



Uneven shifts: the geography of occupational change in France, Italy, Spain and the United Kingdom, 1992–2018

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ABSTRACT

Amid renewed interest in geographical inequalities in life chances and an ongoing debate about occupational upgrading versus polarisation, we investigate how the occupational structure changed across NUTS-2 regions in France, Italy, Spain and the UK between 1992 and 2018. Against the expectation that national upgrading trends may mask a diversity of regional upgrading, downgrading and polarisation experiences, EU Labour Force Survey data show clear and unambiguous upgrading. In every region, employment in high quality jobs grew while employment in low quality jobs shrank. These shifts were often large in magnitude: the proportion of employment in high quality jobs increased by more than 10 percentage points in two thirds of the regions studied. However, there was considerable heterogeneity in the rate and type of occupational upgrading. Strong upgrading and employment growth in the economic capital regions of Île-de-France (Paris), Lombardy, Madrid and London contrasted with weaker upgrading and sluggish (or even negative) employment growth in regions like Lorraine, Sicily, Extremadura and the West Midlands. That these and many regions have yet to achieve the same proportion of high quality jobs that the economic capitals possessed in 1992 highlights the greater relative difficulty of ascending to the top of the occupational structure in some places than in others.

KEYWORDS Employment; occupational change; regional inequality; structural change; regional economies; Europe

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1. Introduction

An influential thesis maintains that employment opportunities in general, and “good jobs” in particular, have become increasingly concentrated in prosperous metropolitan areas (Moretti, 2013; Iammarino, Rodríguez-Pose and Storper, 2019). However, much remains unclear about the nature, extent and timing of this shift in Europe. To date, most research on change in the occupational structure has focused on the national rather than the regional level (Goos and Manning, 2007; Goos, Manning and Salomons, 2009; Kalleberg, 2011; Fernández-Macías, 2012; Fernández-Macías and Hurley, 2017). Furthermore, the small number of regional studies that do exist (Hurley *et al.*, 2019; Aimone Gigio, Camussi and Maccarrone, 2021; Henning and Eriksson, 2021; Vera-Toscano, Fana and Fernández-Macías, 2022) have used a variety of different timeframes, spatial units and approaches to measuring occupational change. In the European context, it is thus unclear whether country-level findings which point to occupational upgrading—rather than occupational polarisation, as in the United States (Dwyer and Wright, 2019)—have been mirrored across regions, or whether national trends primarily reflect the job dynamics of dominant capital city regions such as London, Paris and Madrid.

The question of whether European regions followed parallel trends or divergent pathways has important implications for the life chances of individuals living in these regions. Amid renewed interest in geographical inequalities in life chances (Chetty *et al.*, 2014; Chetty and Hendren, 2018a, 2018b) and widespread concern about economic and political divergence within countries (Rodríguez-Pose, 2018; Van Hauwaert, Schimpf and Dandoy, 2019; Broz, Frieden and Weymouth, 2021), we investigate how the occupational structure changed across regions in France, Italy, Spain and the United Kingdom between 1992 and 2018. These countries were selected for three reasons: the availability of comparable occupational data at the regional level, population size (the four countries have a combined population of almost 250 million) and institutional variety. Whereas France and the UK are defined by strong centralism and dominant capital regions, Italy and Spain have more devolved governance and polycentric urban structures.

We use European Union Labour Force Survey (EU-LFS) data¹ and the job quality method developed by Wright and Dwyer (2003) to test two competing hypotheses in these four contrasting institutional contexts.² Whereas the diverging destinies hypothesis predicts that globalisation and technological change will

¹ EU Labour Force Survey 2019, <https://doi.org/10.2907/LFS1983-2018V.2>

² Replication Stata code is available at <https://osf.io/vbpdg/>

have produced a diversity of regional upgrading, downgrading and polarisation pathways (Iammarino, Rodriguez-Pose and Storper, 2019), the parallel trends hypothesis highlights the similarity of long-term structural shifts in employment and expects similar regional upgrading trends within countries (Autor, Dorn and Hanson, 2013). The job quality method involves dividing occupations into national job quality quintiles that were equally large in the early 1990s, and tracing employment change in these occupations over the subsequent decades. EU-LFS data provide us with large samples and allow us to explore occupational change at the level at which regional policies are decided (NUTS-2). We investigate change over time in French *Régions* (such as Île-de-France or Provence), Italian *Regioni* (such as Lazio or Veneto), Spanish *Autonomías* (such as Madrid or the Valencian Community) and the UK's Government Office Regions (such as London or the West Midlands).

In undertaking comparable analyses for France, Italy, Spain and the United Kingdom over the period 1992–2018, we make two core contributions to the understanding of how globalisation and technological change have reshaped the occupational structure. First, and in line with the parallel trends hypothesis, we show that there was a universal upgrading trend at the regional level across these diverse institutional contexts. Regional trends echoed national ones: employment in high quality jobs grew, while employment in low quality jobs shrank in every region within France, Italy, Spain and the United Kingdom. These shifts were often large in magnitude: the proportion of employment in high quality jobs increased by more than 10 percentage points in two thirds of the regions studied.

Second, and consistent with elements of the diverging destinies hypothesis, our analysis reveals considerable heterogeneity in the rate and type of regional occupational upgrading that took place between 1992 and 2018. Strong upgrading and strong employment growth in the economic capitals of Île-de-France (Paris), Lombardy (Milan), Madrid and London contrasted with weaker upgrading in a context of sluggish (or even negative) employment growth in more peripheral regions like Champagne-Ardenne in France, Calabria in Italy, Castile-Leon in Spain or the North East of England. That these and many regions in France, Italy, Spain and the United Kingdom have yet to achieve the same proportion of high quality jobs that the economic city regions possessed in 1992 highlights the greater relative difficulty of ascending to the top of the occupational structure in more peripheral regions.

2. Expectations from the literature

While it is universally agreed that technological change has profoundly reshaped the occupational structure over the past 50 years, there is considerable

disagreement about the nature of the changes induced at the country level, and considerable uncertainty about the nature of change below the country level. The disagreement arises from conflicting country-level results. Whereas some researchers have documented polarisation and the hollowing out of employment in middle-ranking jobs (Goos and Manning, 2007; Goos, Manning and Salomons, 2009, 2014; Kalleberg, 2011), others identify a clear or mostly clear upgrading trend (Murphy and Oesch, 2018; Fernández-Macías and Hurley, 2017; Goux and Maurin, 2019; Oesch and Piccitto, 2019; Haslberger, 2021; Zilian, Zilian and Jäger, 2021; Hunt and Nunn, 2022; Torrejon Perez *et al.*, 2023). Uncertainty stems from both the conflicting national results and the difficulty of comparing findings from existing regional studies, since these cover a variety of timeframes and use different spatial units and approaches to measuring occupational change.

