Spatial heterogeneity in migration patterns of nationals and non-nationals in Southern Italy: Reassessing the (apparent) centre-inner area dichotomy.

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Introduction

Where population numbers shrink and populations age, territories become progressively more fragile and marginal, increasing their exposure to exogenous shocks of various kinds. Conversely, growing urban areas face density-related pressures such as residential segregation, social marginalisation, and environmental pollution (Benassi et al., 2021). These are characteristic features of polarised territorial systems, of which Italy represents a particularly significant case (Billari and Tomassini, 2021). Recent research highlights that a substantial share of Italian municipalities, around one third, has been experiencing population decline for decades (Benassi et al., 2023). Even metropolitan areas display pronounced differences, with more dynamic demographic patterns in the Centre–North and broadly stagnant or declining trends in the South and Islands (Buonomo et al., 2024). Spatial polarisation is therefore especially marked in Southern Italy, a macro-area that is demographically, socially, and economically more fragile than the North and Centre (Annunziata et al., 2024).

In this context, the territorial redistribution of the population is not merely relevant but pivotal for understanding population change and, eventually, counteracting demographic decline (Champion, 2019). Population redistribution occurs primarily through migration, a demographic process that responds flexibly to external stimuli (Billari, 2022). It is therefore essential to assess the extent to which migration (particularly internal migration) shapes the spatial redistribution of the population (Rowe et al., 2019). Over the past decade, a substantial body of research has examined internal migration in Italy (Bonifazi et al., 2021; Impicciatore and Panichella, 2019), including studies adopting a comparative perspective that contrast natives and foreign-born residents or focus specifically on foreign communities (Benassi et al., 2019; Casacchia et al., 2022; de Filippo and Strozza, 2011). Despite this extensive literature, to the best of our knowledge, no systematic assessment has been conducted on how intra-regional changes of residence among nationals and foreigners contribute to the territorial redistribution of the resident population, particularly when considering the classification of inner areas. These areas are defined under the National Strategy for Inner Areas (SNAI), launched in 2012, which aims to remove socio-economic and infrastructural barriers that hinder demographic and economic development (Barca, 2009; Benassi et al., 2024).

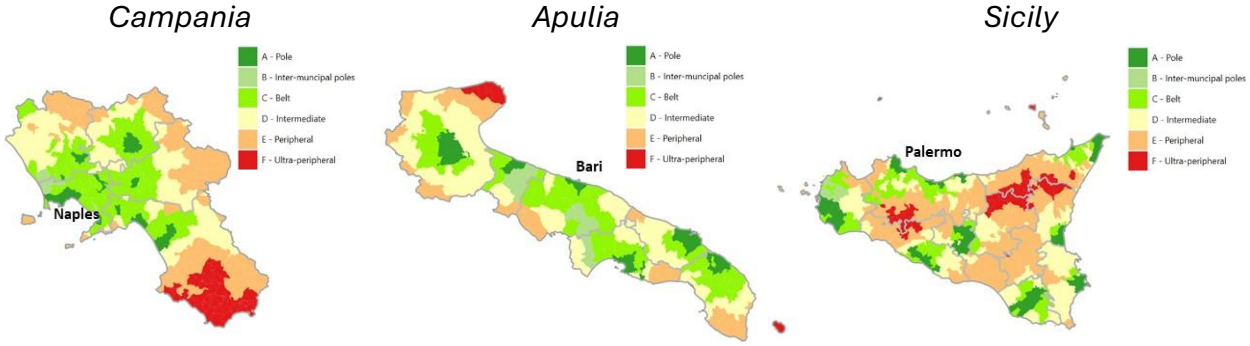
The present study aims to estimate the impact of internal (and, to a lesser extent, international) migration on the spatial redistribution of residents in selected Southern Italian regions over two periods (2011–2015 and 2018–2022) distinguishing between Italians (natives), citizens of EU countries, and non-EU foreign residents. The analytical focus is on inner areas, which are frequently characterised by a heightened risk of population decline.

