforcement challenges are more diffuse. Labour inspectorates, courts and administrative bodies typically act only when disputes arise, leaving many potentially abusive clauses unchallenged. Moreover, the costs, delays and uncertainty associated with litigation may deter workers from contesting restrictions, further amplifying chilling effects. However, in the United States, Attorney Generals of a number of states have acted in the absence of disputes between private parties, threatening sanctions against companies using overbroad non-compete clauses, forcing companies to abandon their policies (e.g. in the case of *People of the State of Illinois v. Check Into Cash of Illinois, LLC*[49]). Yet, sanctions for excessively broad non-compete clauses are very rare. Spain is the only OECD country which requires employers to pay a fine if a non-compete agreement fails to meet minimum legal requirements.[50] Some US states as well as Ontario in Canada also introduced financial penalties for employers who knowingly use overbroad non-compete clauses[51] and questions emerge as to whether other OECD countries should introduce sanctions into their regulatory mix. Sanctions, if sufficiently severe, can help shifting the cost-benefit calculation away from routine inclusion of overly broad restrictions and foster a stronger compliance with existing regulations.

Beyond more effective legal enforcement, higher transparency and clarity are essential complements. Where legal frameworks are complex, fragmented or poorly communicated, employees may overestimate the strength and scope of contractual clauses. Conversely, clear rules, accessible information and visible enforcement can reduce uncertainty and weaken the deterrent effect of unenforceable clauses. This suggests that policy effectiveness depends not only on the content of regulation, but also on how rules are communicated, interpreted and enforced.[52] Several policy options can help strengthen transparency and reduce behavioural distortions:

- One approach is to require that any non-compete clause be accompanied by a **clear statement of the applicable legal framework**, including the minimum conditions that make a clause valid and the circumstances under which the clause would be void. Such requirements are common in consumer protection law and aim to counteract unfair or misleading contractual practices. By explicitly referencing the law, these measures can both inform workers and encourage employers to ensure higher compliance.
- **Plain-language and salience requirements** can also play a role. Presenting the geographic and temporal scope of non-compete clauses in simple, standardised formats – such as tables or maps – can reduce misunderstandings and prevent inadvertent violations. Such measures help ensure that workers understand not only that a restriction exists, but also its practical implications.
- **Public information and advisory services** provide an additional layer of support. Government-run websites explaining non-compete clauses in accessible language,[53] helplines offering confidential advice, and mediation services[54] can lower barriers to information and dispute resolution. Tools such as the “employment agreement builder”[55] in New Zealand that assists employers in drafting compliant and proportionate contracts can also reduce reliance on boilerplate clauses and minimise unintentional non-compliance.

Employer organisations and trade unions can play an important complementary role by informing and educating their members about the legal framework, promoting good contractual practices, and helping to raise awareness and understanding of workers' rights and employers' obligations in this area. Research evidence from France shows that sectoral collective agreements have been important in shaping how non-compete clauses are used in practice – see Box 5.8.

Box 5.8. Collective bargaining as a tool to regulate non-compete clauses: evidence from France

France is, alongside Sweden, one of the few OECD countries where collective bargaining actively regulates non-compete clauses. Drawing on a dataset covering nearly a thousand sectoral collective bargaining agreements, Boeri et al. (forthcoming[85]) examine how social partners limit non-compete clause use and firms' monopsony power.

Using a staggered difference-in-differences approach on firm-level data from the French manufacturing sector (1996-2023), the study finds that sectors covered by a collective agreement that goes beyond national case law in regulating non-compete clauses (e.g. by setting a minimum compensation, duration caps, or geographic scope) experience a reduction in firm-level markdowns (the ratio of the marginal revenue product of labour to the wage, a standard measure of monopsony power) of 1.3%-2.2%. This effect strengthens over time, reaching 7-10%, equivalent to an annual wage gain of EUR 1 305-1 860. Effects are concentrated in smaller, lower-productivity, lower-wage firms, where workers are most exposed to non-compete misuse.

A complementary analysis exploits a 2002 ruling by the French Court of Cassation, which made financial compensation a universal condition for enforceability. The evidence shows that this national-level reform led to a significant reduction in monopsony power only in sectors where collective agreements already regulated non-compete clauses to some degree. In sectors with no prior regulation, the court ruling had no measurable effect. This finding points to a complementarity between statutory or judge-made regulation at the national level and sectoral collective bargaining: social partners both set rules and support enforcement, without which national reforms may remain ineffective.

5.6. Concluding remarks

This chapter has documented substantial cross-country variation in the scope, stringency and enforcement of regulatory frameworks governing non-compete clauses. The empirical analysis finds some suggestive evidence that existing regulatory frameworks can partly mitigate the adverse effects of non-compete clauses on job mobility, allocative efficiency and productivity. However, regulation alone is unlikely to eliminate these effects. Even in countries with relatively strict legal requirements, non-compete clauses remain prevalent, and their economic impact often depends less on formal regulation than on how clauses are perceived, communicated and used in practice. This underscores both the importance and the limits of regulation as currently designed.

Effective policy on non-compete clauses cannot rely solely on defining when such clauses are allowed. It must also account for how workers and firms interpret, respond to and act upon contractual restrictions in practice. Improving transparency, reducing uncertainty and strengthening enforcement are key to ensuring that regulation translates into meaningful protection for workers and into more dynamic, competitive and productive labour markets. In parallel, competition policy can play a complementary role by addressing anticompetitive agreements between employers, which can suppress wages and job mobility independently of contractual clauses. Effective detection and enforcement of such practices help preserve

competitive labour market conditions and reinforce the effectiveness of regulatory frameworks governing non-compete and related clauses.

Finally, any initiative to better regulate non-compete clauses should be considered in the broader context of post-employment clauses. Non-compete clauses do not operate in isolation. Firms may respond to tighter regulation by relying more heavily on alternative tools, such as non-solicitation clauses or training repayment agreements, potentially reproducing similar chilling effects on mobility. Experiences in countries such as Austria and Denmark, which have reformed multiple types of post-employment clauses in parallel, highlight the importance of addressing the broader contractual ecosystem to avoid regulatory substitution.

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Annex 5.A. Survey specifications

Employee-level survey

Survey design and target population

The target population consists of private-sector employees aged 18 to 64 who were in paid employment at the time of the survey. The following groups were excluded through screening questions: self-employed workers and independent contractors; public-sector and non-profit employees; unemployed individuals, students and retirees. This definition ensures that respondents are subject to private employment contracts and potentially exposed to non-compete clauses and related restrictions.

The survey was implemented by Ipsos NV in 14 OECD countries: Belgium, Canada, France, Germany, Japan, Korea, Mexico, New Zealand, Poland, Portugal, Spain, Sweden, Switzerland and the United Kingdom. A common core questionnaire and methodological framework were applied in all countries, with limited country-specific adaptations where required by national legal contexts.

Data were collected using Computer-Assisted Web Interviewing (CAWI). Respondents were recruited from Ipsos' proprietary online panels and selected partner panels. The sample comprised two components: (i) a general population sample of private-sector employees used to estimate the prevalence of non-compete clauses; and (ii) a boost sample of employees reporting a non-compete clause in their current job, designed to ensure sufficient observations for detailed analysis of clause content, use and perceived effects.

Questionnaire design

The questionnaire was developed jointly by the OECD, Bocconi University and Ipsos, drawing on previous employee-level surveys on non-compete clauses (Starr, Prescott and Bishara, 2021[10]; Andrews and Jarvis, 2023[26]; Boeri, Garnero and Luisetto, 2025[28]) and adapting them for cross-country use.

The final questionnaire includes modules covering: survey introduction and consent; socio-demographic characteristics; information on the current job and employer; features of the employment relationship; presence and content of non-compete and related clauses; circumstances under which clauses were agreed; and experiences with non-compete clauses over the career.

The final English master questionnaire was translated by professional translators into French, Dutch, German, Japanese, Korean, Polish, Portuguese, Spanish and Swedish, and all translations were proofread by local native speakers as well as by native speakers at the OECD.

A pilot survey was conducted prior to main fieldwork. Following the pilot, only minor adjustments were introduced, primarily to improve clarity and reduce item non-response (including converting selected open-ended questions into closed-ended formats and clarifying country-specific legal references).

Sampling, recruitment and panel management

The survey relies on non-probability online access panels. Respondents were selected using a combination of random allocation and targeted recruitment within pre-defined quotas. Sampling was conducted consistently across countries using Ipsos' standard procedures.

Ipsos panels consist of individuals who have voluntarily agreed to participate in survey research and are recruited through multiple high-quality sources (including online advertising, co-registration, social media

and search engine marketing). A double opt-in process is used for all panellists, requiring explicit confirmation of participation at registration. Panel members are regularly profiled to allow efficient targeting by socio-demographic and employment characteristics. Respondents receive incentive points for participation, with rewards calibrated to survey length and complexity.

All respondents provided informed consent prior to participation. Data were processed in accordance with applicable data-protection regulations, including the GDPR. Personal identifiers were never shared with the research team, and all datasets delivered were anonymised or pseudonymised.

Ipsos applies extensive quality assurance procedures to ensure that respondents are real, unique and engaged. These include geo-IP validation, duplicate device detection, proxy detection and monitoring of response patterns. Panel usage rules are applied to limit respondent burden and avoid conditioning effects, including rest periods between surveys, category exclusions for recently surveyed topics, and exclusion of respondents who participated in the pilot survey from the main fieldwork.

Quotas and sample control

Country-specific quotas were applied to approximate the structure of the employee population. Hard quotas were enforced for sex, age group and region, ensuring alignment with official employment statistics. Soft quotas were monitored for education level (based on ISCED groupings) and industry sector (grouped NACE categories). Quotas were defined separately by country using the most recent available national or international labour force statistics. While best efforts were made to achieve all quota targets during fieldwork, some deviations – particularly for lower-educated groups – remained and were addressed through post-stratification weighting.

Pilot survey

A pilot survey was conducted between 30 June and 4 July 2025, with approximately 20 interviews per participating country. The pilot tested questionnaire flow, survey length and data-quality procedures. It confirmed overall questionnaire suitability but identified challenges in reaching younger and lower-educated respondents and highlighted the need for stricter minimum duration thresholds, which were subsequently implemented.

Main fieldwork

Main fieldwork took place between 28 July and mid-September 2025. After data-quality checks, a total of 31 762 completed interviews were retained across the ten countries.

Annex Table 5.A.1. Fieldwork period and completes by country – employee survey

Country	Achieved completes	Fieldwork dates
Belgium	2 321	28 July – 12 September 2025
Canada	2 165	28 July – 2 September 2025
France	2 184	28 July – 5 September 2025
Germany	2 300	28 July – 15 September 2025
Japan	2 096	28 July – 27 August 2025
Korea	2 016	28 July – 4 September 2025
Mexico	2 258	28 July – 4 September 2025
New Zealand	2 240	28 July – 12 September 2025
Poland	2 474	28 July – 11 September 2025
Portugal	2 441	28 July – 14 September 2025
Spain	2 441	28 July – 8 September 2025
Switzerland	2 146	28 July – 8 September 2025
Sweden	2 289	28 July – 12 September 2025
United Kingdom	2 391	28 July – 11 September 2025

Median completion times were consistent with the planned interview length and varied depending on whether respondents reported a non-compete clause.

Annex Table 5.A.2. Median survey duration

Minutes

Country	With non-compete				Without non-compete			
	Min	Mean	Median	Max	Min	Mean	Median	Max
Belgium	4.00	11.85	8.77	171.68	3.00	10.20	6.33	507.58
Canada	4.00	15.41	9.53	573.87	3.00	14.16	7.35	1 479.67
France	4.00	12.00	7.83	354.48	3.00	10.43	6.15	1 387.38
Germany	4.00	12.86	8.38	503.58	3.00	10.29	6.23	1021.67
Japan	4.00	11.53	7.68	950.98	3.02	7.88	6.05	228.15
Korea	4.00	12.06	8.87	231.17	3.00	9.25	6.33	184.38
Mexico	4.02	18.50	11.18	850.53	3.07	12.18	8.07	903.47
New Zealand	4.03	15.31	10.08	449.37	3.03	11.69	7.60	1 276.27
Poland	4.03	13.81	8.05	669.43	3.02	11.54	6.50	925.25
Portugal	4.00	13.18	9.35	512.07	3.05	11.06	6.97	725.77
Spain	4.00	13.36	8.03	1044.03	3.00	10.54	6.30	1 257.03
Sweden	4.00	13.39	8.88	266.57	3.00	11.88	6.45	1 508.47
Switzerland	4.02	18.91	11.48	831.05	3.02	12.58	6.83	1 396.93
United Kingdom	4.00	15.65	9.28	729.00	3.00	10.73	6.18	620.15

Because quota sampling and survey routers were used, conventional response rates cannot be computed. Indicative response rates, defined as the ratio of completed interviews to all survey terminations (including screen-outs, drop-outs and over-quota cases), are reported below.

Annex Table 5.A.3. Indicative response rates

Country	Response rate
Belgium	14%
Canada	18%
France	14%
Germany	16%
Japan	29%
Korea	25%
Mexico	9%
New Zealand	23%
Poland	19%
Portugal	14%
Spain	17%
Sweden	19%
Switzerland	25%
United Kingdom	25%

Note: Response rates are calculated as the total number of completes (ahead of quality checks), divided by the number of completed interviews + respondents that were screened out (i.e. refusing to accept the survey conditions, or below the age of 18 or above the age of 64, or refusing to answer the region question or the employment status question or the current employer question or the sector question, or working in certain sectors, or not being employed, or working for the non-profit or public sectors) + over-quota (i.e. terminated because the quotas in place were full) + respondents that dropped out (i.e. respondents who started the survey but did not complete all questions, i.e. partially completed questionnaires).

Partial interviews and break-offs were more frequent among respondents aged 25-54, women, higher-educated respondents, and employees in service-sector industries. Missing information limits precise inference, but these patterns are consistent with known non-response dynamics in online surveys.

Multiple data-quality checks were applied, including detection of speeding, straight-lining and high item non-response. Minimum duration thresholds (3 minutes for respondents without a non-compete clause and 4 minutes for those with a clause) were enforced. Interviews failing quality criteria were removed prior to analysis. The share of interviews excluded for low quality ranged between approximately 5% and 13% across countries.

Weighting and representativeness

Post-stratification weights were computed separately for each country using raking procedures. Weighting variables included sex, age group, region, education level and industry sector. Weight trimming was applied where necessary to preserve weighting efficiency.

Annex Table 5.A.4. Weighting efficiency

Country	Main sample	Boost
Belgium	92%	94%
Canada	80%	82%
France	88%	84%
Germany	91%	88%
Japan	87%	87%
Korea	73%	75%
Mexico	50%	49%
New Zealand	82%	81%
Poland	92%	69%
Portugal	66%	69%
Spain	62%	58%
Sweden	85%	87%
Switzerland	85%	84%
United Kingdom	85%	78%

Note: Weighting efficiency measures the extent to which variation in survey weights – typically arising from raking to population margins – reduces the effective sample size and increases the variance of survey estimates relative to an unweighted sample.

Lower efficiency in Mexico reflects persistent under-representation of lower-educated respondents, which weighting could not fully correct.

Employer-level survey

Survey design and target population

The target population consists of for-profit firms with five or more employees operating in the private sector. Firms with fewer than five employees were excluded, as were non-profit organisations. The survey also excluded firms operating primarily in public administration and defence, education, health and social work activities, activities of households as employers, and extraterritorial organisations. Within each eligible firm, the target respondent was the person responsible for, or with in-depth knowledge of, employment contracts, personnel retention and hiring practices (typically owner-managers, CEOs, senior managers or HR managers).

The employer-level survey was implemented in 15 OECD countries: Belgium, Canada, France, Germany, Italy, Japan, Korea, Mexico, New Zealand, Poland, Portugal, Spain, Sweden, Switzerland and the United Kingdom. A common core questionnaire and methodological framework were applied in all countries, with limited country-specific adaptations where required by national legal contexts.

Data were collected using Computer-Assisted Telephone Interviewing (CATI) using probabilistic sampling frames. All respondents provided informed consent prior to participation. Data were processed in compliance with applicable data-protection regulations, including the GDPR. Personal identifiers were separated from survey responses, and only anonymised or pseudonymised datasets were shared with the OECD.

Questionnaire design

The master questionnaire was developed jointly by the OECD, Bocconi University and Ipsos. It drew inspiration from a prior statistical survey on non-compete clauses conducted in Australia (ABS, 2024[86]) and was adapted for cross-country use and CATI administration. The adaptation included detailed

interviewer instructions, definitions of contractual clauses and probing guidance to ensure consistent interpretation across countries.

The questionnaire comprises the following main sections:

- survey introduction and screening;
- firm characteristics (sector, size, business environment);
- use of non-compete clauses and related contractual provisions;
- coverage of clauses across employees and employee types;
- enforcement practices and perceived effectiveness;
- industry-wide practices and awareness of anti-competitive labour market agreements.

The final English master questionnaire was translated by professional translators into Dutch, French, German, Italian, Japanese, Korean, Polish, Portuguese, Spanish and Swedish, and all translations were proofread by local native speakers as well as by native speakers at the OECD.

A pilot survey was conducted prior to main fieldwork. Following the pilot, only a minor clarification was introduced to the definition of non-compete clauses. No additional questions were added during main fieldwork.

Sampling methodology

The survey universe includes all eligible for-profit firms with five or more employees operating in the following grouped NACE sectors:

- Agriculture, manufacturing and mining (A, B, C);
- Construction, engineering, waste collection and treatment (D, E, F);
- Trade, transport, accommodation, food, arts and entertainment (G, H, I, R);
- Information and communication, financial and insurance activities, real estate, professional and administrative services, and other services (J, K, L, M, N, S).

Sampling frames were sourced primarily from Dun & Bradstreet business registers, complemented by Orbis data in Portugal, Sweden, Switzerland and the United Kingdom to improve coverage of larger firms. These registers provide recent, high-coverage information on firm size, sector and contact details.

A stratified random sampling design was employed. Firms were stratified by:

- company size (5-9, 10-49, 50-249, and 250+ employees);
- industry sector (four grouped NACE categories).

This resulted in 16 stratification cells per country. A minimum of 400 completed interviews per country was targeted. Sampling was implemented disproportionately across size classes to ensure adequate representation of larger firms, which employ a substantial share of employees but are relatively few in number. To better reflect the distribution of employees across firms, a hybrid allocation strategy was adopted, combining employee-proportional and firm-proportional approaches. The balance between these approaches varied by country, reflecting differences in sample availability and firm-size distributions. In particular, a 75% employee-proportional design in Belgium, Canada, France, Germany, Italy, Japan, Korea, Mexico, Poland, Spain and the United Kingdom, while, due to a lack of enough observations for large firms, a 33% employee-proportional design was used in Portugal, a 20% employee-proportional design in Switzerland, an 18% employee-proportional design in New Zealand and a 15% employee-proportional design in Sweden, with the remainder being firm-proportional.

Eligible respondents were identified through screening questions and, where necessary, interviewers requested referral to a more appropriate colleague within the firm. A structured contact protocol was applied:

- at least five contact attempts per telephone number;
- contact attempts spread over different days and times during business hours;
- a minimum fieldwork window of 14 days before classifying a case as non-contact;
- appointments scheduled at respondents' convenience.

This protocol was designed to maximise the likelihood of reaching senior decision makers, particularly in larger firms.

Pilot survey

A pilot survey was conducted in June – July 2025, with approximately 10-11 interviews per country. The pilot tested questionnaire comprehension, interview length, and fieldwork procedures. Median interview durations exceeded initial expectations, particularly for firms using non-compete clauses. Pilot feedback informed interviewer guidance and a minor clarification of the non-compete definition but did not lead to substantive questionnaire changes.

Main fieldwork

Main fieldwork was conducted between June and September 2025. In total, more than 6 112 employer interviews were completed across the OECD and Bocconi country groups.

Annex Table 5.A.5. Fieldwork period and completes by country – employer survey

Country	Fieldwork start	Fieldwork end	Number of interviews
Belgium	30-Jun-25	12-Sep-25	410
Canada	24-Jun-25	05-Sep-25	411
France	24-Jun-25	04-Sep-25	406
Germany	24-Jun-25	05-Sep-25	408
Italy	30-Jun-25	12-Sep-25	403
Japan	24-Jun-25	05-Sep-25	413
Korea	24-Jun-25	05-Sep-25	409
Mexico	24-Jun-25	04-Sep-25	406
New Zealand	24-Jun-25	04-Sep-25	406
Poland	30-Jun-25	12-Sep-25	403
Portugal	30-Jun-25	12-Sep-25	406
Spain	24-Jun-25	04-Sep-25	405
Sweden	30-Jun-25	16-Sep-25	408
Switzerland	24-Jun-25	05-Sep-25	409
United Kingdom	23-Jul-25	05-Sep-25	409

Dedicated interviewer teams were used in each country, ranging from 8 to 9 interviewers. All interviewers received project-specific training, including detailed briefings on survey objectives, key concepts, interviewer instructions and quality control requirements. Supervisors monitored fieldwork continuously.

Survey duration differed systematically between firms using non-compete clauses and those not using them, reflecting the routing structure of the questionnaire.

Annex Table 5.A.6. Survey duration in minutes by country

Minutes

	Non-compete clause user				Non-user			
	Mean	Median	Min	Max	Mean	Median	Min	Max
Belgium	17.92	17.81	13.95	22.28	15.21	15.03	12.12	18.23
Canada	19.00	18.97	15.02	25.62	16.72	16.52	13.73	21.13
France	17.17	17.13	13.90	20.73	14.57	14.38	12.05	18.60
Germany	17.99	17.77	14.50	27.97	14.94	15.00	12.13	19.13
Italy	16.22	15.93	12.85	25.10	13.64	13.28	11.03	40.92
Japan	17.34	17.40	13.95	22.37	15.04	15.05	12.58	17.65
Korea	17.58	17.52	14.33	22.48	15.26	15.22	12.43	19.07
Mexico	16.47	16.38	13.93	21.78	14.05	14.13	11.27	17.97
New Zealand	16.14	16.07	13.47	20.65	13.59	13.62	11.20	15.95
Poland	17.11	16.92	14.10	21.62	14.35	14.28	11.67	21.02
Portugal	17.22	17.06	13.63	20.73	14.6	14.39	11.67	23.65
Spain	16.70	16.62	13.82	20.82	14.08	13.95	11.73	17.83
Switzerland	17.80	17.73	14.80	22.30	14.96	14.76	12.03	19.20
Sweden	17.24	17.2	14.1	21.88	14.54	14.42	11.55	20.78
United Kingdom	16.49	16.39	13.6	20.73	14.11	13.92	11.5	17.55

Durations were broadly similar across countries and consistent with expectations for CATI business surveys covering complex contractual practices.

Across both the OECD and Bocconi country groups, a large number of call attempts were required to reach eligible respondents, reflecting the seniority of the target respondents and the nature of CATI business surveys.

Eligibility rates (i.e. percentage of contacted respondents who met the criteria to participate in the survey) generally ranged between 70% and 85% once contact was established. Combined refusal rates (proportion of contacted individuals or companies who declined to participate in the survey, including immediate refusals and refusals by confirmed eligible respondents) typically ranged between 15% and 20% across countries. The resulting response rate (i.e. number of completed interviews divided by the number of completed and partial interviews (i.e. drop-outs) plus the number of non-interviews (refusals, non-contacts, and cases of unknown eligibility) was low – around 2-3% – but consistent with international experience for telephone-based employer surveys.[56] Analysis of partial interviews and break-offs indicates that non-response was more frequent among:

- firms in manufacturing, construction and engineering sectors;
- smaller firms (5-49 employees);
- firms where the appropriate respondent could not be easily identified or reached.

As is common in CATI business surveys, information on non-respondents is limited, and results should be interpreted with this limitation in mind.

Multiple quality checks were implemented, including detection of speeding, straight-lining and high item non-response. Interviews were flagged as low quality if multiple criteria were breached. Only two interviews were removed for low quality across all countries.

Item non-response remained below 10% for all questions, indicating good respondent engagement despite the technical nature of the questionnaire.

Weighting and representativeness

Post-stratification weights were calculated separately for each country, using the same sector-by-size stratification cells employed in the sampling design. Weights were constructed to align the achieved samples with the distribution of employees across firms, rather than the distribution of firms alone, reflecting the analytical focus on the number of employees covered by contractual provisions.

Official business statistics were used as reference sources, including Eurostat Structural Business Statistics and Business Demography, with country-specific adjustments where necessary to match survey size-class definitions.

In the context of this employer survey, weighting efficiency should be interpreted with caution and is not used as a primary measure of data quality. Post-stratification weights were calculated using a single target distribution based on the crossed sector-by-company-size structure, without iterative raking across multiple dimensions. Moreover, the survey deliberately employed a disproportionate sampling design to adequately represent larger firms, which account for a large share of employment but a small share of firms. Consequently, the presence of relatively large or small weights – and lower efficiency scores in some countries – is an expected outcome of the design and reflects differences in sample availability and alignment with employee-proportional targets, rather than deficiencies in the underlying data.

Annex Table 5.A.7. Efficiency of weighting

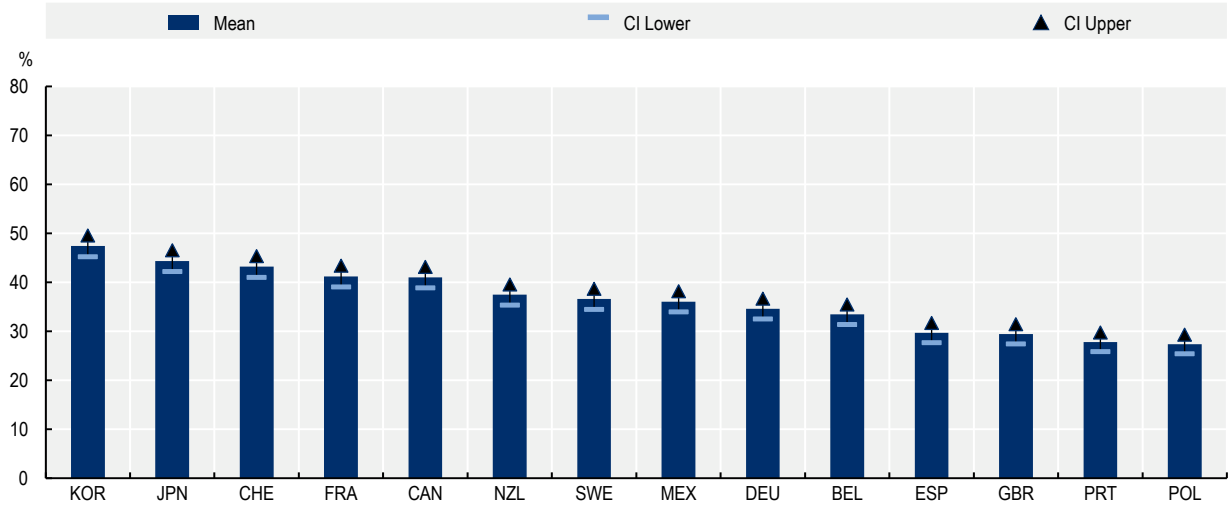
Country	Efficiency
Belgium	86%
Canada	91%
France	88%
Germany	89%
Italy	92%
Japan	93%
Korea	93%
Mexico	89%
New Zealand	45%
Portugal	90%
Poland	65%
Spain	91%
Sweden	65%
Switzerland	44%
United Kingdom	89%

Note: Weighting efficiency measures the extent to which variation in survey weights – typically arising from raking to population margins – reduces the effective sample size and increases the variance of survey estimates relative to an unweighted sample.

Annex 5.B. Additional figures and tables

Annex Figure 5.B.1. Prevalence of non-compete clauses

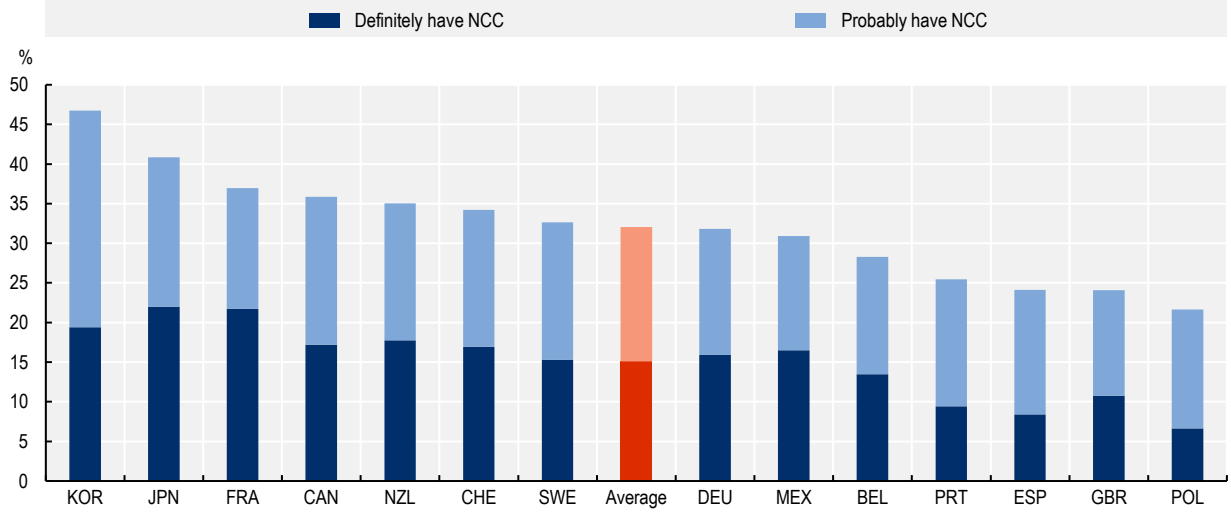
Share of employees bound by non-compete clauses as reported by employees and 95% confidence intervals (CI)



Source: OECD-Bocconi employee-level survey.

StatLink https://stat.link/4o6mbs

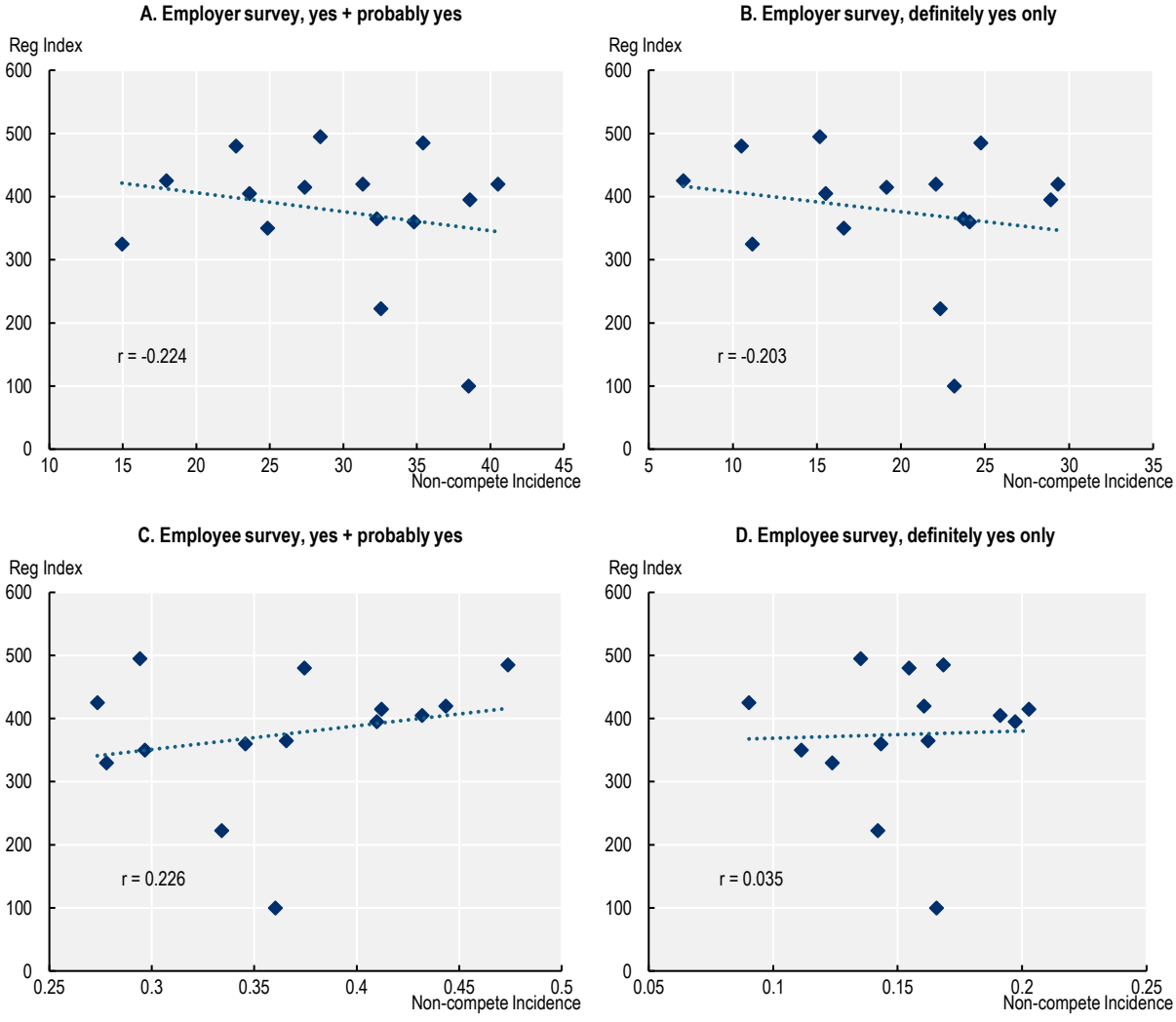
Annex Figure 5.B.2. Incidence of non-compete clauses among employees who started their job after 2023



Source: OECD-Bocconi employee survey on non-compete and related clauses.