2.1. *Diverging destinies hypothesis*

The diverging destinies hypothesis derives from influential claims which suggest that globalisation and technological change have accentuated economic differences between regions (Morris, 2010; Moretti, 2013; Iammarino, Rodríguez-Pose and Storper, 2019; Diemer *et al.*, 2022). According to this view, a few central city regions have successfully harnessed the agglomeration economies that arise from highly skilled workers and “superstar firms” interacting in close proximity to each other. These interactions result in more productive matches, more innovation, faster technology adoption and employment spillovers (Moretti, 2012; Kline and Moretti, 2014; Hurley *et al.*, 2019; Dauth *et al.*, 2022). By contrast, the labour markets in many smaller towns and rural regions are seen as being hampered by deindustrialisation and outmigration, leading to marked divergence in regional trajectories (Storper, 2018).

A number of broader trends support this claim, not least the cessation of post-war economic convergence in regional GDP per capita in the United States and in Europe. While the period between 1940 and 1980 was characterised by convergence in per capita income across US states, this convergence slowed down in the 1990s (Ganong and Shoag, 2017) and thereafter reversed across metropolitan areas (Moretti, 2012; Lindley and Machin, 2014). Similarly in Europe, regional differences in per capita incomes consistently declined between 1900 and 1980 but stagnated in the following two decades and may have increased after 2000 (Rosés and Wolf, 2021).

Proponents of the diverging destinies hypothesis also point to striking differences in the development of globalisation winners such as London and Paris, Berlin and Munich, Amsterdam and Zurich, and Madrid and Milan, when compared with more peripheral towns and cities. Whereas these cities play host

to high-wage finance, accountancy, law, IT, and media and communications firms, economic decline is apparent in the once prosperous industrial centres such as Liverpool and Hull, Genoa and Taranto, Le Havre and St. Etienne, and Bochum and Halle (Cortese *et al.*, 2014; Shetty and Reid, 2014; Pike *et al.*, 2016; Bartholomae, Woon Nam and Schoenberg, 2017). Stagnation has also affected the development of sparsely populated rural regions such as France's "empty diagonal" which prominently figured in the Yellow Vests protest (Oliveau and Doignon, 2016), as well as large swaths of Southern Italy and East Germany (Kühn, 2015).

Overall, this perspective suggests we should observe a variety of upgrading, downgrading and polarisation trajectories across regional labour markets in Europe. The expectation is of strong occupational upgrading in capital and other major city regions, with strong knowledge economy growth and inflows of skilled migrants contributing to the creation of a disproportionate number of jobs in the professions and management. But the notion of "winner-take-all cities" (Florida, Mellander and King, 2020) suggests this upgrading has taken place at the expense of former industrial and rural regions, which are seen as having followed alternative trajectories.

The upgrading of capital and other major city regions may come with a polarising twist. This would be the case if the growing ranks of managers and professionals boosted demand for low skilled personal services in childcare, cleaning, food provision or private security. According to this consumption spillover argument, the creation of high paid jobs in tradeable services is accompanied by growth in low paid non-tradeable service jobs such as drivers, cleaners, food deliverers and babysitters (Sassen, 2001; Mazzolari and Ragusa, 2013). Research for Germany (Dauth, 2014; Blien and Dauth, 2016), the Netherlands (Terzidis and Ortega-Argilés, 2021) and Spain (Consoli and Sánchez-Barrioluengo, 2019) indeed suggests that more urbanised regions were more likely to develop a polarised employment structure in the last decades.

2.2. *Parallel trends hypothesis*

In contrast to the diverging destinies argument, a second perspective emphasises the similarity of structural shifts in employment over the long term and expects parallel trends of regional upgrading within countries. Regions may well have had different occupational starting points: capital city regions transited earlier to services, whereas peripheral regions held on longer to agricultural employment. However, in the long run, regional labour markets are expected to be shaped by similar shifts in technology (Autor, Dorn and Hanson, 2013, 2015) and to experience similar processes of agrarian rationalisation, deindustrialisation and

service-sector expansion. To the extent that these changes went in hand with major demographic shifts such as educational expansion and increased female labour market participation, regional job markets in Western Europe may have experienced similar upskilling trends of their employment structure.

Two recent studies indeed find that regional job structures have converged towards the European average since the 1990s, in part because the most dissimilar rural regions saw their agricultural sectors contract and their service employment grow (Hurley *et al.*, 2019; Vera-Toscano, Fana and Fernández-Macías, 2022). Since agricultural employment is clustered at the lower end of the occupational structure, the loss of agricultural jobs tends to upgrade the occupational structure of more peripheral regions.

Manufacturing employment is more equally distributed across the employment structure. However, the shift from lower-skilled production to higher-skilled service jobs has also taken place *within* manufacturing (Baines *et al.*, 2009). As a result of this upskilling process, employment losses in European manufacturing between 1991 and 2011 were strongly skewed towards the lower half of the occupational structure (Cirillo, 2018). Regions exposed to industrial decline may thus also experience occupational upgrading.

A shared trend of occupational upgrading may also result from long-term shifts in labour supply, notably educational expansion and female labour market participation. While technology affects firms' demand for labour, employers will choose different production techniques and create different jobs depending on whether more or less educated workers are in plentiful supply (DiPrete and McManus, 1996; Korpi and Tählin, 2009). Contrary to the popular image of left-behind regions (Rodríguez-Pose, 2018), educational expansion was universal across Western Europe. Between 2000 and 2020, the proportion of the population aged 25 to 64 years with tertiary education grew not only in capital regions such as Greater London (from 40% to 60%), Île-de-France (from 33% to 54%) or Madrid (from 31% to 50%), but also in more peripheral regions such as North West England (from 26% to 40%), Nord-Pas-de-Calais-Picardie (from 15% to 32%) and Andalusia (from 19% to 33%).³ While regions differed in their educational starting points, they benefited from a similar trend of educational expansion.

Another demographic shift that may have left its imprint on regional occupational structures is increased female labour market participation. While this increase has been under way for decades, it was still visible across regions between 2000 and 2020. Among women, the economic activity rose not only in Greater London (from 67% to 76%), Île-de-France (from 67% to 71%) and, especially,

³ OECD Regional Labour Dataset, extracted from <https://stats.oecd.org/> (6 February 2023).

