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Immigrants' spatial concentration: Region or locality attractiveness?

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Abstract

The spatial concentration of immigrants across and within European countries is highly heterogeneous, tending to reinforce the internal spatial disparities within EU Member States and regions. Although European regional data show that the highest levels of foreign-born population concentration correspond to those NUTS2 regions that contain a large city or metropolitan area, there are other place-based determinants that might explain their attractiveness to immigrants. Using a comprehensive database at NUTS2 (regional) and LAU2 (local) levels for three large European countries in terms of immigrant population (Italy, Spain, and France), comparable results show how the relevance of these determinants depends on the country under analysis and the spatial unit chosen. This provides challenges for the design of a common future European policy addressing the unresolved demographic issues. Understanding the main regional and local factors of attraction to foreign-born population within countries is crucial to explain the present spatial concentration patterns and anticipate future migration flows, especially in a context where immigrants are the fastest-growing population group in those European countries. Nevertheless, there might be a trade-off between the foreign-born population alleviating the territorial ageing and depopulation issues and the search for spatial justice.

KEYWORDS
ageing population, depopulation, immigrant concentration, local data, spatial justice

1 | INTRODUCTION

Immigration has grown rapidly over a relatively short period of time in some European countries. In response to the European Union's freedom of movement and different political and socioeconomic shifts, over recent decades there have been significant internal migration flows within Europe as well as inflows from other continents.

While the 2004 and 2007 enlargements implied a sharp and constant outflow of workers from such countries toward the rest of the European Union (EU), traditional net senders from Southern Europe—such as Spain, Italy, Greece and Portugal—started to become net receivers, attracting not only European citizens but also workers from Latin America and North Africa. Although immigration flows into many European countries slowed down significantly or even reversed after the 2008 economic crisis, the spatial distribution of immigrants among European countries is far from uniform. In some Member States the immigrant population[1] share surpasses 10% (e.g., Belgium, Spain, or Ireland), while in others, it is below 6% (e.g., Finland, Portugal, or France).

When immigrant population does not spread out equally within countries, the *overall* immigrant share, though relevant, is not the figure that matters when analysing relevant topics including immigrant

assimilation, the potential impact of immigration on the labour market, the economic or welfare consequences of immigration for the native population, or the design and implementation of the policies aimed at these issues. Issues related to immigrant segregation or generation of deprived areas might arise when there is a highly heterogeneous distribution of the immigrant population across space, with high levels of concentration in specific places. In most OECD countries, immigrants tend to concentrate in urban areas, and those '…with unfavourable background characteristics often tend to be concentrated in disadvantaged neighbourhoods within those urban areas' where unemployment rates are high and there is cheap housing available. This might be misinterpreted as causality by the native-born population. Thus, receiving countries tend to perceive immigrant concentration as a threat and/or cost as they increase the local demand for jobs, housing, public goods, and services, as well as having an impact on the local infrastructure and budget. As a consequence of this, some countries have made attempts to 'spread the burden' geographically, and some even attempt to encourage settlement in regions, smaller cities, or localities that are facing population decline, labour shortages, or an ageing population.

The spatial concentration of immigrants across and within European countries is heterogeneous, generating strong spatial inequalities. Contrary to the idea of immigration as a solution to depopulation, European data show that immigrants' patterns of spatial concentration tend to reinforce internal population territorial imbalances within EU Member States, that is, the foreign-born population clusters in those regions that are more attractive to the native population. For instance, in France, more than 55% of the foreign-born population concentrates in the three most-populated regions (viz., Île de France, Rhône-Alpes, and Alpes-Coté de Azur), which are also the regions concentrating most of the French-born population. Similarly, while the overall share of foreign-born population in Spain was 11.2% in 2011, in the highly populated regions of Madrid and Cataluña those figures were 14.7% and 15%, respectively. There are also noticeable disparities in Belgium, with an overall share of 10.5% which rises to 32.9% in Région de Bruxelles-Capitale,[2] the region with highest levels of native population concentration. The same pattern can be observed in Italy, where three regions in the North—Lombardia, Veneto, and Emilia Romagna—concentrate more than 30% of the foreign-born population, and other European countries for which data are available (for more details on immigrant and national population shares at NUTS2 regional level, see Table 1).

A feature that stands out from the European regional data is that the highest values are shown in those NUTS2 regions that contain a large city or metropolitan area (Paris for Île de France, Lyon for Rhône Alpes, Marseille for Alpes Coté de Azur, Madrid for the Madrid region, Barcelona for Cataluña, Brussels for Région de Bruxelles-Capitale, or Milan, Venezia, and Roma for the regions of Lombardia, Veneto and Lazio, respectively). This raises the following question: Is it the attractiveness of the municipality/city rather than the region that explains the immigrant concentration?

To address this question, we draw on the insights from the New Economic Geography (NEG) as applied to immigration decisions. NEG models describe a cumulative process of spatial agglomeration where firms tend to cluster in locations with good access to demand and workers are drawn to regions with good access to sources of supply (Crozet, 2004). This suggests that immigrants will be drawn to large metropolises or locations relatively close (i.e., with good access) to them. Indeed, empirical studies using detailed data for Canada have used these NEG insights to explain immigrant concentration and settlement decisions. Thus, *size* of the *cities* matters (Hyndman et al., 2006) in this regard. However, it has also been noted that the *Size* factor seems to be a necessary but not sufficient condition to attract immigrant population (Derwing & Khran, 2008), so that additional factors such as, for example, socio-economic and demographic variables, also need to be considered.