StatLink https://stat.link/sk7ipm

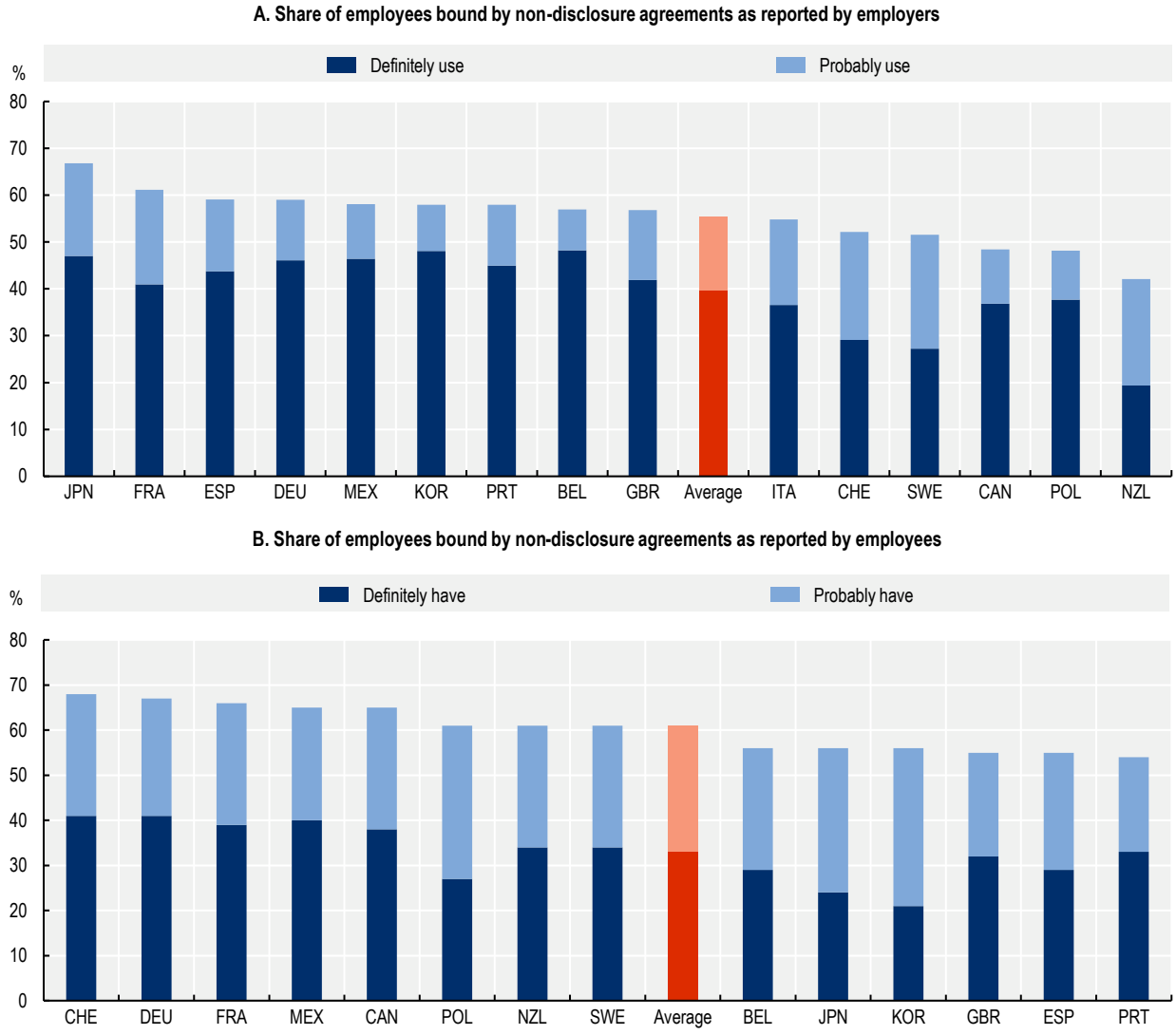
Annex Figure 5.B.3. Correlation between the prevalence of non-compete clauses and the OECD index of non-compete regulation



Note: None of the correlations is statistically significant at conventional levels.
Source: OECD-Bocconi employee and employer surveys and Andrews et al. (2026[24]), "The regulation of non-compete clauses across OECD countries", https://doi.org/10.1787/88e3eb6e-en.

StatLink https://stat.link/lz8v2r

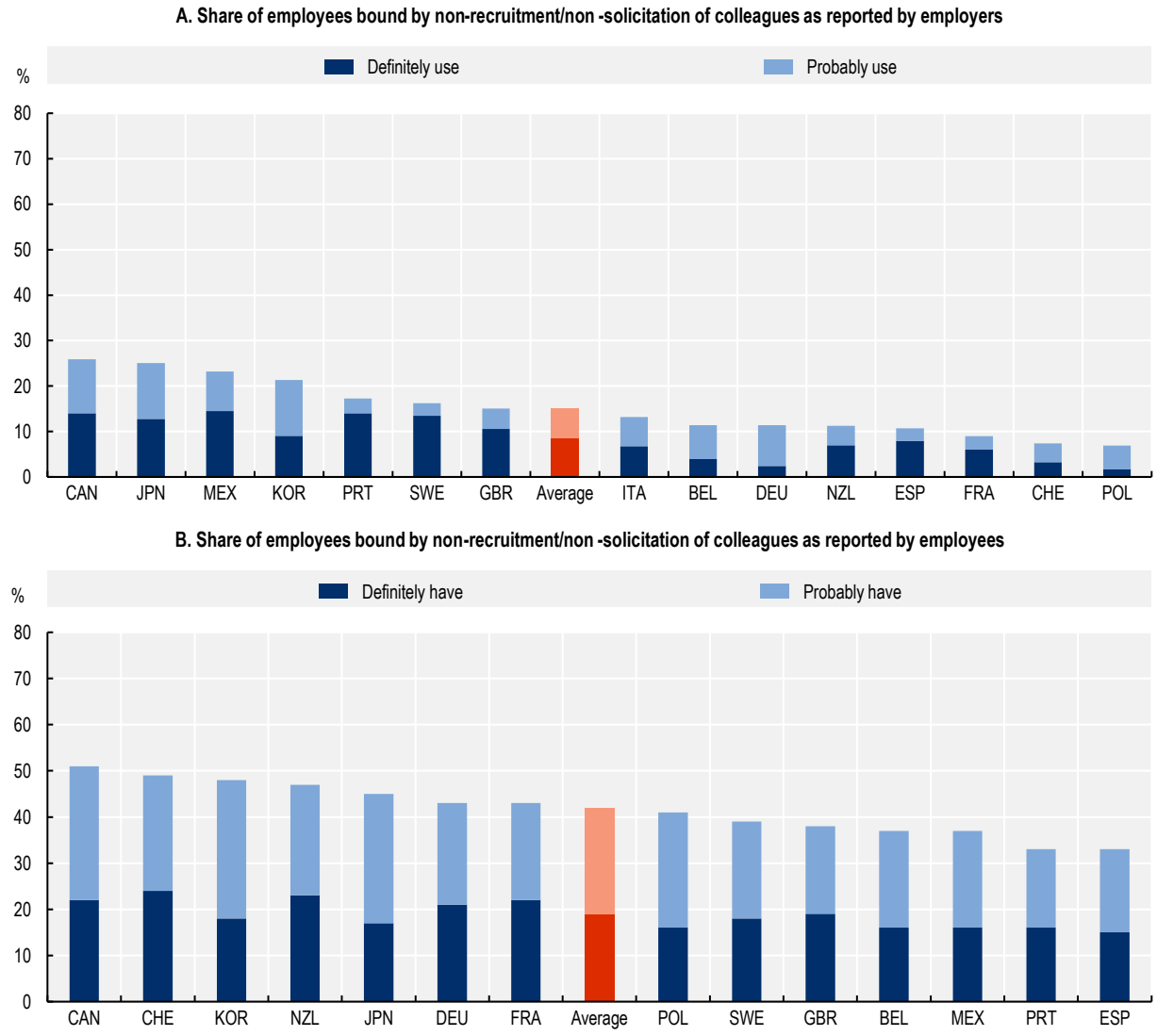
Annex Figure 5.B.4. Incidence of non-disclosure agreements



Source: Panel A: OECD employer survey on non-compete and related clauses. Panel B: OECD employee survey on non-compete and related clauses.

StatLink https://stat.link/dq7wfj

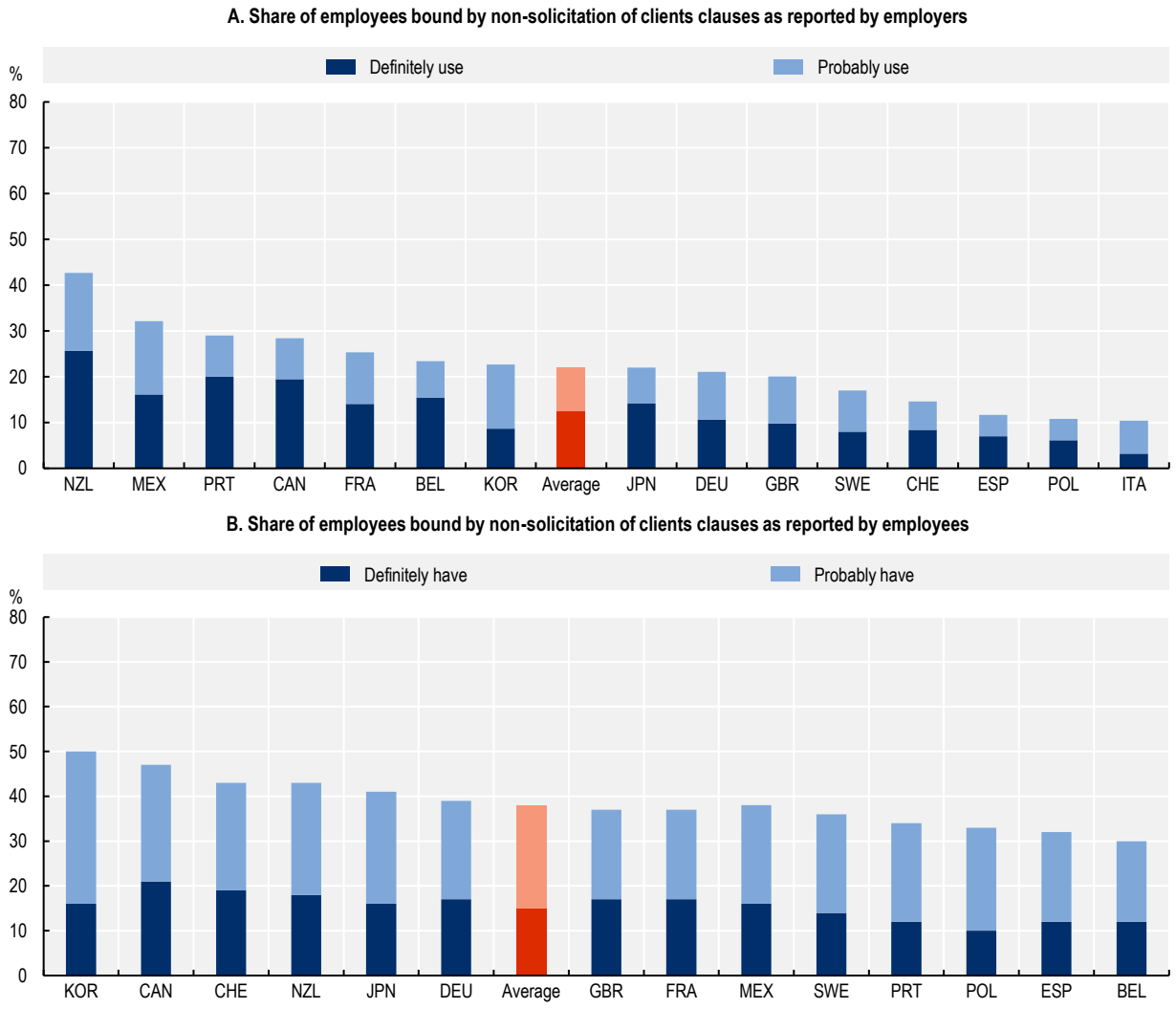
Annex Figure 5.B.5. Incidence of non-recruitment/non-solicitation of colleagues clauses



Source: Panel A: OECD-Bocconi employer survey on non-compete and related clauses. Panel B: OECD-Bocconi employee survey on non-compete and related clauses.

StatLink https://stat.link/75uikt

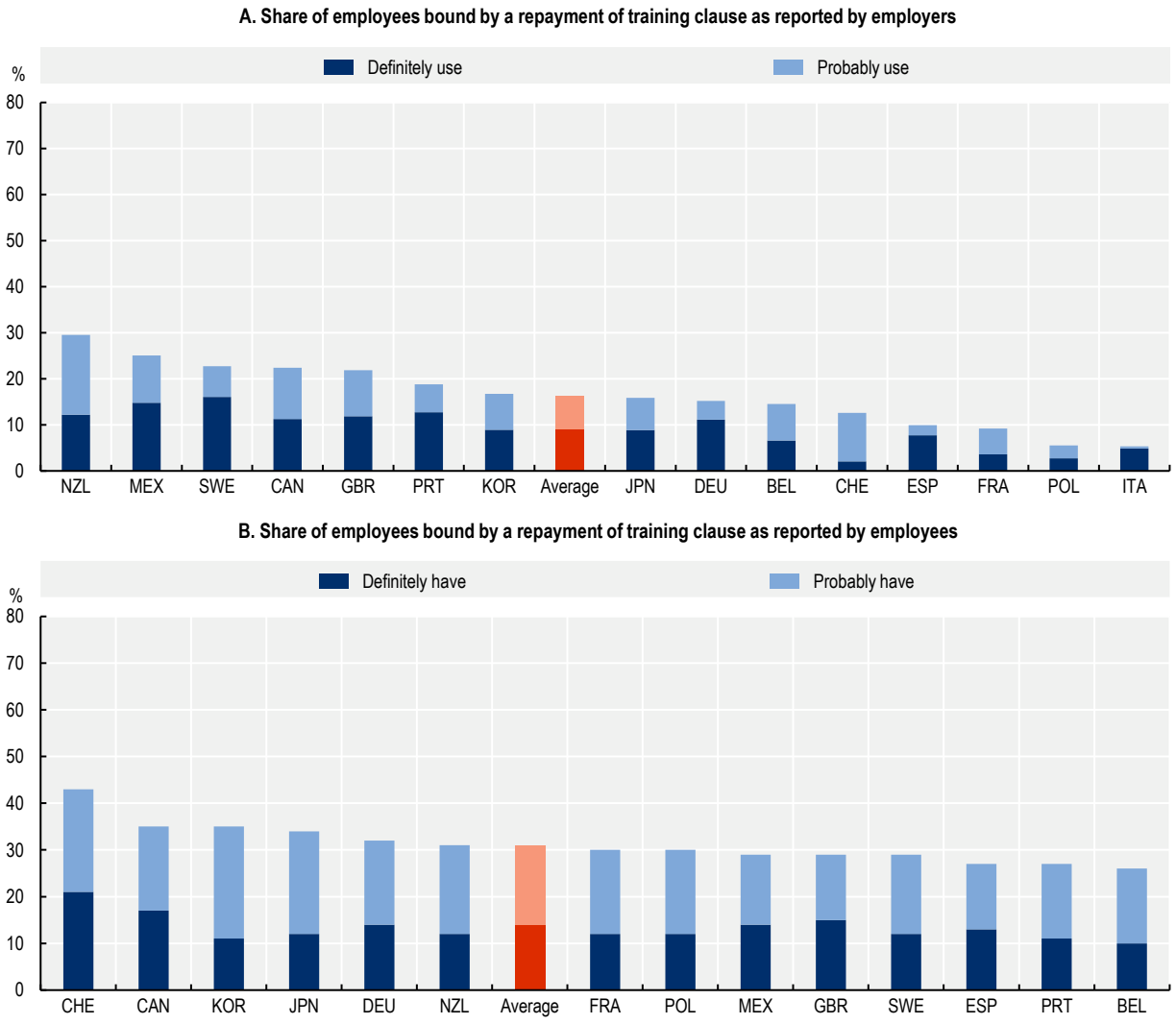
Annex Figure 5.B.6. Incidence of non-solicitation of clients clauses



Source: Panel A: OECD-Bocconi employer survey on non-compete and related clauses. Panel B: OECD-Bocconi employee survey on non-compete and related clauses.

StatLink https://stat.link/pq9jba

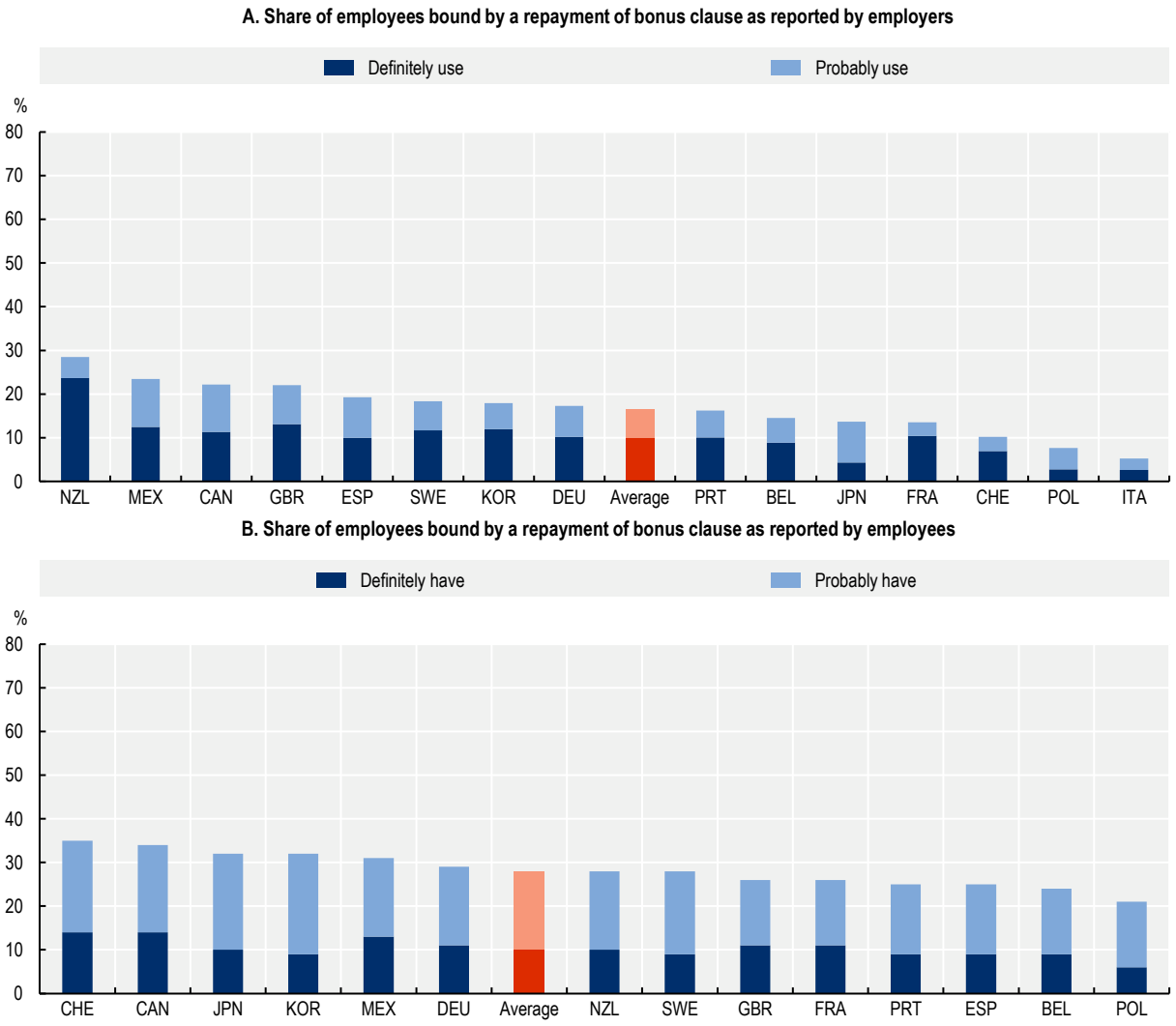
Annex Figure 5.B.7. Incidence of repayment of training clauses



Source: Panel A: OECD-Bocconi employer survey on non-compete and related clauses. Panel B: OECD-Bocconi employee survey on non-compete and related clauses.

StatLink https://stat.link/zao0pl

Annex Figure 5.B.8. Incidence of repayment of bonus clauses

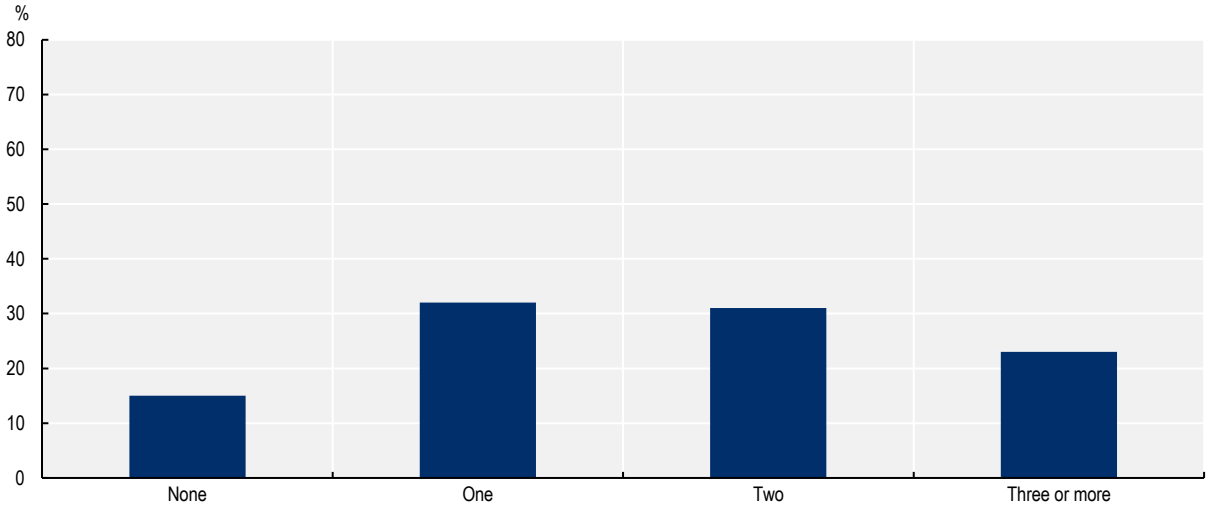


Source: Panel A: OECD-Bocconi employer survey on non-compete and related clauses. Panel B: OECD-Bocconi employee survey on non-compete and related clauses.

StatLink https://stat.link/lva34n

Annex Figure 5.B.9. Share of employees by number of post-employment restraint clauses used by firms

Including only firms declaring that they definitely do include post-employment restraint clause in contracts

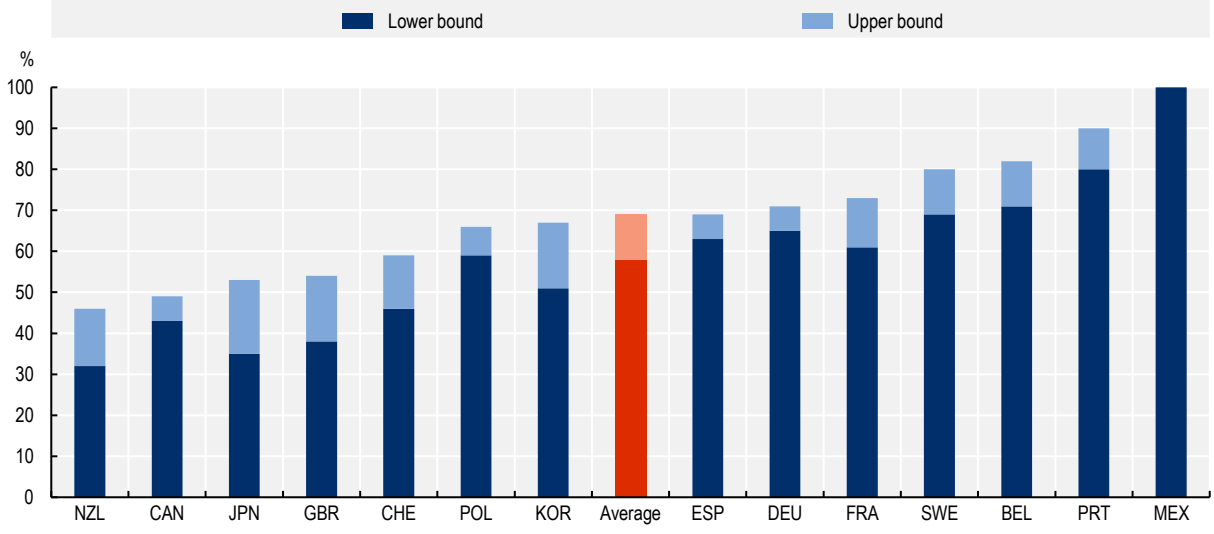


Source: OECD-Bocconi employer survey on non-compete and related clauses.

StatLink https://stat.link/pn9q27

Annex Figure 5.B.10. Share of non-compete clauses appearing to fall short of legal requirements

Share of non-compete clauses that appear to fall short of legal requirements, including only employees who declare that they definitely have a non-compete clause, to have read it carefully and to have understood it well



Note: Lower/upper bound differ in how an employee saying "don't know" or "prefer not to answer" on questions on the duration/compensation/scope is considered. For the upper bound, answering "don't know" or "prefer not to answer" does NOT make the clause invalid, while it does for the lower bound.
Source: OECD-Bocconi employee survey on non-compete and related clauses.

StatLink https://stat.link/wzvfra

Annex Table 5.B.1. Non-compete clauses and returns to total work experience

	All workers	All workers	High education	Low + Mid education
	Earnings quintile	Earnings quintile	Earnings quintile	Earnings quintile
Experience	0.0180***	0.0223***	0.0288***	0.0162***
	(0.00313)	(0.00336)	(0.00473)	(0.00522)
Experience * Current NCC		-0.000274	-0.0000364	-0.00000852
		(0.00166)	(0.00240)	(0.00251)
Experience * Past NCC		-0.00693***	-0.00493*	-0.00772***
		(0.00184)	(0.00255)	(0.00293)
Experience, squared	-0.000358***	-0.000401***	-0.000620***	-0.000232**
	(0.0000744)	(0.0000751)	(0.000119)	(0.000110)
Observations	14 383	14 383	8 333	6 050
R-squared	0.424	0.424	0.368	0.377

Note: Experience denotes years of total work experience, proxied by age adjusted for years in education. Current NCC is a non-compete clause indicator, taking a value of one for employees with a non-compete clause in their current job. Past NCC is an indicator variable taking a value of one for employees with a non-compete in a previous job. High education refers to employees who have completed tertiary education. Low + mid education refers to employees without tertiary education. The sample is restricted to employees with a non-disclosure agreement in current job. All regressions control for employee, job and firm characteristics and include industry x occupation and country fixed effects. Robust standard errors in parentheses. Stars denote standard significance levels: * p < 0.1, ** p < 0.05, *** p < 0.01.
Source: OECD-Bocconi employee survey on non-compete and related clauses.

Annex Table 5.B.2. Non-compete clauses and returns to tenure in current job

	(1)	(2)	(1)	(2)	(3)	(4)
	Earnings quintile	Earnings quintile	Earnings quintile	Earnings quintile	Earnings quintile	Earnings quintile
Tenure	0.0288***	0.0290***	0.0335***	0.0335***	0.0244***	0.0241***
	(0.00472)	(0.00474)	(0.00674)	(0.00675)	(0.00644)	(0.00643)
Tenure * NCC	-0.00148	-0.00268	-0.00712	-0.00701	-0.00230	0.00174
	(0.00614)	(0.00645)	(0.00881)	(0.00886)	(0.00922)	(0.00939)
Tenure * NCC * Enforceable		-0.0114***		-0.00239		-0.0162***
		(0.00338)		(0.00420)		(0.00627)
Tenure, squared	-0.000501***	-0.000509***	-0.000622***	-0.000624***	-0.000383**	-0.000379**
	(0.000142)	(0.000142)	(0.000201)	(0.000201)	(0.000188)	(0.000188)
Sample	All workers	All workers	High education	High education	Mid + low education	Mid + low education
Observations	14 383	13 317	7 766	7 766	5 551	5 551
R-squared	0.425	0.433	0.373	0.374	0.386	0.388

Note: Tenure denotes years in current job. NCC is a non-compete clause indicator, taking a value of one for employees with a non-compete clause in their current job. Enforceable is an indicator variable taking a value of one for employees with non-compete clauses that are likely to be upheld in court. High education refers to employees who have completed tertiary education. Low + mid education refers to employees without tertiary education. The sample is restricted to employees with a non-disclosure agreement in their current job. All regressions control for employee, job and firm characteristics and include industry x occupation and country fixed effects. Robust standard errors in parentheses. Stars denote standard significance levels: * p < 0.1, ** p < 0.05, *** p < 0.01.
Source: OECD-Bocconi employee survey on non-compete and related clauses and Andrews et al. (2026[24]), "The regulation of non-compete clauses across OECD countries", https://doi.org/10.1787/88e3eb6e-en.

Notes

[1] The protection of trade secrets is not limited to contractual instruments such as non-disclosure agreements, but is also regularly ensured through statutory and criminal law. For instance, in Germany, the Trade Secrets Act (*Geschäftsgeheimnisgesetz*) provides civil remedies and, in serious cases, criminal sanctions; in France, the unlawful acquisition, use or disclosure of trade secrets may give rise to civil liability and criminal sanctions under the Commercial Code; in Switzerland, the unauthorised disclosure of a manufacturing or business secret is punishable under the Swiss Criminal Code, while the Federal Act on Unfair Competition prohibits the exploitation or disclosure of trade secrets obtained through improper means; and in the United Kingdom, trade secrets are protected through a combination of statutory law and criminal offences related to fraud and misuse of confidential information. These regimes provide legal protection of confidential business information independently of non-compete clauses.