Madrid (from 54% to 74%), but also in the more peripheral regions of North West England (from 65% to 74%), Nord-Pas-de-Calais-Picardie (from 55% to 62%) and Andalusia (from 47% to 64%).⁴ As rising female employment shifted care activities from the household to the market and the welfare state, it spurred further demand in services typically dominated by women such as childcare, elderly care, educational support, cleaning and eating out (Dwyer, 2013; Esping-Andersen, 2009). To the extent that the demographic shifts in women's labour supply tended to create their own demand, they should result in similar regional patterns of occupational change, possibly with a polarising twist due to growth in low-paid personal service jobs.

2.3. Reconciling the arguments

At first glance, the two perspectives of diverging destinies and parallel trends lead to contrasting predictions. According to the first thesis, we should observe very different patterns of occupational change between a few central city regions, which benefited from upgrading, and former peripheral regions, which suffered from a combination of job loss and low-skill job growth, resulting in occupational downgrading.⁵ By contrast, the thesis of parallel trends expects similar patterns of occupational upgrading across the regions of a given West European country because these regions were exposed to similar structural forces, namely skill-biased technological change on the demand side that is mirrored by educational expansion and rising female employment on the supply side.

Yet these perspectives may be less irreconcilable if one distinguishes between the *quality* and the *quantity* of job creation. When measured purely in relative (quality) terms, upgrading can result from two different mechanisms: faster rates of growth in high rather than low quality jobs, or the slow or sudden collapse of low quality employment. Likewise, the same increase in the proportion of high quality employment can reflect either a positive version of upgrading driven by massive growth of high quality jobs in some regions, or a negative and “residual” form of upgrading linked to the destruction of low quality jobs in other regions. While the parallel trends hypothesis may correctly predict the prevailing trend

⁴ The activity rate is defined as the proportion of the labour force aged 15–64 over the population aged 15–64. Data source: OECD, Regional Education Dataset, extracted from <https://stats.oecd.org/> (6 February 2023).

⁵ This view is put forward most clearly by Iammarino, Rodríguez-Pose and Storper (2019, p. 274): “The inversion concerns the fact that areas that were once quite prosperous have been characterised by a combination of job loss, declining labour-force participation or declining per capita income relative to the national average. In some others, employment may be increasing but on average is not of high quality, comprising routine and relatively less-skilled jobs.”

towards upgrading within regions, broadening the focus to incorporate regional differences in absolute job creation (the quantity of jobs created) may reveal the regional heterogeneity predicted by the diverging destinies hypothesis.

Since relative measures provide only a partial picture of employment change, we incorporate absolute employment growth of regions into our analysis. By further using national employment growth as a benchmark, we are able to show the broader context of employment growth—or stagnation—in which regional occupational change took place.

3. Data and method

3.1. *The choice of countries*

Our analysis focuses on four large Western European countries: France, Italy, Spain and the United Kingdom. These countries were selected for three reasons. The first is the availability of comparable occupational data at the regional level over several decades. When working with the EU Labour Force Survey, this rules out a number of countries including Germany and Sweden. The second reflects population and country size. The public debate about regions drifting apart seems to primarily apply to the larger European countries such as France (Guilluy, 2013) or the UK (Goodhart, 2017), rather than smaller countries such as Austria, Denmark and the Netherlands. With a combined population of almost 250 million, the four selected countries accounted for half of the total European Union population in the 1992–2018 period under study.

A third and final selection criterion relates to institutional variety in terms of federalism versus centralism. Strong federalism in Spain contrasts with weak federalism in Italy, and with high levels of centralism in the UK and France (Armingeon, Engler and Leeman, 2022; Richards *et al.*, 2023). These institutional differences are evident from the proportion of total government expenditure that is spent at central rather than state (regional) or local level: central spending accounts for 56% of all spending in Spain, 72% in Italy, 77% in the UK and 81% in France.⁶ Strong centralism within France and the UK is also mirrored in monocentric city structure, with the capital city regions of Paris and London accounting for over 20% of national GDP.⁷ By contrast, Italy and Spain have more polycentric regional structures, with dynamic northern regions—notably Lombardy

⁶ OECD Fiscal Decentralisation Database, <https://www.oecd.org/tax/federalism/fiscal-decentralisation-database/> (31 January 2023).

⁷ OECD Regions and Cities Atlas, <https://www.oecd.org/en/data/tools/oecd-regions-and-cities-atlas.html>.

(Milan) in Italy and Catalonia (Barcelona) in Spain—that rival the capital city regions in terms of economic weight (Hurley *et al.*, 2019).

3.2. Data, sample and units

We use annual EU-LFS survey data and the job quality method developed by Wright and Dwyer (2003) to explore the geography of occupational change in France, Italy, Spain and the United Kingdom over the period 1992–2018. Though EU-LFS data for these four countries are available from 1983 onwards, 1992 represents the first year for which the necessary regional identifiers and detailed occupational data are both available.

In all four countries, the sample comprises individuals aged 20–64 who are employed for at least 20 hours a week, as employees, as employers or in a self-employed capacity. This approach means we exclude workers with a marginal attachment to the labour market such as students with part-time jobs, but include workers in all sectors of the economy.⁸ This leaves us with large sample sizes of, on average, 113,900 yearly observations in France, 140,500 in Italy, 53,500 in Spain and 42,900 in the UK.

We define occupations using the International Standard Classification of Occupations 1988 (ISCO-88) at the 3-digit level, the most detailed level available in the EU-LFS. We opt for this approach rather than the combination of 1- or 2-digit ISCO codes and NACE 1-digit sectors used by some researchers (Fernández-Macías and Hurley, 2017; Aimone Gigio, Camussi and Maccarrone, 2021) for both theoretical and practical reasons. In theoretical terms, there are few reasons to expect that cooks (for example) who work in the retail, distribution and hospitality sector work in jobs of radically different quality to cooks who work in the transport industry. In practical terms, crossing occupations and sectors tends to produce many empty or sparsely populated cells: there are very few teaching professionals who work outside the education sector, for example. This inhibits the construction of reliable rankings of job quality that are central to the Wright and Dwyer (2003) approach.

Eurostat shifted to using the updated ISCO-08 occupational codes in 2011. To deal with this discontinuity and address variation over time in occupational coding practices, we back code ISCO-08 to ISCO-88 using the *iscogen* tool for Stata (Jann, 2020). We first harmonise occupational codes across three-year time blocks (for example 1992–1994) for each country to ensure that there are a minimum of 50 observations in each occupational grouping at each timepoint.

