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Regional migration in economically lagging territories: a comparative analysis

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Abstract

Discussion of economically lagging regions tends to emphasise out-migration more so than in-migration, particularly when it comes to the young and the higher-skilled. This may give rise to the expectation that net out-migration is a key feature of regions affected by long-term relative economic decline. In this paper, we examine patterns of residential migration in economically 'left behind' regions, as compared to other territories, in the UK, France and Germany with a view to understanding implications for population change in these regions. We find that economically lagging regions are, as a whole, not characterised by net population outflows. In fact, though economically buoyant regions often receive higher numbers of international migrants, rates of net internal in-migration are on average slightly higher in economically lagging regions. This seems to be driven by lower rates of out-migration from these territories, more so than higher rates of in-migration. Economically lagging regions, instead of losing population through net out-migration to other regions, thus tend to be places of relatively low residential regional mobility, with the partial exception of the 18-24 age group. We explore this finding in more detail and discuss theoretical and policy implications.

1. Introduction

This paper aims to better understand the impact of regional migration on economically 'left behind' territories. More specifically, it investigates whether economically lagging territories experience population loss or gain through inter-regional migration, which age groups move in and out of these regions, and what the implications might be for these territories in terms of population change and overall regional development?

Neoclassical economic theory (Barro & Sala-I-Martin, 1991; Greenwood, 1997; Sjaastad, 1962) and other prominent theories of migration (Ravenstein, 1889) emphasise the centrality of economic factors in driving migration flows, positing that people will generally tend to move from economically depressed territories to places offering better economic opportunities. But there are several potentially countervailing factors that may work to limit the extent of out-migration from economically lagging regions and perhaps even act to

promote in-migration. The exact direction and magnitude of regional migration flows in lagging regions is thus not easy to predict from theory. Existing empirical work on interregional migration gives us some sense of whether economically lagging regions may be more prone to net migration outflows. But since most empirical studies assess the extent to which economic disparities are a 'driver' or determinant of migration, often while controlling for other variables, this only provides limited insight into the actual population outflows, inflows, and net migration balances in economically lagging regions.

To remedy this, we examine net and gross rates of inter-regional migration across four categories of regions in the UK, France and Germany, ranging from low-GDP, low growth regions to high-GDP, high growth regions. We show that economically 'left behind' regions – i.e., regions that have seen relatively low rates of economic growth over past decades from an already low base – were on the whole not characterised by net out-migration during the immediate pre-Covid period. Though young adults did tend to leave these regions in net terms, among all other age groups they tended to experience net in-flows. These positive migration balances were largely driven by relatively low rates of out-migration (i.e. high rates of 'staying'). The paper contributes to current debates about regional inequality, uneven development, and 'left behind places' by discussing what this finding means for economically lagging territories and their inhabitants.

2. Economic disparities and regional migration: theoretical perspectives (1116 words)

Economic opportunity is seen as a major driver of migration, from Ravenstein to neoclassical economics and beyond. For instance, within classical economics it is generally assumed that migrants tend to flow towards places offering more employment opportunities and higher wages, and away from places characterised by economic downturn (Blanchard & Katz, 1992; Greenwood, 1975, 1997; Sjaastad, 1962). The assumption is that such migration works to equalise spatial differentials in per capita incomes, earnings and unemployment rates (Barro & Sala-I-Martin, 1991, 1992; Maza, 2006; Rappaport, 2005). According to rival perspectives, the skill-selectivity of migrants leads to the depletion of human capital in economically marginalised regions and exacerbates their disadvantaged position (Fratesi & Percoco, 2014; Granato et al., 2015; Østbye & Westerlund, 2007). Despite the contrasting implications for regional development, in both perspectives the main direction of migration is from low-income, high-unemployment regions to more economically buoyant territories. Based on these perspectives, we would expect to see lagging regions lose population through net out-migration.

Similarly, in accounts of urban shrinkage economic factors are often also seen as key drivers of out-migration and depopulation. For instance, it has been documented how deindustrialisation and the loss of jobs prompted the out-migration of large proportions of residents of North American cities, particularly in former manufacturing centres in the northeast of the United States (Beauregard, 2003; Bluestone & Harrison, 1982; Weaver et

al., 2016). Similarly, in Europe, many urban areas have witnessed population shrinkage over recent decades, with economic processes often being an important determinant (Haase et al., 2016; Turok & Mykhnenko, 2007; Wiechmann & Pallagst, 2012). These developments, argue Cunningham-Sabot et al. (2013, p. 99), are a consequence of the increased importance of innovation and knowledge in a globalised world, in which "some places attract investments and the most qualified workers, while others lose their economic base, their jobs and thereby their population".

However, it has long been recognised, including among economists, that inter-regional migration should not be understood as a simple function of regional economic characteristics. For one, migration entails costs – not only material but also social and psychological – that often prevent individuals and households from moving even if economic prospects may be better elsewhere (Greenwood, 1975; Kitching, 1990). And importantly, the prospect of increased income or better living conditions are by no means the only drivers of regional migration. For one, family and other social networks exert a strong influence on migration flows (Massey, 1990; Mulder & Cooke, 2009). Other non-economic factors that have been shown to exert significant influences on migration behaviour include climate (Graves, 1980), natural and cultural amenities (Niedomysl & Hansen, 2010; Partridge, 2010), particular kinds of social environment (Florida, 2003), and cultural heritage (van Duijn & Rouwendal, 2013). Even when employment is a key factor when weighing up the possibility of residential mobility, staying in the same area can in fact be the most rational strategy, especially in sectors where personal contacts and word-of-mouth are crucial for finding work. (Kitching, 1990). This means that actual rates of gross and net out-migration in economically lagging regions may be much lower than one might expect given their economic situation.

Among perspectives emphasizing factors beyond regional income or wages in locational choices, particularly notable is an influential body of work in urban economics and regional science based on the notion of spatial equilibrium. Aside from incorporating amenities (climate, crime rates, school quality, etc.) as key drivers of migration, this works additionally draws attention to the crucial role of land- and housing costs (Blomquist et al., 1988; Glaeser & Gottlieb, 2009; Graves & Mueser, 1993; Roback, 1982).[1] Along with wage levels, rents (i.e. housing costs) fluctuate depending on demand for housing, itself a function of economic opportunity and amenities. Housing costs therefore play an important role in offsetting higher incomes in more economically prosperous regions (as well as the higher attractiveness of amenity-rich locations), such that utility is equalised across space. The magnitude of fluctuations in housing costs depends on the elasticity of housing supply to changes in demand, and it is argued that in the US in particular, supply constraints have greatly pushed up housing prices in the most productive cities (Ganong & Shoag, 2017; Hsieh & Moretti, 2019). So much so that, for all but the most highly-paid workers, the cost of living in these cities outstrips the potential economic benefits.

[1] As well as commercial property rents or costs.

The assumptions underpinning spatial equilibrium models – such that a lack of mobility implies equal 'utility' and thus equal welfare levels across space – are questionable (Storper, 2018). But by giving a central role to housing costs, spatial equilibrium theorists are able to account for certain features of regional migration in the United States and Europe over recent decades. In particular, they provide an explanation for why households have not been moving *en masse* towards economically booming cities like New York or London. Importantly for the present study, it also means that, contrary to the assumptions outlined above, economically disadvantaged regions may be characterised by far less out-migration than would be expected under the standard neoclassical view.

A further consideration is that, at the regional level, rates of gross and net migration are a function not just of the presence of different push and pull factors – economic, social, cultural, housing-related – but also of compositional effects (Gleave & Cordey-Hayes, 1977; Green, 2017). For example, young adults are much more likely to migrate than older age groups (de Jong et al., 2016; Ghio et al., 2022; Plane et al., 2005), women tend to be more mobile than men (Leibert, 2016; Ravenstein, 1889), and the higher-skilled generally out-migrating lower-skilled groups (Fratesi & Percoco, 2014; Glaeser & Resseger, 2010; Granato et al., 2015). Rates of out-migration in particular are a function of the social class, skill level, and life stage of the resident population, and reflect the differential material and immaterial resources that people have available to them (Fielding, 2012). The extent to which a territory loses or gains population through migration therefore depends on the degree to which different groups are over- or under-represented. If the populations of economically lagging regions skew older, and less skilled, than those of more economically prosperous and dynamic areas, this may result in lower rates of (out-)migration compared to other territories.

Demographic groups moreover respond differently to different push and pull factors. Employment opportunities and wage levels will be much more relevant to those of working age than those who have retired, for whom lifestyle and amenity considerations are likely to be more important, alongside the presence of social and family networks. This means that regions with relatively low housing costs yet offering pleasant surroundings may be disproportionally attractive to older age groups, even if these territories lack a strong economic base (Steinführer & Grossmann, 2021). Meanwhile, higher-skilled individuals tend to respond more strongly to regional economic differences than those with lower skill levels (Carlsen et al., 2013; Niedomysl & Hansen, 2010; Piras, 2012a). If economically lagging regions have a predominantly lower-skilled population, this may mean lower rates of out-migration (Kitching, 1990), and thus a lower propensity for population loss through migration.