Researchers dealing with the issue of access to large cities in Europe are forced to use NUTs regions as the basic spatial unit when covering several European countries and doing comparisons across space. Alternatively, they have been obliged to focus on only one European country, one case study, or a very specific area for which there exist data at local level so the *Size* of the *city* (among other relevant factors) can be properly identified.

Bearing in mind that European NUTS2 regions are very broad and internally very heterogeneous in terms of economic and population structures, labour opportunities, amenities, endowments, and so on, using NUTS 2 region as the spatial unit of analysis means assuming that their average levels of factors such as income, unemployment rates, or accessibility constitute a representative agent's value of those characteristics. NUTS2 regions are heterogeneous spatial units, comprising urban and rural areas, coastal and inland territories, localities well-connected to the economic centre with high accessibility, and also remote localities considered peripheral.

Taking advantage of the European local data generated though the IMAJINE Project,[3] the objective of this paper is to analyse the spatially differentiated patterns of the foreign-born population concentration of some European countries at local level using the Local Administrative Units (LAU) as the spatial unit of analysis. Analyses are usually conducted at the regional level and therefore use regional averages that mask or soften the internal heterogeneity of the NUTS2 regions. Only by going beyond NUTS regions classification can we detect the factors attracting or expelling immigrants within those European countries and regions. This in turn will help when it comes to designing and implementing tailor-made policies aimed at attracting and/or retaining immigrant population in those places where they are necessary to tackle issues related to depopulation or an ageing population.

The previous literature on immigrants' location decisions highlights job opportunities and the networks created by previous immigrants as the key factors explaining the concentration processes of the foreign-born population. However, in accordance with the NEG, the agglomeration economies taking place in the large metropolitan areas (as opposed to the region per se) or the position of the locality with reference to the economic centre may be what matters to identify the determinants of immigrant concentration. Are the labour and network-related characteristics of the region what make a region

TABLE 1 Share of foreign-born population and national population by NUTS2 for a selection of European countries in year 2011

NUTS2	NUTS2_name	Foreign Population concentrated in the region (%)	National Population concentrated in the region (%)	Aged national population living in the region (%)
AT11	Burgenland (AT)	1.94	3.67	3.98
AT12	Niederösterreich	12.72	20.42	21.14
AT13	Wien	39.87	16.79	17.61
AT21	Kärnten	4.13	7.08	7.53
AT22	Steiermark	8.89	15.40	16.10
AT31	Oberösterreich	13.24	17.49	16.44
AT32	Salzburg	6.33	6.29	5.83
AT33	Tirol	7.95	8.53	7.67
AT34	Vorarlberg	4.92	4.31	3.70
BE10	Région de Bruxelles Capitale/ Brussels Hoofdstedelijk Gewest	29.95	6.99	6.38
BE21	Prov. Antwerpen	14.04	16.40	17.30
BE22	Prov. Limburg (BE)	6.96	7.85	7.52
BE23	Prov. Oost Vlaanderen	6.55	14.27	15.02
BE24	Prov. Vlaams Brabant	7.54	10.31	10.88
BE25	Prov. West Vlaanderen	3.79	11.76	13.88
BE31	Prov. Brabant wallon	3.47	3.51	3.23
BE32	Prov. Hainaut	12.06	12.08	10.45
BE33	Prov. Liège	10.86	9.65	8.92
BE34	Prov. Luxembourg (BE)	2.19	2.54	2.27
BE35	Prov. Namur	2.59	4.65	4.15
BG31	Severozapaden	6.85	11.55	14.27
BG32	Severen tsentralen	10.56	11.71	12.82
BG33	Severoiztochen	18.20	13.06	11.82
BG34	Yugoiztochen	12.12	14.67	14.25
BG41	Yugozapaden	37.82	28.86	26.72
BG42	Yuzhen tsentralen	14.46	20.15	20.12
CH01	Région lémanique	25.90	15.44	16.15
CH02	Espace Mittelland	16.17	25.01	25.75
CH03	Nordwestschweiz	13.58	13.80	13.91
CH04	Zürich	19.54	16.50	16.16
CH05	Ostschweiz	12.31	14.82	14.14
CH06	Zentralschweiz	6.99	10.54	9.65
CH07	Ticino	5.50	3.90	4.25
CZ01	Praha	27.03	10.98	12.31
CZ02	Strední Cechy	11.71	12.40	11.91
CZ03	Jihozápad	9.32	11.65	11.93
CZ04	Severozápad	13.17	10.39	8.90
CZ05	Severovýchod	11.16	14.53	14.69
CZ06	Jihovýchod	11.06	16.38	17.03
CZ07	Strední Morava	6.36	11.99	12.29
CZ08	Moravskoslezsko	10.20	11.68	10.93
DE11	Stuttgart	6.55	4.57	4.13
DE12	Karlsruhe	4.07	3.15	3.06
DE13	Freiburg	3.05	2.61	2.57
DE14	Tübingen	2.38	2.16	1.95