[2] Evidence from commercial contracts in franchising suggests that information-protection rationales for restrictive covenants are real – with covenant use tracking individuals' access to proprietary information (Lafontaine, Luisetto and Prescott, 2025[98]).

[3] Although non-compete clauses are generally considered beneficial for firms, Ganco et al. (2022[92]) show that, while such clauses may enhance employee retention, they can also diminish a firm's attractiveness and ability to recruit staff, in particular amongst firms behind the productivity frontier. This may explain why some firms chose not to use non-compete clauses, even when they are allowed and used by competitors.

[4] Consistent with this, Babina (2019[57]) shows, using US matched employer-employee data, that employees are significantly more likely to depart financially distressed firms to found new ventures in states where noncompete clauses are less enforceable – suggesting that non-compete clauses suppress a form of productive reallocation that would otherwise occur precisely when incumbent firms are unable to exploit their own growth opportunities.

[5] The ban proposed in the United States in 2024 by the Federal Trade Commission (FTC), since vacated, applied to non-compete clauses and "functional" equivalents. In addition, in 2024, the General Counsel of the US National Labor Relations Board issued a memorandum declaring training repayment agreements (pejoratively called "TRAPs") as unlawful. The memorandum was rescinded by the new General Counsel in February 2025. In 2015, Austria made the use of repayment of training clauses more restrictive after liberalising it in 2006. Denmark restricted the use of both non-compete clauses and non-solicitation of customers in 2016.

[6] The Australian Government has announced that from 2027 it will ban non-compete clauses for low- and middle-income employees earning less than the high-income threshold in the *Fair Work Act 2009* (currently AUD 183 100 and adjusted annually on 1 July). This reform would make Australia one of the OECD countries with the strictest regulations.

[7] For most countries, the overall ranking produced by the OECD index is consistent with that obtained using the original Bishara (2011[21]) index – see robustness tests in Andrews et al. (2026[24]) – suggesting that cross-country differences are driven primarily by core legal features already identified in the US literature. Austria, France, Luxembourg and Spain constitute the main exceptions. Specifically, in Austria and Luxembourg, given the presence of a wage threshold that restricts the use of non-compete clauses to higher-paid employees, dimensions 2, 3, 4, 5, 6, 7 and 8 are halved. In France, collective agreements play

a major role in the regulation of non-compete clauses. In Spain, employers are subject to an obligation to pay damages if a non-compete clause fails to meet minimum requirements.

[8] In order of effective date, they are: Oregon (2008; updated 2022), Illinois (2016; updated 2022), Massachusetts (2018), Maine (2019), Maryland (2019; updated 2023; refined in 2024), New Hampshire (2019), Rhode Island (2020), Virginia, (2020; updated 2025), Washington (2020), Nevada (2021), Colorado (2022), and Washington, D.C. (2022). Florida also has a wage threshold (as of 1 July 2025) which, differently from all the other US states and OECD countries, does not restrict the use of non-compete clauses but provides enhanced enforcement. For workers earning twice the annual average wage of the county where the worker is based, the burden of the proof is inverted, i.e. a clause is considered valid unless the employee proves otherwise (Fair Competition Law, 2026[96]).

[9] The validity of non-compete clauses following dismissal may operate differently when the clause includes a compensation requirement, since such compensation effectively functions as a form of severance pay.

[10] Under strict employment protection, firms facing changes in production methods or product lines are often compelled to retrain their existing workforce rather than adjust employment along the extensive margin. Such retraining gives rise to a classic "hold-up" problem (Hart, 1995[88]): employers may refrain from investing in workers' skills if training increases workers' outside options and bargaining power ex post, limiting firms' ability to appropriate the returns to human capital investment.

[11] Employee-level incidence is estimated by weighting firm-level responses by the number of employees and sampling weights. Specifically, firm size brackets are converted into point estimates using their midpoints (i.e. 5-9 employees: 7; 10-49 employees: 29.5; 50-249 employees: 149.5; 250-999 employees; 1000+: 2000). The share of employees covered in each firm is also estimated using the midpoints (1-10% of employees: 5.5%; 11-20% of employees: 15.5%; 21- 30% of employees: 25.5%; 31-40% of employees: 35.5%; 41-50% of employees: 45.5%; 51-75% of employees: 63%; 76-99% of employees: 87.5%; and 100%). The share of employees covered within each firm is then multiplied by this estimated employee count and the IPSOS sector-size sampling weight. The national incidence rate is calculated as the weighted average of these within-firm shares, ensuring the results reflect the total workforce rather than a simple average of firms. As a conservative measure, "Don't know" responses regarding the share of covered employees are treated as zero.

[12] Based on previous survey experiences Australia (Andrews and Jarvis, 2023[26]; Andrews, Brennan and Buckley, 2024[27]), Italy (Boeri, Garnero and Luisetto, 2025[28]) and in the United States (Prescott, Bishara and Starr, 2016[25]), graded response options were offered to both employees and employers ("definitely yes", "probably yes", "probably no" and "definitely no"), alongside a distinct "don't know" category. This allowed respondents to express uncertainty.

[13] The incidence estimates are close for many countries, and the differences between countries with similar incidence estimates are well within the margin of error, meaning that the exact ranking of countries should not be interpreted as definitive. This is also apparent in the differences when countries are ordered based on the employer versus the worker surveys; or whether the ordering is done based on the combination of "definitely yes" and "probably yes" answers versus "definitely yes" only. However, there is significant variation in non-compete prevalence between countries, with the top 3 countries having an incidence estimate that is significantly higher than that of the bottom three countries, using 95% confidence intervals – see Annex Figure 5.B.1.

[14] Existing evidence points to similarly “surprisingly high” levels of non-compete use across advanced economies, including 21-22% in Australia, 16% in Italy, 23-34% in Japan, and around 18% in the United States – see Andrews and Garnero (2025[87]) for a summary. In fact, where directly comparable surveys are available, estimates are closely aligned: for example, employee-level prevalence in Italy is 16% in Boeri, Garnero and Luisetto (2025[28]) compared to 18% in the OECD-Bocconi survey; in Japan, employer-reported prevalence is 34% in Kodama, Kambayashi and Izumi (2025[51]) compared to 31%; and in the United Kingdom, estimates are 26% in Alves et al. (2024[89]) and CMA (2024[93]) compared to 28%. Some US results (Colvin and Shierholz, 2019[33]) based on establishment surveys, find an even higher incidence.

[15] The correlation between the prevalence of non-compete clauses as measured in the employee-level survey and the index of non-compete regulation is 0.23 and is not statistically significant (even after dropping Mexico, keeping only employees who declare to definitely have a non-compete clause, or controlling for employee and firm level characteristics). The correlation with the prevalence of non-compete clauses as measured in the firm-level survey is -0.22 and not statistically significant – see Annex Figure 5.B.3.

[16] In the Netherlands, the government banned the use of non-compete agreements for workers with a temporary contract in 2015, after evidence emerged suggesting that NCCs were often more prevalent in temporary contracts (24%) than in permanent ones (19%) (Streefkerk M., Elshout S. and Cuelenaere B., 2015[90]).

[17] These estimates should be interpreted with caution. Survey-based measures are inevitably subject to measurement error, as employees may not fully recall the precise terms of the non-compete clauses they have signed, and employers may report practices in stylised terms. In addition, the scope for such measurement error is likely to be correlated with the complexity of the legal framework: in countries where the validity of the clauses depends on a large number of formal requirements, correctly identifying whether a given clause complies with all legal conditions is inherently more difficult, increasing the risk of misclassification. This implies that cross-country differences in the share of apparently non-compliant clauses partly reflect differences in regulatory complexity as well as reporting noise.

[18] Annex Figure 5.B.10 shows the proportion of non-compete clauses that are unlikely to meet legal requirements once the sample of workers is restricted to those that definitely have a non-compete clause, and who read and understood the clause well. Even though the incidence of clauses that are unlikely to meet the legal requirements falls marginally, it remains high (55-65% for the average country). Similar pattern can be seen in the employer survey: the share of likely unenforceable clauses declines slightly when including firms who definitely use non-compete clauses, and when only firms that intend to enforce their non-compete clauses are included, but the lower bound of likely unenforceable clauses remains high, above 55%.

[19] In the United States, around 40% of employees report turning down a job offer from a competitor because of a non-compete clause, even when they work in states where such clauses are banned (Starr, Prescott and Bishara, 2020[35]; Prescott and Starr, 2021[37]). In Italy, although approximately two-thirds of non-compete clauses appear to be unlikely to be upheld in court, the share of employees reporting the clause as an obstacle to mobility is similar among employees with likely valid and likely invalid clauses (Boeri, Garnero and Luisetto, 2025[28]). In Sweden, 47% of employees in the legal sector who are members of the Akavia trade union report that they would reject a job offer because of a non-compete clause, even

though sectoral codes of conduct prohibit the inclusion of such clauses in employment contracts (Akavia, 2021[36]).

[20] Wage-fixing agreements are agreements between companies and should not be confused with collective bargaining agreements signed between employers and trade unions which are expressly excluded from antitrust enforcement.

[21] In some cases no-poaching agreements may be permissible under competition law when they are ancillary to a legitimate, pro-competitive collaboration – such as a joint venture – or when they are narrowly tailored and directly related to the implementation of a merger for a limited transition period. In such cases, the restraint must be objectively necessary and proportionate to the main transaction; stand-alone no-poaching agreements or broad, open-ended restraints remain unlawful.

[22] The results are similar when limiting the sample to firms whose estimate of the use of non-compete clauses in their industry matches the prevalence revealed by the OECD-Bocconi employer-survey, i.e. firms that appear well informed of HR practices in their industry.

[23] See https://www.justice.gov/opa/pr/jury-convicts-home-health-agency-executive-fixing-wages-and-fraudulently-concealing-criminal (accessed on 28 January 2026).

[24] See https://ec.europa.eu/commission/presscorner/detail/en/statement_25_1381 (accessed on 28 January 2026).

[25] For the average OECD-EU country, in 2019 (Causa, Luu and Abendschein, 2021[97]).

[26] New business density (new registrations per 1000 people ages 15-64), average across survey countries. Entrepreneurship Database, World Bank (https://www.worldbank.org/en/programs/entrepreneurship).

[27] The analysis builds on a similar approach applied to Australia by Buckley, Rankin and Andrews (2024[64]) who use linked employer-employee data matched with an employer-level survey on the use of non-compete clauses to show that workers employed in firms using non-compete clauses experience slower wages growth over the first few years of their employment.

[28] It should be noted that in many countries included in the sample, simply having a non-compete clause that specifies duration and scope is sufficient for it to be classified as likely enforceable, meaning workers without tertiary education can also have non-compete clauses that are likely to be upheld in courts.

[29] These results are obtained from a regression assessing the association between current non-compete clauses and returns to tenure in current job, following a similar approach to that used to estimate the link between past non-compete clauses and returns to total work experience. The employee-survey did not ask about the characteristics of past non-compete clauses, and hence it is not possible to determine how likely these clauses would have been to be upheld by courts.

[30] The difference in these figures reflects two different perspectives: the 12% reduction for requiring a non-compete measures the broad impact on all job vacancies where a clause was included (which can deter high-quality applicants from applying at all), whereas the 4-8% reduction for signing measures the specific wage penalty experienced by the individual employees who ultimately accepted the restricted offer. This does not mean that the individual wage penalty is smaller than the aggregate penalty as the two add up.

[31] In addition, Abrahams and Fesko (2025[94]) have studied how relaxing non-compete-like restrictions affects the allocation of talent and the resulting productivity dynamics in women college basketball in the United States. They find that greater player mobility intensifies competition by allowing talent to flow to lower-productivity teams, while simultaneously strengthening elite programmes' dominance as they retain performance stability and increasingly recruit top players from lower-tier teams rather than incoming freshmen.

[32] The employer-level survey is used to compute the industry-country level prevalence of non-compete clauses due to the higher precision of responses compared to the employee-level survey.

[33] Due to the small sample of countries included and the relatively limited variation in regulation – for example, the sample does not include any country where non-compete clauses are banned – the estimates are subject to some statistical imprecision. But the pattern is consistent with the idea that non-compete clauses have a stronger negative relationship with productivity in countries where such clauses are less regulated (i.e. are more likely to be upheld in court).

[34] There are many other channels through which non-compete clauses may influence aggregate productivity, as detailed at the beginning of the section. For example, entry, exit, innovation, and the competitive environment could all be affected. As the empirical estimates zoom in on reallocation and catch-up growth, the analysis is limited to isolating the aggregate effects associated with these mechanisms.

[35] As the empirical specification capturing catch-up growth is only estimated for non-frontier firms, the computation implicitly assumes that the labour productivity of frontier firms does not change when the non-compete incidence increases.

[36] In terms of magnitude, this corresponds closely to the share of employees covered by a non-compete clause despite having no access to confidential information (9.5%), making it a policy-relevant benchmark. It should be noted that the empirical estimates are obtained for the overall non-compete incidence and therefore increasing the non-compete incidence for specific groups of employees may have larger or smaller effects than the estimates computed here. Nevertheless, the computation below remains informative of the potential magnitude of productivity costs associated with the spread of non-compete clauses amongst employees for whom they may be less justified.

[37] The total effect, displayed by the blue diamonds, is slightly attenuated by the presence of an interaction term between reallocation and within-firm productivity in the decomposition. Details of the computation and definitions are presented in Andrews, Garnero and Holttinen (2026[72]).

[38] The baseline estimates include firm-level controls as well as industry x country and time fixed effects. Even when including additional controls (interactions with NDA and no-poach agreement prevalence, as well as EPL and PMR), the more conservative estimates imply sizeable productivity losses from higher non-compete prevalence: a 10 p.p. increase in non-compete clauses is associated with aggregate productivity losses of 1.7 p.p., stemming from a 0.2 p.p. loss due to less efficient resource allocation and a 1.5 p.p. loss due to slower catch-up growth. In addition, including these controls does not alter the conclusion that the estimated losses are larger in countries with more lenient regulation: the estimated aggregate productivity losses associated with a 10 p.p. increase in the prevalence of non-compete clauses is 1.4 p.p. in countries with stricter regulation, increasing to 1.8 p.p. in countries where non-compete clauses are more likely to be upheld by courts (more lenient regulation). Andrews, Garnero and Holttinen (2026[72]) provides more detail on the robustness of the estimates.

[39] The survey did not ask employers of current innovation activities and hence recent introduction of new products, services or processes is used as a proxy for innovation. A caveat of this approach is that it is not a perfect measure of current innovation activity, which could show stronger links with non-compete use.

[40] A regression analysis exploring associations between firm non-compete use, innovation, training and growth that controls for firm characteristics as well as industry fixed effects did also not result in any statistically significant differences in non-compete use along these dimensions.

[41] Modelling work by Gottfries and Jarosch (2026[99]) suggests that once such spillovers are taken into account, restricting non-compete clauses may be a relatively low-cost way of restoring wage competition, even if it leads to higher turnover.

[42] See https://blogs.microsoft.com/on-the-issues/2022/06/08/microsoft-announces-four-new-employee-workforce-initiatives/ (accessed on 20 January 2026).

[43] The Australian Government is finalising detailed policies on matters related to the ban, including penalties for breaches and transitional measures. It is also considering whether additional reforms to non-compete clauses are required for high-income employees and related restraints, such as non-solicitation clauses for clients and co-workers.

[44] Hiraiwa, Lipsitz and Starr (2024[40]) show that firms do not place significant value on the formal validity of non-compete clauses for workers earning below such thresholds, reinforcing the case for targeted exemptions.

[45] Other exemptions are more narrowly targeted, such as those for broadcasters in Oregon or automobile sellers in Louisiana, suggesting the influence of sector-specific lobbying rather than consistent economic principles.

[46] Approaches based on job titles carry the risk of "job title inflation" being used to bypass the law. Cohen, Gurun and Ozel (2023[91]) find that managerial title usage increases fivefold just over the regulatory threshold to avoid overtime payments in the United States.

[47] Oregon was the first US state to require advance notice (i.e. not permitting a noncompete to be disclosed to a worker for the first time on the first day of the job). Oregon was then followed by Massachusetts (2018), New Hampshire (2019), Maine (2019), Washington (2020), Virginia (2020), Illinois (2021), and Colorado (2022), Washington, D.C. (2022), and Florida (2025) with various types and standards of notice requirements (Beck Reed Riden, 2026[95]).

[48] There is some uncertainty about the effectiveness of a non-compete clause in cases of unlawful dismissal or employee termination with just cause. Article 136(3) of the Labour Code provides that, in such cases, the compensation may be increased up to the base salary at the date of termination; otherwise, the non-compete clause cannot be enforced.

[49] See https://www.jdsupra.com/legalnews/payday-lender-ends-non-compete-47106/ (accessed on 19 February 2026).

[50] In Spain, the use of overly broad or abusive non-compete clauses can trigger both judicial and administrative consequences. Judicially, a clause that fails to meet the requirements of Article 21 of the Workers' Statute (e.g. lack of adequate compensation or exceeding the 2-year limit) is typically declared

null and void, freeing the worker from the restriction. Administratively, such conduct may be classified as a “grave infraction” under Article 7.10 of the Law on Infractions and Sanctions in the Social Order (LISOS) for imposing working conditions inferior to those established by law. Following the 2021 reform (Law 10/2021), these infractions carry administrative fines ranging from EUR 751 to EUR 7 500, depending on the severity and number of affected workers.

[51] In Colorado, employers found in violation may be required to pay USD 5 000 per affected worker or prospective worker, while in Maine fines of at least USD 5 000 may be imposed. Virginia provides for penalties of USD 10 000 per violation, and in Illinois courts may impose penalties of up to USD 5 000 per violation, or USD 10 000 for repeated violations within a five-year period. Similarly, the District of Columbia provides that employers attempting to use a void non-compete clause are liable to each affected employee for relief of no less than USD 1 500.

[52] In Finland, a 2022 reform to non-compete legislation extended compensation requirements to cover all non-compete clauses. Whilst the reform seems to have reduced the incidence of non-compete clauses somewhat, a large margin of uncertainty amongst workers remain, with many being unaware of whether or not they have a non-compete clause. Raising awareness of non-compete legislation was one of the key policy recommendations that emerged from a post-reform evaluation in 2024 (Mahonen and Lyly-Yrjanainen, 2024[84]).

[53] See for example the webpage of the French Government https://www.service-public.gouv.fr/particuliers/vosdroits/F1910?lang=en (accessed on 21 January 2026).

[54] The Advisory, Conciliation and Arbitration Service (Acas) in the United Kingdom can provide a useful example.

[55] See https://eab.business.govt.nz/employmentagreementbuilder/ (accessed on 21 January 2026).

[56] Response rates in telephone surveys are generally low, and they have been declining in recent years. In Europe, response rates for telephone surveys typically vary between 5% and 15% for random probability studies, as evidenced by the Flash Eurobarometer series of surveys run by Ipsos since January 2021. Response rates for business surveys are even lower, and it is important to recognise that participation can represent a significant investment for businesses. The response rates observed for this study are consistent with previous findings.

6 Recent trends in employment protection legislation: Tackling dualism by harmonising and strengthening regulations

Alexandre Georgieff

Regulations affecting the hiring and dismissal of workers – i.e. employment protection legislation (EPL) – affects the ability of companies to adapt to fluctuation in demand and structural changes as well as people's job security and hiring opportunities. This chapter presents an up-to-date review of EPL in OECD countries, based on the latest update of the OECD EPL indicators. Considering both legislation and actual practices, it describes the regulations governing individual and collective dismissals of employees on open-ended contracts, as well as the rules applicable to the hiring and termination of temporary contracts. It shows that common-law countries generally have fewer restrictions, while European civil-law countries tend to have stricter regulations. It also highlights a clear trend towards harmonising the protection of workers on open-ended contracts and strengthening the regulations of temporary contracts since the onset of the COVID-19 crisis, marking a break with the trends of easing regulation for open-ended contracts observed during the previous decade.

In Brief

Employment protection legislation (EPL), i.e. regulations on the hiring and dismissal of employees, aims at protecting workers against arbitrary job termination and having companies bear some of the social costs of separations. EPL affects the labour market in many ways, e.g. through job transitions, job and worker flows, worker bargaining power, and the incidence of temporary contracts. It can therefore influence people's job security, career path and working conditions, as well as the ability of companies to adapt to fluctuations in demand and structural changes (e.g. induced by the digital transformation, the move toward carbon neutrality, demographic ageing, or changes in the international trade environment) in a fair and effective manner.

The OECD indicators of Employment Protection Legislation measure job termination regulations for open-ended and, since the last edition, fixed-term contracts, covering four dimensions of regulation: i) procedural requirements before termination notice is given; ii) notice period and severance pay; iii) the regulatory framework for unfair dismissals; and iv) enforcement of unfair dismissal regulation. They also aim to capture constraints to the ease with which temporary employment (both fixed-term contracts and temporary work agency assignments) can be used. The chapter extends the database, last updated in 2019, to 2025 and describes recent trends in employment protection in OECD countries, with a particular focus on the termination of fixed-term contracts and the corresponding new indicators.

The main findings are as follows:

- Whether considering regulations on dismissals of workers on open-ended contracts or regulations on temporary contracts **in general, common-law countries generally have fewer restrictions, while EU civil-law countries tend to have stricter regulations.** Common-law countries with available data all rank in the bottom half of OECD countries in terms of both the overall EPL indicator for temporary workers and of the overall EPL indicator for open-ended contracts. In contrast, a majority of EU civil-law countries rank in the top half for each of these two indicators.
- **The stringency of dismissal regulations for workers on open-ended contracts increases with job tenure.** Notice period and severance pay both tend to be higher the longer the job tenure, with the increase being more pronounced for severance pay. For a worker with four years of job tenure, the average duration of the notice period across the OECD is 1.3 months, and the average amount of severance pay is 1.1 months of pay. These values are respectively 2.1 times and 3.4 times lower than for a worker with 20 years of job tenure, and 1.6 and 3.4 times higher than for a worker with only 9 months of job tenure.
- **Thirty-one of the 36 OECD countries with available data impose more restrictions on collective dismissals than on individual dismissals of workers on open-ended contracts.** Almost all OECD countries require a consultation with a third party or an authorisation before the dismissal can take place from a certain threshold number of employees dismissed, extending the time delay before notice can be given from 9 days to 30 days on average across countries. These higher restrictions reflect the greater challenge that collective dismissals pose to local economies and to workers' search for a new job.
- Countries with high overall dismissal regulation for workers on open-ended contracts typically have strict regulations in the three broad categories of procedural requirements, notice and severance pay, and regulatory framework for unfair dismissals; but this is not the case for

enforcement of unfair dismissal regulation. The median of the maximum time to make a claim of unfair dismissal among OECD countries is two months.

- **In all OECD countries with available data, there are few or no restrictions on the termination of fixed-term contracts *at* the end date.** Limited restrictions are in force at the end of the contract in about one-fifth of countries and include notice periods, severance pay, or priority given to fixed-term employees for hiring under permanent contracts.
- **In virtually all OECD countries, dismissal regulation is at least as strict *during* the execution of a fixed-term contract (i.e. *before* the expiration date) as it is during an open-ended contract.**
- **However, in about one-third of OECD countries, employers can use a large number of successive very short-term contracts without interruption, and therefore can retain the option of terminating the employment relationship at virtually any time** – as there is no limit on the number of successive fixed-term contracts. When there is a limit, it is generally between two and four successive contracts (three on average across countries).
- **As a result, fixed-term contracts can be terminated at any time at virtually no cost in about a quarter of OECD countries**, including some common-law countries where regulation governing the dismissal of workers on open-ended contracts is relatively lenient, but also in a few countries where regulation for workers on open-ended contracts is relatively strict.
- **About half of OECD countries impose restrictions on the type of work for which fixed-term contracts are allowed; compared with two-thirds of countries for temporary work agency (TWA) employment.** Most countries also impose limitations on the cumulative duration of successive fixed-term contracts and TWA assignments, which average 41 and 26 months, respectively.
- **Most EPL reforms implemented since the onset of the COVID-19 crisis have focussed on: (i) harmonising regulation among dismissals of workers on open-ended contracts** – mostly by limiting the discretionary power of courts in the event of dispute and by aligning protection for blue-collar workers with that for white-collar workers –, with generally small or positive effects on the corresponding EPL indicators; **and (ii) strengthening regulation of temporary contracts**. This marked a break with the trend toward relaxing dismissal regulations for workers on open-ended contracts, while keeping regulations on temporary contracts approximately unchanged, observed in many countries over the decade following the 2008-2009 global financial crisis.
- **These recent reforms could help reduce labour market dualism** by making dismissal regulation for workers on open-ended contracts more predictable and temporary contracts less attractive and more difficult to use.
- **Recent reforms of other types of work and workers,** such as variable hours (or “on-call”) contracts or vulnerable self-employed people, **could also reduce labour market dualism**.

Introduction

OECD labour markets are undergoing profound transformations. Rapid advances in artificial intelligence and other digital technologies (OECD, 2023[1]), the move of many countries toward carbon neutrality (OECD, 2024[2]), and shifts in international trade dynamics are changing the nature of jobs and their distribution across firms, sectors and regions. At the same time, demographic ageing is altering the size and composition of the workforce, raising challenges for labour supply and GDP per capita (OECD, 2025[3]).

Regulations governing the hiring and dismissal of employees – i.e. employment protection legislation (EPL) – can influence countries' ability to navigate these changes fairly and effectively. EPL aims to protect workers from arbitrary dismissals and to make companies bear part of the social costs of their dismissals. It has been shown to affect various labour market outcomes, including job and worker flows, job transitions, worker bargaining power, productivity or the incidence of temporary contracts (Section 6.1).

This chapter provides a comprehensive overview of EPL in OECD countries and recent reforms in this area. It does not seek to analyse the effects of these reforms. Rather, it describes regulations as in force on 1 January 2025 and their recent changes, relying on the OECD EPL indicators, which quantify the costs and procedures involved in dismissing individuals – or groups of employees – and using temporary contracts.[1] The OECD has published estimates of the strictness of employment protection in member countries since the early 1990s (Grubb and Wells, 1993[4]; OECD, 1999[5]; 2004[6]; 2013[7]; 2020[8]; Venn, 2009[9]). These indicators have been extensively used by governments, organisations and researchers for cross-country benchmarking in reports, books and academic papers.

The chapter is organised as follows. Section 6.1 provides an overview of the ways in which EPL can affect countries' ability to navigate temporary shocks and long-term labour market transformations. Section 6.2 describes dismissal regulation for workers on open-ended contracts in 36 OECD countries.[2] Section 6.3 presents regulation of temporary contracts, including a new indicator for termination of temporary contracts. Section 6.4 looks at employment protection reforms in the OECD during 2019-2025 and how they are reflected in the indicators.[3]

6.1. Tailored EPL can help labour markets navigate short-term fluctuations and structural changes in a fair and effective manner

Dismissal regulation aims to protect workers from arbitrary dismissals and to make companies bear part of the social costs of their dismissals (e.g. fiscal costs and lower fiscal revenues) (Pissarides, 2010[10]; Scarpetta, 2014[11]). It also promotes efficient worker reallocation by helping workers transition to their next job. These effects of dismissal regulation are particularly important at a time of cyclical labour market turbulence (such as the repeated disruptions in the global value chain recently experience by OECD countries) and profound labour market transformations – whether driven by global megatrends (e.g. the digital transition) or policy changes such as tariff increases. Dismissal regulation can also make these transformations more equitable by supporting a balanced distribution of their costs and benefits between workers and firms. Finally, dismissal regulation can support demographic ageing by preventing discriminatory practices against older workers and ensuring that firms internalise some of the significant social costs of dismissing them.

However, if overly strict, dismissal regulation can reduce labour markets' ability to adapt fairly to fluctuations in demand and structural changes. It can excessively hinder job and worker flows, and thus adaptation to new market conditions and technology adoption, thereby hampering productivity growth. Strict dismissal regulation can also replace permanent contracts with temporary ones or other forms of employment, thereby segmenting the labour market between a small number of very protected jobs and many jobs that can be easily terminated, especially in countries where restrictions on hiring under temporary contracts are weak or poorly enforced. By reducing aggregate employment protection, the widespread use of temporary contracts can reduce training incentives, decrease the labour share, worsen working conditions, increase wage inequality, and leave a disproportionate share of the social costs of transitions on workers and governments – see also OECD (2014[12]; 2020[8]).

6.1.1. If not too strict, dismissal regulation can smooth labour market adjustments and help labour markets navigate ongoing job transformations

If not too strict, dismissal regulation can smooth labour market adjustments, which is particularly important at a time of profound labour market transformations.

Dismissal regulation reduces inefficient incentives for firms to dismiss a worker that can arise when the firm does not take into account the consequences of the job separation for fiscal revenues (due to lower labour income) and fiscal costs (higher expenditure on income replacement programmes) (Cahuc, Carcillo and Zylberberg, 2014[13]), but also on health (Bassanini and Caroli, 2015[14]) and destruction of human capital (Neal, 1995[15]).

Job dismissal regulation can also help workers transitions to new jobs by encouraging them to search for a new job while still employed, during the notice period. In fact, recent quasi-experimental evidence from Sweden has shown that not only does a longer notice period lead to lower nonemployment and higher post-unemployment wages, but also that job search is more effective during the notice period than during unemployment (Cederlöf et al., 2024[16]). This corroborates previous findings from US survey data that on-the-job search is more effective and leads to better job offers than job search during unemployment (Faberman et al., 2022[17]).

Another way dismissal regulation can ease the transition to new jobs is by providing income security to dismissed workers (through severance payments) and by facilitating transition measures – e.g. outplacement services, early interventions by the public employment service (PES), social plans or transition initiatives[4] – although unemployment benefits and re-employment assistance are generally the preferred policy levers for achieving these objectives. Dismissal regulation can indeed require certain transition measures to be met before a dismissal is considered fair or allow more time to implement them before dismissals take place through the notice period[5] (OECD, 2018[18]).

When considering the digital transition, for example, additional ways in which dismissal regulation can smooth this transition are by: (i) counterbalancing its negative effects on the labour share and (ii) helping to address some of its ethical issues. AI-driven growth indeed tends to be concentrated in large firms and favour industry concentration, which has negative effects on the labour share (Autor et al., 2020[19]; Babina et al., 2024[20]; Minniti, Prettner and Venturini, 2025[21]). Beyond forcing firms to internalise some of the social costs of the transition, EPL can help redirect the benefits of AI to labour by strengthening worker bargaining power (Ciminelli, Duval and Furceri, 2018[22]; Ciminelli and Franco, 2025[23]; Falk, Huffman and Macleod, 2015[24]). Dismissal regulation can also help address the ethical challenges raised by the impact of AI on working conditions: for example, recent court cases have invalidated dismissal decisions “made” solely by AI (New Zealand, 2013), or motivated by a worker’s refusal to use fingerprint scanners to sign in and out of work (Australia, 2019) (OECD, 2023[1]).

6.1.2. Dismissal regulation can protect older workers who are able to work longer

Population ageing will require older individuals to participate more in the labour market to maintain current levels of GDP per capita and social protection spending (OECD, 2025[3]). Yet, firms can be reluctant to retain or hire these workers, who are generally perceived as relatively costly: seniority wage-setting practices can widen the gap between wage and productivity of older workers, and firms’ perception of this gap is further reinforced by negative age-related stigma – e.g. older workers are often perceived as less adaptable or lacking ICT skills (OECD, 2019[25]). In addition, the consequences of job loss tend to be particularly severe for older workers, who are more likely to leave the labour force permanently after losing their jobs (OECD, 2025[3]).