Geographical context of analysis, data and methods

The analysis draws on annual records of residential changes within the municipalities of three Southern Italian regions (Apulia, Campania, and Sicily) the most populous regions of Southern Italy, characterised by heterogeneous settlement patterns and major metropolitan centres (Bari and

Naples in Apulia and Campania, respectively, and Palermo, Messina, and Catania in Sicily). Alongside these urban poles, each region also comprises multiple shrinking zones, most of which fall within the category of Inner Areas. More specifically, municipalities are classified according to the most recent version of the *Strategia Nazionale delle Aree Interne* (SNAI), which distinguishes small municipalities in Inner Areas (Intermediate, Peripheral and Ultra-peripheral), characterised by poor accessibility to essential services, from Central Municipalities (Pole, Inter-municipal pole, Belt), which are instead equipped with infrastructures ensuring the full provision of such services.

Figure 1 – Geographical context of analysis



Migration flows are organised into two five-year periods: 2011–2015 and 2018–2022. The first corresponds to phase still touched by the 2008 financial crisis and the European debt crisis (the Great Recession),, while the second captures a period of modest economic recovery as well as the effects of the COVID-19 pandemic. For each interval, data are analysed separately for Italians, foreign citizens from EU countries, and foreign citizens from non-EU countries. To construct denominators and assess compositional change, the stock of resident population by citizenship are taken at four reference dates: 1 January 2011, 2016, 2018, and 2023. Both flow and stock data are produced by the Italian National Institute of Statistics (Istat). The data on migration flows are derived from Istat Changes of residence, while the stock data are taken from the Intercensal register of population estimates (up to 2018) and the Permanent Census (from 2019).

The empirical strategy to analyse the data combines origin–destination matrices with established measures from migration studies. Two indicators are central to the analysis. The first is the net internal migration rate, which expresses, for each population group, sub-period, and area type, the balance between inflows and outflows relative to the population at risk. This measure enables consistent comparisons across territories of different sizes and across citizenship groups. The second indicator is the Bachi preference index (Bachi, 1961), following the formulation proposed by Wunsch and Termote (1978), which is used to explore spatial preferences (or spatial orientation in the word of Wunsch and Termote) in intra-regional migration, again distinguishing by population group, sub-period, and area type.

(Expected) Results

Due to space constraints, only a subset of the results is presented here. Specifically, those concerning the spatial orientation of intra-regional migration flows for the selected period, population groups, and selected geographical units (Table 1). When the index exceeds 1 (green values in the table), there is a preference to migrate from the selected (*i*) origin to the corresponding destination (*k*). Conversely, when the index is below 1 (red values), no such preference is observed.

The results show that migrants do not always avoid marginal areas; this tendency is strongest when their origins are already non-central municipalities. However, similar patterns also emerge for the Poles, from which migration towards Belt municipalities appears to be relatively common.

Overall, territorial redistribution processes, here interpreted in terms of spatial preferences, tend to manifest within both Central and Inner areas (considered separately), while also revealing interesting centre–periphery trajectories within each macro-category.

Table 1 – Preference index of migration ($I_{i,k}$)

Campania

2011-2015

Destination	A- Pole	B- Intermuni. pole	C- Belt	D- Interm.	E- Periph.	F- Ultra Periph.
Ita						
A- Pole - Origin	0.3	0.4	1.6	0.9	0.8	0.8
B- Intermuni. pole - Origin	0.6	11.0	0.6	0.7	0.7	0.1
C- Belt - Origin	1.6	0.6	1.1	0.5	0.3	0.2
D- Interm. - Origin	1.0	0.8	0.5	2.2	1.2	0.5
E- Periph. - Origin	1.0	0.6	0.2	1.2	3.7	3.6
F- Ultra Periph. - Origin	1.1	0.1	0.2	0.5	4.0	14.7
EU						
A- Pole - Origin	0.5	0.5	1.7	0.9	0.7	1.2
B- Intermuni. pole - Origin	0.6	8.6	0.9	0.4	0.3	0.2
C- Belt - Origin	1.7	0.8	1.6	0.6	0.4	0.4
D- Interm. - Origin	0.9	0.6	0.6	1.6	0.8	0.4
E- Periph. - Origin	0.7	0.2	0.3	0.9	2.6	2.5
F- Ultra Periph. - Origin	0.4		0.2	0.4	3.4	7.9
Extra EU						
A- Pole - Origin	0.5	1.1	1.7	0.9	0.8	1.0
B- Intermuni. pole - Origin	1.0	4.2	0.8	0.7	0.7	0.5
C- Belt - Origin	1.5	1.0	1.3	0.5	0.4	0.1
D- Interm. - Origin	1.0	0.6	0.4	1.6	1.1	0.6
E- Periph. - Origin	0.8	0.7	0.3	1.1	2.6	2.6
F- Ultra Periph. - Origin	0.4		0.2	0.7	3.6	17.7
Total						
A- Pole - Origin	0.3	0.5	1.6	0.9	0.8	0.8
B- Intermuni. pole - Origin	0.6	10.7	0.6	0.7	0.7	0.1
C- Belt - Origin	1.6	0.6	1.2	0.5	0.3	0.2
D- Interm. - Origin	1.0	0.8	0.5	2.2	1.2	0.5
E- Periph. - Origin	0.9	0.6	0.2	1.2	3.6	3.5
F- Ultra Periph. - Origin	1.1	0.1	0.2	0.5	3.9	14.6