⁸ We also run additional analysis for a sample of workers employed for at least 10 hours a week. Results are shown in Appendix D and are substantively very similar to those obtained with the main sample of 20 hours or more a week.

We then split very large occupations (defined as those that comprise more than 2% of the workforce) into either public versus private sector categories or primary/secondary versus tertiary categories, and further split occupations that remain large (and inhibit the creation of balanced national quintiles) by dominant versus other sector. The number of occupations distinguished is 101 in France, 109 in Italy, 102 in Spain and 97 in the United Kingdom.

Regions are defined as the lowest available NUTS level available in the EU-LFS. This is NUTS-2 level in France, Italy and Spain,⁹ and NUTS-1 in the United Kingdom. Prior to 1996, London and the South East, which collectively account for nearly two fifths of the British economy (Office for National Statistics, 2022), were coded as a single mega-region in the EU-LFS. The window of observation for the United Kingdom is thus 1996–2018 rather than 1992–2018.

3.3. Analytical strategy

The analysis of occupational change depends on a reliable indicator of job quality, with the literature typically contrasting highly skilled and low-skilled jobs. As job quality is difficult to measure directly, we follow Fernández-Macías (2012) and Oesch (2013) in ranking occupations by the mean level of education of workers in a given occupation. The idea is that workers' education serves as a proxy for the skill requirements and quality of a given job. For each country, we therefore rank-order occupations on the basis of the mean ISCED-97 level of people working in these occupations at the earliest possible point of the observation window. Detailed education variables only become available in EU-LFS in 1998: we therefore rank occupations by the mean educational level of people working in these occupations over the period 1998–2003 in France, Italy and Spain and 1999–2004 in the United Kingdom.

While it would be preferable to measure education at the beginning of the period under study, previous research has shown that occupational rankings are very stable over time, with correlations across two decades typically exceeding 0.80 (see Hurley, Fernández-Macías and Storrie, 2013; Oesch, 2013). We test the assumption that 1998–2003 EU-LFS rankings will be highly correlated with occupational rankings at any other timepoint and show in Appendix C that it holds: education-based rankings from 1998 to 2003 correlate with education-based rankings constructed at the end of the time period considered at a minimum of 0.937 in Italy and a maximum of 0.975 in Spain.

⁹ We exclude the French overseas territories and island of Corsica from our analysis of France as well as the Canary Islands, Ceuta and Melilla for Spain because the sample sizes are too low.

We use mean education rather than income to rank-order occupations for both practical (national income deciles are available in EU-LFS only from 2009 onwards) and substantive reasons. Unlike income-based rankings, education-based rankings are independent of the regional distribution of particular occupations. The large regional price differences that exist in all four countries (Hayes, 2005; Janský and Kolcunová, 2017) mean that uncorrected income-based rankings may be partly endogenous: occupations will rank artificially high if they are clustered in high price regions such as London and Paris. Since regional price inflators are not consistently available, we opt to rank by education in the main analysis. However, we run additional analysis using income-based occupational rankings in order to test of the validity of our results. In this analysis, we rank-order occupations on the basis of the mean income decile of people working in these occupations over the period 2009–2014 in France, Italy, Spain and the United Kingdom, where income deciles are adjusted to reflect a typical 40-hour working week. We show in Appendix B that income-based ranking results are substantively the same as those presented in the main analysis and lead to identical conclusions.

Having rank-ordered occupations separately for each country, we then divide these ranked occupations into five groups containing one fifth of total national employment at the beginning of the time period considered (1992–1994 in France, Italy and Spain; 1996–1998 in the United Kingdom). We opt for quintiles rather than the terciles used in regional analysis by Vera-Toscano, Fana and Fernández-Macías (2022) and the deciles and percentiles sometimes favoured in national-level analysis (see Goos and Manning, 2007) because they strike a balance between granularity and interpretability at the regional level.

We construct quintiles on the basis of national rather than regional employment so that occupations always fall in the same quintile within each country. This approach enables meaningful comparisons between regions and in relation to the national average over time.¹⁰ The bottom and top national quintiles are thus composed of the 20% of employees working in occupations with the lowest and highest average levels of educational attainment, respectively.

While occupations and occupational rankings are country-specific, there are many similarities. In all four countries, architectural, computing, health, legal and

¹⁰ If quintiles were constructed on the basis of regional employment, then some occupations would fall in different quintiles in different regions, making it difficult to compare change over time between regions or to benchmark regional against national performance. In France, for example, 62 of the 96 occupations (65%) present in both Île-de-France and Champagne-Ardenne would fall in a higher quintile in Champagne-Ardenne than in Île-de-France, including 5 that would fall in quintile 2 in Île-de-France but in quintile 4 in Champagne-Ardenne. With region-specific quintiles, regions could only reliably be compared with their own starting positions.

life sciences professions are top national quintile occupations, while domestic workers, garbage collectors, textile workers, and agriculture and fishing labourers are bottom national quintile occupations.

Our analysis then proceeds in three parts. First, we trace the evolution of employment within national job quality quintiles in relative (percentage point) terms between the start and end of the observation window, both at country and regional level. Next, we calculate an upgrading rate based on change over time in the ratio of top quintile (5) to bottom quintile (1) jobs within each region. The upgrading rate is calculated as follows:

$$\frac{Q5_{2018}}{Q1_{2018}} - \frac{Q5_{1992}}{Q1_{1992}}.$$

Lastly, we trace the growth and decline of employment within national job quality quintiles in absolute terms, transposing percentage point change calculated via EU-LFS data to regional employment data obtained from the national statistical agencies of the four countries.¹¹

4. Results and discussion

4.1. Relative change

Against the expectation that national trends could mask a variety of regional upgrading, downgrading and polarisation experiences, our analysis reveals a clear and unambiguous upgrading trend in every region of France, Italy, Spain and the United Kingdom. This can be seen in Figure 1, which documents change over time in the proportion of employment in high quality (quintile 5) occupations in all regions, and Figure 2, which plots percentage point change in employment across all five national quintiles at country level and in the five most populous regions over the period 1992–2018. Figure 1 shows that the probability of being employed in a high quality occupation increased over time in all regions within France, Italy, Spain and the United Kingdom, relative to 1992. These shifts were modest in the United Kingdom, but large in magnitude in France, Italy and Spain: over the last three decades, the proportion of total employment set in top quintile

¹¹ Our analytical strategy comes closest to the methodology used by Vera-Toscano *et al.* (2022). Based on Census data for 1980–2010, they construct occupational groups by crossing nine occupations (ISCO 1-digit) with 15 sectors. Using education to rank occupations, they show occupational change in NUTS-3 regions compared to change at the national level. While our analysis shows occupational change for NUTS-2 regions over time, Vera-Toscano *et al.* (2022) present regional change relative to national change (i.e. faster or slower upgrading of a given region than the national average). This makes the comparison of results difficult.