3. Regional migration in economically lagging regions: existing evidence

So far, we have reviewed theoretical perspectives on regional migration and hypothesised about what these might mean for economically lagging regions. But what does the evidence tell us? Much of the descriptive evidence of migration in Europe and the US has focused on

mobility along the urban-rural spectrum (Johnson & Winkler, 2015; Plane et al., 2005; Stockdale & Catney, 2014). This literature describes how, after a period of sometimes rapid urbanisation, many (western) European countries have from the second half of the twentieth century been characterised by suburbanisation and counter-urbanisation, followed more recently by selective re-urbanisation (Champion, 2001; Lerch, 2023). Kabisch and Haase (2011) found that more than a fifth of large agglomerations in western Europe, in particular in eastern Germany, were subject to re-urbanisation after 2001, though often still within an overall trend of counter-urbanisation. Migration up and down the urban hierarchy also varies by age group, with net migration of young adults oriented towards cities, while among middle-age and older age groups net movements tend to be down the urban hierarchy (de Jong et al., 2016; Johnson & Winkler, 2015; Plane et al., 2005; Stockdale & Catney, 2014). It is, however, less obvious how these patterns of counter- and re-urbanisation correspond to migration along the economic spectrum.[2]

Migration literature that directly considers the economic status of different regions tends to be concerned with a particular question, namely the 'responsiveness' of migration flows to economic differentials. This is usually investigated through modelling to determine if a significant relationship exists between the relative economic performance of a territory and its rate of net, or gross, migration (Biagi et al., 2011; Eichengreen, 1993; Etzo, 2011; Puhani, 2001). Alternatively, papers use individual- or household-level data to model the effect of territorial economic variables on migration decisions (Antolin & Bover, 1997; Berger & Blomquist, 1992; Bover & Arellano, 2002). Many of these studies suggest that (changes in) the economic performance of regions do partly shape interregional migration in European and other countries (Furceri, 2006; Gärtner, 2016; Li et al., 2024; Mitze, 2019). However, others have found that migration flows correspond only moderately to economic factors (McCormick, 1997; Palomares-Linares & van Ham, 2020; Piras, 2012b; Puhani, 2001; Rodríguez-Pose et al., 2015). Aside from national differences and contrasting modelling approaches, this variety in results may stem from which economic variables are considered – wage levels, unemployment rates, and/or levels of per capita income or output – and whether the focus is on the effect of cross-sectional differentials in wage or income levels, or of short- or medium-term fluctuations ('asymmetric shocks'). It is possible that the effect of the latter is somewhat stronger, particularly in times of economic crisis (Mitze, 2019).

It is also possible that the responsiveness of regional migration to disparities in economic performance has diminished over time. Gordon and Molho (1998) find that both economic and environmental factors exerted influence on migration flows between UK regions during the 1960s, 1970s and 1980s, with the most important economic variable being the rate of employment growth in both origin and destination regions. Unemployment differentials, on the other hand, appear to only be significant during the 1960s and early 1970s, with a much-

[2] Though historically, a territory's position the urban-rural spectrum may have aligned fairly closely with their position on the continuum of economic advantage and disadvantage, in the current era, the connection between urban density and economic prosperity has become less direct, in large part as a result of many cities having fallen into economic decline over past decades.

reduced impact thereafter. This aligns with other evidence that labour flows in the UK have, at least since the 1970s, not been particularly responsive to unemployment differentials (McCormick, 1997). Rising regional disparities in housing costs (Causa et al., 2021), and/or increased homeownership (Palomares-Linares & van Ham, 2020) may partly explain this. Additionally, the compositional effects discussed above may be playing a role here.

While the above literature provides valuable evidence on the 'effect' of economic differentials (e.g., levels of per capita gross domestic product (GDP)) on net or gross migration rates, it does not necessarily provide a good sense of actual rates of net and gross migration in economically 'left behind' regions. This is because the relationship between economic variables and migration rates is usually modelled while controlling for other variables, and because such modelling is sometimes based on sub-groups of the population (such as those of working age only). Descriptive evidence on the nature and scale of migration in economically disadvantaged versus economically leading regions is, however, relatively scarce. What evidence we do have, points to a mixed picture. In the UK context, it has been found for several decades that London – one of the most economically dynamic areas – has a high rate of internal out-migration (Fielding, 2012). Causa et al. (2021) report that, although in many OECD countries, net migration rates are higher in regions with high per capita GDP, there are several nations, including the UK, France, Germany, and the US, in which the opposite is the case, with low-income territories seeing higher net migration.

In Germany, the tendency for low-income regions to be net recipients of inter-regional migrants reflects, in part, a recent reversal of the once-dominant east-to-west migration seen in this country. After a decade-and-a-half of substantial net migration losses from eastern Germany to the west – driven in large part by inferior economic conditions in the east, from the mid-2010s onwards this long-term trend reversed with eastern Germany recording a net migration gain for the first time since the fall of the Berlin Wall (Stawarz et al., 2020). One possible contributing factor might have been that those most prone to leaving the east had already done so by this point, which can explain the reduction in east-to-west migration among 30-49-year-olds seen during this time. But in fact the largest driver of this reversal was the fall in out-migration from the east among 18-24 year olds (ibid).

When it comes to the composition of (net) migration in economically lagging areas, the analysis by Ghio et al. (2022) suggests that across the EU, local areas with lower levels of GDP per capita tend to see net out-migration among younger adults, whereas for the 35-39 age group, both low- and high-GDP regions have positive rates of net migration, though migration balances do tend to be lower in the former. For age groups over 40, net migration tends to be positive in low-GDP territories and negative in high-GDP areas, the reverse of the pattern seen for young adults. Overall, this points to a tendency for low-GDP regions to attract those aged 35 and older, but to lose, in net terms, individuals in their twenties.

However, these last results are for the EU as a whole, meaning we do not know to what extent these findings are similar between individual countries. These findings also do not provide a good sense of the degree to which different types of economically lagging regions

experience distinct migration patterns. One question, for instance, is whether among economically-lagging territories, rural regions are more strongly affected by the net outflow of population than comparable urban regions, or perhaps the other way around (given the still-dominant pattern of counterurbanisation in many countries). It is these questions that we turn to in the rest of the paper.

4. Data and methodology

Geographies

The geographies used for the analysis are NUTS3 regions in France, NUTS3 regions in the UK[3], and Spatial Planning Regions (Raumordnungsregionen) in Germany. The reason for using Spatial Planning Regions for Germany is that NUTS3 regions are substantially smaller in size in Germany than in France and the UK. Since most households move only relatively small distances, using NUTS3 regions in Germany would have resulted in us observing a large amount of residential mobility over short distances.[4] Spatial Planning Regions are of a more similar size to French and British NUTS3 regions.[5]

NUTS3 regions are used for the whole of the UK except London, again for scale comparability reasons. NUTS3 regions in London are relatively small, much smaller than NUTS3/Spatial Planning Regions covering the French and German capitals, or other large metropolitan areas across the three countries. Thus, for London, NUTS2 geographies were used. These divide London into five regions, rather than 21 regions under NUTS3 boundaries.

In total, our analysis comprises 96 regions in Germany, 96 regions in France, and 159 regions in the UK.

Data

A variety of national datasets are used to calculate interregional migration flows and rates.

For the UK, we use estimates of internal (domestic) migration flows at the local authority district level produced by the national statistics agencies for England and Wales, Scotland, and Northern Ireland, supplemented with data on international inflows and outflows for each area. There are no unified datasets covering the whole of the UK, so datasets for Scotland, Northern Ireland, and for England and Wales, are combined to produce complete estimates of migration inflows and outflows for each local authority area in the UK. These are then

[3] With the exception of London – see below.
[4] Of course, even in France and the UK, estimates of inter-NUTS3 mobility do inevitably contain some moves over small distances, with households happening to just cross over an administrative border. But due to the generally larger size of NUTS3 regions in these countries, we can probably assume that a relatively greater proportion of moves can be interpreted as genuine 'inter-regional migration'.
[5] Spatial Planning Regions are in fact somewhat larger than British and French NUTS3 regions, hence there is still a difference between the average size of regions in the three countries which does affect observed rates of gross migration. However, this is as close to comparable geographies as we were able to obtain using the available migration data.

aggregated to the NUTS3 level, ensuring only flows crossing NUTS3 boundaries are counted. Because local authority boundaries are non-conterminous with NUTS3 boundaries for a number of regions in Scotland, four Scottish NUTS3 regions had to be excluded from the analysis.[6] Data on population by age group was obtained from the Office for National Statistics. For more information on UK data and methodology, please see appendix A.1.

For France, harmonised census data is used to calculate internal in- and out-migration and international in-migration. Information on migration is obtained by comparing the NUTS3 of residence at the time of census with the NUTS3 of residence one year earlier. We are thus able to identify all movements between French NUTS3 regions[7], as well as individuals entering a French NUTS3 region from abroad. However, individuals who were resident in a French NUTS3 region a year prior to the census date but who have moved abroad in the meantime are not present in the census. This means that data on international out-migration at the regional level is not available for France. Therefore, to estimate total net migration between t-1 and t, we use additional datasets on births and deaths by NUTS3 region. Total net migration was derived as follows: $total\ net\ migration = (population_t - population_{t-1}) - (births - deaths)$. The absence of out-migrants from the data also means that the census only allows us to observe the regional population at the end of the annual period over which we measure migration, rather than the mid-year population. Therefore, another dataset is used for data on total population by NUTS3 region, age and sex.[8] For more information on French data and methodology, please see appendix A.2.

For Germany, data on internal migration comes from a migration matrix by gender and age group at district (Kreise) level, produced by the Statistische Ämter des Bundes und der Länder and harmonised to 2020 district borders by the Bundesamt für Bauwesen und Raumordnung (BBSR). Data was aggregated from district level to Spatial Planning Regions (Raumordnungsregionen), taking care to exclude movements remaining within Spatial Planning Region borders. Data on international migration comes from the same agency and is again aggregated from district level to Spatial Planning Region-level.