2018-2022

Destination	A- Pole	B- Intermuni. pole	C- Belt	D- Interm.	E- Periph.	F- Ultra Periph.
Ita						
A- Pole - Origin	0.3	0.4	1.6	0.9	0.8	0.8
B- Intermuni. pole - Origin	0.5	10.8	0.6	0.6	0.7	0.1
C- Belt - Origin	1.5	0.6	1.2	0.5	0.2	0.2
D- Interm. - Origin	1.0	0.7	0.5	2.1	1.1	0.6
E- Periph. - Origin	1.0	0.6	0.2	1.2	3.7	3.3
F- Ultra Periph. - Origin	1.0	0.1	0.2	0.5	4.0	15.7
EU						
A- Pole - Origin	0.5	0.4	1.7	0.9	0.7	0.4
B- Intermuni. pole - Origin	0.9	7.3	1.0	0.3	0.3	0.5
C- Belt - Origin	1.7	1.0	1.6	0.6	0.3	0.2
D- Interm. - Origin	0.9	0.3	0.7	1.6	0.7	0.6
E- Periph. - Origin	0.7	0.4	0.3	0.9	2.8	2.7
F- Ultra Periph. - Origin	1.1		0.3	0.2	3.4	10.5
Extra EU						
A- Pole - Origin	0.6	0.8	1.7	1.0	0.8	1.2
B- Intermuni. pole - Origin	0.6	2.7	0.7	0.4	2.5	0.1
C- Belt - Origin	1.6	1.0	1.5	0.6	0.4	0.3
D- Interm. - Origin	1.0	0.3	0.6	1.5	0.9	0.7
E- Periph. - Origin	0.9	2.1	0.4	0.8	1.8	2.0
F- Ultra Periph. - Origin	0.7	0.4	0.4	0.9	2.4	10.1
Total						
A- Pole - Origin	0.3	0.4	1.6	0.9	0.8	0.8
B- Intermuni. pole - Origin	0.5	9.7	0.6	0.6	0.9	0.1
C- Belt - Origin	1.6	0.6	1.2	0.5	0.3	0.2
D- Interm. - Origin	1.0	0.6	0.5	2.1	1.1	0.6
E- Periph. - Origin	0.9	0.8	0.2	1.2	3.5	3.2
F- Ultra Periph. - Origin	1.0	0.1	0.2	0.5	3.8	15.6