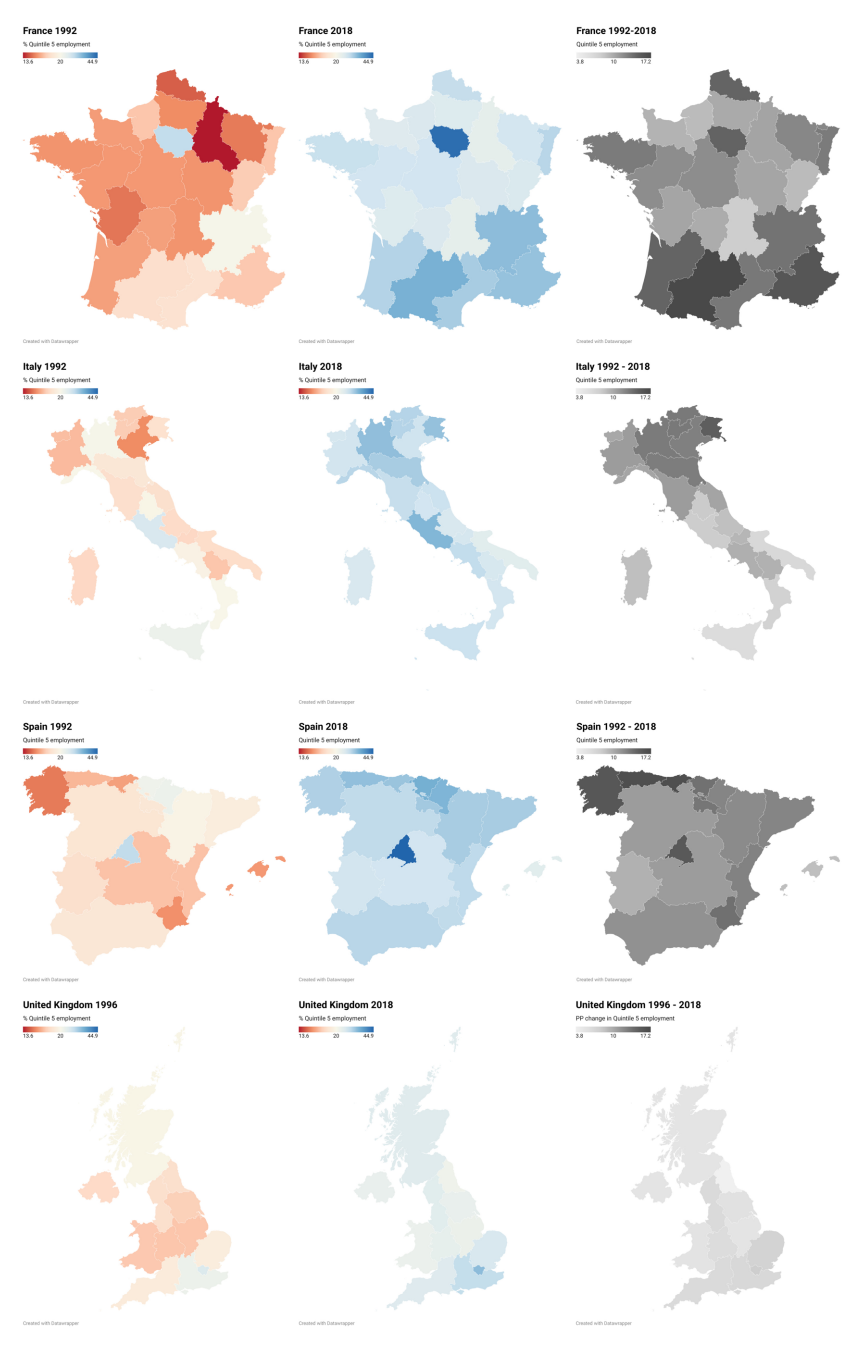


Figure 1. Proportion of employment in the top national quintile in all regions in 1992 and 2018, and change in percentage points, 1992–2018.

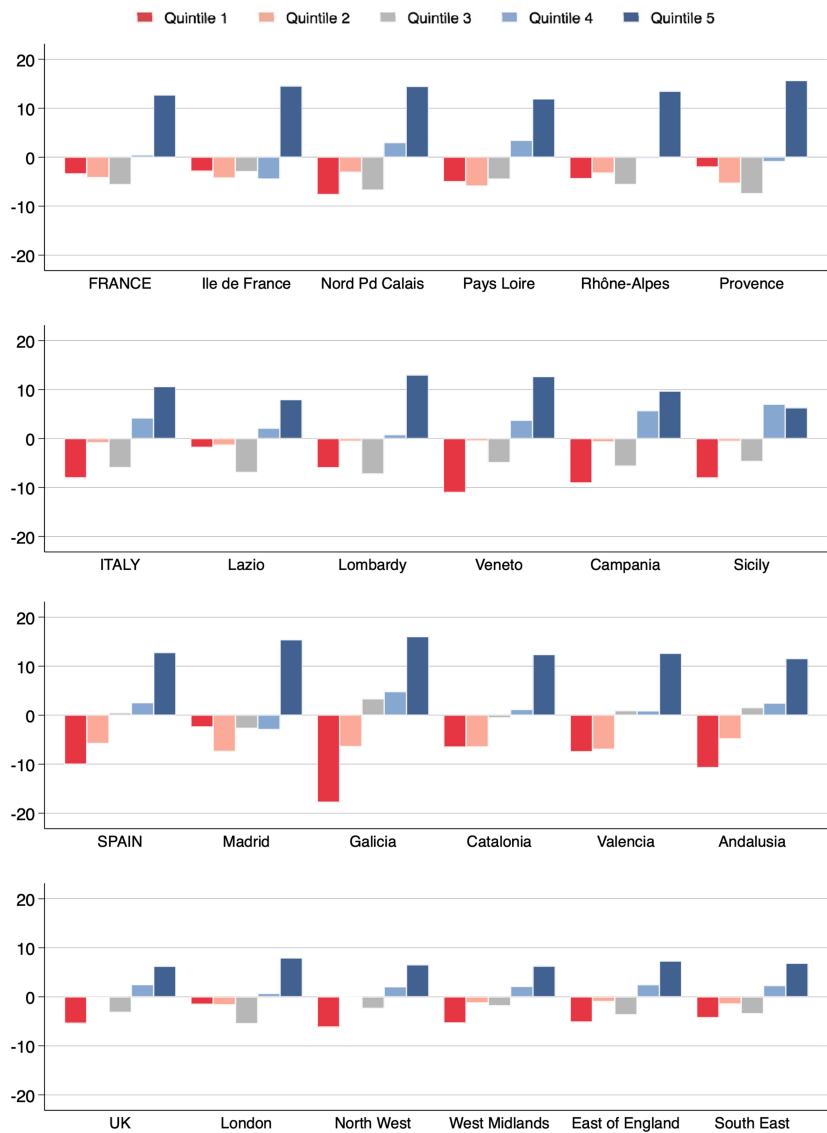


Figure 2. Relative employment change (in percentage points) across national job quality quintiles in large regions, 1992–2018.