(Continues)

TABLE 1 (Continued)

NUTS2	NUTS2_name	Foreign Population concentrated in the region (%)	National Population concentrated in the region (%)	Aged national population living in the region (%)
DE21	Oberbayern	6.59	5.19	4.74
DE22	Niederbayern	1.19	1.52	1.40
DE23	Oberpfalz	1.04	1.40	1.29
DE24	Oberfranken	1.00	1.40	1.40
DE25	Mittelfranken	2.57	2.04	1.96
DE26	Unterfranken	1.37	1.68	1.64
DE27	Schwaben	2.34	2.21	2.04
DE30	Berlin	4.96	3.97	3.90
DE40	Brandenburg	1.67	3.33	3.28
DE50	Bremen	1.05	0.76	0.81
DE60	Hamburg	2.77	1.97	1.99
DE71	Darmstadt	6.58	4.31	4.17
DE72	Gießen	1.32	1.26	1.21
DE73	Kassel	1.40	1.52	1.63
DE80	Mecklenburg	1.28	2.13	1.80
DE91	Braunschweig	2.04	1.96	1.94
DE92	Hannover	2.91	2.57	2.59
DE93	Lüneburg	1.58	2.17	2.12
DE94	Weser Ems	2.62	3.11	3.03
DEA1	Düsseldorf	7.58	6.13	6.54
DEA2	Köln	6.18	5.13	4.95
DEA3	Münster	2.88	3.27	3.15
DEA4	Detmold	3.09	2.40	2.39
DEA5	Arnsberg	5.05	4.34	4.52
DEB1	Koblenz	1.54	1.88	2.04
DEB2	Trier	0.45	0.68	0.72
DEB3	Rheinhessen Pfalz	2.37	2.50	2.60
DEC	Saarland	0.95	1.31	1.58
DED2	Dresden	0.99	2.18	2.47
DED4	Chemnitz	0.69	2.11	2.63
DED5	Leipzig	0.62	1.31	1.40
DEE0	Sachsen	1.33	3.15	3.48
DEF0	Schleswig	2.83	3.60	3.63
DEG0	Thüringen	1.12	3.03	3.27
DK01	Hovedstaden	45.04	29.05	27.30
DK02	Sjælland	10.13	15.21	16.34
DK03	Syddanmark	18.45	21.91	23.13
DK04	Midtjylland	19.23	23.06	21.73
DK05	Nordjylland	7.14	10.77	11.50
EL11	Anatoliki Makedonia, Thraki (NUTS 2010)	5.03	5.70	6.16
EL12	Kentriki Makedonia (NUTS 2010)	18.78	17.22	17.45
EL13	Dytiki Makedonia (NUTS 2010)	1.70	2.75	3.05
EL14	Thessalia (NUTS 2010)	4.30	7.11	7.92
EL21	Ipeiros (NUTS 2010)	2.31	3.22	3.85
EL22	Ionia Nisia (NUTS 2010)	2.15	1.89	2.11

TABLE 1 (Continued)

NUTS2	NUTS2_name	Foreign Population concentrated in the region (%)	National Population concentrated in the region (%)	Aged national population living in the region (%)
EL23	Dytiki Ellada (NUTS 2010)	3.73	6.63	6.61
EL24	Sterea Ellada (NUTS 2010)	4.13	5.19	6.01
EL25	Peloponnisos (NUTS 2010)	5.16	5.37	6.47
EL30	Attiki	42.77	34.40	30.55
EL41	Voreio Aigaio	1.28	1.92	2.16
EL42	Notio Aigaio	3.38	2.79	2.36
EL43	Kriti	5.30	5.82	5.32
ES11	Galicia	3.16	6.30	8.03
ES12	Principado de Asturias	1.14	2.46	3.09
ES13	Cantabria	0.78	1.33	1.42
ES21	País Vasco	2.68	4.94	5.52
ES22	Comunidad Foral de Navarra	1.28	1.38	1.45
ES23	La Rioja	0.77	0.67	0.76
ES24	Aragón	2.94	2.86	3.44
ES30	Comunidad de Madrid	18.10	13.11	12.28
ES41	Castilla y León	3.20	5.73	7.46
ES42	Castilla la Mancha	3.77	4.60	4.74
ES43	Extremadura	0.77	2.58	2.72
ES51	Cataluña	20.44	15.46	15.92
ES52	Comunidad Valenciana	13.89	10.26	9.85
ES53	Illes Balears	4.15	2.10	1.80
ES61	Andalucía	12.73	18.59	15.57
ES62	Región de Murcia	3.99	3.00	2.52
ES63	Ciudad Autónoma de Ceuta (ES)	0.17	0.18	0.10
ES64	Ciudad Autónoma de Melilla (ES)	0.30	0.16	0.07
ES70	Canarias (ES)	5.74	4.27	3.26
FI19	Länsi Suomi	18.67	25.67	27.27
FI1B	Helsinki Uusimaa	49.77	27.52	22.45
FI1C	Etelä Suomi	16.48	21.66	24.05
FI1D	Pohjois ja Ita Suomi	13.18	24.67	25.71
FI20	Åland	1.91	0.47	0.52
FR10	Île de France	34.34	16.21	12.28
FR21	Champagne Ardenne	1.27	2.16	2.22
FR22	Picardie (NUTS 2013)	1.59	3.13	2.86
FR23	Haute Normandie	1.39	3.02	2.93
FR24	Centre (FR) (NUTS 2013)	2.72	4.09	4.70
FR25	Basse Normandie	0.77	2.46	2.86
FR26	Bourgogne (NUTS 2013)	1.69	2.64	3.20
FR30	Nord Pas di Calais	3.10	6.62	5.68
FR41	Lorraine (NUTS 2013)	3.07	3.69	3.63
FR42	Alsace (NUTS 2013)	3.20	2.81	2.70
FR43	Franche Comté	1.34	1.87	1.94
FR51	Pays de la Loire (NUTS 2013)	2.06	5.99	6.33
FR52	Bretagne (NUTS 2013)	1.78	5.36	6.13
FR53	Poitou Charentes	1.32	2.92	3.67
FR61	Aquitaine (NUTS 2013)	4.19	5.12	5.90