Dismissal regulation has a role to play in preventing discriminatory dismissals of older workers. Mandatory retirement, a regulatory scheme that removes (or reduces) dismissal regulation above a certain age[6] and

exists in about two-fifths of OECD countries, can facilitate age discrimination in dismissal (OECD, 2025[3]; 2025[26]; Raub, Stek and Heymann, 2023[27]).[7] Rulings of the Court of Justice of the European Union set the limits within which mandatory retirement can be considered lawful and non-discriminatory in EU countries (Dewhurst, 2016[28]; Oliveira, 2016[29]). These limits take into account, among other criteria, how the mandatory retirement age is justified (e.g. for safety reasons) and determined (e.g. by a collective agreement), as well as eligibility for a full pension (OECD, 2022[30]). Evidence from France, the Netherlands and Sweden show that removing EPL at or after full pension age increases job separations among the workers concerned, suggesting that, at slightly younger age where EPL is binding, EPL effectively protects older workers from dismissal (Saez, Schoefer and Seim, 2024[31]; Rabaté, Jongen and Atav, 2024[32]; Rabaté, 2019[33]).

In most countries,[8] stricter regulation on the dismissal of older workers reduces the number of such dismissals and ensures that firms internalise some of the significant social costs associated with dismissing them. As might be expected, stricter dismissal regulation for older workers reduces the number of dismissals of these workers (Schnalzenberger and Winter-Ebmer, 2009[34]), and increases firms' incentives to train them (Messe and Rouland, 2014[35]). However, it can also have a number of adverse effects: it can further reduce firms' incentives to hire older workers (Kryńska et al., 2013[36]; Behaghel, Crépon and Sédillot, 2008[37]), it may discourage older workers' from changing jobs[9] (OECD, 2025[3]), and, as discussed in the previous section, it can increase older workers' exposure to temporary employment. Increased dismissal regulation for older workers may also encourage firms to circumvent this enhanced protection by offering early retirement arrangements. Finally, stronger dismissal protection for older workers may lead firms to replace dismissals of older workers with those of their younger colleagues (Georgieff and Lepinteur, 2018[38]).

6.1.3. If too strict, dismissal regulation can excessively hinder labour market adjustments and replace open-ended contracts with temporary contracts

The intended effect of job dismissal regulation – consistent with the objectives of protecting workers against arbitrary dismissals and having employers bear some of the social costs of dismissals – is that layoffs are less frequent than they would be in the absence of regulation. A large number of empirical studies confirm that dismissal regulation reduces job and worker flows, in terms of layoffs but also in terms of hiring and voluntary quits.[10]

Although it reduces excessive turnover, hindering job and worker flows can also overly hamper firms' ability to adapt to fluctuations in demand, as well as the transformation and reallocation of jobs in the face of structural changes, thereby hampering productivity growth. In particular, empirical analyses at the industry level show that strict dismissal regulation is associated with less reallocation of workers from low-productivity to high-productivity firms and less technology adoption (Andrews and Cingano, 2014[39]; Bravo-Biosca, Criscuolo and Menon, 2016[40]; Cette, Lopez and Mairesse, 2019[41]), and quasi-experimental analyses indicate that dismissal regulation alters production processes in a way that reduces firm-level total factor productivity growth (Autor, Kerr and Kugler, 2007[42]; Bjuggren, 2018[43]; Caggese et al., 2022[44]; Ciminelli and Franco, 2025[23]; Cingano et al., 2015[45]). Reduced hiring opportunities can also deepen pre-existing labour market divides (Butschek and Sauermann, 2022[46]).

Strict dismissal regulation can also increase labour market dualism, i.e. the extent to which firms replace less flexible open-ended contracts with more flexible temporary contracts (Centeno and Novo, 2012[47]; Hijzen, Mondauto and Scarpetta, 2017[48]). By reducing aggregate employment protection, the widespread use of temporary contracts can reduce training incentives (Adrjan, Jessen and Victoria-Lanzon, 2026[49]; Bratti, Conti and Sulis, 2021[50]; Damiani, Pompei and Ricci, 2016[51]), decrease the labour share (Daruich, Di Addario and Saggio, 2023[52]), worsen working conditions and increase wage inequality (Autor and Houseman, 2010[53]; García-Pérez, Marinescu and Vall Castello, 2018[54]; OECD, 2014[12]), and leave a disproportionate share of the social costs of transitions on workers and governments.

Therefore, strict dismissal regulation for workers on open-ended contracts typically calls for strict hiring regulation for temporary workers. Empirical analyses of reforms aimed at strengthening restrictions on the use of temporary contracts in three countries with strict dismissal regulations – Italy (2018), Portugal (2009) and Spain (2022) – indeed suggest a negative impact on the incidence of temporary employment in these three countries, with generally a positive impact on the incidence of open-ended employment and limited overall employment effects[11,12] (see Box 6.3 in Section 6.4.2, Adrjan, Jessen and Victoria-Lanzon (2026[49]), Cahuc et al. (2023[55]), Grasso and Tatsiramos (2023[56]) and OECD (2024[57])).[13]

However, restrictions on the use of temporary contracts may be difficult to enforce (OECD, 2013[7]), and even with strict hiring regulation for temporary workers, overly strict dismissal regulation for workers on open-ended contracts can lead to labour market dualism that is then hard to tackle. Although restrictions on hiring under temporary contracts are now strict in Italy, Portugal and Spain, these contracts remain widespread, accounting for around 15%-16% of dependent employment in 2024 in these three countries, compared with 12% in OECD EU countries overall – see the Statistical Annex at the end of this publication. In fact, restrictions on the use of temporary contracts were already relatively strict in Spain before the 2022 reform (Section 6.4), while the incidence of temporary employment was among the highest in the OECD (between 24% and 27% over the 2015-2021 period). Substantial non-compliance with temporary contract regulations can be explained by the lack of clarity of the regulatory framework,[14] challenges concerning collective representation (permanent workers form the core of trade union membership), as well as temporary workers' vulnerability – in particular, workers may have little incentives to challenge the misuse of temporary contracts in court, given their limited employment opportunities (Bosmans, De Moortel and Vanroelen, 2021[58]; Eurofound, 2017[59]).

6.2. Dismissal regulation for workers on open-ended contracts

This section compares dismissal regulations for workers on open-ended contracts in OECD countries, based on the *OECD indicators of EPL for regular workers*.[15] These indicators evaluate, for both individual and collective dismissals, employers' dismissal costs for workers on open-ended contracts, focussing on four aspects: procedural requirements (which capture the actions that the firm must take before or when issuing the dismissal to the worker), notice period and severance pay, the regulatory framework for unfair dismissals (i.e. the breadth of the definition of fair and unfair dismissals and the stringency of remedies imposed by courts when a dismissal is judged to be unfair) and enforcement of unfair dismissal regulation (i.e. the extent to which regulations make unfair dismissal procedures more or less likely) (Box 6.1).[16] They refer to no-fault dismissals; hence, the stated reason for the dismissal is not related to alleged worker's misbehaviour (such as, e.g. theft, misconduct or unauthorised absence from work). They also exclude explicitly prohibited grounds (e.g. discrimination or violation of civil right legislation)[17].

Box 6.1. Enforcement of unfair dismissal regulations in the OECD EPL indicators

The EPL indicators for regular workers include four items related to enforcement of unfair dismissal regulations: i) the maximum time to make a claim of unfair dismissal; ii) whether the worker alone has the burden of proof when filing a complaint for unfair dismissal; iii) whether there is an ex-ante validation of the dismissal – validation of the dismissal as a preventive check tends to make notification procedures more stringent but it has the advantage for the firm of limiting the risk that the dismissal will be judged as unfair later on – ; and iv) whether resignation or mutual agreement, by granting eligibility for unemployment benefits, offers an attractive alternative to dismissal for the employee (OECD, 2020[8]).

In most countries, following an unfair dismissal complaint, it falls, at least in part, on the employer to provide evidence that the dismissal was fair. The only OECD countries where the burden of proof lies solely with the employee in cases of unfair dismissal (not based on prohibited grounds) are Australia, Colombia, Czechia, Denmark, Israel, Poland, the Slovak Republic, Switzerland and the United States.

Only in Austria and the Netherlands, all dismissals are subject to an advance validation that limits the scope for unfair dismissal complaints; dismissals should be approved by the work council in Austria and the Public Employment Service or the Sub-district Court in the Netherlands. A validation secures the dismissal for the employer, but only from a given number of workers dismissed, in Belgium (in some cases), Colombia, France, Greece, Mexico and Spain.

Resignation and/or some form of termination by mutual consent provide the right to unemployment benefits in many countries, sometimes subject to sanctions or waiting periods, and can therefore constitute a common alternative to dismissals. Cross-country approaches nevertheless differ substantially.

- In a first group of countries, resignation and/or termination by mutual consent provide access to unemployment benefits without specific penalties beyond the standard eligibility conditions applying to dismissed workers. This is the case in Austria, Chile, Colombia, France, Hungary, Japan, Korea, Lithuania, Mexico (where there are no unemployment benefits), the Netherlands and the Slovak Republic. In some of these countries (e.g. Hungary and the Slovak Republic), this is the case for both resignation and termination by mutual consent. In other countries, such as France, the Netherlands and Portugal, unemployment benefits are generally available following termination by mutual consent, but not after a simple resignation (except under very specific conditions). In addition, in the Netherlands, eligibility may depend on the agreement explicitly stating that the initiative came from the employer, while in Portugal access is largely restricted to cases linked to restructuring or economic difficulties. In France, all terminations by mutual consent (“rupture conventionnelle”) give entitlement to unemployment insurance under the same conditions as dismissal, although forthcoming reforms[1] aim at tightening some parameters of the scheme.
- In a broader set of countries, including Denmark, Estonia, Germany, Poland, Sweden, Switzerland and the United Kingdom, resignation and/or termination by mutual consent also give access to unemployment benefits, but with sanctions such as waiting periods, temporary benefit suspensions or reduced entitlements.
- By contrast, except under very specific circumstances (e.g. health reasons, care responsibilities, discrimination or harassment), neither resignation nor termination by mutual consent normally give access to unemployment benefits in Canada, Greece, Italy, Luxembourg, Slovenia, Spain and Türkiye. Similar restrictions also apply in the United States.[1]

Nevertheless, the coverage of enforcement issues in the EPL indicators remains limited overall. In particular, the indicators do not account for aspects related to the functioning of the judicial system, such as access to labour courts or the length of proceedings. This is because these aspects influence firms' dismissal decisions (Espinosa, Desrieux and Ferracci, 2018[60]; Gianfreda and Vallanti, 2017[61]), but also employees' incentives to file a complaint (Campolieti and Riddell, 2018[62]; Espinosa, Desrieux and Wan, 2017[63]; Fraisse, Kramarz and Prost, 2015[64]), so that their overall impact on dismissal costs for employers remains theoretically ambiguous. In addition, the lack of comparable data across countries and the endogeneity of judicial outcomes to regulations and labour market conditions (Ichino, Polo and Rettore, 2003[65]) make it difficult to include statistics on legal proceedings in the indicators.

1. In most states in the United States, employees who voluntarily quit without good cause are not eligible for unemployment benefits, although employees who accept a voluntary separation package in a situation where an insufficient number of workers take such voluntary separation packages may be eligible for unemployment compensation under specific circumstances.

This section relies on three separate indicators, assessing regulation of individual dismissals, regulation of collective dismissals (i.e. when a firm lays off several workers at around the same time), and overall dismissal regulation. The overall employment protection legislation indicators for dismissing workers on open-ended contracts is a weighted average of the two formers, assigning a weight of 5/7 to the indicator for individual dismissals and 2/7 to that for collective dismissals.[18]

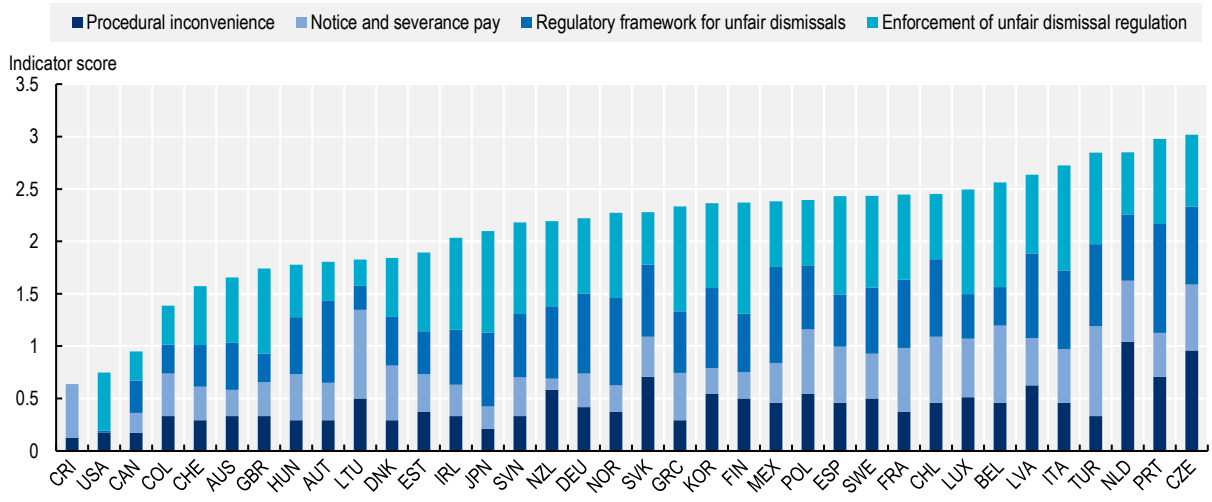
This section presents an update of the main analysis provided in OECD (2020[8]) based on the 2019 EPL indicators. Detailed information on all specific aspects of dismissal regulations for workers on open-ended contracts is not presented here, but can be found in OECD (2020[8]), supplemented by Section 6.4 of this chapter for aspects of the regulations that have been reformed since 2019. Annex 3.A in OECD (2020[8]) also provides additional details on the structure and full scoring scale used for the three EPL indicators concerning open-ended contracts.[19]

6.2.1. Regulation of individual dismissals of employees on open-ended contracts

The *OECD indicator of employment protection of regular workers against individual dismissals* (EPR) brings out international differences in labour market and social models quite strongly (Figure 6.1). English-speaking countries, with British common-law origin, rank in the bottom half in the OECD with respect to this indicator. Regulation is assessed to be low as well in Costa Rica, and a few European countries (e.g. Switzerland, Hungary, Austria, Denmark and Estonia). By contrast, eight of the ten countries with the highest EPR are civil-law EU countries, and two-thirds of the 21 civil-law EU countries are in the top half in terms of this indicator.

Figure 6.1. Strictness of regulation of individual dismissals of workers on open-ended contracts

2025



Note: OECD indicator of employment protection of regular workers against individual dismissals (EPR), version 4. Range of indicator scores: 0-6 from least to most restrictive. The overall strictness indicator assigns the same weight to the four broad categories.
Source: *OECD Employment Protection Legislation Database*, https://www.oecd.org/en/data/datasets/oecd-indicators-of-employment-protection.html.

StatLink https://stat.link/z58xwu

According to the EPR and its components, countries with high overall dismissal regulation for workers on open-ended contracts typically have strict regulations along the three categories procedural requirements, notice and severance pay, and regulatory framework for unfair dismissals (Figure 6.1); but this is not the case for enforcement of unfair dismissal regulation. In particular, the United States[20] has some of the least stringent regulations overall, while scoring highly in this dimension. This is because the time period during which an employee can file an unfair dismissal complaint can be long in the United States.

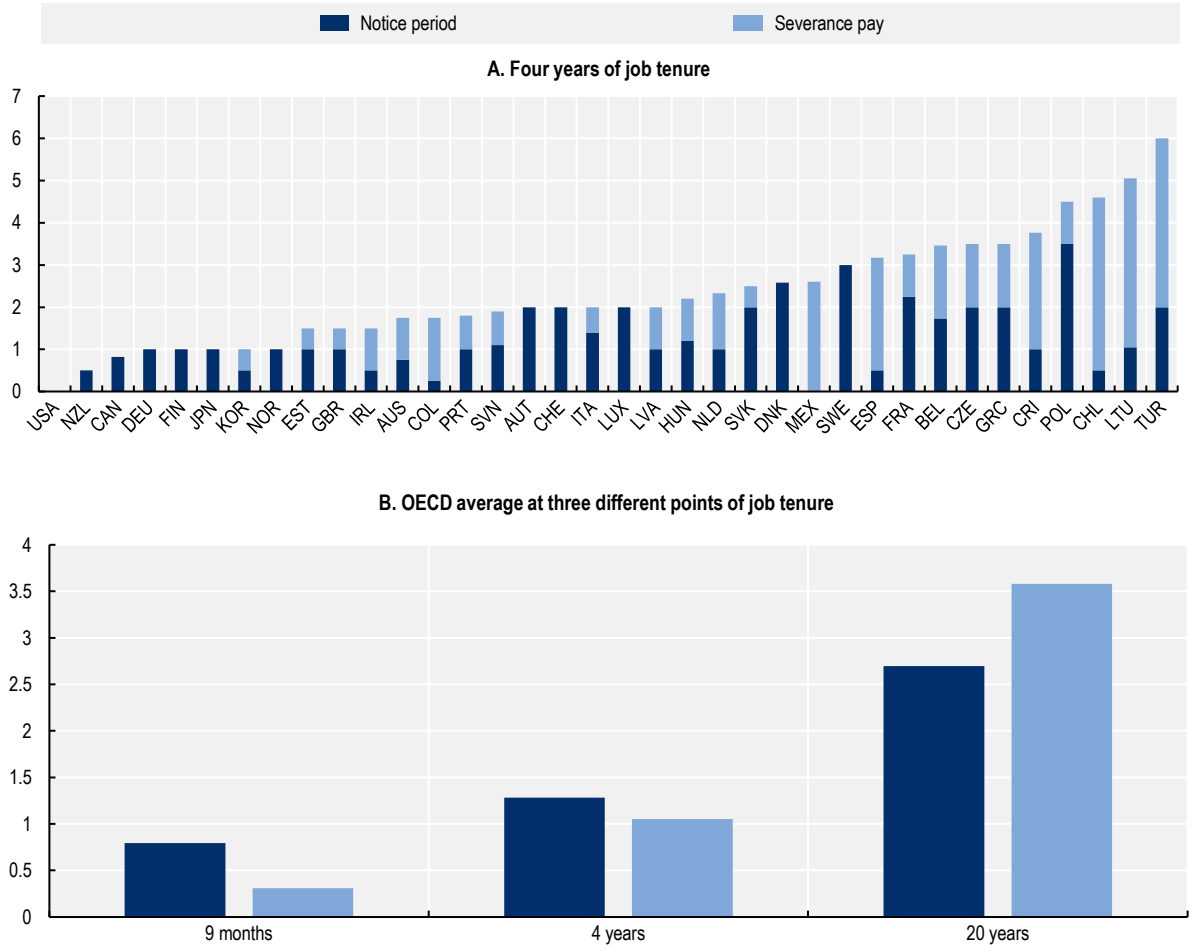
The median of the maximum time to make a claim among OECD countries is two months. However, it is longer than two years in the United States (where it, however, varies by state),[21] as well as in Colombia and Japan. By contrast, in some countries (Austria, Denmark, Hungary, Lithuania, Slovenia, Switzerland and Türkiye), claims must be filed before the dismissal takes effect.[22]

Looking specifically at the wages paid to a dismissed worker after notice of dismissal, whether in the form of notice period or severance pay, and for a worker with four years of job tenure, they vary widely among OECD countries, from no compensation in the United States to six months of pay in Türkiye (Figure 6.2, Panel A). At this level of tenure, the average duration of the notice period across countries is 1.3 months, and the average amount of severance pay is 1.1 months of pay.

In addition, notice period and severance pay both tend to increase with job tenure (Figure 6.2, Panel B), with the increase being more pronounced for severance pay. On average across countries, notice period and severance pay are respectively 2.1 times and 3.4 times lower at 4 years of job tenure than at 20 years, and 1.6 and 3.4 times higher than at 9 months of job tenure. In addition, average severance pay is smaller than average notice period at 9 months of job tenure, but greater at 20 years of job tenure.

Figure 6.2. Notice period and severance pay for individual dismissals of workers on open-ended contracts

In months of pay after dismissal notice, 2025



Note: These values are for individual (not collective) dismissals. They take the average of dismissals for personal and economic reasons. Panel B: OECD average is the unweighted average for the 36 OECD countries analysed.
Source: *OECD Employment Protection Legislation Database*, https://www.oecd.org/en/data/datasets/oecd-indicators-of-employment-protection.html.

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6.2.2. Regulation of collective dismissals of workers on open-ended contracts

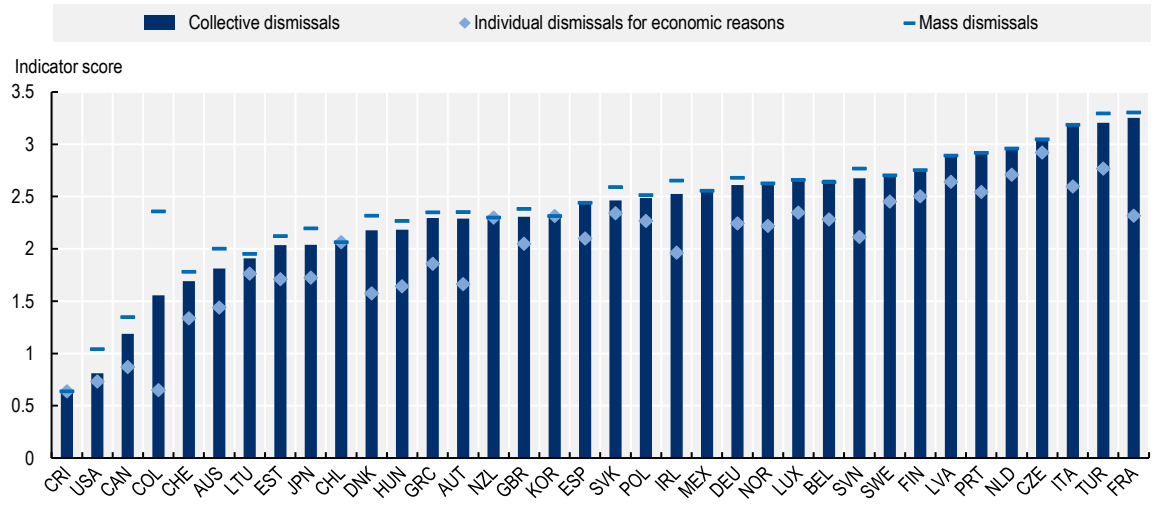
Cyclical factors, such as downturns in product demand, and changing attitudes toward labour hoarding, as well as structural trends, such as the digital transformation and the move toward carbon neutrality, could force firms to restructure their workforces, resulting in the dismissal of large numbers of workers in a relatively short period of time. Considering the greater challenge that these dismissals pose to local economies and to workers' search for a new job (see for example Chapter 3), most OECD countries have put in place additional dismissal regulation that apply from a certain number of workers dismissed in a given period of time. This section presents employment protection legislation for collective dismissals, i.e. dismissals of several workers at around the same time (irrespective of whether specific regulations apply), relying on the OECD EPL indicator for collective dismissals.

The EPL indicator for collective dismissals (EPC) takes into account the same elements of regulation as in the indicator for individual dismissals[23] but applying to dismissals of 10, 45 and 120 workers by a firm within one month.[24] In all OECD countries where specific regulations apply above a certain number of dismissals (and for the firm sizes covered by the indicator), these regulations always apply in the event of 120 or more workers being laid off in the same month[25] – in other words, the threshold for the application of these specific regulations is always less than 120 workers. Regulations relating to the dismissal of 120 workers or more will be referred to as "mass dismissals regulations" in the rest of this chapter.[26]

Figure 6.3 presents the indicator for collective dismissals. It also shows, for comparison purposes, the indicator for mass dismissals and a specific, recalculated indicator for individual dismissals for economic reasons to allow a proper comparison,[27] given that collective dismissals always occur for economic reasons (and that the OECD indicators for individual dismissals described above reflect both dismissals for economic and personal reasons). In one-third of OECD countries, the dismissal threshold for collective dismissals to be subject to specific regulations is (or is equivalent to) ten or less workers in one month. In these countries, the indicator for mass dismissals is therefore[28] equal to that for collective dismissals. By contrast, the dismissal threshold is particularly high in Australia, Colombia, Japan and the United States. This explains the relatively large difference between the indicator for mass dismissals and that for collective dismissals in these countries.

Figure 6.3. Strictness of regulation of collective dismissals (defined as dismissals of several workers on open-ended contracts in one month)

2025



Note: OECD indicator of employment protection against collective dismissals (EPC), version 4. Range of indicator scores: 0-6 from least to most restrictive. Individual dismissals refer to economic reasons, because collective dismissals are always for economic reasons. The indicator for collective dismissals scores the average of the values for 10, 45 and 120 dismissals within one month. The regulation of mass dismissals corresponds to the regulation of collective dismissals above the country-specific threshold for a series of individual dismissals to be subject to different legislation. The definition of at least 120 workers on open-ended contracts ensures that this threshold is passed in all countries with dedicated legislation for a series of individual dismissals. In Mexico, the indicator for individual dismissals for economic reasons takes the maximum value because legislation does not allow individual dismissals for economic reasons, only collective dismissals can be implemented for economic reasons.

Source: OECD calculations based on *OECD Employment Protection Legislation Database*, https://www.oecd.org/en/data/datasets/oecd-indicators-of-employment-protection.html.

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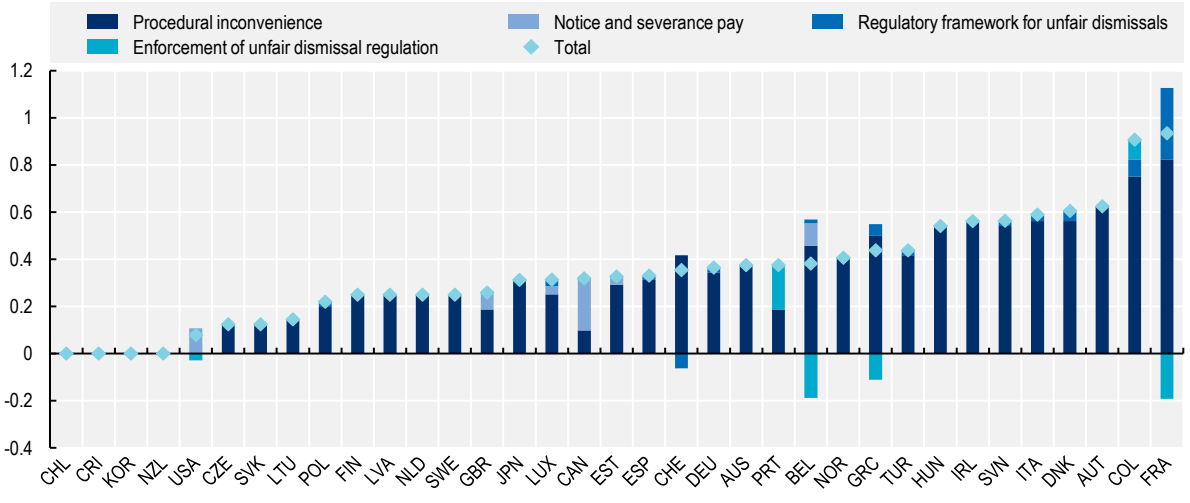
Regulation of collective dismissals tends to be stricter in countries where regulation of individual dismissals is stricter, as in practice regulation of individual dismissals often serves as a minimum for that of collective dismissals (Figure 6.3).

All OECD countries with available data – with the exceptions of Chile, Costa Rica, Korea, Mexico and New Zealand – impose more stringent restrictions on collective dismissals relative to individual dismissals (Figure 6.3).[29] Chile, Costa Rica, Korea and New Zealand regulate collective dismissals the same as individual dismissals; Mexico is a peculiar case, as legislation does not allow individual dismissals for economic reasons, while only collective dismissals can be implemented for economic reasons.

The EPL indicator for collective dismissals is 15-20% higher than that for individual dismissals for economic reasons in the OECD on average, mostly because of stricter procedural requirements before notice can be given (Figure 6.4).[30] In fact, notification procedures for mass dismissals are more homogeneous and stricter than for individual dismissals. All OECD countries analysed, with the exception of Chile, Costa Rica, the United States, and certain provinces in Canada, require consultation with a third party or an authorisation before the dismissal can take place above a certain threshold of workers dismissed. By contrast, this is only systematically[31] the case in eight countries for individual dismissals for economic reason (Czechia, Finland, Germany, Korea, the Netherlands, New Zealand, the Slovak Republic and Sweden). As a result, on average across countries, the time delay before notice can be given is 30 days for mass dismissals, compared with 9 days for individual dismissals for economic reasons.[32]

Figure 6.4. Difference between strictness of regulation of collective and individual dismissals for economic reasons

2025



Note: Range of indicator scores: 0-6 from least to most restrictive. Individual dismissals refer to economic reasons, because collective dismissals are always for economic reasons. The indicator for collective dismissals scores the average of the values for 10, 45 and 120 dismissals within one month. Mexico is excluded, as legislation does not allow for individual dismissals for economic reasons. The chart decomposes the difference between the EPL indicator for collective dismissals and the EPL indicator for individual dismissals into the differences between each of their broad components.

Source: OECD calculations based on *OECD Employment Protection Legislation Database*, https://www.oecd.org/en/data/datasets/oecd-indicators-of-employment-protection.html.

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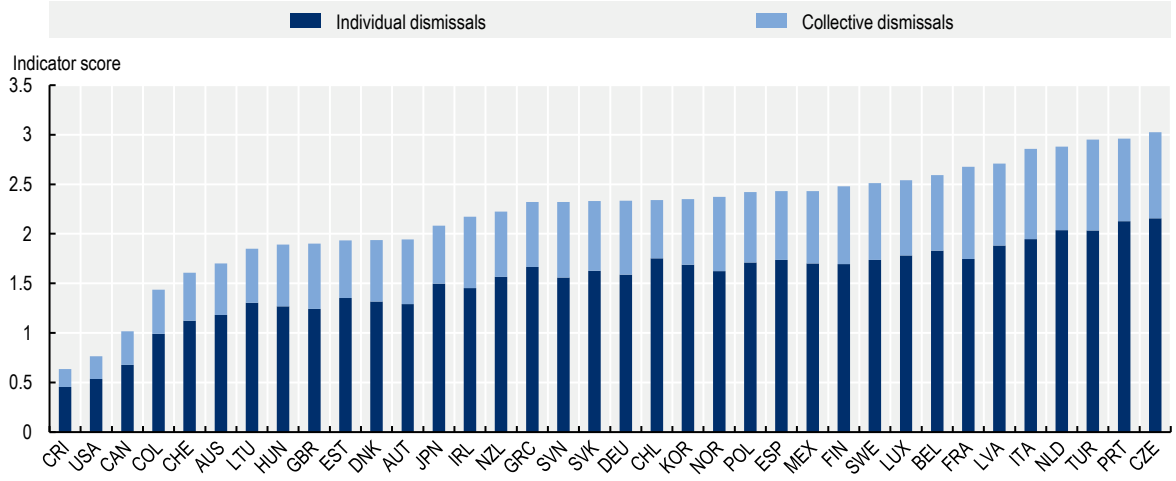
A few countries stand out with certain components of the indicator being lower for collective dismissals than for individual dismissals: enforcement of unfair dismissal regulation in Belgium, France, Greece and the United States; and regulatory framework for unfair dismissal in Switzerland (Figure 6.4). These differences can be explained by the reduced risk of dismissal being challenged in court in the event of mass dismissals in Belgium, France, Greece and the United States, due to: (i) shorter time limits to make a claim for unfair dismissal (Belgium and France), (ii) administrative authorisation (France, Greece) and (iii) eligibility for unemployment benefits when taking a voluntary separation package, under certain conditions, in most states in the Unites States. In Switzerland, the maximum compensation for unfair dismissal is lower in the event of mass dismissals (two months' pay compared to six months for individual dismissals).[33]

6.2.3. Overall regulation of dismissing workers on open-ended contracts

The EPL indicator of overall regulation of individual and collective dismissals of workers on open-ended contracts is similar to that for individual dismissals (and collective dismissals) taken separately in terms of (i) country rankings (Figure 6.5) and (ii) the relative importance of the four broad components of the indicators (Annex Figure 6.A.1). As a result, common-law countries (i.e. Australia, Canada,[34] Ireland, New Zealand, the United Kingdom and the United States) rank in the lower half in terms of the overall indicator for dismissing workers on open-ended contracts (EPRC), while about two-thirds (13) of the 21 OECD EU civil-law countries rank in the upper half; and countries with high EPRC generally have high components for all subcategories, except for the enforcement of unfair dismissals regulations (Annex Figure 6.A.1).