Apulia

2011-2015

Destination	A- Pole	B- Intermuni. pole	C- Belt	D- Interm.	E- Periph.	F- Ultra Periph.
Ita						
A- Pole - Origin	0.6	0.9	1.2	0.9	1.0	1.1
B- Intermuni. pole - Origin	0.9	2.3	0.8	0.5	0.3	0.5
C- Belt - Origin	1.2	0.8	1.1	0.6	0.3	0.4
D- Interm. - Origin	0.9	0.4	0.6	4.8	2.4	0.8
E- Periph. - Origin	1.1	0.3	0.3	2.5	11.9	11.5
F- Ultra Periph. - Origin	1.3	0.5	0.3	1.1	11.5	
EU						
A- Pole - Origin	0.8	1.2	1.3	0.4	0.3	
B- Intermuni. pole - Origin	1.1	4.0	0.8	0.6	0.1	
C- Belt - Origin	1.3	0.9	1.2	0.5	0.2	0.2
D- Interm. - Origin	0.6	0.3	0.6	3.1	1.2	1.7
E- Periph. - Origin	0.3	0.1	0.3	1.3	6.6	6.6
F- Ultra Periph. - Origin	0.5		0.2	1.5	6.4	
Extra EU						
A- Pole - Origin	0.9	1.2	1.1	0.6	0.8	1.8
B- Intermuni. pole - Origin	1.3	1.8	0.9	0.3	0.2	
C- Belt - Origin	1.1	0.9	1.1	0.7	0.2	0.5
D- Interm. - Origin	0.7	0.4	0.8	4.0	1.1	
E- Periph. - Origin	0.5	0.2	0.2	2.2	13.4	7.8
F- Ultra Periph. - Origin	1.9		0.3	1.8	6.6	
Total						
A- Pole - Origin	0.6	0.9	1.2	0.8	1.0	1.1
B- Intermuni. pole - Origin	0.9	2.3	0.8	0.5	0.3	0.5
C- Belt - Origin	1.2	0.8	1.1	0.6	0.3	0.4
D- Interm. - Origin	0.9	0.4	0.6	4.7	2.3	0.9
E- Periph. - Origin	1.0	0.3	0.3	2.4	11.9	11.2
F- Ultra Periph. - Origin	1.3	0.5	0.3	1.3	11.4	

2018-2022

Destination	A- Pole	B- Intermuni. pole	C- Belt	D- Interm.	E- Periph.	F- Ultra Periph.
Ita						
A- Pole - Origin	0.6	0.8	1.2	0.9	1.0	1.1
B- Intermuni. pole - Origin	0.9	2.4	0.8	0.5	0.3	0.3
C- Belt - Origin	1.2	0.8	1.1	0.7	0.3	0.4
D- Interm. - Origin	0.9	0.4	0.6	4.4	2.2	1.0
E- Periph. - Origin	1.0	0.3	0.2	2.2	12.2	13.0
F- Ultra Periph. - Origin	1.1	0.1	0.4	0.7	14.3	
EU						
A- Pole - Origin	0.9	1.2	1.3	0.5	0.4	
B- Intermuni. pole - Origin	1.2	4.0	0.8	0.4	0.1	
C- Belt - Origin	1.3	0.7	1.2	0.7	0.3	
D- Interm. - Origin	0.4	0.3	0.6	2.7	1.7	
E- Periph. - Origin	0.4	0.0	0.2	1.5	7.0	14.0
F- Ultra Periph. - Origin			0.7	1.3	5.8	
Extra EU						
A- Pole - Origin	0.7	1.3	1.2	0.6	0.9	0.2
B- Intermuni. pole - Origin	1.3	2.1	0.9	0.3	0.2	
C- Belt - Origin	1.2	0.9	1.1	0.7	0.4	0.8
D- Interm. - Origin	0.7	0.4	0.7	3.4	1.4	3.7
E- Periph. - Origin	0.8	0.2	0.3	1.6	10.1	3.3
F- Ultra Periph. - Origin	0.1		0.7	3.9	4.4	
Total						
A- Pole - Origin	0.6	0.9	1.2	0.8	1.0	0.9
B- Intermuni. pole - Origin	0.9	2.4	0.8	0.4	0.3	0.2
C- Belt - Origin	1.2	0.8	1.1	0.7	0.3	0.4
D- Interm. - Origin	0.8	0.4	0.6	4.3	2.1	1.3
E- Periph. - Origin	1.0	0.3	0.3	2.2	11.9	12.5
F- Ultra Periph. - Origin	0.9	0.1	0.4	1.2	12.9	