(Continues)

TABLE 1 (Continued)

NUTS2	NUTS2_name	Foreign Population concentrated in the region (%)	National Population concentrated in the region (%)	Aged national population living in the region (%)
FR62	Midi Pyrenees	4.33	4.49	5.00
FR63	Limousin (NUTS 2013)	0.73	1.19	1.69
FR71	Rhône Alpes	10.56	9.56	9.11
FR72	Auvergne (NUTS 2013)	1.16	2.20	2.73
FR81	Languedoc Roussillon	5.27	3.96	4.32
FR82	Provence Alpes Coté de Azur	11.59	7.06	7.59
FR83	Corse (NUTS 2013)	0.64	0.46	0.56
FR91	Guadeloupe (NUTS 2010)	0.28	0.67	0.57
FR92	Martinique (NUTS 2010)	0.17	0.66	0.62
FR93	Guyane (NUTS 2010)	1.00	0.28	0.07
FR94	Réunion (NUTS 2010)	0.47	1.38	0.71
HR03	Jadranska Hrvatska	67.63	66.96	64.97
HR04	Kontinentalna Hrvatska	32.37	33.04	35.03
HU10	Közép Magyarország (NUTS 2013)	47.77	28.91	29.40
HU21	Közép Dunántúl	8.54	11.00	10.57
HU22	Nyugat v	7.66	10.03	10.08
HU23	Dél v	8.75	9.41	9.34
HU31	Észak Magyarország	5.45	12.32	12.60
HU32	Észak Alföld	9.97	15.23	13.99
HU33	Dél Alföld	11.85	13.11	14.02
IE01	Border, Midland and Western (NUTS 2013)	28.17	26.93	28.60
IE02	Southern and Eastern (NUTS 2013)	71.83	73.07	71.40
ITC1	Piemonte	8.38	7.25	8.26
ITC2	Valle d'Aosta/Vallée d'Aoste	0.22	0.21	0.22
ITC3	Liguria	2.87	2.62	3.44
ITC4	Lombardia	20.49	15.96	16.29
ITF1	Abruzzo	2.30	2.19	2.31
ITF2	Molise	0.38	0.54	0.57
ITF3	Campania	4.61	10.15	7.79
ITF4	Puglia	3.15	7.14	6.32
ITF5	Basilicata	0.47	1.02	0.97
ITF6	Calabria	2.20	3.39	3.07
ITG1	Sicilia	4.54	8.76	7.71
ITG2	Sardegna	1.10	2.90	2.69
ITH1	Provincia Autonoma di Bolzano/ Bozen	0.99	0.84	0.72
ITH2	Provincia Autonoma di Trento	1.15	0.86	0.83
ITH3	Veneto	10.53	7.97	8.07
ITH4	Friuli Venezia Giulia	3.52	1.92	2.14
ITH5	Emilia Romagna	9.98	7.07	8.06
ITI1	Toscana	7.42	6.07	7.09
ITI2	Umbria	1.99	1.44	1.69
ITI3	Marche	3.19	2.54	2.86
ITI4	Lazio	10.50	9.15	8.90
NL11	Groningen	2.33	3.62	3.69

TABLE 1 (Continued)