Economic categories

[6] The four excluded NUTS3 regions are as follows: Caithness and Sutherland (UKM61), Inverness and Nairn and Moray, Badenoch and Strathspey (UKM62), Lochaber, Skye and Lochalsh, Arran and Cumbrae and Argyll and Bute (UKM63), and East Dunbartonshire, West Dunbartonshire and Helensburgh and Lomond (UKM81). In the case of East Ayrshire and North Ayrshire mainland (UKM93), despite slight discrepancies between local authority and NUTS3 boundaries, it was possible to combine local authorities in a way that closely corresponded to the NUTS3 boundary and it was therefore decided to leave this region in the analysis.

[7] Only regions in mainland France plus Corsica are included, since data for overseas regions was incomplete.

[8] Since in this dataset, population by age is only available by five-year age group, an adjustment is made to align the French data with the six age groups used in the analysis (specifically, the 0-17 and 18-24 age groups). Using census data, we calculate the proportion of 0-17 year olds among 0-19 year olds (after mobility, by adding up the residents in each NUTS3 at the time of the census). This proportion can then be applied to the known population figures for the 0-19 age group to obtain an estimate of the 0-17 age group.

To assess the migratory characteristics of economically 'left behind' regions and compare these to other types of regions, we develop a four-way regional categorisation. This categorisation divides regions based on their longer-term economic performance – measured through per capita gross domestic product (GDP) – and taking into account both starting levels and rates of growth. Per capita output is a widely-used measure to evaluate the economic performance of regions (e.g. Biagi et al., 2011; Ghio et al., 2022; Puhani, 2001; Rodríguez-Pose et al., 2015), and has the advantage of being easily available and produced using comparable methods across countries. Specifically, regions are assigned to one of four categories as follows:

1. *Forging ahead*: higher-than-national-average GDP per capita in 1991 and faster-than-national-average per capita GDP growth between 1991 and 2018
2. *Slowing down*: higher-than-national-average GDP per capita in 1991 and slower-than-national-average per capita GDP growth between 1991 and 2018
3. *Catching up*: lower-than-national-average GDP per capita in 1991 and faster-than-national-average per capita GDP growth between 1991 and 2018
4. *Lagging behind*: lower-than-average GDP per capita in 1991 and slower-than-national-average per capita GDP growth between 1991 and 2018

This regional categorisation is designed to correspond to the prevalent view of 'left behind' places as being characterised by economic decline or stagnation over the longer term, as opposed to a more short-lived downturn. The year 1991 is the first year for which comparable GDP figures are available for all regions across the three countries.[9] The reason for benchmarking levels and growth rates against the national average, rather than the average across all three countries or the EU average, is that this aligns better with the way that residents of each country are likely to evaluate the 'left-behindness' or not of their region.

[9] There might be a concern that measuring regions' economic performance over a relatively long time-period obscures their more recent trajectories, which may be seen as more likely to affect current migration patterns. However, when using the much shorter time-period of 2013-2018 as the basis of allocating regions to the economic categories and repeating key aspects of the analysis, most results are not qualitatively different.

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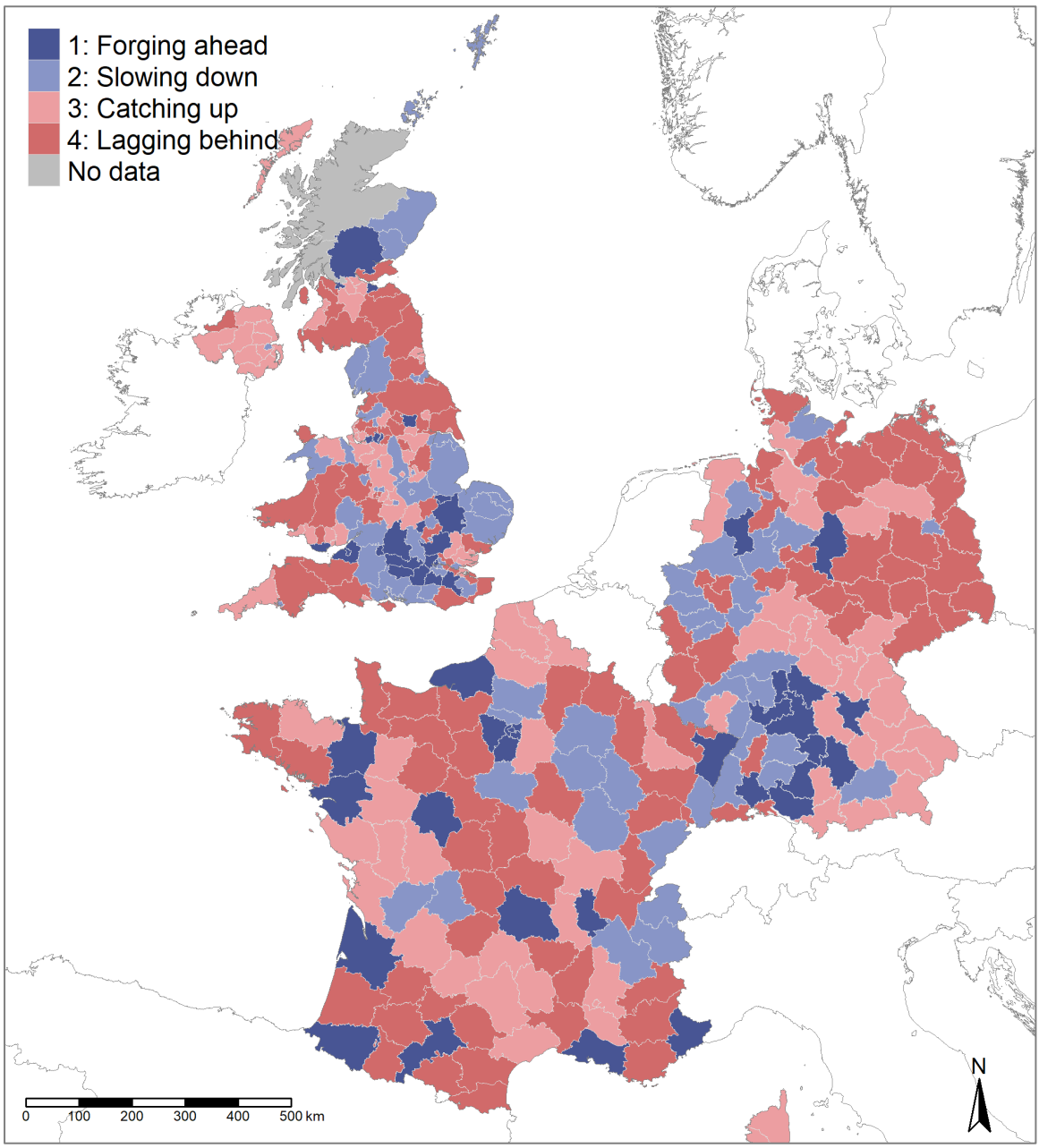
Figure 1: Map showing spatial distribution of regional economic categories in UK, France and Germany



This categorisation could be seen as a rather one-dimensional way of capturing economically 'left behind' regions, in that it does not account for regional characteristics like (un)employment rates, earnings, or other features commonly ascribed to 'left behind places'. However, finding comparable data for other variables, at the NUTS3 level, is not straightforward since much of the relevant data available through Eurostat or the OECD, e.g. on earnings or unemployment, is only available at the NUTS2 level. Basing our classification on just two measures, both related to per capita GDP, also has the advantage of producing a conceptually simple and clear four-way categorisation.

Because of the importance of migration along the urban hierarchy, however, we do also apply a rural-urban distinction to our regions for parts of the analysis. For the UK and France, we use the Eurostat urban-rural typology (Eurostat, 2020), and for Germany a conceptually and methodologically similar classification developed at the Spatial Planning Region-level (BBSR, 2024). We treat the German class ‘urban region’ as equivalent to Eurostat’s ‘predominantly urban’, the German class ‘region with rural characteristics’ as equivalent to Eurostat’s ‘intermediate’, and the German class ‘rural region’ as equivalent to Eurostat’s ‘predominantly rural’. For brevity, these classes are hereafter referred to as ‘urban’, ‘intermediate’ and ‘rural’.

Figure 2 shows how the urban, intermediate and rural status of regions varies across each economic category and each country. It is notable that in France, there is a much stronger connection between long-term economic disadvantage and rurality, with the vast majority of regions in the ‘lagging behind’ category being rural (and the remainder classified as ‘intermediate’). In Germany, close to half of the regions in the ‘lagging behind’ category are rural with another third classified as intermediate, and it is the ‘catching up’ category that is in fact the most rural in nature. In the UK, since there are far fewer rural (and intermediate) regions than in the other two countries, all four of the economic categories, including the ‘lagging behind’ category, are predominantly composed of urban regions.