Figure 6.5. Overall strictness of regulation of dismissing workers on open-ended contracts

2025



Note: OECD indicator of employment protection of regular workers against individual and collective dismissals (EPRC), version 4. Range of indicator scores: 0-6 from least to most restrictive. These aggregate indicators assign a weight of 5/7 to individual dismissals and 2/7 to collective dismissals.

Source: *OECD Employment Protection Legislation Database*, https://www.oecd.org/en/data/datasets/oecd-indicators-of-employment-protection.html.

StatLink https://stat.link/nelqud

6.3. Regulation of temporary contracts

An important aspect of job protection regulations relates to the difference between workers on open-ended and temporary contracts, especially fixed-term contracts. Terminating an employment relationship at the end of a fixed-term contract is much less costly for employers than dismissing an employee on open-ended contract. To tackle the excessive use of temporary contracts, governments generally impose restrictions on their use and, in some countries, add termination costs when a contract expires.

This section compares regulations of temporary contracts in OECD countries, based on the OECD Employment Protection Legislation indicators for temporary workers. They focus on restrictions on the use of fixed-term contracts and temporary work agency assignments,[35] as well as termination costs for fixed-term contracts.[36]

6.3.1. Regulation on the termination of fixed-term contracts

This section presents employment protection against terminating fixed-term contracts in OECD countries based on the new OECD indicator of protection against termination of fixed-term contracts (EPTT) (see Box 6.2 for a description of the design of this indicator). This is done in relation to regulations of individual dismissals of workers on open-ended contracts, in order to compare the regulations applying to fixed-term and open-ended contracts. The qualitative information underlying the coding of the EPTT is available in Annex Table 6.A.2 in Annex 6.A.

Box 6.2. The design of the new indicator of protection against terminating fixed-term contracts

Versions 1-3 of the EPL indicators for temporary contracts were limited to hiring restrictions for workers on fixed-term or temporary work agency contracts. With Version 4, the scope of these indicators has been extended to termination costs of fixed-term contracts to capture more adequately the overall level of regulation of temporary contracts and the degree of institutional dualism in the labour market.

An indicator of protection against individual termination of fixed-term contracts (EPTT) has been constructed based on the same model as the indicator of protection of workers on open-ended contracts against individual dismissals (EPR), discussed in the previous section. In particular, it takes into account the same four broad aspects of dismissal regulation: (i) procedural requirements, (ii) notice period and severance pay, (iii) the regulatory framework for unfair dismissals and (iv) enforcement of unfair dismissal regulation. These categories are defined from a number of lower-level elements (or items) following the structure described in Table 6.1[1] For the EPTT, however, the regulation is assessed exclusively for a worker with 9 months of tenure, while the EPR takes into account several durations of tenure.[2, 3]

In virtually all OECD countries, a fixed-term contract can be terminated *at* the end date for any reason[4] and with few or no restrictions, while dismissal regulation is usually at least as strict *before* the contract expiry date as it is in the case of an open-ended contract (Annex Table 6.A.2).[5] In fact, in about one-third of countries, regulation governing dismissal (without fault) is even stricter for a fixed-term contract.[6] As a result, employers should generally wait until the end of the contract – rather than terminating it before the end date – to minimise the costs associated with terminating a fixed-term contract (Cahuc, Charlot and Malherbet, 2016[66]).

Table 6.1. The design of the indicator of protection against terminating fixed-term contracts

Category of regulation	Lower-level elements of regulation	(1) Weights: EPR	(2) Weights: EPTT
Procedural requirements	1. Notification procedures	1/8	1/8
	2. Time delay before notice can be given	1/8	1/8
Notice and severance pay	3a. Length of notice period (9 months tenure)	1/28	3/28
	3b. Length of notice period (4 years tenure)	1/28	-
	3c. Length of notice period (20 years tenure)	1/28	-
	4a. Amount of severance pay (9 months tenure)	1/21	3/21
	4b. Amount of severance pay (4 years tenure)	1/21	-
	4c. Amount of severance pay (20 years tenure)	1/21	-
Regulatory framework for unfair dismissals	5. Definition of unfair dismissal	1/16	1/16
	6. Length of probationary period (the initial period in which unfair dismissal claims cannot be made)	1/16	1/16 (score = 0)
	7. Compensation to the worker following unfair dismissal	1/16	1/16 (score = 0)
	8. Possibility of reinstatement following unfair dismissal	1/16	1/16 (score = 0)
Enforcement of unfair dismissal regulation	9. Maximum time to make a claim of unfair dismissal	1/16	1/16 (score = 0)
	22. Burden of proof when the worker files a complaint for unfair dismissal	1/16	1/16 (score = 0)
	23. Ex-ante validation of the dismissal by an external authority	1/16	1/16 (score = 0)
	24. Pre-termination resolution mechanism granting unemployment benefits	1/16	1/16 (score = 0)

Note: The weights provided are the final weights used in the indicators. The four broad categories of dismissal regulation determine with equal weight (25%) the aggregate score; the lower-level elements determine with equal – or almost equal – weight the scores of the four broad categories. Annex Table 6.A.1. provides the full scoring scale.

In virtually all OECD countries, the EPTT therefore reflects the termination costs incurred when the employer decides to wait until the end of a fixed-term contract; termination of the contract before the end date is not taken into account. Accordingly, the time delay before notice can be given (item 2) generally corresponds to the period between the employer's decision to terminate the employment relationship and the actual end of the fixed-term contract, while the notice period (item 3) is equal to zero.[7] The delay between the employer's decision to terminate the employment relationship and the end of the fixed-term contract (item 2) is set at: (i) at zero when the contract is not renewed for economic reasons, on the assumption that, unlike insufficient performance or unsuitability, employers can anticipate changes in activity and adjust ex-ante the duration of the contract; (ii) evenly distributed between zero and the "baseline" duration (i.e. half the baseline duration) in the event of non-renewal for personal reasons, the baseline duration being taken equal to the maximum cumulative duration divided by the maximum number of successive contracts.[8] Overall, the period referred to in item 2 is considered to be equal to the average between that for non-renewal for economic (i.e. zero) and that for non-renewal for personal reasons, i.e. half that for non-renewal for personal reasons.

Only in Switzerland does the EPTT reflect the termination costs when a worker is dismissed before the end of their contract rather than those incurred when the employer decides to wait until the end of the contract. This is because fixed-term contracts can be terminated for any reason and at relatively low

costs[9] before their end date if stipulated in the contract, whereas it can be costly to wait until the contract expires.

In all countries, the EPTT reflects regulations allowing terminations of contracts for any reason (except for explicitly prohibited grounds – e.g. discrimination or violation of civil right legislation –, not covered by the EPL indicators), either because it considers the termination costs incurred when the employer decides to wait until the end of the contract or, in the case of Switzerland, because the contract can be terminated for any reason before its term. There is therefore no possible dispute over the reasons for termination. As a result, all aspects of regulations dealing with the application and enforcement of unfair dismissal regulations are assigned a score of zero in the EPTT indicator. These correspond to items 6, 7, 8, 9, 22, 23 and 24 in Table 6.1. Annex Table 6.A.1 in Annex 6.A provides the full scoring scale for all other items of the EPTT.

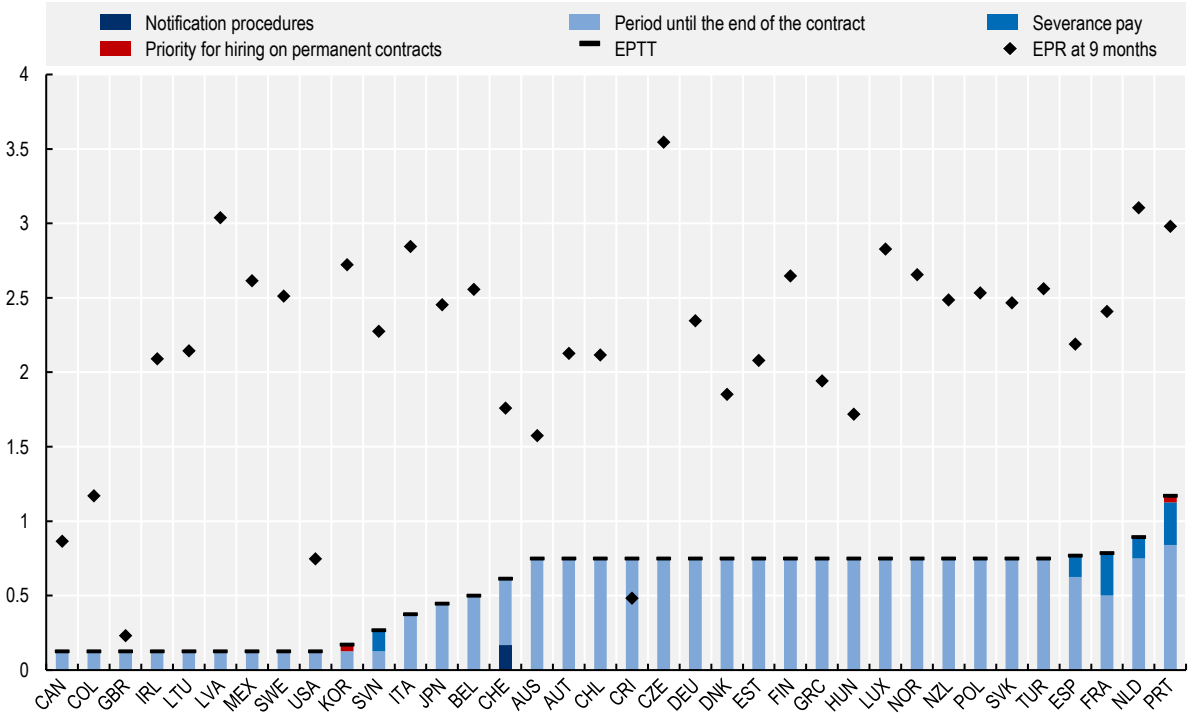
1. The four broad categories determine with equal weight the aggregate score, and the lower-level elements determine with equal weight the scores for the four broad categories. The only exception is the lower-level category notice and severance pay, in which severance pay carries a slightly higher weight (4/7) than notice period (3/7). The rationale is that workers can still contribute to the firm's output while on notice. Consequently, the net cost to the firm is higher for one month of severance pay than for one month of advance notice.
2. In the EPR, notice period and severance pay are assessed at three different tenures (9 months, 4 years, and 20 years) (Table 6.1 column (1)) and compensation following unfair dismissal is assessed at 20 years of tenure.
3. In Sweden, the cumulative duration of fixed-term contracts is assumed to be less than 12 months over a three-year period, so no notice period is required and there is no priority for re-hiring. Where relevant, the contract duration is assumed to be equal to the maximum cumulative duration of fixed-term contracts divided by the maximum number of successive contracts. When regulation and judicial practices do not impose any limit on the maximum number of successive contracts, a succession of very short-term contracts is assumed. For example, in Alberta (Canada) and Colombia, contracts are considered short enough so no notice period is required.
4. Unfair dismissal rules apply to both permanent and fixed-term contracts (before and at the end) in Ireland (unless explicitly excluded in the employment contract) and the United Kingdom. Therefore, the end of a fixed-term contract is no longer a fair reason for termination after expiry of the probationary period in these two countries (at 6 months of tenure in Ireland and 24 months in the United Kingdom). At 9 months' tenure, unfair dismissal rules can apply at the end of a fixed-term contracts in Ireland only. However, in Ireland, the indicator considers the most favourable case for the employer, i.e. when the contract explicitly excludes unfair dismissal rules. Disputes may also arise in all countries concerning the non-renewals of fixed-term contracts on explicitly prohibited grounds (such as discrimination or violation of civil right legislation), but terminations involving these grounds are not considered in the EPL indicators.
5. Dismissal regulation is significantly less restrictive before the end of a fixed-term contract than during an open-ended contract in only two OECD countries. In Switzerland, the fixed-term contract can be terminated at any time if specified in the employment contract. In Italy, the layoff tax that the employer has to pay when dismissing a permanent employee is not due when dismissing a worker with a fixed-term contract, and, in the event of unfair dismissal, the employer has to pay the remaining wage until the end of the contract, compared to 6 to 36 months of pay for workers on open-ended contracts.
6. In Colombia, Costa Rica and Estonia, for example, the employer must pay the remaining wage until the end of the contract in case of termination of a fixed-term contract before its end date (for economic reasons in Colombia and Estonia). The remaining wage until the end of the contract is awarded by the court to an unfairly dismissed fixed-term employee in Chile, Colombia, France and Portugal. In Portugal, the severance pay is higher and the probationary period is shorter for fixed-term employees than for permanent employees. The probationary period is also substantially shorter for fixed-term employees in France, Lithuania, the Netherlands and Spain (in the case of training contracts). Fair reasons for dismissal are mainly limited to cases of serious misconduct or unsuitability before the end of a fixed-term contract in France, Greece, Japan and Luxembourg.
7. Item 3 is different from zero at the end of a fixed-term contract only in Japan and Portugal. In Japan, the notice period is the same as for an open-ended contract (i.e. one month) after three or more renewals. In Portugal, a notice period of 15 days is required at the end of a fixed-term contract (this period is however deducted from item 2).
8. Where regulations and judicial practices do not impose any limit on the maximum cumulative duration of fixed-term contracts, item 2 is assigned the maximum score (6). Where they do not impose any limit on the maximum number of successive contracts, the delay for item 2 is considered to be equal to one day.
9. The only regulations applying to the termination of a fixed-term contract before its end date are the same notification procedure and notice period as for the dismissal of a regular employee.

Figure 6.6 shows the EPTT indicator of protection against terminating fixed-term contracts and its decomposition into the relevant subcomponents (see Box 6.2): notification procedures (item 1), the period until the end of the contract – i.e. the sum of (i) the delay before notice can be given (item 2) and (ii) the

notice period (item 3) –, severance payments (item 4), and the priority for hiring a fixed-term employee on a permanent contract[37] (item 5). It is presented together with an ad hoc indicator of protection for workers on open-ended contracts against individual dismissals, which reflects the degree of protection at 9 months of tenure (*EPR at 9 months*), to allow a meaningful comparison between the level of protection for permanent employees and that for fixed-term employees (the EPTT reflects regulation applying at 9 months of tenure while the traditional EPR takes into account three different tenure levels: 9 months, 4 years and 20 years).[38]

Figure 6.6. Strictness of regulation on the termination of fixed-term contracts

2025



Note: Range of indicator scores: 0 to 6 from least to most restrictive. In virtually all countries, the EPTT reflects the termination costs incurred when the employer decides to wait until the end of a fixed-term contract, and termination of the contract before the end date is not taken into account (see Box 6.2). *EPR at 9 months* is made of the sub-components of the original EPR aggregated using the same weights as those used to construct the EPTT (see columns (2) of Table 6.1), except that the sub-component compensation following unfair dismissals is assessed at 9 months of tenure instead of 20 years. The United Kingdom is a particular case, as the probationary period is longer than 9 months (see note 38). The component period until the end of the contract corresponds to the sum of the scores for item 2 (time delay before notice can be given) and item 3 (notice period) (item 3 is only different from zero in two countries: Japan and Portugal).
Source: OECD calculations based on *OECD Employment Protection Legislation Database*, https://www.oecd.org/en/data/datasets/oecd-indicators-of-employment-protection.html.

StatLink https://stat.link/9u6mxl

In 10 countries – including four of the six common-law countries –, there is no limit on the number of successive fixed-term contracts, so employers can use a large number of successive very short-term contracts and terminate the employment relationship at virtually any time. In these countries, the time between the employer's decision to terminate the employment relationship and the end of the contract is therefore very short. This is the case in Canada, Colombia, Ireland, Latvia, Lithuania, Mexico, Slovenia, Sweden, the United Kingdom and the United States. All other countries have limits on the number of

successive contracts, whether explicitly defined in law or implicitly in judicial practices – courts tend to sanction successive fixed-term contracts in some of the countries without legal restrictions, considering that these contracts hide a permanent employment relationship. Fixed-term contracts are therefore longer in these countries, and so is the period between the employer's decision to terminate the employment relationship and the end of the contract.

In most OECD countries, the only termination cost reflected in the EPTT is this period *until* the end of the fixed-term contract (Figure 6.6).[39,40] In only two countries (Japan and Portugal), this period should include a notice period, i.e. the non-renewal of the contract should be notified in advance to the worker. A few countries have additional restrictions that apply *at* the end of the contract, including severance pay (France, the Netherlands, Portugal, Slovenia and Spain), and priority given to fixed-term employees for hiring under permanent contracts (Korea, Portugal)[41] (Figure 6.6). The detailed aspects of these regulations are presented in Annex Table 6.A.2.

As expected given that restrictions on the termination of fixed-term contracts at the end date are light or absent, termination costs, as assessed by the indicators, are significantly lower for fixed-term contracts than for open-ended ones in virtually all OECD countries (Figure 6.6). The only exceptions are Costa Rica and the United Kingdom (at 9 months' tenure), where dismissals of workers on open-ended contracts are allowed for any reason, which is not explicitly prohibited (e.g. discrimination or violation of civil right legislation).[42] Furthermore, in Costa Rica, the duration of a fixed-term contract can be relatively long, which can lead to significant delays between the employer's decision to terminate the employment relationship and the end of the contract.[43]

Fixed-term contracts can be terminated at any time at virtually no cost in about a quarter of OECD countries, which therefore have the lowest EPTT score (Figure 6.6).[44] These countries include some common-law countries where dismissal regulation for workers on open-ended contracts tends to be loose (Canada, Ireland, the United Kingdom and the United States), but also a few countries where regulation for workers on open-ended contracts is relatively strict (e.g. Latvia or Mexico) and where there is therefore a substantial degree of regulatory dualism in the labour market.[45]

By contrast, four countries stand out by combining substantial delays until the contract termination date – due to limits on the maximum number of successive fixed-term contracts – with severance pay (France, the Netherlands, Portugal,[46] and Spain). These countries also have relatively strict dismissal regulations for workers on open-ended contracts – they rank in the top half of OECD countries in terms of the indicator of regulation for workers on open-ended contracts.

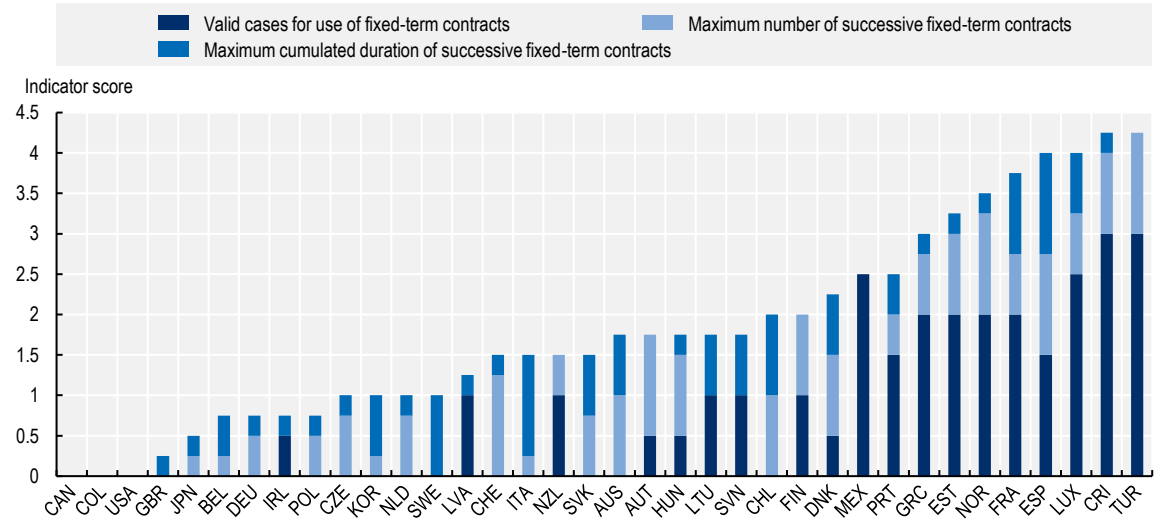
6.3.2. Regulation of hiring fixed-term employees

The EPL indicator for hiring regulation on fixed-term contracts quantifies the regulations governing hiring of workers on fixed-term contracts, i.e. the types of work for which these contracts are allowed, their number of renewals, and their cumulative duration. Further details on the structure and full scoring scale used for this indicator are provided in OECD (2020[8]).

Fixed-term contracts are allowed in all OECD countries analysed and require no justification in about half of them. In the other half, the use of fixed-term contracts must be justified by "objective reasons" or a "material situation", i.e. to perform a task that is itself of fixed duration (e.g. seasonal work, temporary increase of workload). This is the case, for example, in Costa Rica, Türkiye and, with limited exemptions, Estonia, France, Greece, Luxembourg, Mexico and Norway (Figure 6.7). Other countries allow more frequent exemptions, based on the specific needs of either employers or employees.

Figure 6.7. Strictness of hiring regulation on fixed-term contracts

2025



Note: Range of indicator scores: 0-6 from least to most restrictive.
Source: *OECD Employment Protection Legislation Database*, https://www.oecd.org/en/data/datasets/oecd-indicators-of-employment-protection.html.

StatLink https://stat.link/xy1pua

About three-quarters of OECD countries impose limits on the duration of successive contracts – which are particularly short in Chile, France and Spain: 12 to 18 months, compared to an average of 41 months across countries.[47] Fewer countries (about half) impose legal restrictions on the *number* of renewals or successive fixed-term contracts, within the maximum cumulative duration (Figure 6.7) – two renewals on average across countries – although, as discussed in the previous section, courts tend to sanction successive fixed-term contracts even in some countries where there are no legislated restrictions on the number of renewals (e.g. in Denmark, Finland, Japan, Korea, New Zealand, Norway and Switzerland). Some countries (e.g. Belgium, Czechia, Germany, Italy, Poland and Sweden) have different restrictions depending on whether the fixed-term contract is justified by objective reasons, with a shorter maximum cumulative duration or a lower maximum number of contracts in the absence of justification.

6.3.3. Regulation of hiring temporary work agency workers

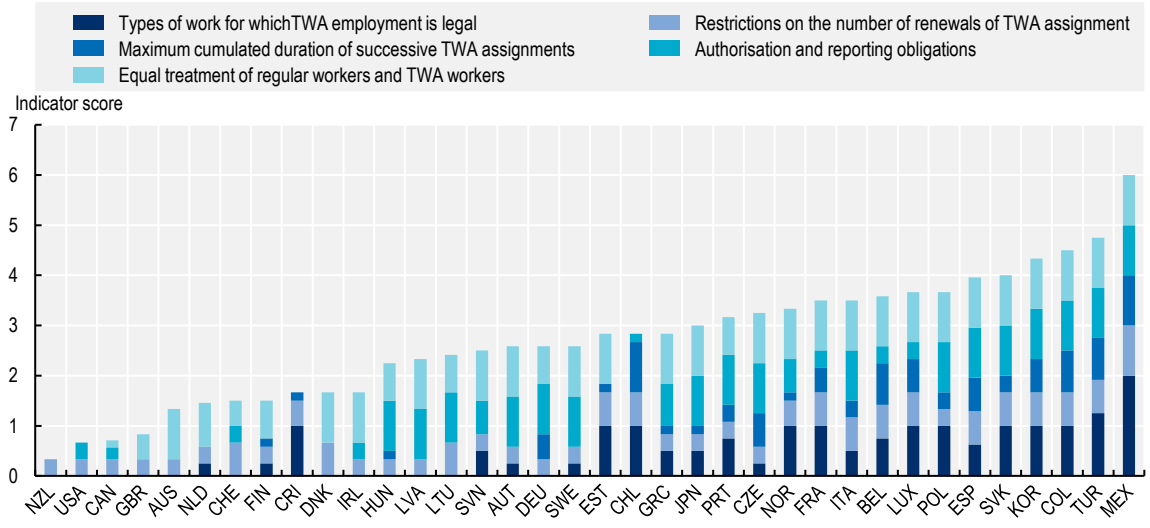
Similar to the indicator for hiring regulation on fixed-term contracts, the EPL indicator for temporary work agency contracts quantifies the regulation governing the use of temporary-work-agency employment in terms of the types of jobs for which it is allowed and the limits on the number and cumulative duration of successive assignments at the user firm. The indicator for TWA contracts also covers some of the regulations governing the operation of temporary work agencies and the requirements for agency workers to receive the same pay and/or working conditions as similar workers on open-ended contracts in the user firm. Further details on the structure and full scoring scale used for this indicator are provided in OECD (2020[8]).

About two-thirds of OECD countries impose some restrictions on the types of work for which TWA employment is allowed. Only common-law countries (Australia, Canada, Ireland, New Zealand, the United Kingdom and the United States) as well as Denmark, Germany, Hungary, Switzerland, Latvia and Lithuania (Figure 6.8) allow TWA employment without justification. As a result, nearly three-quarters of

countries that restrict the type of work for which fixed-term contracts are allowed also restrict the type of work for which TWA employment is allowed (only Denmark, Hungary, Ireland, Latvia, Lithuania and New Zealand have such limitations for fixed-term contracts but not for TWA employment). In many countries, restrictions on the type of work allowed are stricter for TWA employment than for fixed-term contracts. For example, TWA employment must be justified by objective reasons in several of the countries that require no justification for fixed-term contracts: Belgium,[48] Chile, Colombia, Korea (with the exception of 32 narrowly defined occupations), Poland and the Slovak Republic. Another example is Mexico, where temporary work agency employment was banned in April 2023 (Section 6.4).

Figure 6.8. Strictness of regulation on temporary-work-agency employment

2025



Note: Range of indicator scores: 0-6 from least to most restrictive. TWA: temporary work agency.
Source: *OECD Employment Protection Legislation Database*, https://www.oecd.org/en/data/datasets/oecd-indicators-of-employment-protection.html.

StatLink https://stat.link/xl0vdk

Almost two-thirds of OECD countries have limitations on the cumulative duration of successive TWA assignments (Figure 6.8), which averages 26 months.[49] The maximum duration of assignments is particularly short in Belgium (six to 18 months depending on the reason for using TWA employment), Chile (three to six months), Colombia (one to 12 months), Korea (six to 24 months), and Türkiye (six to eight months). On the other hand, less than half of OECD countries impose restrictions on the number of renewals or successive assignments.

TWA operations are strictly controlled in about half of OECD countries. In these countries, TWA typically can operate only after obtaining a licence from the relevant government authority and providing sufficient financial guarantees. Moreover, to keep their licence, TWAs should generally show compliance with regulations through regular reporting.

A large majority of OECD countries guarantee equal pay and working conditions for TWA workers and workers on open-ended contracts in the user firm – although sometimes only after a certain duration of assignment (e.g. 12 weeks in the United Kingdom or 6 months in Hungary). Only Chile, Costa Rica, and a few common-law countries (most provinces in Canada, New Zealand and the United States) do not have such provisions for equal treatment.

6.3.4. Overall regulation of temporary contracts

The new Version 4 of the overall indicator of regulation of temporary contracts (EPT) takes into account, with equal weighting, each broad category of hiring regulation (i.e. for fixed-term and temporary work agency employment) and the new category specific to the termination of fixed-term contracts (Table 6.2).

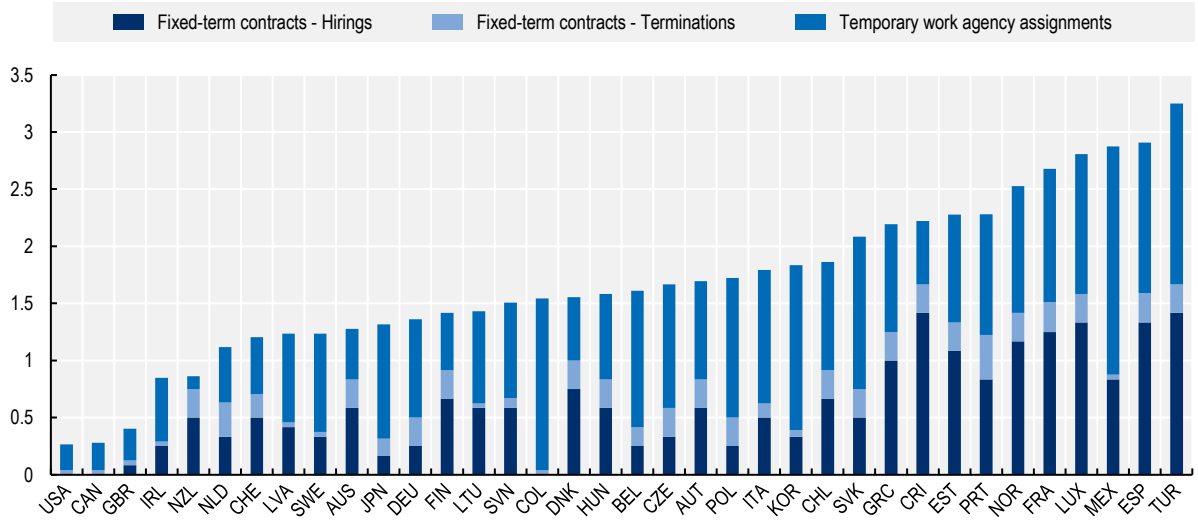
Table 6.2. The design of the overall indicator of regulation of temporary contracts

Category of regulation	Weights in the overall indicator for temporary contracts	
	New Version 4	Version 3
Hiring on temporary work agency contracts	⅓	½
Hiring on fixed-term contracts	⅓	½
Termination of fixed-term contracts **(new indicator)**	⅓	-

As in the case of regulation of dismissals of workers on open-ended contracts, common-law OECD countries have relatively weak regulation for terminating temporary contracts, while OECD European countries with civil-law systems tend to be more regulated. Specifically, the six common-law countries (the United States, the United Kingdom, Canada, New Zealand, Ireland and Australia) are among the ten OECD countries with the lowest EPL indicator for temporary contracts (Figure 6.9). By contrast, seven of the ten countries with the highest score are civil-law European countries, and a majority (12) of the 21 OECD EU civil-law countries are in the top half in terms of the indicator.

Figure 6.9. Strictness of overall regulation of temporary contracts

2025



Note: OECD overall EPL indicator for temporary contracts (EPT), Version 4. Range of indicator scores: 0-6 from least to most restrictive. This aggregate indicator assigns the same weight to hiring regulation of temporary contracts and termination of fixed-term contracts, with hiring regulation for fixed-term contracts and temporary work agency employment contributing in equal shares to hiring regulation for temporary contracts.

Source: *OECD Employment Protection Legislation Database*, https://www.oecd.org/en/data/datasets/oecd-indicators-of-employment-protection.html.