NUTS2	NUTS2_name	Foreign Population concentrated in the region (%)	National Population concentrated in the region (%)	Aged national population living in the region (%)
NL12	Friesland (NL)	1.64	4.17	4.46
NL13	Drenthe	1.25	3.17	3.61
NL21	Overijssel	4.50	7.10	6.97
NL22	Gelderland	7.86	12.56	12.60
NL23	Flevoland	3.07	2.26	1.46
NL31	Utrecht	7.03	7.42	6.37
NL32	Noord Holland	22.93	15.30	14.74
NL33	Zuid Holland	30.55	20.00	19.62
NL34	Zeeland	1.88	2.34	2.84
NL41	Noord Brabant	11.29	15.17	15.59
NL42	Limburg (NL)	5.66	6.88	8.05
NO02	Hedmark og Oppland	7.45	10.24	11.97
NO03	Sør Østlandet	28.73	24.47	25.72
NO04	Agder og Rogaland	23.65	18.59	16.07
NO05	Vestlandet	21.69	22.50	22.16
NO06	Trøndelag	9.18	11.54	11.15
NO07	Nord Norge	9.30	12.66	12.94
PL11	Lódzkie (NUTS 2013)	3.46	6.69	7.75
PL12	Mazowieckie (NUTS 2013)	9.93	13.84	15.50
PL21	Malopolskie	4.20	8.74	9.26
PL22	Slaskie	8.40	12.11	13.07
PL31	Lubelskie (NUTS 2013)	3.13	5.71	6.34
PL32	Podkarpackie (NUTS 2013)	3.54	5.51	5.59
PL33	Swietokrzyskie (NUTS 2013)	1.04	3.37	3.93
PL34	Podlaskie (NUTS 2013)	2.05	3.10	3.57
PL41	Wielkopolskie	4.84	9.07	8.25
PL42	Zachodniopomorskie	8.93	4.38	3.51
PL43	Lubuskie	7.28	2.58	1.71
PL51	Dolnoslaskie	21.90	7.31	5.74
PL52	Opolskie	6.60	2.49	2.23
PL61	Kujawsko Pomorskie	2.79	5.50	5.32
PL62	Warminsko Mazurskie	5.67	3.72	3.00
PL63	Pomorskie	6.24	5.90	5.22
PT11	Norte	20.05	36.27	31.94
PT15	Algarve	8.82	3.86	4.12
PT16	Centro (PT)	18.27	22.38	26.30
PT17	Área Metropolitana de Lisboa	45.00	25.07	24.74
PT18	Alentejo	4.71	7.39	9.25
PT20	Região Autónoma dos Açores (PT)	0.94	2.46	1.64
PT30	Região Autónoma da Madeira (PT)	2.20	2.57	2.01
RO11	Nord	11.52	12.93	12.18
RO12	Centru	9.29	11.75	11.23
RO21	Nord	15.75	16.42	16.62
RO22	Sud	13.13	12.65	12.88
RO31	Sud	8.58	15.64	17.35
RO32	Bucuresti	26.35	11.18	9.72

(Continues)

TABLE 1 (Continued)

NUTS2	NUTS2_name	Foreign Population concentrated in the region (%)	National Population concentrated in the region (%)	Aged national population living in the region (%)
RO41	Sud	4.78	10.36	11.38
RO42	Vest	10.60	9.07	8.64
SE11	Stockholm	32.83	20.32	16.22
SE12	Östra Mellansverige	15.55	16.88	17.23
SE21	Småland med öarna	6.36	8.92	9.98
SE22	Sydsverige	16.15	14.43	14.96
SE23	Västsverige	18.44	20.13	19.70
SE31	Norra Mellansverige	5.52	9.30	10.77
SE32	Mellersta Norrland	1.96	4.24	4.95
SE33	Övre Norrland	3.20	5.77	6.19
SI01	Vzhodna Slovenija (NUTS 2010)	42.55	54.15	54.57
SI02	Zahodna Slovenija (NUTS 2010)	57.45	45.85	45.43
SK01	Bratislavský kraj	15.73	11.36	11.47
SK02	Západné Slovensko	38.23	34.39	36.64
SK03	Stredné Slovensko	21.88	24.84	25.01
SK04	Východné Slovensko	24.16	29.42	26.88
UKC1	Tees Valley and Durham	0.60	2.04	2.10
UKC2	Northumberland and Tyne and Wear	1.01	2.43	2.54
UKD1	Cumbria	0.23	0.87	1.06
UKD3	Greater Manchester	4.04	4.28	3.72
UKD4	Lancashire	1.32	2.46	2.58
UKD6	Cheshire	0.60	1.55	1.68
UKD7	Merseyside	1.03	2.58	2.60
UKE1	East Yorkshire and Northern Lincolnshire	0.66	1.57	1.70
UKE2	North Yorkshire	0.67	1.35	1.60
UKE3	South Yorkshire	1.30	2.25	2.25
UKE4	West Yorkshire	3.18	3.57	3.19
UKF1	Derbyshire and Nottinghamshire	2.03	3.53	3.58
UKF2	Leicestershire, Rutland and Northamptonshire	2.94	2.67	2.51
UKF3	Lincolnshire	0.63	1.20	1.51
UKG1	Herefordshire, Worcestershire and Warwickshire	1.13	2.18	2.48
UKG2	Shropshire and Staffordshire	1.07	2.69	2.89
UKG3	West Midlands	5.68	4.14	3.66
UKH1	East Anglia	3.07	3.89	4.57
UKH2	Bedfordshire and Hertfordshire	3.26	2.66	2.41
UKH3	Essex	1.71	2.88	3.05
UKI1	Inner London (NUTS 2010)	17.06	3.38	1.54
UKI2	Outer London (NUTS 2010)	20.44	5.99	4.55
UKJ1	Berkshire, Buckinghamshire and Oxfordshire	4.63	3.44	3.09
UKJ2	Surrey, East and West Sussex	4.10	4.37	4.99
UKJ3	Hampshire and Isle of Wight	2.30	3.11	3.31
UKJ4	Kent	2.02	2.84	2.95