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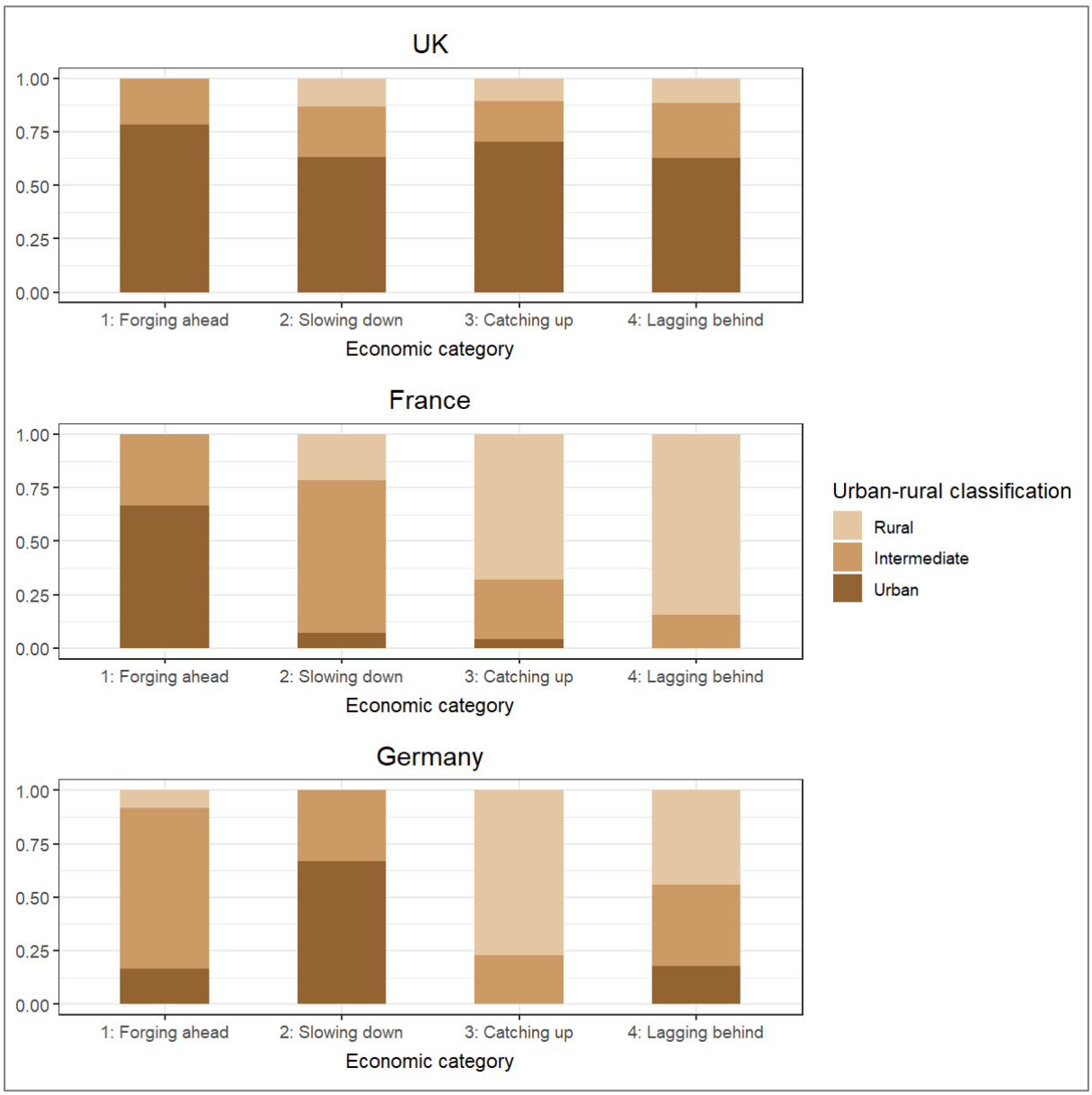
Figure 2: Proportion of urban, intermediate and rural regions in each economic category



Source: ARDECO regional database. Proportions refer to the number of regions in each category, unweighted by population.

Migration rates

We present rates of net and gross migration over the year 2017 to 2018, thus capturing migration patterns just before the global Covid-19 pandemic. This is largely a decision based on data availability – at the time of conducting the analysis, the most recent data available was for the years 2020 and 2021 which were likely still impacted by the direct effects of the pandemic and associated measures (e.g., lockdown or 'stay at home' orders). Additionally, changes to the way German internal migration data are reported mean that it is not possible to calculate rates of in- and out-migration for spatial planning regions for years after 2017-18.

A possible objection to the use of this analysis period is the hypothesis that the Covid-19 pandemic has had longer-term impacts on migration patterns, which would mean that pre-pandemic findings cannot be used to infer anything about the current period. However, any evidence of a Covid-19 effect on regional migration, such as a relative increase in urban-to-rural mobility during 2020 and 2021, has largely been shown to be temporary with migration rates and patterns more or less reverting to pre-pandemic normality since (Perales & Bernard, 2023; Stawarz et al., 2022). Though the longer-term effects of changes in working and commuting patterns have yet to be evaluated, it appears that the pandemic has not significantly reshaped prevalent patterns of national population movement (Rowe et al., 2023). This means that the patterns observed for the period 2017-18 likely remain reasonably instructive regarding current circumstances.

To get a sense of whether the findings observed in 2017-18 are representative of longer-term stable patterns or whether there have been shifts or changes when looking further back in time, we did also examine data for the period 2012-13. Where significant changes occurred, we report on this in the text.

The main measures presented in this paper are net regional migration rates, that is, the difference between the number of individuals moving into the region and the number of individuals moving out of the region, divided by the mid-year population (in 1,000 persons): $Net\ migration = \frac{inflow - outflow}{mid\text{-}year\ population} \times 1{,}000$.

A negative rate of net migration indicates a loss of population through migration, a positive rate a gain.

We additionally separate out internal migration – migration between regions but remaining within the same country – and international migration.[10] Similarly to above, net rates of internal/international migration are calculated by subtracting all internal (international) outflows from internal (international) inflows and dividing by the mid-year population.

Age-specific net migration rates are calculated in an analogous way but using the mid-year population in the relevant age group as the base[11] (e.g. for the 18-24 age group: $Net\ migration_{18-24} = \frac{inflow_{18-24} - outflow_{18-24}}{mid\text{-}year\ population_{18-24}} \times 1{,}000$).

Migration flow data by age group is not available for Scotland and Northern Ireland, hence for the UK, analysis of migration by age group is reserved to England and Wales only.

Rates of in-migration and out-migration are also calculated separately, again per 1,000 persons of the mid-year population.

[10] Migration between the three countries, e.g. between the UK and France, or between Germany and the UK, is counted as international migration.
[11] Though for France, the denominator is the number of residents aged 18-24 on 1 January 2018, which would have been aged 17-23 in 2017.

We have tried to align the time periods over which migration is measured as best as possible, but because we are working with nationally-specific datasets there are some discrepancies. The UK migration data counts all inter-regional moves taking place between the 1st of July of the starting year and the 30th of June of the following year (i.e. data for the year 2017-18 refers to all moves taking place between the 1st of July 2017 and the 30th of June 2018). The French census data captures moves taking place between the 1st of January of the starting year and the 1st of January of the following year (i.e. data for the year 2017-18 refers to all moves taking place between the 1st of January 2017 and the 1st of January 2018). The same applies to the German data.

5. Results

Gross migration rates

To start, we examine whether economically lagging regions are characterised by higher rates of out-migration. We focus mainly on internal migration in this section because data on international (and thus total) migration for France is more limited, not being available by age group. Though international migrants are excluded, we argue that internal migration rates nonetheless give us a good idea of patterns of population (re)distribution across countries, since in almost all regions internal migrants make up the majority of regional migration flows.

Figure 3 presents average rates of gross internal in- and out-migration for the four economic categories in each country. This shows that, particularly in the UK and France, 'lagging behind' regions do not have especially high rates of out-migration. Out-migration rates are in fact on average somewhat lower than in 'forging ahead' or 'slowing down' regions. In Germany, average differences between the categories are less pronounced, but even here, the 'lagging behind' category has a relatively low rate of average out-mobility. And, correspondingly, gross in-migration rates also tend to be fairly low in 'lagging behind' regions, consistent with Ravenstein's fourth 'law of migration' (Ravenstein, 1889). Instead of economically lagging regions being places of (net) out-migration, they can thus be more accurately described as places of relative low regional mobility.[12] This is in line with recent evidence from the US (Molloy & Smith, 2019).

[12] Though in Germany, the tendency for 'lagging behind' regions to be characterised by lower rates of out-migration is perhaps less pronounced.

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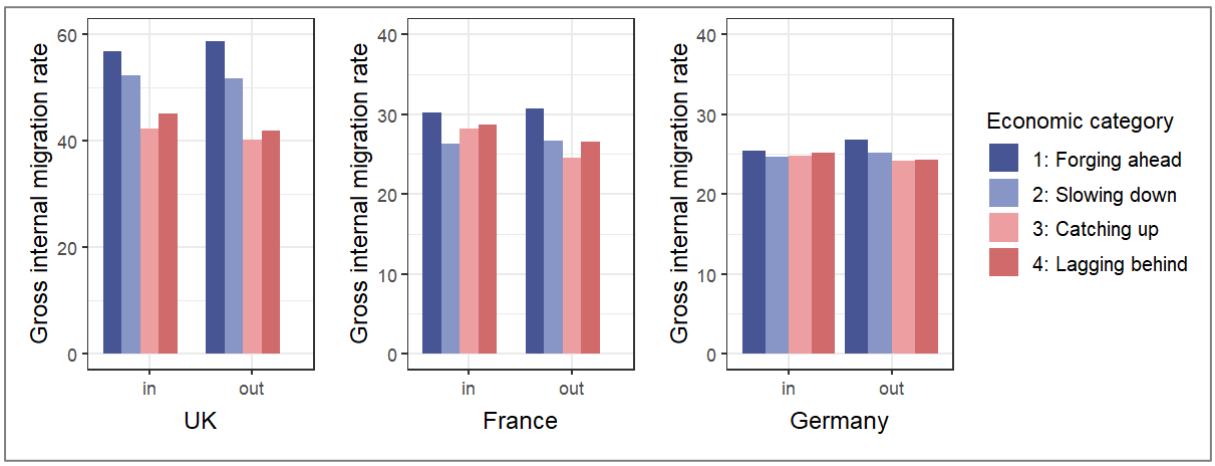
Figure 3: Average rates of internal in- and out-migration by economic category and country, 2017-18



Sources: authors' analysis based on data from the Office of National Statistics, Northern Ireland Statistics and Research Agency, National Records of Scotland, Bundesinstitut für Bau-, Stadt- und Raumforschung, Statistische Ämter des Bundes und der Länder, and the Institut Nationale de la Statistique et des Études Économiques.