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6.4. Recent reforms in EPL: Harmonising protection of workers on open-ended contracts and strengthening regulation of temporary contracts

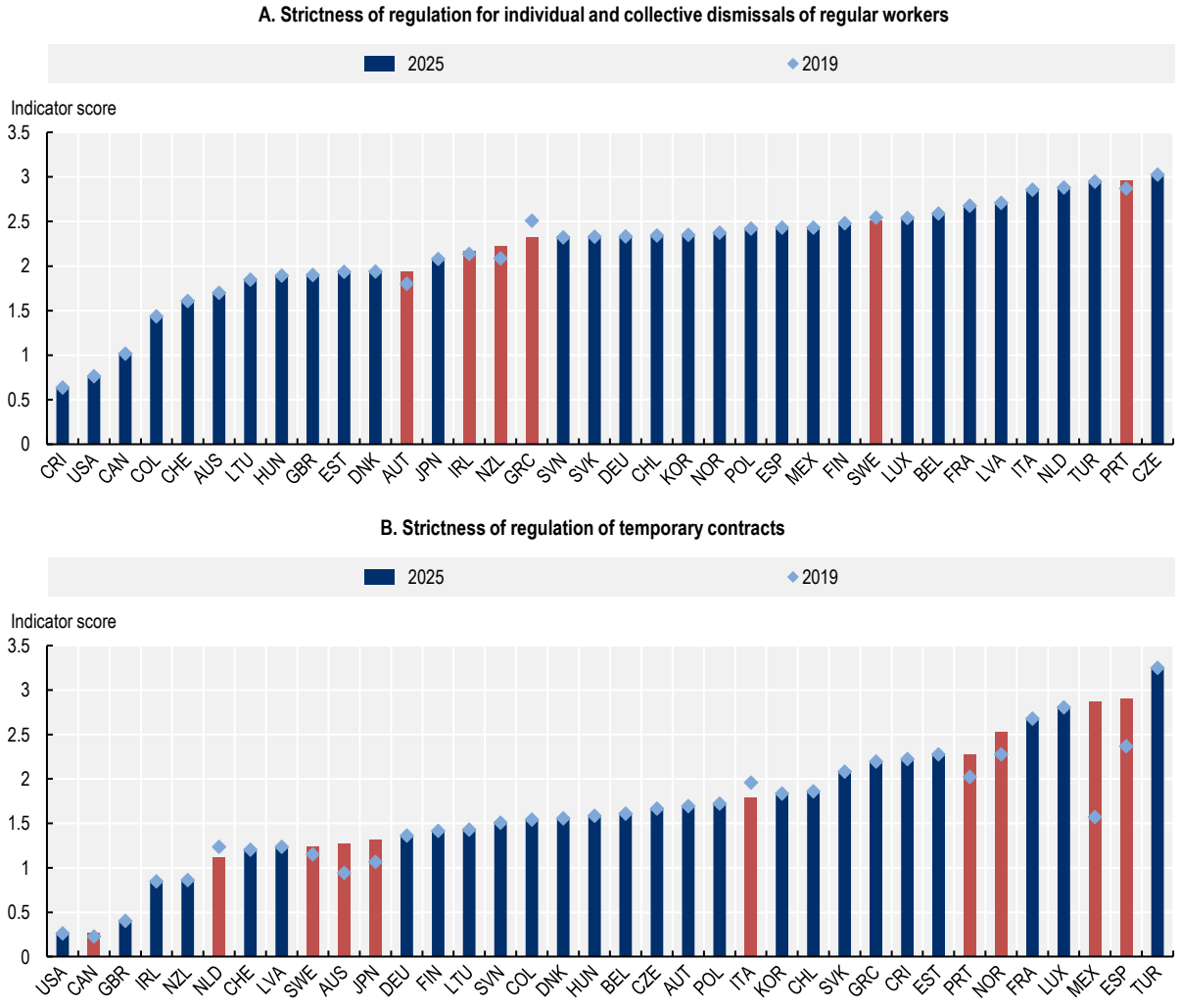
This section presents EPL reforms in OECD countries between 2019, the year of the previous release of the indicators, and 2025, the latest year in the database.[50] It focusses mostly on reforms that affected the indicators, as illustrated in Figure 6.10 and Figure 6.11. Figure 6.10 depicts the changes in the indicators for individual and collective dismissals concerning open-ended contracts (Panel A) and in the indicator for temporary contracts from 2019 to 2025 (Panel B). Figure 6.11 decomposes these changes in terms of the main dimensions of the regulation.

These reforms can be classified into four groups. A first group of reforms made regulation more predictable by harmonising regulation among dismissals of workers on open-ended contracts. A second category of reform concerned hiring regulation for temporary workers and mainly consisted of making regulation more restrictive – only two countries relaxed restrictions between 2019 and 2025 with the aim to mitigate previous or concomitant reforms that significantly limited the opportunities and incentives for firms to use temporary contracts. A third category of reforms aligned certain aspects of the regulation of temporary contracts with that of open-ended contracts. Finally, EU directive 2019/1 152 on transparent and predictable working conditions led to a series of reforms of the probationary period in European countries, although these were minor and mainly limited to fixed-term contracts (more details on this directive are provided in Section 6.4.4 below).

These reforms led to a substantial increase in the overall indicator for open-ended contracts (EPRC) in Austria, New Zealand and Portugal, while they significantly reduced the EPRC only in Greece (Figure 6.11, Panel A). The reforms also led to a significant increase in the indicator for temporary contracts in Australia, Japan, Mexico, Norway and Spain (Panel B). Only Italy and the Netherlands saw a significant decline in the indicator for temporary contracts.

During the period 2019-2025, many countries substantially strengthened regulation of temporary contracts (Figure 6.10 and Figure 6.12, Panel B[51]), while virtually no country significantly reduced protection for workers on open-ended contracts (Figure 6.10 and Figure 6.12, Panel A).[52] This marks a break with the trend toward relaxing dismissal regulations for workers on open-ended contracts, while keeping regulations on temporary contracts approximately unchanged, as observed in many countries over the decade following the 2008-2009 global financial crisis (Figure 6.10 and Figure 6.12) (OECD, 2020[8]; 2013[7]).

Figure 6.10. Quantifying recent reforms in employment protection legislation

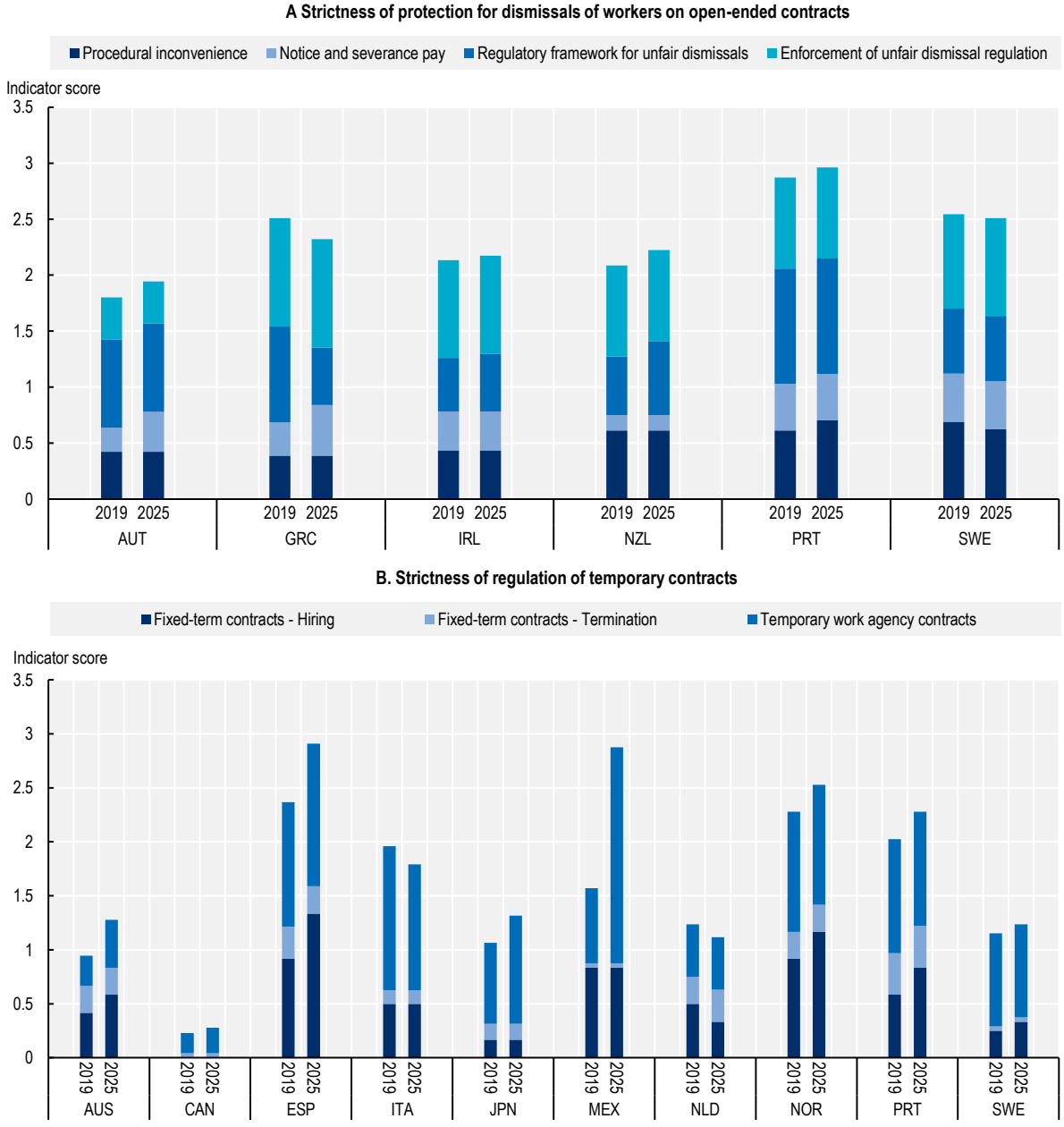


Note: Range of indicator scores: 0-6 from least to most restrictive. Panel A: OECD indicator of employment protection of regular workers against individual and collective dismissals (EPRC), Version 4. Panel B: OECD overall EPL indicator for temporary contracts (EPT), Version 4. Countries for which the indicator changed between 2019 and 2025 are shown in red.
Source: *OECD Employment Protection Legislation Database*, https://www.oecd.org/en/data/datasets/oecd-indicators-of-employment-protection.html.

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Figure 6.11. Regulatory changes of recent reforms of employment protection legislation

Indicator score of countries with changes in the indicator between 2019 and 2025



Note: Range of indicator scores: 0 to 6 from least to most restrictive. Panel A: OECD indicator of employment protection of regular workers against individual and collective dismissals (EPRC), Version 4. Panel B: OECD overall EPL indicator for temporary contracts (EPT), Version 4. All countries with changes in the OECD indicator of protection against dismissals for regular workers (EPRC, Panel A) and the OECD overall indicator for temporary contracts (EPT, Panel B) between 2019 and 2025 are displayed. Panel A: The EPL indicator assigns the same weight to the four broad categories. Panel B: countries are excluded if restrictions on the use of temporary contracts changed solely because dismissal regulations for open-ended contracts changed and dismissal regulations for fixed-term workers are aligned with that applicable to permanent employees; the EPL indicator assigns the same weight to hiring regulation of temporary contracts and termination of fixed-term contracts, with hiring regulation for fixed-term contracts and temporary work agency employment contributing in equal shares to hiring regulation for temporary contracts.

Source: *OECD Employment Protection Legislation Database*, https://www.oecd.org/en/data/datasets/oecd-indicators-of-employment-protection.html.

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Figure 6.12. Long-term trends in employment protection legislation

OECD unweighted average



Note: Range of indicator scores: 0 to 6 from least to most restrictive. The OECD unweighted average is taken across the 32 OECD countries with data available over the whole observation period (not including Colombia, Costa Rica, Iceland, Israel, Latvia and Lithuania). Panel A: OECD indicator of employment protection of regular workers against individual and collective dismissals (EPRC), Version 3. Panel B: OECD overall EPL indicator for temporary contracts (EPT), Version 3.
Source: *OECD Employment Protection Legislation Database*, https://www.oecd.org/en/data/datasets/oecd-indicators-of-employment-protection.html.

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6.4.1. Six countries harmonised employment protection for workers on open-ended contracts

Six countries harmonised regulation among dismissals of workers on open-ended contracts, by (i) limiting the discretionary power of courts in the event of dispute (Greece, Sweden and New Zealand), (ii) aligning protection for blue-collar workers with that for white-collar workers (Austria and again Greece), (iii) harmonizing the rules for calculating severance pay between different job tenure levels (the Netherlands) or (iv) extending the period between notification of dismissal and actual dismissal, so that workers have more time to contest the validity of the dismissal (e.g. with the Ministry of Labour) before dismissal (Portugal). Reforms in Austria, New Zealand and Portugal led to a substantial increase in the indicator over the period 2019-2025 (Figure 6.10, Panel A), while the indicator declined significantly in Greece.[53]

Three countries harmonised protection against dismissal by limiting the discretionary power of courts in the event of dispute. In June 2021, Greece introduced a compensation scale for unfair dismissal: at the request of either the employer or the employee, the court may award the employee a compensation ranging from three monthly wages to double the severance payment, instead of reinstating the employee and paying back pay. This led to a significant decrease in the EPL indicator of protection against dismissal for regular workers (EPRC) (Figure 6.10, Panel A). Since October 2022 in Sweden, if an employee files a complaint for unfair dismissal before the date of dismissal, the court can no longer issue a provisional ruling. Until the reform, employers had to wait for the court's provisional decision to dismiss the employee. This change harmonised and simplified the notification procedure – whether the dismissal concerns an employee on an open-ended contract or an employee on a fixed-term contract before its expiration – but also increased the risk of subsequent complaints for unfair dismissal. As a consequence, the reform led to two moderate and offsetting changes in the indicator for regular workers. In New Zealand, since May 2019, reinstatement must be offered to the employee (whether on a permanent contract or before the end of a

fixed-term contract) following unfair dismissal, where possible and reasonable. Prior to the reform, the authority could order reinstatement but was not required to do so. This reform led to a substantial increase in the EPRC.

Two countries strengthened protection for blue-collar workers against dismissal by aligning certain aspects of EPL applicable to blue-collar workers with those applicable to white-collars workers: the notice period in Austria (October 2021) and both the notice period and severance pay in Greece (January 2022). These changes led to a substantial increase in the notice period and severance pay component of the EPL indicators for regular workers in both countries (Figure 6.10, Panel A).

In January 2020, as part of the Balanced Labour Market Act, the Netherlands harmonised the rules for calculating severance payment – also paid in the event of non-renewal of a fixed-term contract – between different job tenure levels, removing the exemption before two years of tenure and a specific restrictive rule applying for tenures longer than 10 years. The reform strengthened the protection of workers with short tenure while reducing that of workers with long tenure, with no overall effect on the indicator (these two aspects of the reform offset each other). This harmonisation effort followed the 2015 Work and Security Act, which made the two available dismissal procedures (via the Public Employment Service or the Sub-district Court) more comparable and determined solely by the reason for termination, rather than by the worker's choice (OECD, 2020[8]).

In October 2019, Portugal extended the period between notification of dismissal and actual dismissal by five days, so that more workers can adequately prepare for dismissal (e.g. by seeking legal advice or asking the Ministry of Labour to verify the validity of the dismissal). This led to an increase in the indicator for regular workers (Figure 6.10, Panel A).

6.4.2. Reforms of hiring regulation for temporary workers mainly consisted of tightening restrictions

Over the period 2019-2025, seven countries (Australia, Canada, Mexico, Norway, Portugal, Spain and Sweden) strengthened restrictions on the use of temporary employment (whether fixed-term contracts or TWA assignments), resulting in a significant increase in the indicator for temporary workers in about half of them (Australia, Mexico, Norway and Spain) (Figure 6.10, Panel B). By contrast, two countries (Italy and the Netherlands) relaxed restrictions, but did so simultaneously or shortly after implementing reforms going in the opposite direction (i.e. reducing the opportunities and incentives for firms to use temporary contracts).

From March 2022, Spain limited the use of temporary contracts to temporary staff needs (OECD, 2024[57]). More specifically: i) the very flexible and widely used *contract for work and service (Contrato por obra o servicio)* was abolished; ii) the maximum duration of the two training contracts (*contrato de trabajo en prácticas and contrato para la formación y el aprendizaje*), of two and three years respectively, was reduced to one year (*contrato para la obtención de la práctica profesional*) and two years (*contrato de formación en alternancia*); and iii) the requirements to justify the temporary nature of needs was strengthened. Another important part of the Spanish reform, but one that is not reflected the OECD Employment Protection indicators, is the increased scope for the use of *open-ended intermittent contracts (Contrato fijo-discontinuo)*,[54] which provide better job security than temporary contracts, but no legal minimum working hours and therefore uncertain economic security (Box 6.3).

In December 2023, Australia introduced legal limitations on the number and cumulative duration of consecutive fixed-term contracts for the same role, which cannot exceed two contracts and two years respectively.[55] In Norway, in July 2022, the possibility for firms to use fixed-term contracts without justification for a maximum period of 12 months – and within the limit of 15% of their workforce – was removed, while the maximum cumulative duration of (standard) fixed-term contracts was reduced from four to three years in January 2024. In Portugal, since October 2019, fixed-term contracts can no longer be

used without justification to hire workers looking for their first job, and their maximum cumulative duration is two years instead of three (four years instead of six in the case of contracts of uncertain duration). Sweden also reduced the maximum cumulative duration of the most common fixed-term contracts (*Special fixed-term employment* or *SÄVA*) from 24 to 12 months in October 2022,[56] alongside the simplification of the notification procedures for dismissal of workers on open-ended contracts discussed above.

Two reforms were aimed exclusively at tightening restrictions on the use of TWA employment. In Mexico TWA employment was banned in April 2023. In Ontario (Canada), since July 2024, owners of temporary work agency need an authorisation to operate, as is the case in six other Canadian provinces and territories (Alberta, British Columbia, Manitoba, Yukon, Nunavut and the Northwest Territories).

On the other hand, only two countries relaxed restrictions on hiring temporary workers. In July 2023, Italy reinstated the possibility, which had been removed in July 2018, of using temporary contracts (fixed-term contracts and TWA assignments) for any technical, organisational or production need for a cumulated duration exceeding 12 months.[57] In January 2020, the Netherlands increased the maximum cumulative duration of fixed-term contracts from two to three years, albeit as part of a broader set of reforms aimed at reducing employer's incentives to use such contracts.[58]

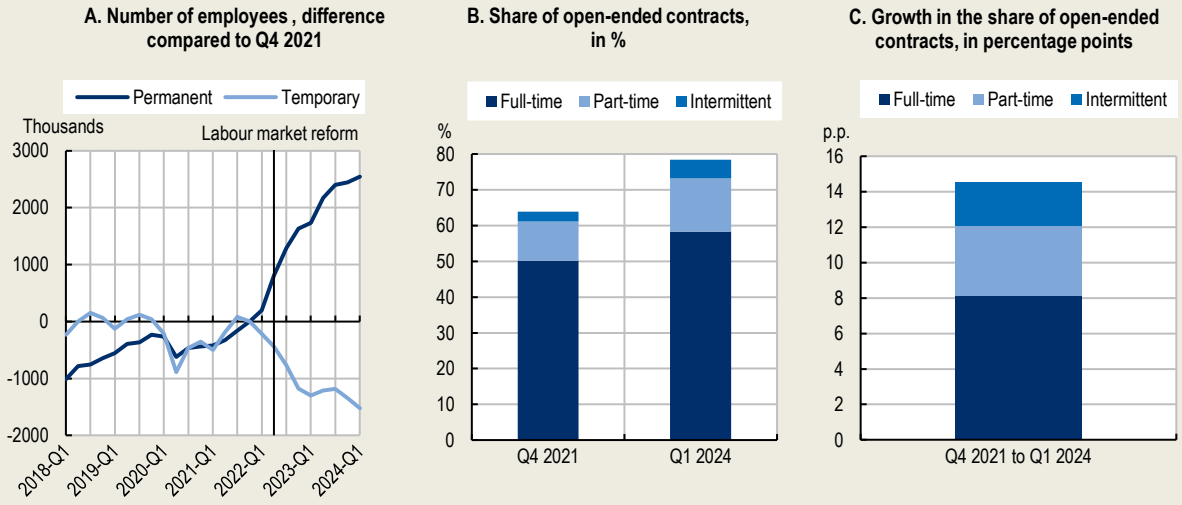
The reforms implemented in Australia, Mexico, Norway, Portugal and Spain led to a significant increase in the overall indicator of employment protection for temporary workers (EPT) while Canada and Sweden saw only a slight increase in the assessed degree of restriction[59] (Figure 6.10, Panel B). In contrast, the EPT declined in Italy and in the Netherlands.[60]

Box 6.3. The surge in open-ended contracts in Spain after the 2022 reform limiting the use of temporary contracts was not due to open-ended intermittent contracts

In addition to restricting the scope for using temporary contracts, the 2022 reform in Spain increased that for the use of *open-ended intermittent contracts (Contrato fijo-discontinuo)* (OECD, 2024[57]). Whereas before the reform their use was strictly limited to seasonal work, the reform extended its scope to all intermittent activities, temporary agency work, and contract work. Consequently, open-ended intermittent contracts can be used for many of the activities that were previously conducted with temporary contracts. Open-ended intermittent contracts offer stronger job security than temporary contracts, but not necessarily more income security: although working hours are known in advance, the law does not guarantee a minimum amount of activity, which might vary depending on the length of the period of activity and the season, within the limits of the applicable sectoral collective agreement.[1] For this reason, the reform attracted a lot of attention as critics of the reform worried that it could simply shift temporary contracts into intermittent employment, without creating permanent jobs that offer good economic security.

Analysis in OECD (2024[57]), however, suggests that the reform was successful in fostering the creation of non-intermittent open-ended contracts. Following the 2022 reform, the incidence of permanent contracts in dependent employment increased from about 74% in Q4 2021 to 84% in Q1 2024 (Figure 6.13). Yet, *open-ended intermittent contracts* played only a limited role in this surge – less than a fifth of the increase was due to these contracts. Although the incidence of *open-ended intermittent* contracts doubled over the period, it remained modest in proportion to the total number of jobs – only 5.2% in Q1 2024. Evaluations confirm the role of the reform in these developments (Adrjan, Jessen and Victoria-Lanzon, 2026[49]; International Monetary Fund. European Dept., 2024[67]).

Figure 6.13. The rise in open-ended employment reflects only to a small extent the increased use of open-ended intermittent contracts



Source: OECD (2024[57]), *Reviving Broadly Shared Productivity Growth in Spain*, https://doi.org/10.1787/34061b21-en.

StatLink https://stat.link/halw3z

The 2022 reform pays considerable attention to promoting transitions from *open-ended intermittent contracts* to continuous permanent contracts. More specifically it compels companies to inform workers on intermittent contracts and their legal representatives of any vacancies for continuous contracts (OECD, 2024[57]) and let workers on intermittent contracts have priority access to vocational training opportunities in the workplace during periods of inactivity.

1. While the law requires that open-ended intermittent contracts specify in advance the expected period and hours of work, the regulation of a minimum guaranteed number of working hours is left to collective agreements. Only for contractors and subcontractors, the maximum period between two calls is set at 3 months or that established by sectoral collective agreements.

6.4.3. Four countries better aligned regulation of temporary contracts with that of open-ended contracts

Four countries (Australia, Japan, Poland and Portugal) better aligned protection of temporary workers with that of workers on open-ended contracts, resulting in a substantial increase in the EPL indicators for temporary contracts in Australia and Japan (Figure 6.11 Panel B).

In April 2023, Poland strengthened the protection of fixed-term employees by aligning EPL for fixed-term contracts *before* the end date with that for open-ended contracts. In practice, this reform made it possible to reinstate fixed-term employees, and notification procedures became more burdensome, with employers now required to notify trade unions of dismissals – including of the reasons for them. However, as discussed above (see Box 6.2), the EPL indicators in practice do not take into account dismissal regulations applicable before the end of a fixed-term contract.

In May 2023, Portugal increased severance payment to be paid both before and at the end of a fixed-term contract, from 18 to 24 daily wages per year of job tenure.[61] However, as far as indicators are concerned, this change is offset in the termination component of the EPT by the 2019 reform, which, by reducing the

maximum contract duration, also reduced the "baseline" duration of a contract,[62] and, as a result, the estimated time between the decision to terminate the contract and its effective end date.

Beyond regulation on contract termination, equal treatment between employees and TWA workers can now be required in Australia in terms of pay (since December 2023, as with the additional hiring restrictions mentioned above on fixed-term contracts, and if the labour court issues an order of equal pay at the request of the employee, employee organisation or user firm[63]),[64] and is now mandatory in Japan in terms of pay and non-monetary working conditions (since April 2020 – before April 2020, Japanese TWA agencies were only required to *consider* the working conditions of employees when setting those of TWA workers). These two reforms led to a substantial increase in the EPL indicators for temporary contracts (Figure 6.10, Panel B).

6.4.4. EU regulation led to slight reduction in the probationary period in some countries, mainly limited to fixed-term contracts

In June 2019, the European Union (EU) introduced a maximum duration of six months for the probationary period – with possible deviations justified by the nature of employment or the interests of the worker. Indeed, according to Article 8 of EU directive 2019/1 152 on transparent and predictable working conditions, *"where an employment relationship is subject to a probationary period as defined in national law or practice, that period shall not exceed six months"*.

Following the entry into force of the Directive, among OECD EU countries, only Ireland implemented a substantial reduction in the probationary period for workers on open-ended contracts – from 12 to 6 months – in December 2022. In fact, the probationary period was already six months or less in virtually all OECD EU countries. Furthermore, Article 14 of the Directive specifies that the probationary period can remain longer than six months in countries where its duration is set by collective agreements, as is the case, for example, in Denmark (where the probationary period is generally nine months) and France (eight months for white-collar workers under certain collective agreements).

EU directive 2019/1 152 led more countries to amend regulation on probationary periods specific to fixed-term contracts than to those specific to open-ended contracts, although the changes are not reflected in the indicators.[65] Article 8 specifies: *"In the case of fixed-term employment relationships, Member States shall ensure that the length of such a probationary period is proportionate to the expected duration of the contract and the nature of the work".* Some countries directly incorporated these obligations into their regulation, leaving some room for interpretation (e.g. Germany, Ireland, Slovenia). On the other hand, five OECD EU counties introduced an explicit link between the length of the probationary period and the length of the contract: a quarter of the contract period up to a maximum of six months in Greece (September 2023), one month (two months respectively) if the contract is less than six months (12 months) in Latvia (August 2022), half the duration of the contract up to a maximum of three months in Lithuania (August 2022), and half the duration of the contract in Norway (July 2024) and the Slovak Republic (November 2022). However, several EU countries (Estonia, Finland, France, the Netherlands and Portugal) had already included such explicit rules on proportionality between the length of the probationary period and the length of the contract in their national regulation before the directive was implemented.

6.4.5. Other policy approaches to labour market dualism

Most of the above reforms could help reduce labour market dualism, by making dismissal regulations for workers on open-ended contracts more predictable and temporary contracts less attractive and more restrictive to use (Section 6.1.3). Beyond the scope of the indicators, other reforms have aimed to limit the use of temporary employment. For example, in September 2022, France introduced a system of experience-rated unemployment insurance contributions (*bonus – malus*) in sectors relying most heavily on short-term contracts. Under this system, firms with a separation rate higher than the sectoral average

face a higher social security contribution rate, while those with a separation rate below the average face a lower rate. Unemployment insurance contribution rates can indeed be used to create financial incentives for employers and employees to choose more stable employment contracts (OECD, 2020[8]).

Policy actions aimed at addressing labour market dualism also extend beyond open-ended and temporary contracts. For example, in the United Kingdom, from 2027, the Employment Rights Act 2025 will grant workers on variable hour contracts[66] the right to guaranteed hours, reasonable notice of shifts, and payments for short-notice cancellation of shifts, with corresponding rights for TWA workers.[67]Recent years have also seen the emergence of numerous regulations and court rulings aimed at improving the working conditions of self-employed workers on digital labour platforms (Box 6.4), who are particularly vulnerable to "false self-employment" – i.e. being hired as self-employed despite working arrangements similar to those of employees in order to avoid regulations, taxes and unionisation (OECD, 2019[68]).

Box 6.4. Improving working conditions for platform workers

In recent years, various regulations and case law have aimed at improving the working conditions of platform workers in many OECD countries, as (i) a number of national court decisions have deemed platform workers the status of employee – many jurisdictions have "primacy of facts" principles that allow workers to be classified as employees if they meet minimum standards of dependency and accountability (OECD, 2024[69]) –, and (ii) several countries have implemented minimum standards on the working conditions of platform workers (e.g. on earnings or deactivation procedures).

In several EU countries, courts have tended to consider some type of platform workers as employees (Eurofound, 2024[70]; OECD, 2024[69]). That was for example the case for two 2020 rulings for: (i) food delivery drivers in Spain, as the platform was deemed to determine their working conditions; and (ii) Uber drivers in France, when the platform was considered to determine prices, monitor execution and impose sanctions on drivers, who, in addition, could not independently access clients. However, more recent court decisions in France have been less clear-cut: while a 2025 decision involving Deliveroo reclassified couriers as employees, again due to prescriptive operational guidelines, two rulings refused this reclassification for Uber drivers, considering that the relationship between drivers and Uber does not constitute a subordinate relationship.[1, 2] These court decisions were issued in the context of the upcoming implementation of the 2024 EU Platform Work Directive,[3] which introduces a presumption of employment when platforms exercise "direction and control" over workers. While the directive should be progressively integrated to national regulations by the end of 2026, some countries have already legislated: in Spain, the 2021 *Rider's law* confirmed the employee status of platform workers when platforms exercise direction and control (ETUC, 2022[71]).

In addition, some countries set minimum standards on the working conditions of platform workers. In 2024, Australia created a new jurisdiction within the labour court (the Fair Work Commission) to set minimum standards for "employee-like" workers in the gig economy, resolving disputes on issues such as unfair deactivation from a digital labour platform, pay floors and insurance coverage.[4] In Italy, a 2019 reform extended certain employment and social protection rights of dependent workers to platform workers, including minimum wage (or the right to bargain over wages) and paid leave (Eurofound, 2024[70]). In Ontario (Canada), the Working for Workers Act (2022) provided some core protections to platform workers – such as pay transparency, notice of deactivation and minimum-earning guarantees.[5] In the United Kingdom, a 2021 Supreme Court ruling[6] deemed that, given Uber's control over its drivers, Uber drivers fall into the "worker" category – a status that sits between self-employment and employment and that provides a limited set of employment rights, including minimum wage and paid leave. In September 2019, California's legislature passed Assembly Bill 5 (AB5), which enacted a presumption of employee status essentially applying to most gig workers. Its application to app-based

drivers was then repealed by referendum in 2020, although the new law still provides more protection for app-based drivers than for other independent contractors.[7]

1. https://www.lemonde.fr/economie/article/2025/06/06/deliveroo-a-nouveau-contraint-a-la-requalification-de-ses-livreurs-en-tant-que-salaries_6610865_3234.html.
2. https://www.lemonde.fr/economie/article/2025/07/18/vtc-pour-la-premiere-fois-la-cour-de-cassation-refuse-de-requalifier-des-chauffeurs-comme-salaries-d-uber_6622072_3234.html.
3. https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32024L2831.
4. https://www.dewr.gov.au/download/15647/extend-powers-fair-work-commission-set-minimum-standards-employee-workers/36520/extend-powers-fwc-include-employee-forms-work/pdf.
5. https://www.ontario.ca/laws/statute/s22007.
6. https://www.bailii.org/uk/cases/UKSC/2021/5.html.
7. https://www.culawreview.org/current-events-2/employee-or-independent-contractor-a-legal-analysis-of-ubers-worker-misclassification and https://www.courthousenews.com/drivers-say-uber-is-not-complying-with-californias-proposition-22/.

6.5. Concluding remarks

Employment protection legislation is widely debated. It plays a key role in helping countries navigate fluctuations in demand and structural changes in a fair and effective manner. This chapter details employment protection legislation in OECD countries, drawing on the updated EPL indicators for 2025.

Most EPL reforms implemented since the onset of the COVID-19 crisis have focussed on harmonising regulation among dismissals of workers on open-ended contracts and strengthening regulation of temporary contracts. This marks a break with the previous trend, when dismissal regulations were often relaxed for workers on open-ended contracts, while keeping regulations on temporary contracts approximately unchanged – an approach followed in many countries over the decade following the 2008-2009 global financial crisis. The recent reforms, however, could help reduce labour market dualism without weakening regulation, by making dismissal regulation for workers on open-ended contracts more predictable and temporary contracts less attractive and more difficult to use – see also OECD (2014[12]; 2020[8]) for a larger discussion of the effects of this type of reforms on labour market segmentation.