occupations increased by more than 10 percentage points in 40 of the 69 NUTS regions, and by more than 5 percentage points in all regions except the North East of the United Kingdom.

That employment in the top quintile grew in every region is noteworthy but does not preclude the possibility of simultaneous growth in the bottom quintile and occupational polarisation rather than upgrading. However, Figure 2 (and

Figure A1 in Appendix A which shows all regions) clearly shows that the overall trend was one of upgrading at country and region level: employment in high quality jobs grew, while employment in low quality jobs shrank in all regions. Furthermore, and contrary to a common expectation in the literature, occupational upgrading did not come with a polarising twist in the capital city regions or anywhere else. The same holds true if we expand the sample to include workers employed for 10 or more hours (Figures D1 and D2 in Appendix D) and when we rank occupations based on mean income deciles rather than mean educational attainment (Figures B1 and B2 in Appendix B). This analysis also shows a very clear upgrading trend for all regions except Lazio and Sicily, where bottom quintile employment also grew very marginally.

4.2. *Heterogenous upgrading*

Though all regions experienced upgrading between 1992 and 2018, the maps in Figure 1 highlight substantial variation in both regional starting points and in quintile 5 growth rates. In general, employment in the top quintile grew more in regions that already had high levels of top quintile employment in 1992, notably the capital regions of Île-de-France, Madrid and London as well as the regions of south-eastern France (notably Rhône-Alpes), north-eastern Italy, north-eastern Spain (notably the Basque country) and southern England.

The opposite was also true, albeit to a lesser extent: employment in the top quintile typically grew less in regions with low initial levels of high quality employment, such as Auvergne and Champagne-Ardenne in France, Puglia and Calabria in Italy, Extremadura and Castilla-la-Mancha in Spain, and the East Midlands and Wales in the UK. However, there are also a number of interesting exceptions to this trend. Regions with low levels of employment in quintile 5 in 1992 but higher than average growth include Brittany and Nord-Pas-de-Calais in France; Friuli-Venezia in Italy; and Asturias, Cantabria and Galicia in Spain.

As outlined above, upgrading can come about from increases in the proportion of high quality employment or the collapse of low quality employment. From a life chances perspective, swift upgrading in a context of strong employment growth is superior to slower upgrading in a context of weak or negative employment growth. We therefore investigate whether higher than expected quintile 5 growth in regions like Nord-Pas-de-Calais, Friuli-Venezia and Galicia reflect similar labour market dynamics to those that took place in the capital city regions. We do so by plotting a regional upgrading rate against a regional employment growth rate. The *upgrading rate* is based on change over time in the ratio of quintile 5 to quintile 1 jobs within each region, indexed to the national rate of change. The national rate of change is set at 100, so that figures above

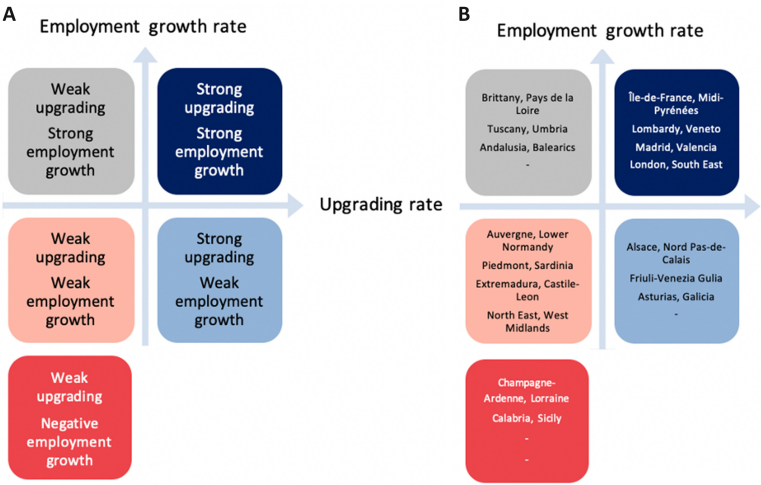


Figure 3. Relative employment change (in percentage points) across national job quality quintiles in large regions, 1992–2018.

100 indicate a faster rate of upgrading than the national average and vice versa. The *employment growth rate* refers to change in jobs between 1992 and 2018 in each region and is again indexed to the national average, 100 denoting the national average rate of employment growth and values below 0 indicating that employment shrank in absolute terms in a given region between 1992 and 2018.

Figure 3 shows the stylised typology that emerges from this comparison and offers some examples of regions in each quadrant of the typology, while Figure 4 plots the position of all regions, with the capital city regions highlighted in red (see Figure A2 in Appendix A for more detailed results). Moving clockwise, the labour markets in regions in the top right corner of Figure 3 upgraded more than the national average and saw higher rates of employment growth than the national average. Regions in the bottom right corner upgraded more than the national average, but employment grew at a slower than average rate. The labour markets in regions in the bottom left upgraded less and either grew more slowly than the national average or—in the case of some French and Italian regions—even shrank in real terms. Finally, regions in the top left corner upgraded more slowly but saw their employment grow at a faster rate than the national average.