TABLE 1 (Continued)

NUTS2	NUTS2_name	Foreign Population concentrated in the region (%)	National Population concentrated in the region (%)	Aged national population living in the region (%)
UKK1	Gloucestershire, Wiltshire and Bristol/Bath area	2.74	3.86	3.97
UKK2	Dorset and Somerset	1.18	2.14	2.80
UKK3	Cornwall and Isles of Scilly	0.30	0.93	1.18
UKK4	Devon	0.85	1.93	2.44
UKL1	West Wales and The Valleys	0.99	3.36	3.82
UKL2	East Wales	1.11	1.89	1.93
UKM2	Eastern Scotland (NUTS 2013)	2.05	3.37	3.45
UKM3	South Western Scotland (NUTS 2013)	1.64	3.99	3.98
UKM5	North Eastern Scotland	0.63	0.77	0.75
UKM6	Highlands and Islands	0.30	0.80	0.93
UKN0	Northern Ireland (UK)	1.49	3.07	2.64

attractive to immigrant population? Or is it the labour conditions of a specific locality within the region? Are size and distance, as would be predicted by NEG, the determinants of foreign-born population concentration? Or does their location respond mainly to labour or economic-related factors? Only by revealing what makes a place (as opposed to a region) attractive or unattractive to immigrant population will it be possible to design and implement immigration policies in line with domestic objectives or to anticipate future migration flows.

This paper is the first attempt, as far as we are aware, to overcome the trade-off between 'spatial depth' and 'spatial coverage', in the sense that we use local data beyond NUTs regions as well as analysing more than one country at a time. However, due to data constraints related to the unavailability of relevant information at local level for many European countries, or the difficulties in compiling comparable data, we will only focus on three large immigrant-receiving countries, namely, Spain, Italy, and France. These countries are representative along a number of important dimensions. There is a traditionally recipient country (France) and also countries that have more recently become recipients of immigrants (Italy and Spain). In terms of the place of origin, they represent countries whose immigrants come mainly from Eastern European countries (in the cases of Italy and Spain) and also from countries with historical colonial links (the cases of France and Spain). According to the UN estimates, for the period 2000–2010, Spain was the second net receiver of international immigrants and Italy was the fifth (United Nations, 2013), while France hosts one of the largest numbers of international migrants (United Nations, 2017).

Our aim in this paper is therefore to determine the features that make a place attractive to immigrants by using local data from France, Italy, and Spain. We draw on the NEG literature by including size and distance as fundamental variables in our analysis, while recognising that other socio-demographic and geographical factors also have a role to play (see Viñuela et al., 2019). The size, quality, and detailed nature of our dataset, which comprises observations for a series of variables for each local area unit for the three countries under study, allows us to make precise estimations of the relationships between the immigrant population and the explanatory variables.

The paper is organised as follows. Some basic figures and a review of the previous literature on determinants of the location choices of foreign-born population are presented in the following section. The spatial patterns for the three European countries under analysis will suggest the need to go beyond the regional level to explain immigrants' localisation decisions at the local level. This will be analysed in Section 3, where we describe the data available and specify the model. A comparison of results on the determinants of foreign-born population concentration using the NUTS2 regions and the LAUs will be offered in Section 4. Concluding remarks and economic policy implications are provided in the last section.

2 | UNDERSTANDING THE DETERMINANTS OF IMMIGRANT POPULATION LOCATION

2.1 | Spatial concentration of immigrant population in Europe: Determinants and effects

Immigrant populations are not distributed evenly across the European territory. In some countries, the share of foreign-born population living in the country is below 6% (mainly states of the former Eastern Bloc), while in other countries such as Liechtenstein, Luxembourg, Switzerland, and Cyprus, the share is over 20% (see Table 2).

Due to problems with data availability and comparability, in Europe, there are few studies on the national and regional impacts that the immigrant population has, at least in theory, on issues such as productivity, wages, income, welfare, assimilation, housing, public finances, innovation, and so on; Kerr and Kerr (2011) is a good survey

TABLE 2 Percentage of Foreign-born population living in European countries (2011)

Country	%	Country	%
Romania	0.75	**France**	11.28
Bulgaria	1.07	Greece	11.89
Poland	1.68	**Spain**	12.07
Slovakia	2.91	United Kingdom	12.64
Finland	3.52	Croatia	13.66
Hungary	3.86	Belgium	13.94
Lithuania	5.90	Germany	14.23
Czech Republic	6.68	Sweden	14.24
Italy	8.08	Latvia	14.59
Portugal	8.25	Estonia	15.25
Malta	8.41	Austria	15.63
Denmark	9.05	Ireland	16.94
Norway	10.01	Cyprus	23.59
Iceland	10.32	Switzerland	28.29
Slovenia	11.15	Luxembourg	39.70
Netherlands	11.22	Liechtenstein	40.53

Source: own elaboration from EUROSTAT database. France Spain and Italy are the 3 countries that will be deeper analysed.

on the impact and labour assimilation of immigrant population that compares the results for some Scandinavian countries with results for the US and Canada. The economic assimilation of the different population groups by country of origin in some EU countries was analysed in Algan et al. (2010). Using the European regions as the basic unit of analysis, we can find studies that focus on exclusively one European country. Research on the *regional* effects of immigrant population includes Foged and Peri (2016) on the effects on labour outcomes in Denmark, Chevalier et al. (2018) on the effect on taxation and public spending in Germany, Dustmann et al. (2013) on the effect on wages in UK, Carrasco and Ortega (2005) on wages and employment in Spain, or the anti-EU discontent unveiled in Dijkstra et al. (2020).