To some extent, the relatively low rates of out-mobility from economically lagging regions are likely a result of their demographic composition (Green, 2017), given that 'lagging behind' regions have, on average, a greater proportion of older residents than other regions. For instance, in the UK in 2018, on average 41% of the population of 'lagging behind' regions was aged 50+, compared to 34% in 'forging ahead' regions. But this compositional difference does not fully explain the difference in out-migration rates between the regional categories. For even within age groups, particularly the 30-49 age group, the 50-64 age group and the 65+ age group, out-mobility rates tend to be relatively low in 'lagging behind' regions, certainly when compared to in 'forging ahead' regions (see Figure 5).[13]

Young adults (18-24) are the exception to these generally lower rates of out-migration from lagging regions. Not only do they have higher rates of out-mobility than other age groups in general, in France and Germany the average rate of internal out-migration among this age group was higher in 'lagging behind' regions than in the other regional categories – though in England and Wales the opposite is the case with rates of out-migration among this age group being lower in economically 'left behind' regions.[14] This may be partly explained by the more urban nature of lagging regions in the UK compared to in France and Germany (see Figure 2).

[13] We are only able to consider internal migration by age group due to data constraints
[14] As explained, data on inter-regional migration flows by age group are not available for Scotland and Northern Ireland.

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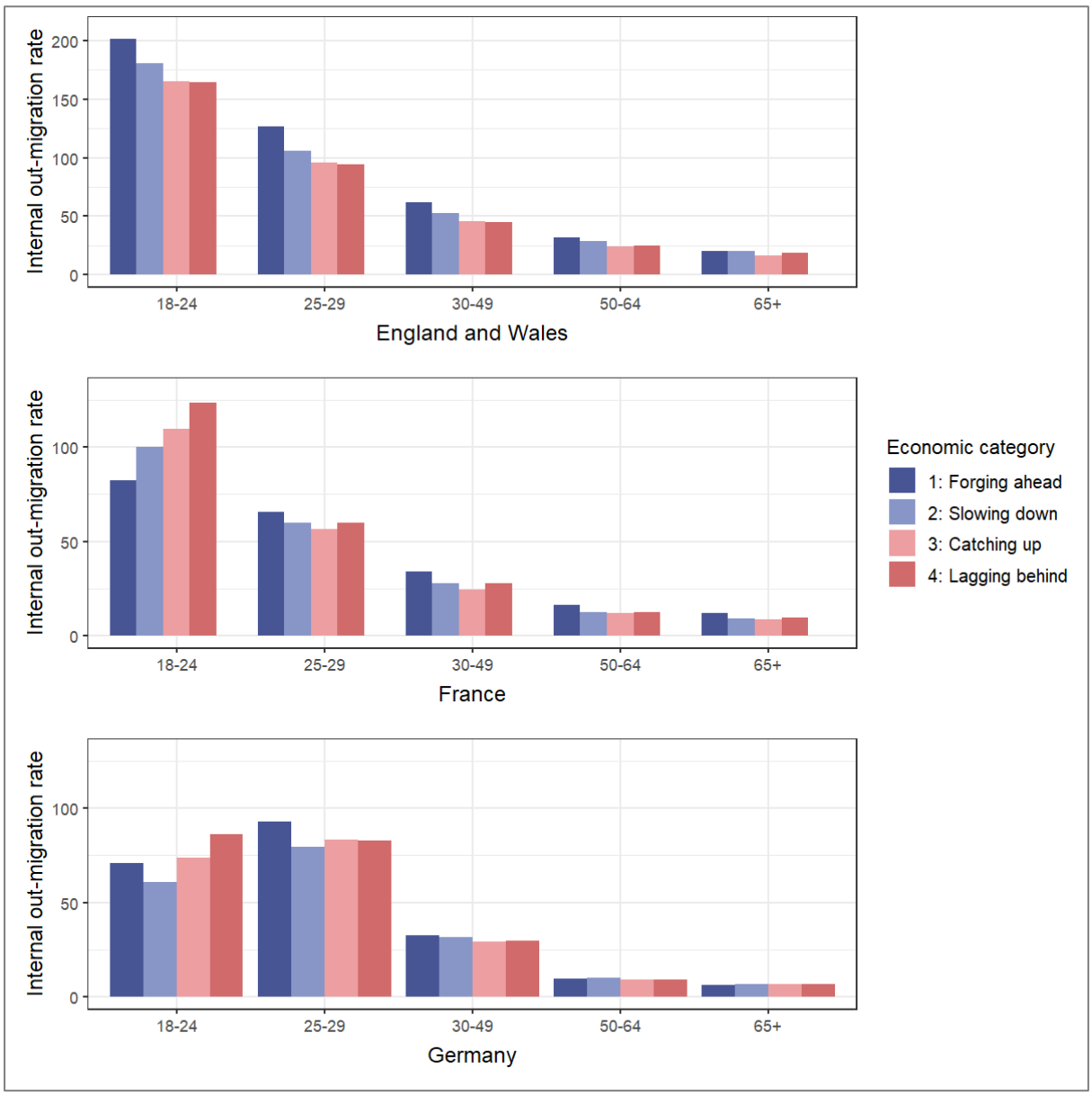
Figure 4: Average rates of gross out-migration by age group, economic category, and country, 2017-18



Sources: authors' analysis based on data from the Office of National Statistics, Northern Ireland Statistics and Research Agency, National Records of Scotland, Bundesinstitut für Bau-, Stadt- und Raumforschung, Statistische Ämter des Bundes und der Länder, and the Institut Nationale de la Statistique et des Études Économiques.

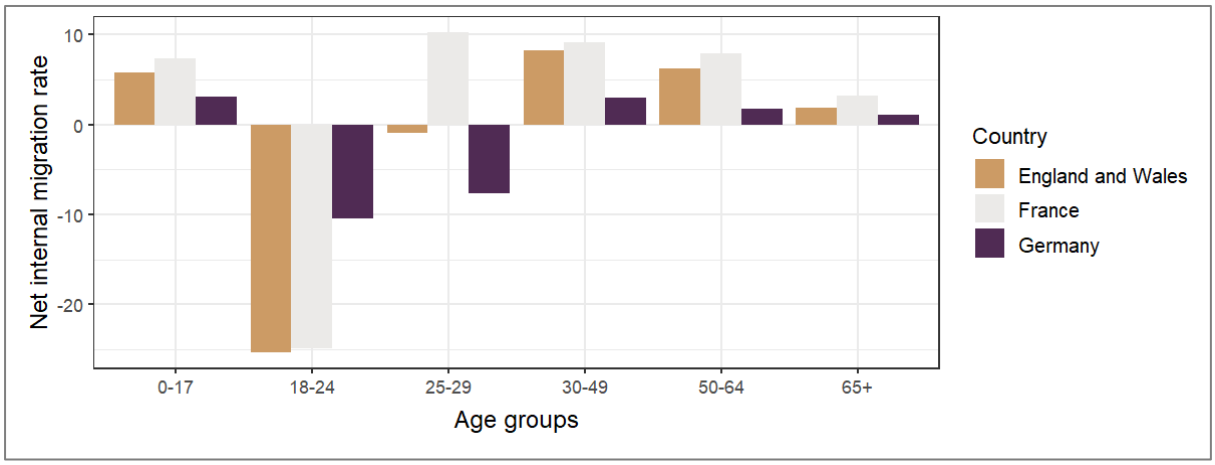
So, while high rates of out-migration are to some degree a feature of economically lagging regions, they are largely confined to a relatively narrow age band of 18-24, and to some extent, 25-29 year olds.

Net migration rates

We now move on to analysis of net migration, to assess the extent to which economically lagging regions are experiencing a loss of population through inter-regional migration. Driven

in part by the relatively high rates of gross out-migration among young adults reported above, economically lagging regions tend to lose 18-24 year olds and (in Germany and England and Wales) 25-29 year olds in net terms. However, they tend to gain those in all other age groups: 0-17 year olds, 30-49 year olds, 50-64 year olds, and those aged 65 and over (see Figure 6). Moreover, because these age groups are much larger in size than the 18-24 age group, even the relatively modest rates of net in-migration seen in Figure 6 translate into quite substantial numbers of net in-migrants, usually exceeding the number of 18-24 year olds lost through net outflows.[15] Only a small number of regions experienced more broad-based net out-migration among not just 18-24 year olds, but also 0-17 year olds, 25-29 year olds, and 30-49 year olds: in 2017-18 this applied to just 19 out of the 355 total regions across the UK, Germany and France, and only 10 of these were regions in the 'lagging behind' category.