As indicated by Figure 3B, the clear winners, where strong upgrading was accompanied by strong employment growth, are the four economic capitals of Île-de-France, Lombardy, Madrid and London. This group also includes Aquitaine, Midi-Pyrenees, Provence-Alpes-Côte d’Azur and Rhône-Alpes in France; Trentino-South Tyrol, Veneto and Emilia Romagna in Italy; Catalonia,

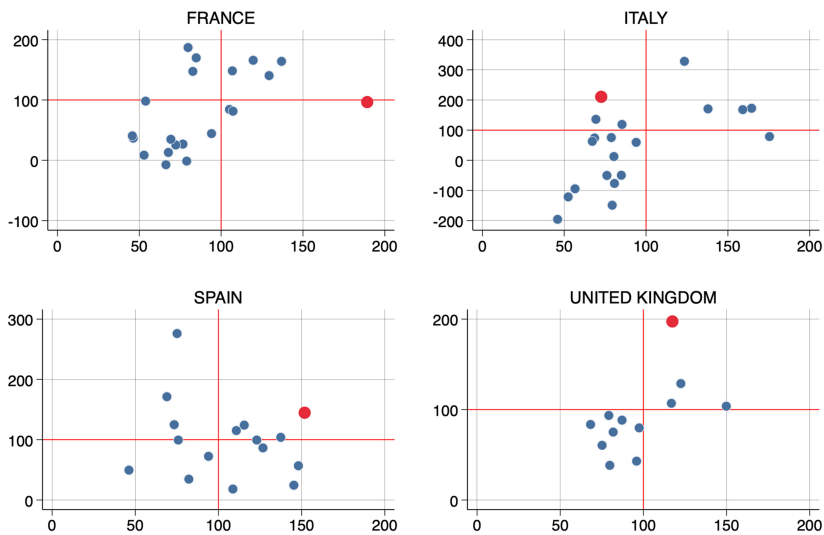


Figure 4. Upgrading rates (horizontal x-axis) versus overall rate of employment growth (vertical y-axis) in regions 1992–2018 (100 denotes the national average and red dots mark the capital city regions).

Valencia, Navarre and La Rioja in Spain; and the South East, East and South West of England in the United Kingdom.

Other regions experienced more ambiguous upgrading processes. Regions with modest upgrading and sluggish employment growth include Auvergne, Bourgogne, Lower Normandy and Upper Normandy in France; Piedmont and Sardinia in Italy; Aragon, Castille-Leon and Extremadura in Spain; and all regions of the United Kingdom outside Southern England. Finally, regions with modest upgrading and overall employment decline—the worst form of labour market evolution in terms of life chances—include almost the whole of southern Italy as well as Champagne-Ardenne and Lorraine in north-eastern France.

Figure 4 shows that other combinations of upgrading and employment growth are less common in France, Italy and the United Kingdom. In these countries, regions are clustered in either the top right or bottom left corner (for region names, see Figure A2 in Appendix A). This indicates that strong upgrading and strong employment growth tended to go hand in hand in the regions of these countries, as did weaker upgrading and sluggish or negative employment growth. Strong north-south divides are also evident in Italy, the United Kingdom and—with the exception of Île-de-France—in France. But while regions in the north did better than those in the south in Italy, the opposite is true in the UK and France where northern regions experienced weaker upgrading and slower employment growth than southern regions. In Spain, there is neither a clear-cut

north-south divide nor a strong association between upgrading and employment growth.

4.3. Demand and supply

The parallel trends hypothesis expects the employment structure of regions to follow similar trajectories, including in terms of the sectoral mix of the new jobs created. We examine this argument by first calculating the sectoral composition of relative job growth or decline within each quintile, where three sectors are distinguished: production (including agriculture, manufacturing and construction); private services; and public services. For additional insight into absolute job creation and destruction over the period 1992–2018, we then transpose these figures to absolute employment data obtained from the national statistical agencies of the four countries.

Figure 5 plots absolute employment growth (or decline) by quintile and broad sector for the five most populous regions in each country, while Figure A3 in Appendix A does the same for all regions. Three main findings emerge. First and in line with expectations from the literature, private services were the main driver of upgrading in the economic capitals of Île-de-France, Lombardy, Madrid and London and in a clear majority of other regions: it was employment in jobs like computing, legal and business professions that grew most between 1992 and 2018.

Second, there was substantial upgrading within the production sector in most regions. While a considerable number of low quality production jobs disappeared, there was employment growth in higher-skilled occupations set in the production sector in all regions of France, Spain and the United Kingdom and in most regions of Italy. Contrary to a common expectation, deindustrialisation did not lead to a massive decline in mid-skilled occupations, but was concentrated in low quality occupations, most obviously in Rhône-Alpes and Nord-Pas-de-Calais; Campania and Veneto; Catalonia and Galicia; and the North West and West Midlands. In parallel, these regions experienced modest growth in top quintile occupations within the production sector.

Third, public sector jobs, which are disproportionately located in the top two national quintiles, made a strong contribution to occupational upgrading in all regions in France, Spain and the United Kingdom, but played a much more modest and variable role in Italy. The expectation that the public sector might have contributed more to upgrading in weaker regions holds only in Spain. The public sector was important in all regions of Spain, accounting for more than 40% of top national quintile growth in all regions except Madrid. It played an outsize role in regions with lower upgrading rates like Extremadura and Murcia. The pattern



Figure 5. Absolute employment change across national job quality quintiles in large regions by sector, 1992–2018.

in France and the United Kingdom is less clear: the contribution of the public sector to upgrading varied substantially between regions, but there is no obvious link to upgrading rates. In Italy, public sector employment in the top quintile shrank in a number of weaker southern regions including Sicily, Puglia and Calabria, possibly reflecting overall population decline.

The common trend of occupational upgrading across regions may also reflect long-term shifts in labour supply, notably the broadly shared trends of