Results on the economic effects tend to be inconclusive or depend upon the methodology, period of time, or country under scrutiny. Regarding the contribution of immigrant population to the public finances and foreseeable imbalances in the pension systems, most of the studies for Europe show that the majority of migrants belongs to the working-age population and therefore are not a present burden on public finances (for a good overall review, see Edo et al., 2018). Nevertheless, some analyses for specific countries show that immigrants are not improving the financial sustainability of the pension systems, including Serrano et al. (2011) for Spain, Blake and Mayhew (2006) for the UK, or Schou (2006) for Denmark. Other studies show that mainly high-skilled immigrants may considerably enlarge the positive impact of immigration on the tax burden of native residents (Bonin et al., 2000), and therefore recommend an active migration policy favouring high-skilled immigrants to relieve "the European social benefit systems, reducing labour market competition between natives and immigrants and preventing anti-foreign sentiments" (Crespo Cuaresma et al., 2015). However, in a centralised tax (and pensions) system, what matters is the immigrants' overall fiscal effect, not their location within the country, as the tax (and national insurance contributions they pay) would still benefit the national system regardless of where they live within the country.

Not only are the economic effects of immigrant population relevant, but also their demographic effects. With the consolidation of strong national and regional demographic imbalances in Europe over the last decade, the immigrant population has been considered by some politicians, administrators and policy makers as the potential answer to the prominent and increasing disparities in terms of ageing, depopulation and rural abandonment, shrinking working force, and even economic growth (Bonin et al., 2000; Bouvier, 2001; Collado et al., 2004; Collantes et al., 2014; Rauhut, 2007). In reality, however, immigrant population does not tend to concentrate in those regions where the aforementioned issues exist. In other words, immigrants do not tend to alleviate the demographic regional imbalances, and instead tend to follow a similar concentration pattern to the native population. As a consequence, their spatial allocation is not "optimal" for the receiving countries in terms of correcting regional imbalances. For instance, in France 34% of the foreign-born population concentrates in Île-de-France, while the national population of all ages tends to distribute more evenly across the territory. In Italy, 41% of the foreign-born population is concentrated in three of the 21 NUTS2 regions: Lombardia, Veneto and Lazio. Those regions also show high values of national population concentration. In Spain, the regions containing the two main cities of Madrid and Barcelona comprise 38.6% of the foreign-born population, which outweighs their concentration of the national population (28.6%).[4] Thus, the immigrant concentration patterns of location tend to reinforce, rather than mitigate, the spatial imbalances of European countries.

2.2 | Determinants of immigrant population concentration: from region to locality

Why do immigrants tend to concentrate in those regions and not others? What are the determinants explaining such spatial concentration patterns? When choosing the country of destination, immigrants frequently cite economic factors such as better job opportunities, low unemployment rates and high wages and income levels. However, they also cite non-economic factors for choosing their new host countries such as better personal safety, shorter distance to home countries, established immigrant networks, and – to a lesser extent - the existence of natural amenities, social and cultural amenities and the quality of social life (Borjas, 2001; Bauer et al., 2005, 2007).

Thus, according to the share of foreign-born population, some European countries seem to be more attractive than others, and within those countries, some regions seem to be more attractive than others (see Figure 1). In general, the European regions containing the main European capital cities and the main economic centres are the ones exerting attraction. However, in Spain and France, those regions located along the Mediterranean Coast also seem to exert some

strong attraction for foreign-born population, which apparently reinforces the hypotheses of the relevance of amenities (as opposed to labour conditions) for immigrant's location choices.

In Europe, immigration is a heterogeneous phenomenon, not only on its spatial distribution but also with regard to the types of immigrant in terms of age, place of origin or level of education. However, due to data restrictions, there is a strong trade-off for researchers between using detailed individual data with information only on the region of residence, or using municipal data without information about the characteristics of the foreign-born population. For example, certain characteristics of the immigrant population such as level of education, country of origin or age are commonly available only at regional level, and there are some interesting studies focusing on the location of immigrants by country of origin (Maza et al., 2013, for Spain; Morettini et al., 2012, for Italy), the determinants of location and geographical mobility across European regions of highly-skilled foreign-born individuals (Miguelez and Moreno, 2013; Mihăilă, 2019), or the relevance of regional economic, labour market and institutional factors for attracting highly-skilled migrants (Nowotny, 2013). All these studies were conducted using regional data and emphasise the importance of networks for specific immigrant groups having the same country of origin, belonging to the same ethnic group, and/or having similar skills.