Policy actions aimed at addressing labour market dualism also extend beyond open-ended and temporary contracts. For example, recent years have seen the emergence of regulations and court rulings aimed at improving working conditions for self-employed workers on digital labour platforms and for workers on variable hour contracts.

To make the most of EPL in today's changing labour markets, it needs to be carefully co-ordinated with complementary labour market policies. In particular, well-designed unemployment benefits and active labour market policies are essential for employees' protection and can limit the consequences of job displacement while accelerating the transition to new jobs and activities. Collective bargaining systems also have a role to play in ensuring a balanced distribution of the costs and benefits of labour market transformations between workers and employers.

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Annex 6.A. Additional material

Annex Table 6.A.1. Detailed components of the indicators of protection against terminating fixed-term contracts

Item	Values and description		Assigned score						
			0	1	2	3	4	5	6
Procedural inconvenience before notice can be given									
Item 1: Notification procedures	0	An oral statement is enough, or a written statement without reason for the dismissal to the employee is required.*	Multiply by (6/4.5), so that the score lies between 0 and 6.						
	1	A statement of the reason for the dismissal to the employee in writing or to a third party is required.*							
	2	A written statement sets the limits of disputes on the reason for the dismissal once for all (given the information available at the time of writing).*							
	3	A consultation of or an inspection by a third party is required.							
	4	An authorisation from a third party is required.							
	Add +0.5 if a warning procedure (i.e. a series of discussions with the employee on the issues) is required in the event of a personal dismissal. * Add +0.5 if an additional consultation of the employee only is required (+0.25 for personal reasons only, +0.25 for economic reasons only).								
Item 2: Time delay before notice can be given	Months Estimated time includes, where relevant, the following assumptions: six days are counted in case of a required warning procedure, one day when dismissal can be notified orally or the notice can be directly handed to the employee, two days when a letter needs to be sent by mail and three days when this must be a registered letter.		0	≤ 0.4	≤ 0.8	≤ 1.2	< 1.6	< 2	≥ 2
Notice and severance pay									
Item 3: Length of notice period	Months, at 9 months of tenure		0	≤ 0.4	≤ 0.8	≤ 1.2	< 1.6	< 2	≥ 2
Item 4: Amount of severance pay	Compensation in months' pay, at 9 months of tenure		0	≤ 0.5	≤ 1	≤ 1.75	≤ 2.5	< 3	≥ 3
Regulatory framework for unfair dismissals									
Item 5: Definition of unfair dismissal	Individual dismissals: weighted average of Items 5a, 5b, 5c and 5d, with the following weights to ensure equal weight for dismissals for economic reasons and dismissals for personal reasons: 5a: (1/2)*(1/3) 5b: (1/2)*(1/3) 5c: (1/2)*(1/3) 5d: 1/2. Collective dismissals (only for economic reasons): weighted average of Items 5a, 5b and 5c, with equal weights (1/3 each).								

Item	Values and description		Assigned score						
			0	1	2	3	4	5	6
Item 5a: Dismissal for economic reasons: Degrees of freedom of the judges	0	No justification is required, or any justification is fair.	Multiply by 2, so that the score lies between 0 and 6.						
	1	The judges can only question patently irrational decisions or false reasons.							
	2	The judges can question the operational need of the dismissal decision.							
	3	Economic reasons are not a valid justification.							
Item 5b: Dismissal for economic reasons: Specific alternatives to the dismissal and binding obligations in the event of a dismissal	0	+1 for each of the following alternatives/obligations: - Transfer - Retraining - Outplacement services and training - Priority for re-hiring and/or no fixed-term contract on a similar job - Social plan (even if it includes some of the above obligations).	See previous column.						
	1								
	2								
	3								
	4								
	5								
	6	Economic reasons are not a valid justification.							
Item 5c: Dismissal for economic reasons: Selection criteria	0	No worker selection criteria or only performance criteria.	Multiply by 3, so that the score lies between 0 and 6.						
	1	Objective selection criteria other than performance.							
	2	Economic reasons are not a valid justification.							
Item 5d: Dismissal for personal reasons: Fair reasons for dismissal *NA for collective dismissals*	0	No justification is required, or any justification is fair.	Multiply by (6/4), so that the score lies between 0 and 6.						
	1	i) Insufficient performance, ii) unsuitability for medical reasons and iii) unsuitability due to insufficient skills/qualifications are fair reasons for dismissal.							
	2	One reason among these three cannot be a ground for a dismissal.							
	3	Two reasons among these three cannot be grounds for a dismissal.							
	4	These three reasons cannot be grounds for a dismissal.							
	Add +0.25 per fair reason (among the three mentioned under value 1) for which constraining alternatives to dismissal (such as transfer or retraining) must be attempted.								
Items 6, 7 and 8	Score = 0								
Regulatory framework for unfair dismissals									
Items 9, 22, 23 and 24	Score = 0								

Note: Where there are differences by types of dismissal, the scored value is the average of the values for a dismissal for personal and for economic reasons. Where there are differences by firm size, the scored value is the average of the values for a firm with 35, 150 and 350 employees. More details on the structure of the indicators of protection against terminating fixed-term contracts are provided in Box 6.2.

Annex Table 6.A.2. Costs and difficulty of terminating standard fixed-term contracts as compared to open-ended contracts

Difference in regulation compared to open-ended contracts for a worker with 9 months of tenure, by broad category of regulation (no difference was found for the category enforcement of unfair dismissal regulation, this category is therefore excluded from the table), 2025

	Regulatory framework for unfair dismissals[1]		Notice and severance pay		Procedural requirements[2]	
	Before end date	At end date	Before end date	At end date	Before end date	At end date
Australia	Same	None	None (Fair Work Act Section 123)	None	Same	None
Austria	Same (if explicitly allowed in the employment contract), but compensation for UNFD is for remaining contract period.	None	Same (if explicitly allowed in the employment contract).	None	Same (if explicitly allowed in the employment contract).	Some CAs require notification of non-renewal.
Belgium	Same	None	Same during the 1st half of the contract and if tenure ≤ 6 months. During the 2nd half of the contract or if tenure > 6 months: no notice period; wages for remaining contract period must be paid up to maximum of double the severance pay due to a worker with an open-ended contract. (Article 40 of law 3 July 1978)	None	Same	None
Canada[3]	Usually same, but compensation for UNFD may be for remaining contract period (e.g. Quebec).	None	Usually same	None, but same notice period in Alberta if FTC duration > 1 year. (Fair and Family-Friendly Workplaces Act)	Usually same	None, but written notice in Alberta if FTC duration > 1 year (Fair and Family-Friendly Workplaces Act)
Chile	Same, but compensation for UNFD is for remaining contract period.	None	Same	None	Same	Same
Colombia	Same, but compensation for UNFD is for remaining contract period (Article 64 of the Labour Code).	None	Same. Wages for remaining contract period must be paid for dismissal without just cause, including dismissal for economic reasons (Article 64 of the Labour Code).	30 days' notice, no severance pay (Article 46 of the Labour Code)	Same	Notification of non-renewal (Article 46 of the Labour Code)

	Regulatory framework for unfair dismissals[1]		Notice and severance pay		Procedural requirements[2]	
	Before end date	At end date	Before end date	At end date	Before end date	At end date
Costa Rica	Same	None	No notice period. Wages for remaining contract period must be paid for dismissal without just cause (Article 31 of the Labour Code).	None	Same	None
Czechia	Same	None	Same	None	Same	None
Denmark	Same, but compensation for UNFD only paid to those with 12+ months' tenure.	None	Same	None	Same	None
Estonia	Same, but the probationary period can't be longer than half of the FTC duration if FTC duration <8 months	None	Same, but in case of layoff for economic reasons, wages for remaining contract period must be paid.	None	Same	None
Finland	Termination is allowed only if agreed in contract terms, if the contract is 5+ years long or on very limited other grounds (Employment Contract Act (ECA) Chapter 7). In these cases, the same rules apply as for open-ended contracts (ECA, Chapters 6 and 7), but the probationary period can't be longer than half of the FTC duration if FTC duration < 8 months (ECA, Chapter 1 Section 4) and provisions on re-employment are applicable only for the duration of the FTC (ECA, Chapter 7).	None	Same (if termination is allowed).	Advanced notice is required if the contract end date is not set in advance (e.g. based on completion of a set task).	Same (if termination is allowed).	Advanced notice is required if the contract end date is not set in advance (e.g. based on completion of a set task).

	Regulatory framework for unfair dismissals[1]		Notice and severance pay		Procedural requirements[2]	
	Before end date	At end date	Before end date	At end date	Before end date	At end date
France[4]	Termination can only take place by agreement or on limited grounds, including force majeure, serious misconduct, ill-health or because the employee has found a permanent job (Article 1 243-1 of the Labour Code). Compensation for UNFD is for remaining contract period (Article 1 243-4 of the Labour Code). Probationary period is 1 day per week of FTC duration, with maximum 2 weeks if FTC duration ≤ 6 months and maximum 1 months if FTC duration > 6 months (Article 1 242-10 of the Labour Code).	None	Same (if termination is allowed).	Severance pay (Prime de précarité) equal to 10% of the total gross compensation since the beginning of the contract (Article 1 243-8 of the Labour Code) (6% in certain collective agreements).	Same (if termination is allowed).	None
Germany	Same	None	Same	None	Same	None
Greece	Termination is only allowed for significant reasons as judged by a court (e.g. employee suspected of criminal offence, breach of contractual obligations, unsuitability)(Article 672 of the Civil Code). Compensation for UNFD is for remaining contract period (Articles 669 and 672 of the Civil Code)., The probationary period can't be longer than 1/4 of FTC duration up to a max. of 6 months	None	None (Article 672 of the Civil Code)	None	Notice of termination is required, but does not have to be written.	None
Hungary	Same	None	Same. Termination without notice is possible, but wages for remaining contract period (up to one year) must be paid(Section 79(1),(2) of the Labour Code).	None	Same	None
Ireland	Same	Same, unless explicitly excluded in the contract	Same	Same severance pay (i.e. none for tenure < 24 months)	Same	Same, unless explicitly excluded in contract.

	Regulatory framework for unfair dismissals[1]		Notice and severance pay		Procedural requirements[2]	
	Before end date	At end date	Before end date	At end date	Before end date	At end date
Italy[5]	Same, but compensation for UNFD is for remaining contract period, and reinstatement is not possible.	None	None (Paragraph 31 Article 2 of Law 92/2012)	None	Same	None
Japan	Termination is only allowed for inevitable reasons.	None	Same	None if tenure < 1 year and less than 3 renewals, or if the employer clearly indicates that the contract is not renewable. Same notice period in other cases.	Same	None or oral statement
Korea	Same	FTC employees have priority for hiring on permanent contracts for similar work (Article 5 of the Act on the Protection of Fixed-Term and Part-Time Employees).	Same	None	Same	None
Latvia	Same, but the probationary period can't be longer than 1 month (resp. 2 months) if FTC duration <6 months (resp. <12 months) (Section 46 Paragraph 3 of Labour Law)	None	Same	None	Same	None
Lithuania	Same but the probationary period can't be longer than 1/2 of FTC duration up to a max. of 3 months (Article 36(2) of the Labour Code)	None	Same	Tenure > 1 year: notice period equal to 5 working days. Tenure > 2 years: severance pay equal to 1 months' salary (Article 69 of the Labour Code)	Same	Written notice if tenure > 12 months (Article 69 of the Labour Code)

	Regulatory framework for unfair dismissals[1]		Notice and severance pay		Procedural requirements[2]	
	Before end date	At end date	Before end date	At end date	Before end date	At end date
Luxembourg	Termination is only allowed for serious reasons such as the death or illness of the employer, gross misconduct, or unsuitability (Article L.124-10 of the Labour Code).	None	Same (if termination is allowed).	None	Same (if termination is allowed).	None
Mexico	Same, but compensation for UNFD is 3 months' wage plus: half of tenure if FTC duration < 1 year, 6 months for the first year and 20 days for subsequent years of tenure if FTC duration > 1 year (Article 50 sections I and III of the Federal Labor Law).	None	Same	None	Same	Same
Netherlands	Same, but no probationary period if FTC duration<6m, and duration of the probationary period is maximum 1 month if FTC duration<2y (Article 7:652 of the Civil Code). Compensation for UNFD is for remaining contract period	None	Same	Same severance pay (Article 7:673 of the Civil Code).	Same	Written notification (Article 7:668 of the Civil Code)
New Zealand	Same	None	Same	None	Same	None
Norway	Same, but the probationary period can't be longer than half of the FTC duration (Work Environment Act Section 15-6 (3))	Preferential rights to a new appointment for employees who have been employed for a total of at least 12 months during the previous two years (Work Environment Act, Section 14-2 Paragraphs (2) and (3).	Same	Tenure > 1 year: notice period equal to one month.	Same	Written notification if tenure > 1 year (Work Environment Act, Section 14-9)

	Regulatory framework for unfair dismissals[1]		Notice and severance pay		Procedural requirements[2]	
	Before end date	At end date	Before end date	At end date	Before end date	At end date
Poland	Same, but compensation for UNFD is for remaining contract period up to maximum of three months (Article 50 Paragraph 4 of the Labour code); and reinstatement is only possible if remaining contract period at the time of dismissal was substantial (Article 45 of the Labour Code).	None	Same	None	Same	None
Portugal	Same, but compensation for UNFD is for remaining contract period or up to final court decision if it comes before the end of the contract (Article 393 of the Labour Code). Probationary period: 30 days if FTC duration > 6 months; 15 days if FTC duration < 6 months: (Article 112 of the Labour Code)	FTC employees have priority for hiring on permanent contracts for similar work up to 30 days after the termination of the FTC (Article 145 of the Labour Code)	Compensation of 24 days' salary per full year of tenure (Article 366 of the Labour Code).	15 days' notice required (Article 344 of the Labour Code). Compensation of 24 days' salary per full year of tenure (Article 344 of the Labour Code)	Same	Written notification (Article 344 of the Labour Code)
Slovak Republic	Same, but the probationary period can't be longer than half of the FTC duration (Laws 350/2022 Coll.).	None	Same	None	Same	None
Slovenia[6]	Same	None	Same	Tenure<1 year: severance pay equal to 1/5 months' salary. Tenure>1 year: severance pay equal to 1/5 months' salary + (1/5)*(1/12) months' salary for each additional months after 1 year. (With a few exceptions.) (Article 79 of the Employment Relationship Act).	Same	None

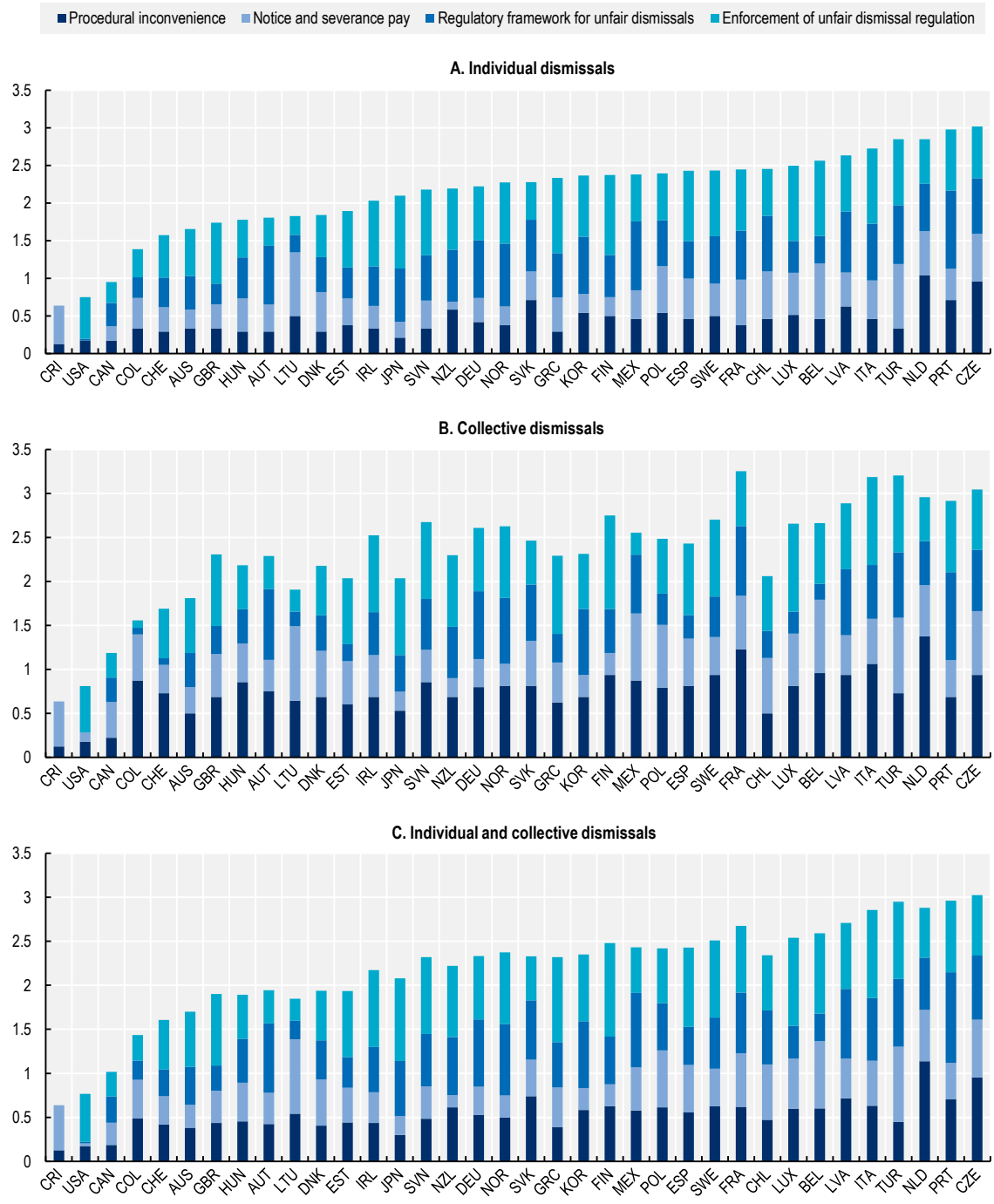
	Regulatory framework for unfair dismissals[1]		Notice and severance pay		Procedural requirements[2]	
	Before end date	At end date	Before end date	At end date	Before end date	At end date
Spain	Same, but probationary period for training contracts < 1 month (Article. 14 of the Statute of Workers).	None	Same	Severance pay: 12 days per year of service for FTC for production needs (Article 49 of the Statute of Workers).	Same	None
Sweden	Termination only allowed for gross misconduct by the employee (e.g. theft from the employer, violence in the workplace) unless termination is explicitly allowed in the employment contract. In this case, the same rules apply as for workers on open-ended contracts (Section 4 of the Employment Protection Act)	FTC employees have priority for re-hiring if FTC > 12 months' duration over the past 3 years (Section 5 of the Employment Protection Act).	Same (if termination is allowed).	One months' written notice required if FTC > 12 months' duration over the past 3 years (Sections 15 and 16 of the Employment Protection Act).	Same (if termination is allowed).	Written notification to the employee and trade union is required if FTC > 12 months' duration during three-year period (Sections 15 and 16 of the Employment Protection Act).
Switzerland	Termination is allowed at any time for just cause, during the probationary period or if explicitly allowed in the employment contract.	None	Generally same (if termination is allowed) as for open-ended contracts; FTCs > ten years' duration can only be terminated with six months' notice.	None	Same (if termination is allowed).	None
Türkiye	Same, but compensation for UNFD is for remaining contract period.	None	Same	None	Same	None
United Kingdom	Same (i.e. none at 9 months' tenure)	Same (i.e. none at 9 months' tenure) (Employment Rights Act, Sections 92 and 93)	Same	Same redundancy payment (i.e. none at 9 months' tenure) (Employment Rights Act, Sections 135 and 136)	Same	Same (Employment Rights Act, Sections 92 and 95)
United States[7]	The contract for employment states the conditions that restrict termination					

Note: CA: collective agreement. FTC: standard fixed-term contract. UNFD: unfair dismissal.
1. Difficulty of dismissal includes definition of fair and unfair dismissal, compensation and the possibility of reinstatement following unfair dismissal and length of the probationary period.
2. Procedural inconvenience includes notification procedures (e.g. simple notice of dismissal or consultation with a third party) and the delay before the notice period can start.
3. In Canada, there is some variation in regulation across provinces. The table reflects the situation most commonly found in the four biggest provinces: Alberta, British Columbia, Ontario and Quebec.

4. In France, in the case of conversion of the contract into one of indefinite duration, the employer can receive a rebate for the social security contributions paid in excess of the rate for workers on open-ended contracts.
5. In Italy, in the case of conversion of the contract into one of indefinite duration, the employer can receive a rebate for the unemployment insurance contributions paid in excess of the rate for workers on open-ended contracts.
6. In Slovenia, the rate of employers' unemployment insurance contributions is higher for FTCs than for open-ended contracts. However, if a FTC is converted into an open-ended contract, then the employer is exempted from unemployment insurance contributions for up to two years.
7. In the United States, there are no regulations governing general contractual matters. If parties bargain for, and create, a contract for employment, the contract itself would state any conditions that would restrict termination at or before the end date. If a lawsuit is brought by the worker for breach of contract, the jurisdiction where the court is located may have its own body of case law that would serve as precedent for deciding the outcome of the case. Under certain circumstances an employer's oral or written assurances regarding job tenure can create an implied contract under which the employer cannot terminate employment without just cause. Only certain states in the United States recognise the "implied contract" exception to at-will employment and states follow their own case law. Court decisions with respect to wrongful termination of an implied relationship claims are made on a case-by-case basis.

Annex Figure 6.A.1. Decomposition of the EPL indicators for dismissing workers on open-ended contracts

2025, ordered with respect to the indicator for individual dismissals



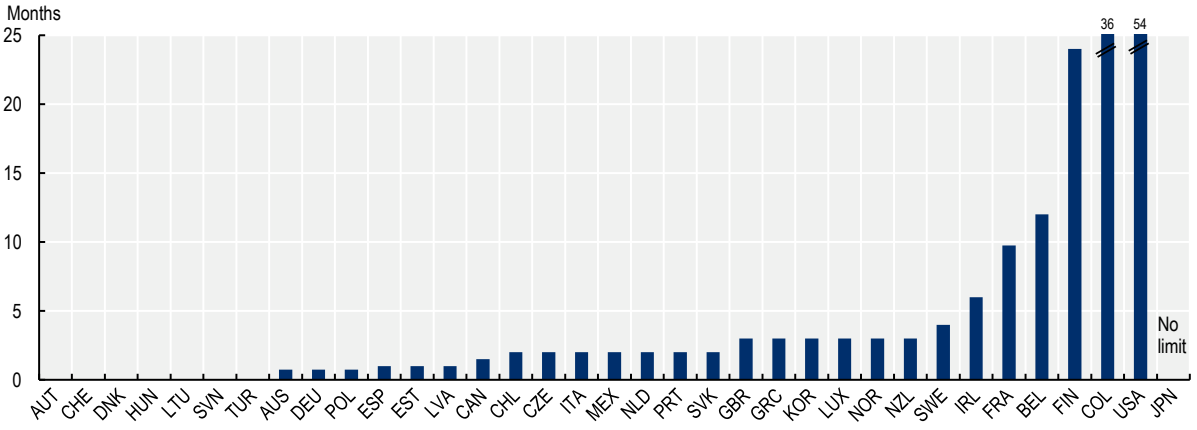
Note: OECD indicators of employment protection for regular contracts against individual dismissals (EPR), collective dismissals (EPC) and both individual and collective dismissals (EPRC), version 4. Range of indicator scores: 0-6 from least to most restrictive. The OECD EPL indicators assign the same weight to the four broad categories. Panel C: Each broad category assigns a weight of 5/7 to the same category corresponding to individual dismissals and 2/7 to that corresponding to collective dismissals.

Source: *OECD Employment Protection Legislation Database*, https://www.oecd.org/en/data/datasets/oecd-indicators-of-employment-protection.html.

StatLink https://stat.link/lx6tri

Annex Figure 6.A.2. Maximum time to make a claim of unfair dismissal for individual dismissals of workers on open-ended contracts

In months, starting from the date of dismissal, 2025

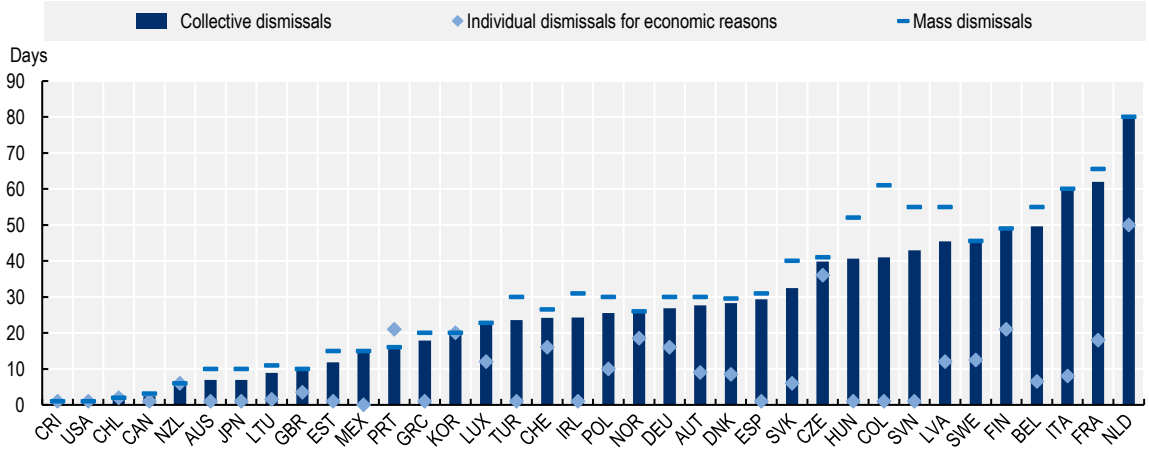


Note: These values are for individual (not collective) dismissals. They take the average of dismissals for personal and economic reasons. They reflect time limits from the *contract termination date*, not from notification of dismissal. Costa Rica is excluded as dismissals of workers on open-ended contracts are allowed for any reason, which is not explicitly prohibited (e.g. discrimination or violation of civil right legislation). Values in Colombia and the United States correspond to the specific cases of dismissal for personal reason in Colombia and implied contract in the United States – in the remaining cases, dismissals are allowed for any non-explicitly prohibited reason. In Canada, the value corresponds to the province of Quebec as, in the three other provinces considered in the EPL indicators (i.e. Alberta, Ontario and British Colombia), dismissals are allowed for any non-explicitly prohibited reason.
Source: *OECD Employment Protection Legislation Database*, https://www.oecd.org/en/data/datasets/oecd-indicators-of-employment-protection.html.

StatLink https://stat.link/4zdh6m

Annex Figure 6.A.3. Time delay before notice can be given

2025

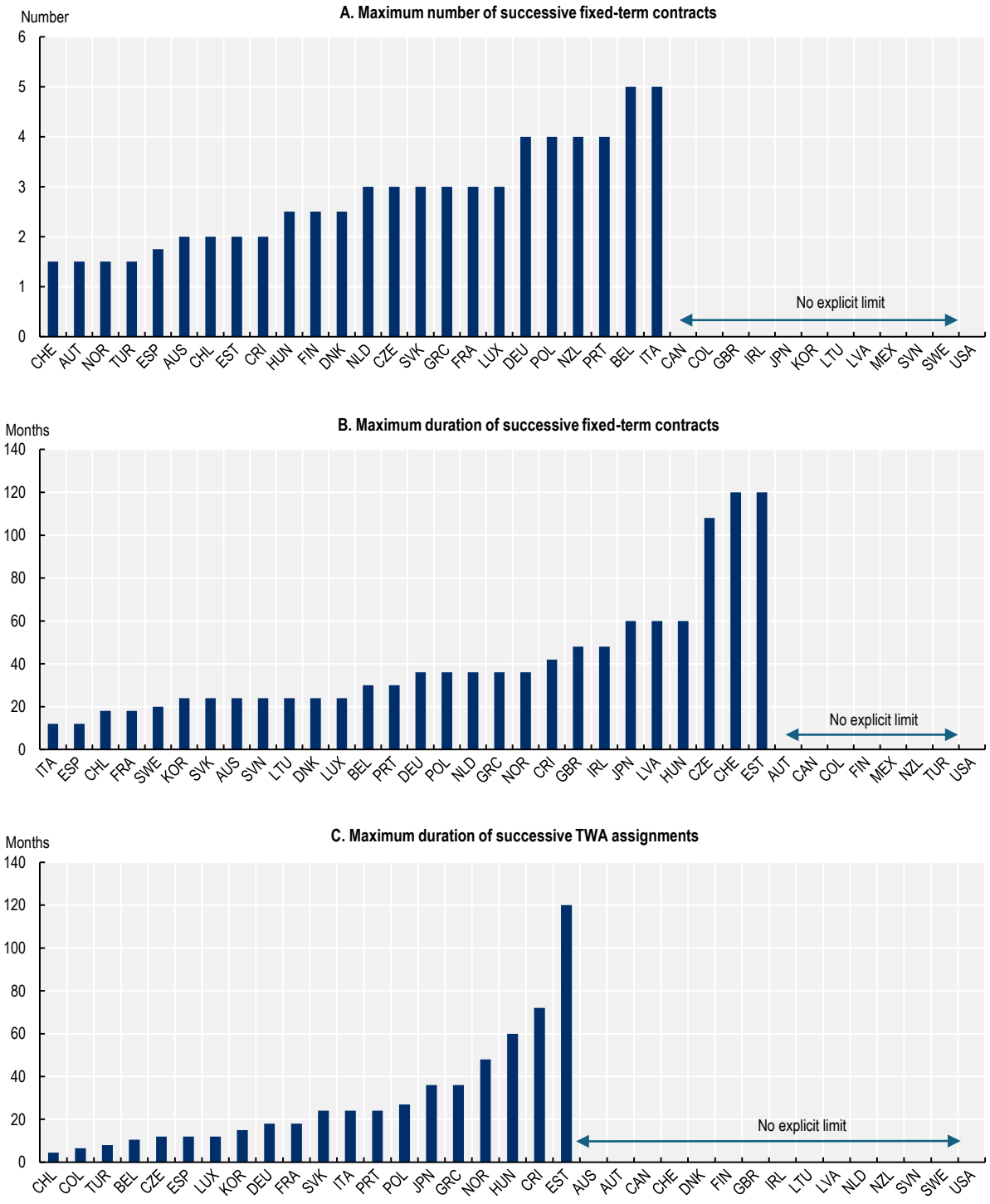


Note: The value for collective dismissals is the average of the values corresponding to regulation applying to dismissals of 10, 45 and 120 workers by a firm within one month.
Source: *OECD Employment Protection Legislation Database*, https://www.oecd.org/en/data/datasets/oecd-indicators-of-employment-protection.html.

StatLink https://stat.link/su8349

Annex Figure 6.A.4. Maximum numbers and durations of temporary contracts

2025



Note: Mexico is excluded from Panel C, as TWA employment has been banned in Mexico. TWA: temporary work agency.
Source: *OECD Employment Protection Legislation Database*, https://www.oecd.org/en/data/datasets/oecd-indicators-of-employment-protection.html.

StatLink https://stat.link/4fdzeg

Notes

[1] The OECD EPL indicators do not only take into account legislation, but also sectoral collective agreements and case law (OECD, 2020[8]; Söderqvist and Lindberg, 2019[80]; Söderqvist, 2026[87]).

[2] Iceland and Israel are excluded from the analyses presented in this chapter due to lack of updated data.