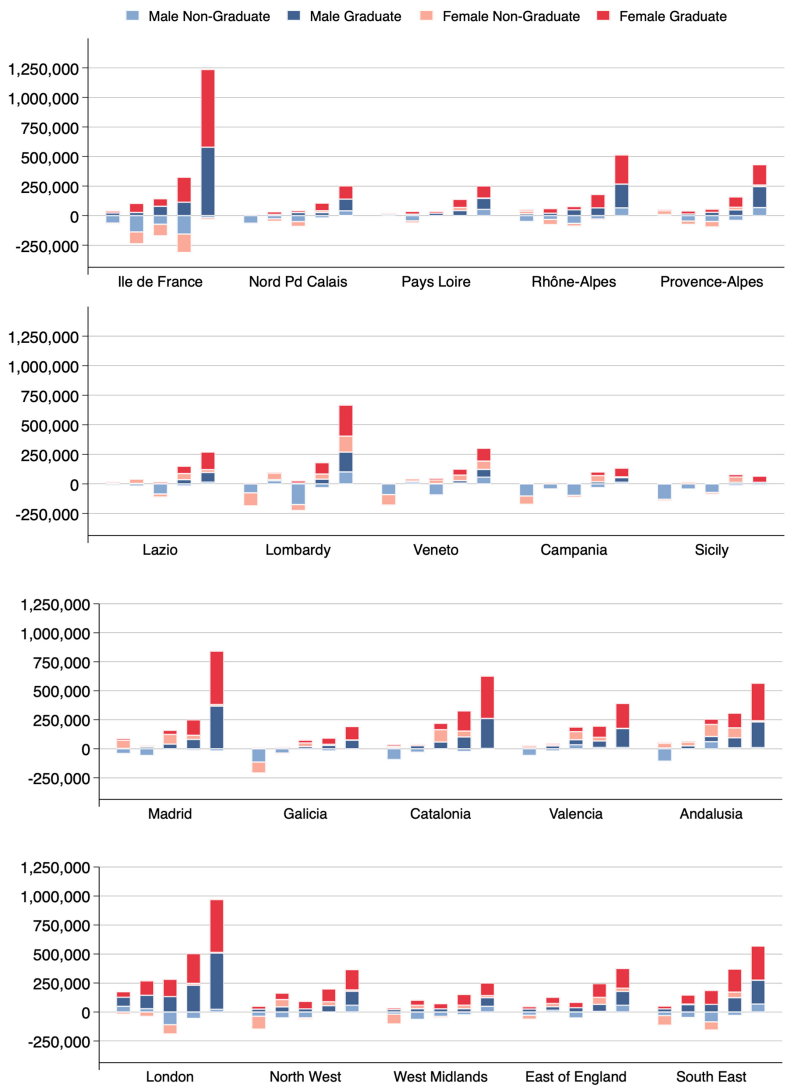


Figure 6. Absolute employment change across national job quality quintiles in large regions by sex and education group, 1992–2018.

educational expansion and increased female labour market participation. Figure 6 disaggregates change in the employment structure by sex and education level—graduates of tertiary education versus non-graduates—and shows that occupational upgrading went hand in hand with increasing educational attainment. In all four countries, job growth in quintile 5 was driven by the rising supply of workers with tertiary education. Graduates captured almost all net job growth in quintile 5 in France, Spain and the UK and the majority of net growth

in quintile 5 jobs in Italy, though there were also some modest net gains in high quality employment among non-graduates in Italy.

As for gender, contrary to expectations, male and female graduates accounted for relatively even proportions of regional occupational upgrading in France and the UK. However, female graduates accounted for a greater proportion of employment growth within the top two national quintiles in Italy and Spain, two countries where the female catch-up process in labour market participation was strongly under way during the period under study.

5. Conclusion

Amid renewed interest in geographical inequalities in life chances and an ongoing debate about occupational upgrading versus polarisation, this paper analyses how the occupational structure changed across regions in France, Italy, Spain and the United Kingdom over the last three decades. Two main sets of findings emerge.

First, and in line with the parallel trends hypothesis, we identify a universal upgrading trend across the different institutional settings studied. Regional trends echoed national ones and do not support the notion of “winner-take-all cities”: over the period 1992–2018, employment in high quality jobs grew while employment in low quality jobs shrank in every region within France, Italy, Spain and the United Kingdom, with no sign of polarising twists in the capital city regions or elsewhere. These shifts were often large in magnitude: when we consider the most middling of regions—Limousin in France, Marche in Italy, Castile-Leon in Spain and the North West of the United Kingdom—we see that employment in high quality occupations increased from around 1 in every 6 workers in 1992, to around 1 in every 3.5 workers in 2018. Instead of cross-country and regional differences, our analysis therefore shows very similar long-term trends. In both economic capital regions and peripheral agricultural regions, employment in high quality occupations increased while employment in lower-skilled occupations decreased. This strongly suggests that European labour markets have been shaped by common structural forces, namely skill-biased technological change on the demand side and educational expansion and increased female employment on the supply side. Universal regional upgrading in all four countries is the consequence of both growing demand for highly skilled labour and the growing supply of highly skilled people.

Second, and in line with aspects of the diverging destinies hypothesis, we identify considerable heterogeneity in the type of regional occupational upgrading that took place between 1992 and 2018. Though the direction of travel was the same in all regions, upgrading took place at different speeds and in

different contexts of employment growth. In France, Italy and the United Kingdom, strong upgrading in the economic capitals of Île-de-France, Lombardy, Madrid and London tended to be accompanied by strong employment growth. The same scenario of disproportionate top quintile expansion also held for a number of other regions that already had high levels of high quality employment in 1992, such as Rhône-Alpes, Emilia-Romagna, Rioja and the South East of England. While this upgrading was not accompanied by the stagnation or downgrading of former industrial and rural regions, the economic capitals increased their relative advantage over regions like Lorraine, Sicily, Extremadura and the West Midlands, where weaker upgrading often took place in a context of sluggish or even negative employment growth.

Although our analysis provides evidence of universal national and regional upgrading in four countries over three decades, we cannot rule out the possibility that regional results disguise substantial within-region heterogeneity. Since NUTS-2 units are relatively large, the overall upgrading trend may hide sizeable differences between thriving provinces, departments, counties and districts and those that are lagging behind. There is no simple solution to the modifiable areal unit problem (Fotheringham and Wong, 1991), but further research on occupational change at lower spatial scales is undoubtedly needed. Ideally such research would take place at the level of local labour markets, as defined by commuting zones (Autor, Dorn and Hanson, 2013; Bauluz *et al.*, 2023).

From both a life chances and a regional development perspective, the worst-case occupational change scenario would be occupational stagnation or downgrading in a context of negative employment growth. That all regions managed to avoid this fate is welcome news. However, this does not mean that geography exerts a non-meaningful impact on individual chances of rising to the top of the occupational structure. Even after nearly 30 years of upgrading, many regions—including Lower and Upper Normandy, Bourgogne and Picardy in France, Puglia and Sardinia in Italy, Extremadura and Castile-La Mancha in Spain, and all regions of the United Kingdom except the South East and East of England—have yet to achieve the same proportion of high quality jobs that the capital city regions of Île-de-France, Lazio, Madrid and London possessed in 1992. The starting points were uneven and so too have proved processes of occupational upgrading over time.

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AI use disclosure

AI was not used at any stage of the research or writing process.

Data and code availability

EU Labour Force Survey microdata are available via Eurostat: see <https://ec.europa.eu/eurostat/web/microdata/european-union-labour-force-survey> for detail of how to apply for access. Replication syntax is available via OSF: <https://osf.io/vbpdg/>

Declaration of interest statement

No potential conflict of interest was reported by the author(s).

Ethical approval

None required.

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Supplements

Supplemental data for this article can be accessed online at https://doi.org/10.1162/euso_a_00015.

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