Figure 5: Average rates of net internal migration by age group, for 'lagging behind' regions in England and Wales, France, and Germany



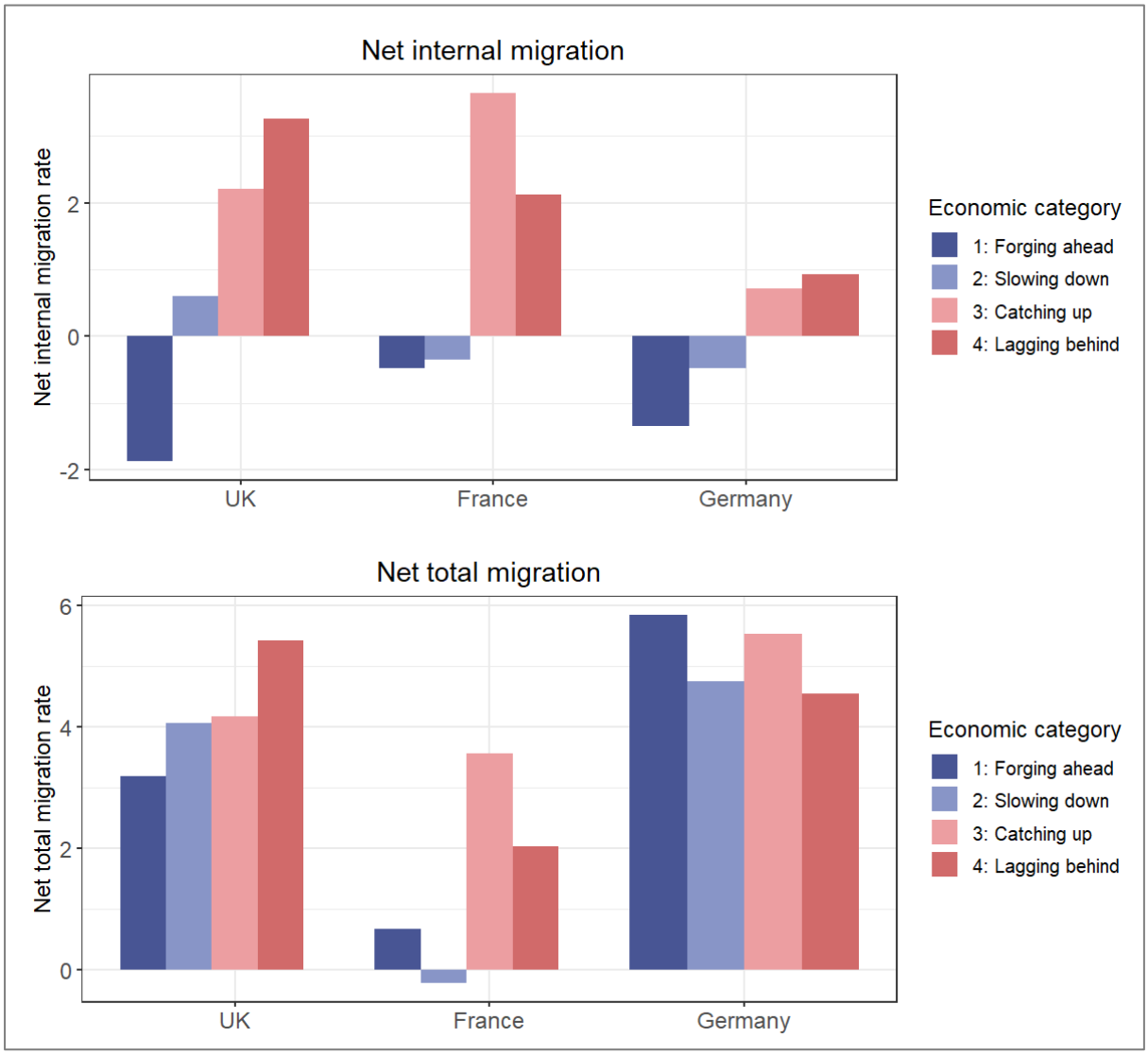
Sources: authors' analysis based on data from the Office of National Statistics, Northern Ireland Statistics and Research Agency, National Records of Scotland, Bundesinstitut für Bau-, Stadt- und Raumforschung, Statistische Ämter des Bundes und der Länder, and the Institut Nationale de la Statistique et des Études Économiques.

Therefore, when we look at whether, taken as a whole, economically lagging regions are losing population through migration, we find that this generally is not the case. When we consider internal migration only, migration balances in 'lagging behind' regions tend to be positive and in fact exceed those in other categories, on average (Figure 7). In the UK and Germany, the 'lagging behind' category had the highest average rate of net internal migration in 2017-18, and in France the 'lagging behind' category had the second-highest average net internal migration rate after the 'catching up' category. As such, economically behind regions in the UK, France and Germany do, on the whole, not experience net population out-flows. This is in line with evidence that questions the neoclassical idea that

[15] E.g. in England and Wales, there were 30 'lagging behind' regions that experienced net out-migration of 18-29 year olds in 2017-18. In 22 of these regions net in-migration of 30-64 year olds exceeded the number of net losses among 18-29 year olds.

population tends to flow from less economically-developed territories to territories with higher levels of economic development (Rodríguez-Pose et al., 2015).

Figure 6: Average rates of net internal migration by economic category, 2017-18



Sources: authors' analysis based on data from the Office of National Statistics, Northern Ireland Statistics and Research Agency, National Records of Scotland, Bundesinstitut für Bau-, Stadt- und Raumforschung, Statistische Ämter des Bundes und der Länder, and the Institut Nationale de la Statistique et des Études Économiques.

When we add international migration to these internal migration figures to arrive at total net migration (lower panel in Figure 7), we can see that for France and the UK, total rates of net in-migration were on average slightly higher in 'lagging behind' regions and 'catching up' regions (i.e. regions with lower-than-average levels of per capita GDP in 1991) than in 'forging ahead' and 'slowing down' regions (i.e. regions with higher-than-average levels of per capita GDP in 1991). This contrasts to some degree with Germany, where 'forging ahead' regions had the highest average rate of total net migration in 2017-18, likely due in part to higher overall rates of immigration in Germany over this period. However, even here, the average rate of net migration for the 'lagging behind' category was not drastically lower

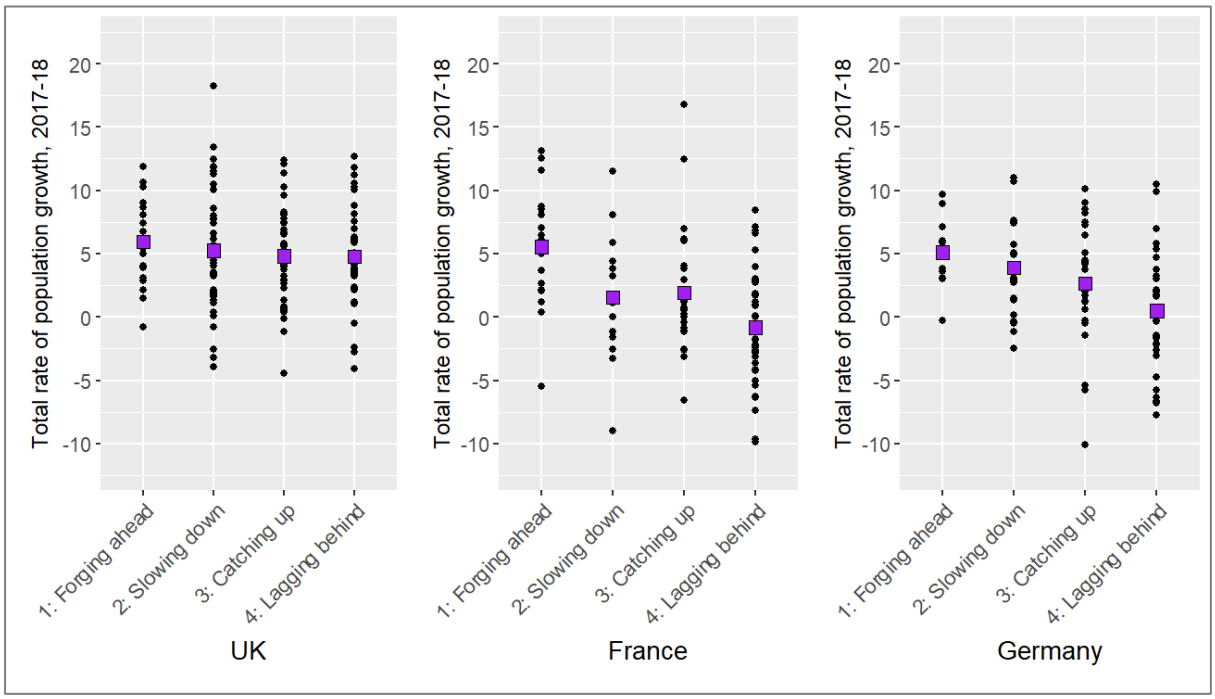
than that for the other categories. These findings are broadly in line with those of Causa et al. (2021) who showed that in the UK, France and Germany, low-GDP territories had higher (i.e. more positive) average rates of net migration.

In the UK and France, the tendency for rates of net internal migration in economically lagging regions to exceed those in more economically successful regions seems to have been fairly stable throughout the 2010s. In both countries, comparing the figures presented above with those for 2012-13 similarly shows higher average net internal migration balances in 'lagging behind' regions than in 'forging ahead' regions. But in Germany, the more recent findings represent somewhat of a reversal: in the early 2010s, the 'lagging behind' category still had a negative average rate of net internal migration, while 'forging ahead' and 'slowing down' regions tended to have higher rates of internal net mobility. The reversal of this pattern towards higher average internal migration towards 'lagging' regions can in part be explained by the turnaround in east-to-west migration observed from the mid-2010s onward (Stawarz et al., 2020). However, even within western Germany, lagging regions have tended to see a slight increase in net internal migration.

To place these findings in context of overall population growth, in the UK and Germany, 'lagging' regions are, on the whole, not seeing population shrinkage – through average growth rates are lower than for the other categories and in Germany about a quarter of regions did experience negative population growth in 2017-18. In France, more than half of 'lagging behind' regions had negative rates of population growth in 2017-18, but this was mostly due to low rates of natural growth.[16] These may in part be the result of the past out-migration (and lack of in-migration) of younger people. But, while the generally positive rates of net migration seen in economically lagging French regions were often not sufficient to outweigh low birth rates[17], for the majority of these regions, net out-migration was not the primary contributor to population loss during the late 2010s.

[16] Of the 22 French lagging regions with negative population growth in 2017-18, 13 had negative migration balances, and 20 had negative rates of natural population growth.
[17] However, as we will show below, French lagging regions do seem to be having higher rates of net in-migration among 25-40 year olds than in the past, so there could be a possibility that, at least in some of these regions, this will have a knock-on effect on natural population growth.