Sicily

2011-2015

Destination	A- Pole	B- Intermuni. pole	C- Belt	D- Interm.	E- Periph.	F- Ultra Periph.
Ita						
A- Pole - Origin	0.6	0.7	1.5	0.6	0.4	0.8
B- Intermuni. pole - Origin	0.7	7.8	1.1	0.4	0.1	
C- Belt - Origin	1.4	1.1	1.0	0.6	0.2	0.2
D- Interm. - Origin	0.7	0.5	0.6	2.7	1.4	1.7
E- Periph. - Origin	0.6	0.1	0.2	1.4	7.5	2.5
F- Ultra Periph. - Origin	0.7	0.2	0.2	2.1	2.7	29.3
EU						
A- Pole - Origin	0.8	0.7	1.5	0.7	0.4	0.3
B- Intermuni. pole - Origin	0.6	9.8	1.4	0.3		
C- Belt - Origin	1.5	0.9	1.2	0.6	0.1	0.1
D- Interm. - Origin	0.8	0.7	0.6	1.9	1.2	1.2
E- Periph. - Origin	0.4	0.3	0.2	1.2	4.8	4.2
F- Ultra Periph. - Origin	1.5			1.8	1.1	13.4
Extra EU						
A- Pole - Origin	0.7	0.7	1.4	0.7	0.5	0.7
B- Intermuni. pole - Origin	0.7	5.3	1.0	0.7	0.5	4.1
C- Belt - Origin	1.4	1.0	1.0	0.6	0.2	0.1
D- Interm. - Origin	0.7	0.6	0.7	2.2	1.5	1.4
E- Periph. - Origin	0.4		0.2	1.8	8.0	3.9
F- Ultra Periph. - Origin	0.7		0.5	2.3	2.2	21.7
Total						
A- Pole - Origin	0.6	0.7	1.5	0.6	0.4	0.8
B- Intermuni. pole - Origin	0.7	7.7	1.1	0.5	0.1	0.2
C- Belt - Origin	1.4	1.1	1.0	0.6	0.2	0.2
D- Interm. - Origin	0.7	0.5	0.6	2.6	1.4	1.7
E- Periph. - Origin	0.6	0.1	0.2	1.4	7.5	2.6
F- Ultra Periph. - Origin	0.7	0.2	0.2	2.1	2.6	28.9

2018-2022

Destination	A- Pole	B- Intermuni. pole	C- Belt	D- Interm.	E- Periph.	F- Ultra Periph.
Ita						
A- Pole - Origin	0.7	0.7	1.5	0.6	0.4	0.7
B- Intermuni. pole - Origin	0.8	7.1	1.1	0.5	0.1	0.1
C- Belt - Origin	1.4	1.1	1.0	0.6	0.2	0.1
D- Interm. - Origin	0.7	0.4	0.6	2.5	1.4	1.3
E- Periph. - Origin	0.5	0.0	0.2	1.4	7.2	2.8
F- Ultra Periph. - Origin	0.7		0.1	1.7	2.3	43.3
EU						
A- Pole - Origin	0.9	1.1	1.4	0.7	0.4	0.4
B- Intermuni. pole - Origin	0.6	4.1	1.6	0.5		
C- Belt - Origin	1.4	1.1	1.2	0.7	0.2	0.1
D- Interm. - Origin	0.8	0.5	0.6	1.7	1.2	0.4
E- Periph. - Origin	0.5	0.8	0.2	1.1	5.2	4.0
F- Ultra Periph. - Origin	0.9		0.1	1.4	2.0	35.2
Extra EU						
A- Pole - Origin	0.9	0.7	1.3	0.8	0.6	1.3
B- Intermuni. pole - Origin	0.7	7.6	0.9	0.6	0.1	
C- Belt - Origin	1.3	1.0	1.0	0.7	0.3	0.1
D- Interm. - Origin	0.8	0.5	0.8	1.8	1.4	1.8
E- Periph. - Origin	0.6	0.3	0.4	1.5	5.9	1.6
F- Ultra Periph. - Origin	1.0	0.6	0.3	1.8	1.6	37.2
Total						
A- Pole - Origin	0.7	0.7	1.5	0.6	0.4	0.7
B- Intermuni. pole - Origin	0.8	7.1	1.1	0.5	0.1	0.1
C- Belt - Origin	1.4	1.1	1.0	0.6	0.2	0.1
D- Interm. - Origin	0.7	0.4	0.6	2.4	1.4	1.3
E- Periph. - Origin	0.5	0.1	0.2	1.4	7.1	2.8
F- Ultra Periph. - Origin	0.7	0.0	0.1	1.7	2.2	44.0

The heterogeneity of mobility patterns, in terms of preferences, appears to affect the different population groups more in the intensity of preference than in the direction of movements itself. Temporal stability in these preferences is also observed. Naturally, these findings do not convey information on the magnitude of flows, which is instead captured by the net internal migration rates (not shown here).

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