[3] The new data will be available for download at https://www.oecd.org/en/data/datasets/oecd-indicators-of-employment-protection.html.

[4] Social plans and transition initiatives typically operate through co-ordinated efforts between employers and worker representatives (and sometimes PES) to reduce the number of dismissals and, particularly, mitigate their negative consequences for workers. Some of these efforts also aim to create structured pathways for displaced workers that can significantly increase their re-employment chances (OECD, 2024[2]).

[5] It should be noted that not all types of early intervention are effective. For example, evidence from Germany suggests that caseworker meetings fail to improve jobseekers' labour market outcomes (Homrighausen and Oberfichtner, 2026[77]), while signing an integration agreement is effective, particularly when combined with the preparation of an action plan (van den Berg, Stephan and Uhlendorff, 2025[81]).

[6] Mandatory retirement can also result in the legal obligation to terminate the employment relationship at a certain age, generally among civil servants or specific occupations that raise health and safety concerns (OECD, 2022[30]).

[7] Mandatory retirement is often used to circumvent strict employment and wage regulations, especially where seniority-based pay leads to a mismatch between wages and productivity or where dismissing underperforming workers is difficult.

[8] Most OECD countries offer stricter dismissal regulation for older workers (until mandatory retirement age when there is one). While in a few OECD countries regulation depends directly on age, it is far more common for dismissal regulations to increase with tenure – often correlated with age: notice period and severance pay are increasing with tenure in almost all OECD countries (OECD, 2020[8]). In the absence of portability of severance pay entitlements, tenure-increasing EPL should not translate into lower hiring rates or higher exposure to temporary employment for older workers.

[9] Where dismissal regulations increase with tenure, mid-career and older workers may hesitate to leave long-held positions due to the risk of losing accumulated severance entitlements, which can be partly solved by increasing the portability severance pay entitlements (Kettemann, Kramarz and Zweimmller, 2017[76]).

[10] Empirical studies highlighting a negative impact of dismissal regulation on job and worker flows include Autor, Donohue and Schwab (2006[72]), Bassanini and Garnero (2013[79]), Boeri and Jimeno (2005[83]), Bottasso, Conti and Sulis (2017[82]), Gielen and Tatsiramos (2012[85]), Haltiwanger, Scarpetta and Schweiger (2014[73]), Marinescu (2009[84]), Micco and Pagés (2006[74]), Millán et al. (2013[75]), and OECD (2010[86]).

[11] Employment effects are discussed in Cahuc et al. (2023[55]) and OECD (2024[57]), positive impacts on the incidence of open-ended contracts are highlighted in Adrjan, Jessen and Victoria-Lanzon (2026[49]), Grasso and Tatsiramos (2023[56]) and OECD (2024[57]).

[12] For Italy and Spain, this is consistent with evaluations of earlier opposite reforms liberalising temporary employment in these countries (Daruich, Di Addario and Saggio, 2023[52]; García-Pérez, Marinescu and Vall Castello, 2018[54]).

[13] Beyond labour market dualism, event study analysis suggests that hiring regulation for temporary workers also influence the type of technology adopted by firms, encouraging them to shift their innovation efforts toward labour-saving processes rather than the introduction of new products (Manera and Uccioli, 2021[78]).

[14] Some regulatory frameworks are also harder to circumvent than others. For example, limits on the number and duration of successive contracts are harder to circumvent when they apply at the firm level rather than within a given establishment or position.

[15] The nature of the indicators, which convert mostly qualitative information into numerical data, means that readers should be cautious when interpreting small differences in scores across countries and over time.

[16] Each of these four components are defined from lower-level elements presented in detail in Annex 3.A. in OECD (2020[8]).

[17] See https://eplex.ilo.org/en/valid-and-prohibited-grounds-for-dismissal for a list of prohibited grounds for dismissal by country.

[18] In contrast to individual dismissals, collective dismissals can only occur for economic reasons. Therefore, while the indicators for individual dismissals give the same weight to dismissals for personal and economic reasons, in the aggregate indicators dismissals for economic reasons take a weight of almost two-thirds.

[19] Besides legislation, the OECD indicators quantify also actual practices, by considering court rulings and collective bargaining agreements (national and sectoral, but not firm level). They focus on the private, not public, sector and evaluate regulation applying to medium-sized and large, not small, firms and their employees. Where there are differences by firm size, the scored value is the average of the values for a firm with 35, 150 and 350 employees. Where there are differences between categories of workers (for example blue-collar and white-collar workers), the scored value is the average of the values corresponding to each category. Where there are differences between dismissals for personal and for economic reasons, the scored value is the average of the two. When the reason for dismissal cannot be challenged in court (except for explicitly prohibited grounds), the scores of the subcomponents in the broad categories regulatory framework for unfair dismissals and enforcement of unfair dismissal regulation are systematically taken equal to zero, except those on obligations and selection criteria (see Annex 3.A in OECD (2020[8]) for more details on the subcomponents). When the reason for dismissal cannot be challenged under certain procedures, contracts, or types of dismissals (i.e. for economic or personal reasons) only, the score of these subcomponents is equal to half that corresponding to the cases where the reason for dismissal can be challenged.

[20] In the United States, the indicators take into account differences across states (although differences are small); in Canada, the indicators take into account differences across provinces and territories.

[21] In the United States, the time to make a claim of unfair dismissal depends on the state jurisdiction, but it is typically very long in case restrictions to dismissals exist in the contract or "implied contract", in which the employer gives certain assurances for continued employment to create a contract of sorts (despite no formal contract). It is for example four years in California and Texas and six years in New York.

[22] The maximum time to make a claim for each country is shown in Annex Figure 6.A.2.

[23] The length of the probationary period enters only the employment protection indicator for individual dismissals and not the indicator for collective dismissals, as probationary periods are always associated with an individual worker and, in principle, individual performance.

[24] More precisely, the indicator for collective dismissals scores the average of the values corresponding to regulation applying to dismissals of 10, 45 and 120 workers by a firm within one month (OECD, 2020[8]). As mentioned in note 19, where there are differences by firm size, the scored value is the average of the values for a firm with 35, 150 and 350 employees. The indicator for collective dismissals is based on the average of the three firm sizes for 10 dismissals, the two larger firm sizes for 45 dismissals and the largest firm size for 120 dismissals. By construction, the higher is the dismissal threshold for specific regulations to apply, the lower (higher) is the weight of mass dismissal (individual dismissal for economic reasons) regulations in the indicator of collective dismissals, and the higher (the lower) is the difference between the indicator for mass dismissals (individual dismissal) and that for collective dismissals.

[25] In some countries specific regulations apply as of 10 dismissed workers or lower; in others they start only when the number of involved workers is greater.

[26] As 120 workers exceeds the dismissal threshold in all countries with specific legislation for collective dismissals (but not 10 and 45 workers), the regulatory differences between individual and mass dismissals enter the indicator for collective dismissals with a minimum weight of around one-third (depending on whether this threshold is also lower than 45 or 10 dismissals).

[27] To allow a comparison between the level of protection for individual dismissals and that for collective dismissals, the indicator for individual dismissals for economic reasons takes into account the same elements of regulation as in the indicator for collective dismissals, i.e. the same elements as in the indicator for individual dismissals with the exception of the length of the probationary period (see note 23).

[28] There is no difference between the specific regulations applying to the dismissal of 10, 45 and 120 workers in these countries.

[29] While additional notifications are required in Israel (to the Employment Service Bureau) and Korea (to the Ministry of Labour), they do not impose significant additional constraints on firms and hence are not reflected in the indicators.

[30] Nevertheless, pooling several individual layoffs in one collective dismissal can, in some cases, reduce the administrative burden of the firm. This is not considered in the EPL indicators.

[31] Some countries require a consultation or an authorisation in specific cases only. In Germany, if the works council objects to the dismissal and the employee files a complaint challenging it, the employer is required,

at the employee's request, to keep the employee on the job after the notice period has expired, until a final decision is rendered in the case. In Latvia (respectively Poland), a dismissal of a union member requires an approval by (respectively a consultation with) the trade union. In Norway, a consultation with employee representatives is required, except if the employee refuses it.

[32] Annex Figure 6.A.3 displays the time delay before notice by country.

[33] In Belgium, the time limit for making a claim of unfair dismissal is one year after an individual dismissal, while the employee may individually contest compliance with the information and consultation procedure up to 30 days after a mass dismissal. In France, any claim related to the termination of the employment contract must be filed within 12 months from the date of notification of the termination in the event of individual dismissal, while, in the event of mass dismissals in firms with 50 employees or more, the homologation by the DREETS can be challenged until two months after dismissal. In addition, the homologation by the DREETS reduces the risks associated with future unfair dismissal complaints. Similarly, in the event of a mass dismissal in Greece, an administrative approval reduces the risk associated with future complaints (although the mass dismissal can take place in its absence). In most states in the United States, employees who voluntarily quit without good cause are not eligible for unemployment benefits, although employees who accept a voluntary separation package in a situation where an insufficient number of workers take such voluntary separation packages may be eligible for unemployment compensation under specific circumstances. In Switzerland, the maximum compensation for unfair dismissal is six months in the event of individual dismissal, against two months to challenge the respect of the procedure in the event of a mass dismissal.

[34] Quebec is the only Canadian province, which operates under a civil law system, while the other provinces and territories operate under a common law system (Morin, 2022[88]).

[35] Temporary work agency assignments are the result of tripartite relationships characterised by an employment contract between the worker and the agency and a commercial contract between the agency and the user firm that places the worker under the direct supervision of the user firm.

[36] The termination rules of temporary work agency assignments are subject to commercial contract regulation, which is out of the scope of the EPL indicators. In addition, the termination costs of temporary work agency contracts are paid by the temporary work agency, which invoices them to the user firm together with the other costs. Therefore, these are not one-time termination costs paid by the user firm at the end of the employment relationship.

[37] This corresponds to the sum of items 5b (for economic reasons) and 5d (for personal reasons) (Annex Table 6.A.1). Other components of item 5, degrees of freedom of the judges (item 5a) and selection criteria (item 5c), are always equal to zero in the EPTT.

[38] The ad hoc indicator of protection of regular workers against individual dismissals is made of the sub-components of the original EPR aggregated using the same weights as those used to construct the EPTT (see columns (2) of Table 6.1), except that the sub-component compensation following unfair dismissals is assessed at 9 months of tenure instead of 20 years. The United Kingdom is a particular case, as the probationary period is longer than 9 months. This means that workers (whether on permanent or fixed-term contracts) are not eligible for protection against unfair dismissal at 9 months of tenure. The sub-components notification procedures, as well as all items in the categories regulatory framework for unfair dismissal and enforcement of unfair dismissal regulations (i.e. items 5, 6, 7, 8, 9, 22, 23 and 24) are therefore equal to zero in the ad hoc EPR, since, like the EPTT, this indicator should assess the level of

protection that applies at 9 months of tenure. This is not the case for the same components of the original EPR, which are assessed after the probationary period, as is the general rule for the EPR.

[39] In many countries, additional restrictions may arise when the employer has violated the regulation on the maximum number of renewals of fixed-term contracts: in that case, judicial practices often consider the contract as a permanent contract. This case is considered to fall under the indicators for regular workers and is not considered in the EPTT.

[40] The EPTT reflects the level of protection that applies at 9 months of tenure. Additional restrictions would be visible at longer tenure, such as in the United Kingdom, where all workers are covered by unfair dismissal rules if they have at least two year's tenure (including workers at the end of a fixed-term contract), or in Norway and Lithuania, where notification procedures, notice period and/or severance payment apply from certain tenure levels (see Annex Table 6.A.2 for more details).

[41] In Sweden, the cumulative duration of fixed-term contracts is assumed to be less than 12 months over a three-year period, so no notice period is required and there is no priority for re-hiring.

[42] Nine months is shorter than the probationary period in the United Kingdom.

[43] The cumulated duration of fixed-term contracts can last up to five years in Costa Rica. The wages corresponding to the remaining contract period should also be paid to the worker in the event of dismissal before the end of the contract.

[44] At most, a simple written notification is required in some of these countries (see Annex Table 6.A.2), which is not considered in the indicators (see Annex Table 6.A.1).

[45] It should be noted that Latvia has among the lowest shares of employees on a fixed-term contract (2.4% in 2024 against 11% in the OECD on average), which suggests that the degree of *regulatory* dualism embodied in contract termination regulation is not necessarily the main determinant of the *actual* dualism of the labour market.

[46] Portugal has the highest EPTT, as regulation also involves a 15 days' notice period and priority for hiring on permanent contracts.

[47] The maximum number and duration of successive fixed-term contracts by county are shown in Annex Figure 6.A.4, Panels A and B.

[48] However, there is evidence that TWA regulations are particularly poorly enforced in Belgium (Bosmans, De Moortel and Vanroelen, 2021[58]).

[49] The maximum duration of successive TWA assignments by county is shown in Annex Figure 6.A.4, Panel C.

[50] Analyses of reforms over earlier periods are available in OECD (2020[8]) and OECD (2013[7]).

[51] Figure 6.12 uses version 3 of the EPL indicators, as the time-series of version 4 are not available before 2013. Compared to version 4, version 3 of the indicator for open-ended contracts does not take into account enforcement of unfair dismissal regulations and treats the regulation for collective dismissals

differently (OECD, 2020[8]), while version 3 of the indicator for fixed-term contracts does not account for regulations on the termination of fixed-term contracts (Section 6.3.1).

[52] The spike in the EPRC indicator in 2021 (Panel A) is due to the ban on dismissals in Italy and Türkiye (only for economic reasons, both individual and collective, in Italy) that was implemented following the COVID-19 pandemic.

[53] In Canada, since February 2024, federal law requires to provide a notice period for individual dismissal that increases with tenure (from two to eight weeks, instead of two weeks for all workers with more than three months' tenure). However, the EPL indicators exclude federal regulations, which cover only 6% of the Canadian workforce. More specifically, the indicators reflect regulations of the four largest provinces (Alberta, British Columbia, Ontario and Quebec), covering 81% of paid employment.

[54] Whereas before the reform their use was strictly limited to seasonal work, the reform extended its scope to all intermittent activities, temporary agency work, and contract work. Consequently, open-ended intermittent contracts can be used for many of the activities that were previously conducted with temporary contracts.

[55] Fixed-term employment plays a minor role in Australia, where firms find flexibility mostly by relying on *casual contracts*, according to which the employment relationship is defined on an hourly or daily basis.

[56] Sectoral agreements for white-collar workers usually allow for an extended maximum duration for successive fixed-term contracts, which remained generally unchanged following the reform (Söderqvist, 2026[87]).

[57] The 2018 reform put no restriction on the use of fixed-term contracts for 12 months or less. This case was taken as a reference for the coding of the indicators for Italy (since more favourable for firms), hence the absence of change between 2019 and 2025 in the fixed-term contracts component of the indicator (Figure 6.11, Panel B).

[58] Beyond the harmonisation of severance payment discussed above, the Balanced Labour Market Act increased the employer's unemployment insurance contribution rate for fixed-term contracts and eased dismissals of regular workers. Employers can now combine personal reasons for dismissal that are by themselves insufficient to justify a dismissal, but the EPL indicators do not capture such possible combinations of insufficient grounds.

[59] The change in the EPT is very small in Canada, where the reform was limited to the province of Ontario; and in Sweden, where most white-collar workers were not affected by the reform due to collective agreements (see Endnote 56).

[60] Changes to the maximum cumulative duration of fixed-term contracts in the Netherlands, Portugal and Spain not only affected the components of the indicators related to hiring regulations. By changing the "baseline" duration of a contract (see Box 6.2) – and thus the period between the employer's decision to terminate the employment relationship and the actual end of the contract – they also had the opposite effect on the component of the indicator corresponding to the termination of fixed-term contracts.

[61] Portugal also slightly increased severance payments specific to collective dismissals from 12 to 14 days of wage per year of job tenure, but the change is too small to be captured by the indicators for regular workers.

[62] The “baseline” duration of a contract, as defined for the indicator, is. the maximum cumulative duration divided by the maximum number of successive contracts (Box 6.2).

[63] Orders made by the labour court (Fair Work Commission) could not take effect before 1 November 2024.

[64] These provisions do not apply for firms with fewer than 15 employees or working arrangements of 3 months or less.

[65] As discussed in Section 6.3.1, in all countries, the EPTT codes regulations according to which all contract terminations are fair (except those for explicitly prohibited grounds), generally corresponding to the situation where the employer decides to wait until the end of the fixed-term contract. The score of the component corresponding to the probationary period (i.e. the period during which the employee is not protected against unfair dismissal) is therefore always equal to zero. In addition, cases of termination of the contract during the probationary period are not relevant to the indicators, as the probationary period only applies to the first contract, not to renewals.

[66] Many countries have specific forms of non-standard employment allowing hours worked to vary from one week to the next, sometimes without a minimum number of guaranteed hours. Some examples include casual workers in Australia, on-call contracts (*lavoro a chiamata o intermittente*) in Italy, min-max contracts and zero-hour contracts in the Netherlands, on-call contracts in New Zealand, zero-hour work in the United Kingdom, and if-and-when contracts and zero-hour contracts in Ireland.

[67] https://www.gov.uk/government/publications/employment-rights-bill-factsheets.

Annex A. Statistical annex

Sources and definitions

The tables of the statistical annex show data for all 38 OECD countries where available. Data are also collected and included in selected databases for OECD accession candidate countries (Argentina, Brazil, Bulgaria, Croatia, Indonesia, Peru, Romania and Thailand), OECD Key Partner countries (China, India and South Africa), as well as other non-Member economies, including other EU countries that are not OECD Members.

The standard tabulations (Tables A to R of former editions of the Employment Outlook) are replaced by web links pointing to data and indicators reported in the OECD central data repository OECD Data Explorer, https://data-explorer.oecd.org/, which contains all data available. Some additional web links entitled Table S to W complete the annex referring respectively to data and indicators on statutory minimum wages, trade union density, collective bargaining coverage and synthetic indicators of employment protection. A richer set of labour market data and indicators is accessible in the OECD Data Explorer. The metadata section of the online datasets reports definitions, notes and sources.

In general, Tables A to K report annual averages of monthly and quarterly estimates based on labour force surveys. Those shown for European countries in Tables A to C and G to K are mainly data from the European Labour Force Survey (EU-LFS), which are more comparable and sometimes more consistent over time than national LFS results. Data for the remaining Tables L to V are from a combination of survey and administrative sources or national reporting for Table W.

A broader set of data can be found in the OECD Employment Database (ED), https://www.oecd.org/en/data/datasets/oecd-employment-database.html, which contains both raw data and indicators for longer time series and more detailed individual characteristics and type of main job such as data by age group, gender and employee job tenure, part time employment, involuntary part time employment, temporary employment, duration of unemployment. The data portal includes more data series than those shown in the web links of the Statistical Annex, such as, the distribution of employment by weekly usual hours worked intervals, potential labour force including so-called people marginally attached to the labour force, etc. The online database contains additional series on working time, earnings and features of institutional and regulatory environments of labour markets. Among these are the following:

- Annual hours actually worked per person in employment for comparisons of trends over time
- Employment by long usual weekly hours worked in the main job
- Average gross annual wages per dependent employee in full time equivalent unit
- Distribution of gross earnings of full-time employees by gender and earnings dispersion measures and wage gaps (between men and women and broad age groups)
- Statutory minimum wages – levels and ratio of minimum to mean and median wages
- Public expenditure on labour market programmes, number of beneficiaries and inflows into the labour market
- Trade union density and collective bargaining coverage
- Synthetic indicators of employment protection

Major breaks in series

Tables A to K: Most of the breaks in series in the tables occurred for any of the following reasons: changes in survey design, survey questionnaire, survey frequency and administration, revisions of data series based on updated population census results. These changes may have affected the comparability over time of employment and/or unemployment levels and to a certain extent the ratios reported in the aforementioned tables:

- **Labour force survey changes**
  - **The implementation of the Integrated European Social Statistics (IESS) Framework Regulation (EU) 2019/1700 in 2021 represented the largest methodological change to the EU Labour Force Survey (EU-LFS**) since the early 2000s. Its impact went well beyond a simple questionnaire update and affected the measurement of many labour market indicators. See the section on conceptual and methodological changes below. This has created series breaks in employment and unemployment series. See: http://data.europa.eu/eli/reg_impl/2019/2240/oj.
  - For the **United Kingdom**, labour market estimates from 2019 to 2024 have been revised following the transition of the labour force survey to a new survey over concerns on the reliability of LFS estimates.
  - **Introduction of a continuous survey producing quarterly results**: **Austria** (2003/04), **Brazil** (2011/12), **France** (2002/03), **Germany** (2004/05), **Hungary** (2005/06, monthly results), **Iceland** (2002/03), **Italy** (2003/04), **Luxembourg** (2002/03, quarterly results as of 2007) and **Türkiye** (2013/14).
  - Data revisions in the following OECD countries:
    - 2009 to 2015: **Belgium**, **Denmark**, **France**, **Germany**, **Greece**, **Italy**, the **Netherlands**, **Portugal**, **Spain**, **Sweden** and the **United Kingdom**.
    - **Denmark** (2021), **Italy** (2018-2020), **Poland** (2015) and **Spain**, **Portugal** and **Sweden** (since 2021).
    - **Chile**: Re-estimation since 2010 implementing the quality estimation standards for household surveys set by the National Statistics Institute of Chile.
  - **Redesign of labour force survey**: Introduction of a new survey in **Chile** since April 2010 (see below), **Germany** (2010/11), **Hungary** (2002/03), **Poland** (2004/05), **Portugal** (2010/11) and **Türkiye** (2004/05 from quarterly to monthly results). Israel (2011/12), change from quarterly to monthly survey results and a change from “civilian” to “total” labour force (including those who are in compulsory or permanent military service). **New Zealand** (2015/16), the survey includes non-civilian personnel. Annual results for Colombia in 2020 are averaged over three-quarters (Q1, Q3 and Q4) as a result of the COVID-19 pandemic outburst and suspension of the survey in the 2nd quarter. Since July 2020, a new edition of the continuous quarterly survey was re-introduced in **Mexico** (Encuesta Nacional de Ocupación y Empleo, New edition ENOE^{N}) after its suspension in April 2020 following the COVID-19 pandemic outburst and lockdown measures. It was replaced in Q2 by a telephone interview survey (ETOE) with partial results. The annual results are averages of three-quarters (Q1, Q3 and Q4). For the **United Kingdom** (2003/04), data for Tables A-C are annual averages of quarterly estimates from the Annual Population Survey (APS); prior to 2004, they refer to the spring quarter (April-June) Labour Force Survey (LFS). Data for Tables G-K are annual averages of quarterly estimates from APS from 2016 onwards.

- **Conceptual changes**
  - **Change in the measurement of the labour force status and methodology in the European Labour Force Survey since 2021**: Data between 2020 and 2021 are affected by a break in series in Tables A-C and G-K. The size and direction of the breaks vary by country and statistics as reported in the national documentations on Eurostat website. See: https://ec.europa.eu/eurostat/statistics-explained/index.php?title=EU_labour_force_survey_-_new_methodology_from_2021_onwards.
  - **Change in the operational definition of employment**:
    - Neat application of the criterion of "at least one hour worked in a gainful job" in the **Chilean** Nueva Encuesta Nacional de Empleo (NENE), a quarterly continuous survey, from April 2010 onward.
  - **Change in the operational definition of usual working time**:
    - In **Israel**, the Labour Force Survey questionnaire was expanded and changed since January 2018. Workers absent from work are asked "how many hours they usually work". This affects the number of workers reporting usual weekly hours worked in their main job prior and, after 2018, notably Table G on the incidence and composition of part-time employment according to a common 30-hour threshold-based definition.
  - **Change in the operational definition of unemployment regarding**:
    - **Active job-search methods**: in particular a change from registration to contact with the public employment service: **France** (2002/03) and **Spain** (2000/01).
    - **Duration of active job search**: In **Australia** (2014/15), the duration of unemployment has been replaced by duration of job search. In **Belgium** (2010/11), the duration of job search has been changed from an unlimited duration to previous four weeks including the survey reference week. In **Chile** (2009/10), the duration of active job search has been shortened from last two months to previous four weeks including the survey reference week.
    - **Availability to work criterion**: In **Sweden** (2004/05), the work availability criterion changed from the reference week to two weeks from the reference week to be consistent with the operational definition in other EU countries. In **Chile**, the work availability criterion did not exist prior to 2010 in the Encuesta Nacional de Empleo (ENE) and was introduced in the Nueva Encuesta Nacional de Empleo (NENE) since April 2010. It has been fixed to two weeks from the end of the reference week.
    - **Persons on lay off** considered as employed instead of unemployed: **Norway** (2005/06).
- **Population benchmark revisions based on latest population census results:** Labour force weighting process generating estimates are calibrated to latest census-based usually resident population estimates, and may generate revisions to employment, unemployment and labour force levels, while rates and indicators are generally unaffected.
  - In **Australia**, employment and labour force levels have been revised since 2017 as a result of a rebenchmarking to 2016 Census population estimates. Recently, in Canada, Labour force levels have been rebased to 2021 Census population controls and revised historically from January 2011 to December 2024. Similarly, in **Portugal**, Labour Force Survey weights were calibrated using the resident population estimates calculated from the final results of the 2021 Population Census. Back series were revised accordingly since 2011. In **New Zealand**, recent major rebase occurred following 2023 census-based population revisions when quarterly estimates from 2018-2025 have been revised.
- **Other changes**
  - **Changes in the questionnaire with impact on employment and unemployment estimates:** Germany (2010/11): new questionnaire design ensures better coverage of small jobs. This led to a higher-than-normal annual employment increase. Impact on employment

and unemployment statistics in **New Zealand** (2015/16) with the inclusion of army personnel. Spain (2004/05): impact on employment and unemployment and impact on unemployment estimates in Norway (2005/06) and Sweden (2004/05).

- **Change from seasonal to calendar quarters: Switzerland** (2009/10) and the **United Kingdom** (2005/06). However, there is no break in series between 2005 and 2006 for the **United Kingdom** as calendar quarter based historical series are available since 1992.
- **Introduction of a new EU harmonised questionnaire**: **Sweden** (2004/05) and **Türkiye** (2003/04).
- **Changes in the age limits in LFS**:
  - Change in lower age limit from 16 to 15 years**: Iceland** (2008/09), **Norway** (2005/06) and **Sweden** (2006/07).
  - Change in lower age limit from 15 to 16 years: **Italy** (2007/08).
- **LFS response rate**: a change in data collected in **Denmark** since the first quarter of 2017 increased the response rate and resulted in a significant break in series between 2016 and 2017.

- **Other remarks**
  - In **Norway**, as of 2006, age is defined as years reached at the survey reference week, instead of completed years at the end of the year, as in previous years.
  - In **Japan**, data for Table I on temporary employees has a break in series between 2013 and 2017.
  - In the **United States**, annual estimates for 2025 are 11-month averages that exclude the month of October. Data for October 2025 were not collected due to the federal government shutdown. As a result, 2025 annual estimates are not strictly comparable with annual averages for other years.

Table A. Employment/population ratios by age and gender

As a percentage of the population in each age group and each gender

http://data-explorer.oecd.org/s/26v.

Table B. Labour force participation rates by age and gender

As a percentage of the population in each age group and each gender

https://data-explorer.oecd.org/s/4rs.

Table C. Unemployment rates by age and gender

As a percentage of the total labour force in each age group and each gender

https://data-explorer.oecd.org/s/4rt.

Table D. Employment/population ratios by educational attainment

Persons aged 25-64, as a percentage of the population in each gender

http://data-explorer.oecd.org/s/26z.

Table E. Labour force participation rates by educational attainment

Persons aged 25-64, as a percentage of the population in each gender

http://data-explorer.oecd.org/s/270.

Table F. Unemployment rates by educational attainment

Persons aged 25-64, as a percentage of the labour force in each gender

http://data-explorer.oecd.org/s/271.

Table G1. Incidence of part-time employment by age and gender

As a percentage of part-time employment in each age group and each gender

http://data-explorer.oecd.org/s/272.

Table G2. Women's share in part-time employment by age

As a percentage of part-time employment in each age group

http://data-explorer.oecd.org/s/273.

Table H1. Incidence of involuntary part-time employment by age and gender

As a percentage of total employment in each age group and each gender

http://data-explorer.oecd.org/s/275.

Table H2. Involuntary part-time employment as a share of part-time employment by age and gender

As a percentage of part-time employment in each age group and each gender

https://data-explorer.oecd.org/s/4ru.

Table I1. Incidence of temporary employment by age and gender

As a percentage of dependent employment in each age group and each gender

http://data-explorer.oecd.org/s/276.

Table I2. Women's share in temporary employment by age

As a percentage of dependent employment in each age group

http://data-explorer.oecd.org/s/282.

Table J. Incidence of job tenure shorter than 12 months by age and gender

As a percentage of total employment in each age group and each gender

http://data-explorer.oecd.org/s/278.

Table K. Incidence of long-term unemployment, 12 months and over by age and gender

As a percentage of total unemployment in each age group and each gender

http://data-explorer.oecd.org/s/279.

Table L. Average annual hours actually worked per person in employment

National accounts concepts unless otherwise specified (Hours per person per year)

http://data-explorer.oecd.org/s/27a.

Table M. Real average annual wages

Average wages in constant 2025 prices at 2025 USD PPPs for private consumption expenditures

http://data-explorer.oecd.org/s/27b.

Table N. Earnings dispersion by gender

https://data-explorer.oecd.org/s/4rv.

Table O. Incidence of high and low pay by gender

http://data-explorer.oecd.org/s/27d.

Table P. Relative earnings: Gender gap

https://data-explorer.oecd.org/s/4rw.

Table Q. Relative earnings: Age gap

http://data-explorer.oecd.org/s/27f.

Table R1. Public expenditure in labour market programmes

As a percentage of GDP

http://data-explorer.oecd.org/s/27i.

Table R2. Participant stocks in labour market programmes

As a percentage of the labour force

http://data-explorer.oecd.org/s/27h.

Table S. Real hourly minimum wages

Statutory minimum wages in constant 2024 prices at 2024 USD Purchasing Power Parities (PPPs) for private consumption expenditures

https://data-explorer.oecd.org/s/4sb.

Table T. Minimum wage relative to mean and median earnings

As a percentage of median and mean earnings of full-time employees

http://data-explorer.oecd.org/s/27l.

Table U. Trade union density

As a percentage of the number of employees

http://data-explorer.oecd.org/s/27m.

Table V. Collective bargaining coverage

As a percentage of eligible employees with the right to bargain

http://data-explorer.oecd.org/s/27n.

Table W1. Strictness of employment protection – individual and collective dismissals (regular contracts)

Index varying from 0 to 6, from the least to the most stringent

http://data-explorer.oecd.org/s/27o.

Table W2. Strictness of employment protection – temporary contracts

Index varying from 0 to 6, from the least to the most stringent

http://data-explorer.oecd.org/s/27p.

OECD Employment Outlook 2026

Geographic Disparities in Jobs and Incomes

Where people live shapes their chances of finding good jobs and moving up the income ladder. The *OECD Employment Outlook 2026* documents large and persistent gaps in employment, unemployment and disposable incomes across regions. Regional access to job opportunities plays a key role in determining both income levels and income mobility. By contrast, mobility across regions alone is insufficient to close existing gaps in labour market outcomes, and can even widen them. Local labour markets are also being reshaped by trade and technology shocks, including artificial intelligence, with some regions losing manufacturing jobs while others are creating more service jobs and non-routine work. However, adjustment to such changes often occurs through transitions into joblessness and job opportunities for newcomers rather than because affected workers move across sectors, leaving lasting scars for displaced workers. The report calls for integrated, place-based strategies that combine regional and industrial policies with effective employment and social support to help workers and communities develop new opportunities and navigate structural change. The *Outlook* also examines recent labour market developments and investigates changes in how skills translate into pay and job prospects, as well as aspects of labour regulation such as employment protection legislation and non-compete agreements.

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