Figure 7: Rates of total population growth by category and country, 2017-18



Sources: authors' analysis based on data from the Office of National Statistics, Northern Ireland Statistics and Research Agency, National Records of Scotland, Bundesinstitut für Bau-, Stadt- und Raumforschung, Statistische Ämter des Bundes und der Länder, and the Institut Nationale de la Statistique et des Études Économiques.

It is important to emphasise that there is a substantial degree of heterogeneity in net migration rates between regions within the same economic category. All four regional categories, across all three countries, contain a number of regions characterised by net migration outflows. This includes 'lagging behind' regions. In the UK, five out of 43 'lagging behind' regions experienced negative net total migration in 2017-18, as did fourteen out of 39 French lagging regions and three out of 34 German lagging regions. However, negative migration balances are not systematically more likely to affect economically 'left behind' regions than other types of regions.

When it comes to internal migration balances there is similarly a substantial amount of heterogeneity between economically lagging regions, as shown in Figure 9 below. As such, among economically lagging regions, there are certainly some that lost residents through internal migration, but the majority had positive internal migration balances. This was particularly the case for lagging regions in the UK, northern and eastern Germany, and southern France.

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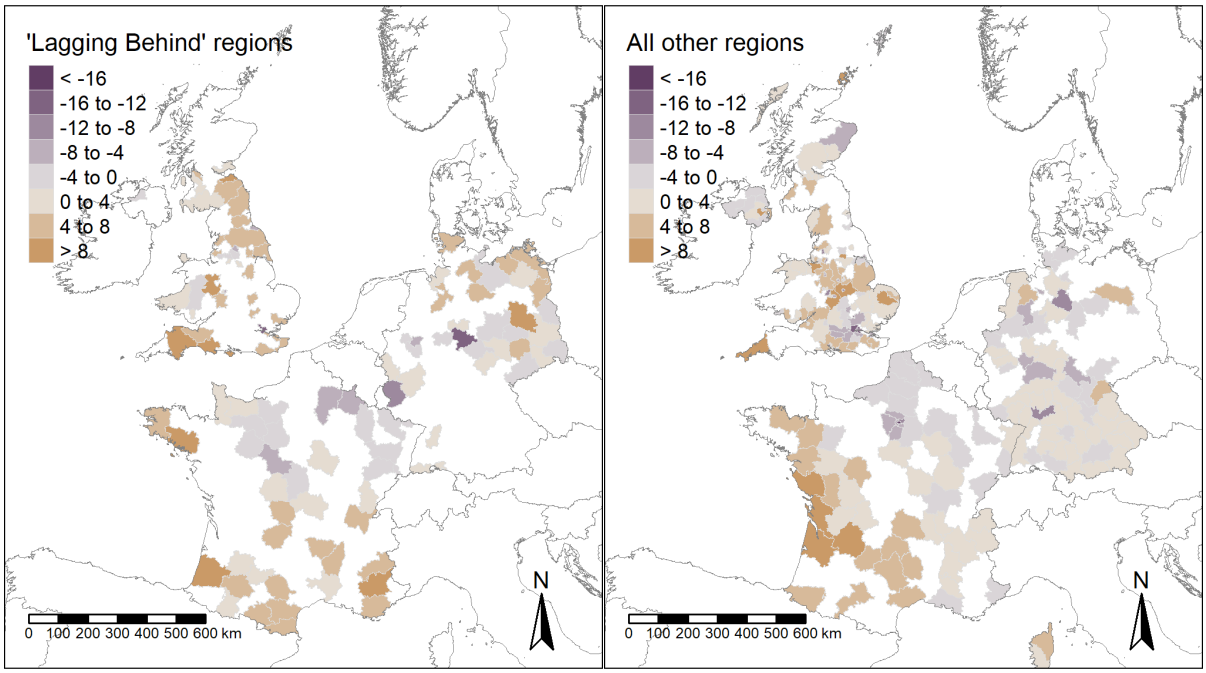
Figure 8: Map showing net internal migration rates for 2017-18, for 'lagging behind' regions and all other regions

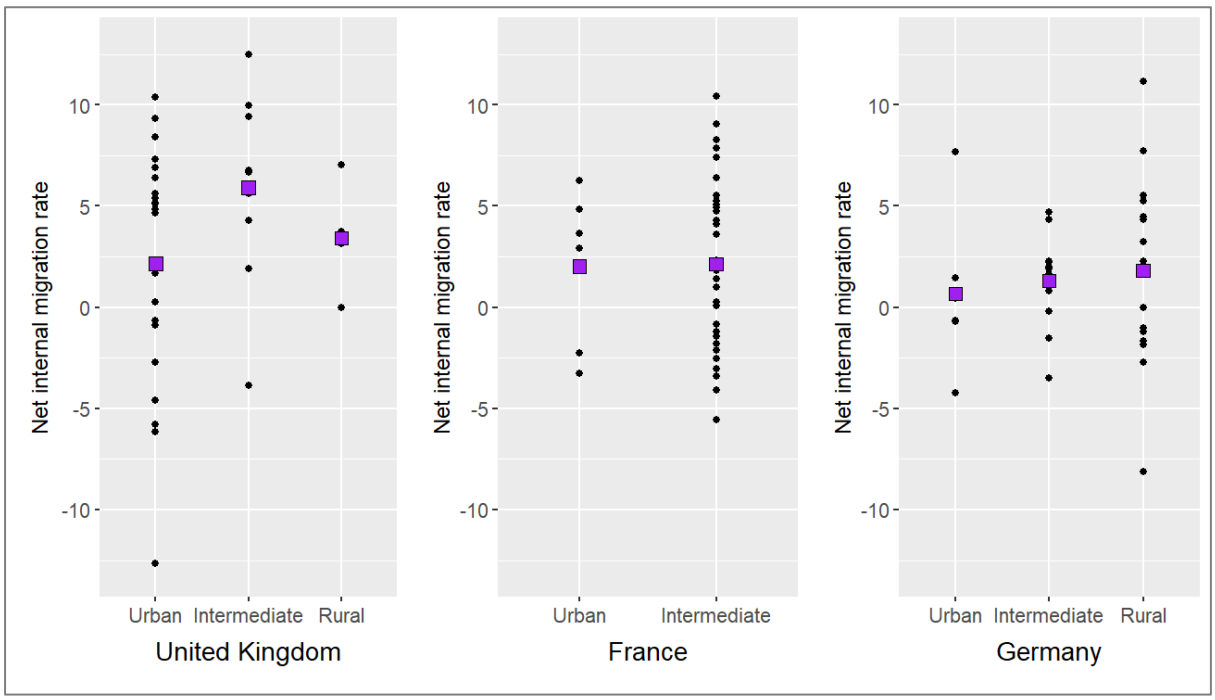


Sources: authors' analysis based on data from the Office of National Statistics, Northern Ireland Statistics and Research Agency, National Records of Scotland, Bundesinstitut für Bau-, Stadt- und Raumforschung, Statistische Ämter des Bundes und der Länder, and the Institut Nationale de la Statistique et des Études Économiques.

Some of the economically lagging regions with the highest net migration rates were *Devon*, *Shropshire*, and *East Lothian and Midlothian* in the UK, *Havelland-Fläming* and *Westsachen* in Germany, and *Alpes-de-Haute-Provence* and *Landes* in France. Most of these are, environmentally speaking, relatively attractive, and some also offer good connectivity to larger urban centres (Edinburgh, Leipzig, Nice). This latter finding raises the question of whether economically lagging regions adjoining more economically booming regions might see higher net migration than lagging regions that are further from such regions, but we find at best only partial evidence for this. In France, 'lagging behind' regions that border at least one 'forging ahead' region do have, on average, higher net internal migration rates than those that do not, but in the UK and Germany average rates of net internal migration in the former group are, if anything, slightly lower than in the latter.

There also does not appear to be a strong relationship between the degree of urbanisation of 'lagging behind' regions and internal migration balances. In none of the three countries do lagging regions classified as 'urban' have higher (or indeed systematically lower) rates of net internal migration than lagging regions classified as 'intermediate' or 'rural' (see Figure 10).

Figure 9: Rates of net internal migration for 'lagging behind' areas, by urban-rural classification, 2017-18



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6. Discussion

We have seen that economically lagging regions do tend to experience net outflows of young people, but for all other age groups – families with children, older workers, pensioners – net migration balances generally tend to be positive. This is due, in large part, to lower rates of out-mobility among these age groups in lagging regions compared to other types of regions. Instead of being affected by net internal migration loss, economically 'left behind' regions in the UK, France and Germany are therefore more accurately described as places of low residential mobility, at least at the regional level.

Though the aim of this paper is not to determine the 'drivers' of migration, these findings appear to be more compatible with perspectives that view regional (im)mobility as shaped by range of drivers of such as housing costs (Berger & Blomquist, 1992; Rabe & Taylor, 2012; Roback, 1982), natural and cultural amenities (Graves, 1980; Knapp & Graves, 1989; Niedomysl & Hansen, 2010), and family and social ties (Fischer & Malmberg, 2001), rather than as a straightforward response to economic disparities. Though the above are all factors that may help explain the relatively low rates of out-mobility from economically 'left behind' regions observed in this paper, they have different implications. If we assume housing cost differentials are a key cause of residential immobility in lagging regions this might imply that immobility is largely due to households not being able to afford to move to places with better

economic opportunities (i.e. being 'stuck').[18] However, if amenities and social ties – or a more general sense of 'place attachment' (Erickson et al., 2018) – are instead more important factors, this implies that people remain in economically lagging places because they have positive reasons to stay. The data examined in this paper does not allow us to comment on the relative importance of these potential explanations, but qualitative research suggests that 'staying' is often the result of a complex mix of both positive choice *and* constraint (Stockdale et al., 2018).

For this paper, a more important question is: what are the repercussions of the relatively high rates of 'staying' we observe in economically lagging regions for these territories and their future development? First of all, they may imply a possible loosening of the connection between economic decline or 'underperformance', and demographic shrinkage through out-migration. This is not to say that net population outflows and depopulation do not still occur, for there are still a substantial number of regions affected by negative migration balances and overall shrinkage, particularly in France and Germany. However, for the majority of the economically lagging regions that we focus on in this paper, net outflows of population do not currently appear to be a hugely pressing issue. This could align with evidence of a return to population growth in at least some previously shrinking territories in Europe (Rink et al., 2012) – though we have not examined to what extent the 'lagging' regions in this study were previously subject to population shrinkage. In a similar vein, it is possible that the relatively modest rates of out-migration observed in economically lagging regions are in part due to many 'migration-inclined' individuals already having moved out previously, but this implies that rates of out-migration from these regions were higher in the past. Unfortunately, the data used in this paper do not go far enough back to be able to tell whether rates of out-migration from the 'lagging behind' category were higher during the 2000s and before, but our data for 2012-13 does not indicate that out-migration flows from lagging regions were more substantial at that time.

Given the challenges known to be associated with population loss (Haase et al., 2014; Lang, 2012), the relatively limited scale of net out-migration across our observed regions should be seen as a good thing. Additionally, the fact that net migration is positive not just among retirees but also among people of 'prime' working age and in the family-formation stage of life implies that most of the economically lagging regions we examine will continue to have pools of labour to draw upon – though, of course, some of these residents might be commuting to other regions rather than work in the lagging region itself (Bosworth & Venhorst, 2018). Therefore, the findings presented in this paper paint a less gloomy picture of economically 'left behind' regions and their population development than might perhaps

[18] Some adherents to the notion of spatial equilibrium may hold that lower housing costs in lagging regions make up for the inferior economic opportunities and potentially lower levels of service provision offered by these regions, and may therefore be less concerned about any potential constraints regarding residential relocation. However, the 'discontent' that we have seen emanating from at least some economically 'left behind' regions calls into question the idea that lower housing costs fully compensate for economic and social conditions in lagging regions.

be expected. However, a lack of large-scale out-migration from economically lagging regions does not mean that conditions in these regions are necessarily without concern. There are likely to be issues related to skill-selective migration (Fratesi & Percoco, 2014; Granato et al., 2015), and there are important policy questions to be answered about how to ensure that these 'lagging' regions provide adequate public and private services and decent living conditions for their populations given their sub-optimal economic situation (Mackinnon et al., 2022).

7. Conclusions

Concern is sometimes expressed about out-migration from 'left behind' regions, especially regarding the departure of young and skilled individuals. Our analysis confirms that these concerns are partly justified, in the sense that economically disadvantaged regions do tend to experience a net outflow of young adults. However, these regions are on the whole not affected by an overall population loss through migration. The majority of the economically lagging regions studied in this paper had positive overall net migration rates, even when excluding international immigration, during the immediate pre-pandemic period. This is, to a large degree, due to relatively low rates of out-migration among age groups other than the 18-24 and 25-29 age group. In most regions, this greater rate of 'staying' among the over-30s more than makes up for the net loss of young adults, though a minority of regions do experience net population outflows.

These findings are in line with reports from the United States that over past decades rates of internal migration have tended to be negative in high-GDP metropolitan areas like New York, Los Angeles and Chicago and positive in places like Houston, Dallas and Phoenix (Berube et al., 2010), and that outflow rates have tend to be lower from metropolitan areas with weaker labour markets (Molloy & Smith, 2019).

These findings raise important questions about the ongoing impact of migration patterns on overall demographic development: will positive net migration, over time, compensate for often negative rates of natural growth in economically lagging regions, and maybe even lead to overall increase in population growth (due to net in-migration of families)? Or is this unlikely? This is a question for future research.

The overall implication of the findings is that economically 'left behind' regions appear likely to remain home to substantial numbers of people in the foreseeable future, meaning that demand for housing and services will remain, particularly for families with children and older people. The main task, therefore, is to ensure that these places are and remain good places for people to live. As for the future economic development of these regions, it is uncertain whether the generally positive migration balances will in and of themselves enable faster development, but at least in most cases, it does not appear that such development is overly constrained by the net loss of population through out-migration.

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Appendix A1: data and technical information for the UK

Since no UK-wide sub-national migration data is available, we combine data for England and Wales (produced by the Office for National Statistics), for Scotland (produced by the National Records of Scotland) and Northern Ireland (produced by the Northern Ireland Statistics and Research Agency).

For internal migration, the datasets used are:

- Office for National Statistics (2022) Internal migration: detailed estimates by origin and destination local authorities (England and Wales), age and sex. Year ending 2013, year ending 2018 and year ending 2019.
- National Records of Scotland (2022) Migration flows between council areas, from 2001-02 to latest (published 13 July 2022).
- National Records of Scotland (2022) Migration between Scotland and the Rest of the UK by administrative area and sex, 2001-02 to latest (published 13 July 2022).
- Northern Ireland Statistics and Research Agency (2023) Rebased Population & Migration Estimates Northern Ireland: Components of population change (published 29 June 2023).

These datasets measure internal migration based on administrative data sources. In England and Wales, these are the Patient Register and the Personal Demographic Service from NHS Digital, which record the address that people are registered with at their General Practitioner, and data from the Higher Education Statistics Agency, which records address changes of higher education students. (These same data sources are used for cross-border flows from England and Wales to Scotland and Northern Ireland.) Data on internal migration within Scotland and migration from Scotland to other parts of the UK is based on the National Health Service Central Register and the Community Health Index. Data on internal migration within Northern Ireland are based on the Medical Card Register and the Higher Education Statistics Agency.

For international migration, we use:

- Local area migration indicators, UK (Discontinued after 2020), years 2009 to 2019 (published on 27 August 2020, superceded 17 September 2021).

Data on mid-year population by sex and age are:

- Office for National Statistics (2022) Population estimates and components of population change. Detailed time series 2001 to 2020 (published 21 September 2021).

Data was aggregated from Local Authority District (LAD) level to NUTS3 level (2021 version). LAD boundaries are non-conterminous with NUTS3 boundaries for the NUTS3 regions: Caithness and Sutherland (UKM61), Inverness and Nairn and Moray, Badenoch and Strathspey (UKM62), Lochaber, Skye and Lochalsh, Arran and Cumbrae and Argyll and Bute (UKM63), and East Dunbartonshire, West Dunbartonshire and Helensburgh and

Lomond (UKM81). As such, these regions are excluded from the analysis, although migration flows into and out of these territories are included in calculated inflows and outflows to/from other UK regions.

Appendix A2: data and technical information for France

Only NUTS3 ("départements") for mainland France (including Corsica coded 2A and 2B) are included, since the data for overseas NUTS3 was deemed not sufficiently reliable.

Harmonised census data[19] is used to calculate internal in- and out-migration and international in-migration. As these are survey data, information on migration is obtained by comparing the NUTS3 of residence at the time of census with the NUTS3 of residence 1 year earlier. We are thus able to identify all movements within the country (between French NUTS3 regions), as well as individuals entering a French NUTS3 region from abroad.

However, this does not allow us to obtain data on individuals who were resident in a French NUTS3 region a year earlier, and who have moved abroad in the meantime, as they are no longer present at the time of the census. This means that data on international out-migration at the regional level is not available for France. This also means that adding up the number of people who said they lived in a NUTS3 1 year previously does not give us the population of that area at t-1. In other words, in the census we only observe the regional population at the end of the annual period over which we measure migration, rather than the mid-year population which is usually used when calculating migration rates.

For data on total population by NUTS3 region, age and sex we therefore use a separate dataset[20] with information on the population by NUTS3 each year. These population totals allow us to calculate the various migration rates (internal in-, internal out- and international in-migration) in a way consistent with and with the other two countries included in this analysis.

However, in this dataset, population by age is only available by five-year age group, which does not correspond to the first of the six age groups used in the analysis (the 0-17 and 18-24 age groups). An adjustment is therefore made. Using census data, which provides detailed age information, we calculate the proportion of 0-17 year olds among 0-19 year olds (after mobility, by adding up the residents in each NUTS3 at the time of the census). This proportion can then be applied to the known population figures for the 0-19 age group to obtain an estimate of the 0-17 age group.

The above data is supplemented with additional databases on births and deaths by NUTS3 region. This enables us to estimate total net migration between t-1 and t, as follows: $total\ net\ migration = (population_t - population_{t-1}) - (births - deaths)$.

[19] https://www.insee.fr/fr/statistiques/6023301?sommaire=2414232

[20] https://www.insee.fr/fr/statistiques/1893198

Appendix A3: data and technical information for Germany

For internal migration, we use a migration matrix by gender and age group at district (Kreise 2020) level published by the Bundesamt für Bauwesen und Raumordnung (BBSR). Data was aggregated from district level to Spatial Planning Region-level.

Migration is defined as a change of main address, except if it is for a period shorter than 6 months for Germans and 3 months for foreigners.

For international migration, we use data published by the Statistische Ämter des Bundes und der Länder. Specifically, international migration flows are retrieved from the dataset: "In- and Out-migration (over municipality borders and international borders) by gender and age groups - Yearly sum at regional level".

It is worth noting that the Statistische Ämter des Bundes und der Länder specifies that, due to methodological changes in the underlying population movement statistics, the results from the reporting year 2016 onwards are only comparable with the values before 2016 to a limited extent. Limitations in the accuracy of the results primarily result from the increased level of immigration that took place from 2016, and the resulting problems with the registration of protection seekers under registration law.