However, when embracing a *spatial approach* and aiming to analyse the characteristics of a place (as opposed to a region) that attracts immigrant population, data constraints dictate that researchers will be forced to study the "immigrant" or "foreign-born" population as a whole, without distinguishing by level of studies, age or nationality,[5] and also to use the official local data released every 10 years through the National Population Censuses.[6] Thus, while the initial presence of immigrants has been proven to exert a strong influence on the foreign-born population's concentration of newly-arrived immigrants when dealing with one specific country of origin or ethnic group (Bauer et al., 2007, 2009), the previous stock of "foreign-born population" seems irrelevant when dealing with figures of *total* immigrant population concentration. Even more, the stock of established immigrants can act in general as a pole of attraction for newly-arrived immigrants but as a repellent for highly-skilled immigrants or for those immigrants re-locating within the region or country, with the overall effect being ambiguous or negative for some areas.

Following the second approach, in the next section will try to "go local" and surpass the regional level at the expense of not having information on the characteristics of the foreign-born population. The question then is: will the factors explaining immigrant concentration at country/regional level also be able to explain

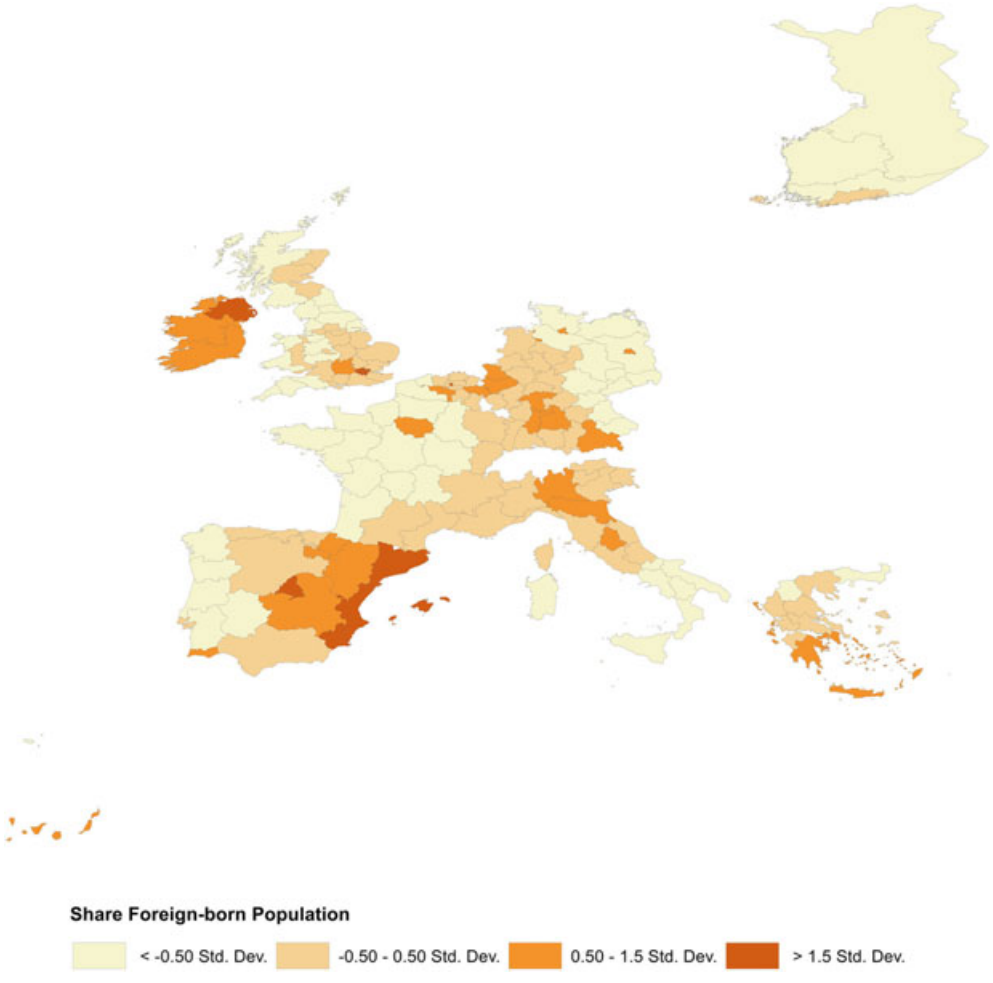

FIGURE 1 Percentage of foreign-born population for NUTS2 regions (2011)

immigrant population concentration at local level? Traditionally, the attractiveness of a country or region to migrants is explained by economic factors, human capital-related and demographic aspects, as well as by the existence of networks[7] and different types of natural or man-made amenities and disamenities. Using European regional data, some studies emphasise the relevance of the economic factors in Europe in comparison to the US (Faggian et al., 2012), while others try to shed some light on the potential role of amenities in attracting migrant population (Rodríguez-Pose & Ketterer, 2012), the role of the government quality of the regions (Ketterer & Rodriguez-Pose, 2015) or the fact that, despite freedom of mobility, the EU is an area with different languages and cultures that might be acting as critical disincentives to international mobility (Wang et al., 2018). Also, weather as a determining factor of attractiveness has been found to be relevant in Europe at country level (Cheshire & Magrini, 2006).

There are some studies that have focused on foreign-born population concentration at local level but covering only one European country (e.g., Buch et al., 2013 for Germany; Détang-Dessendre et al., 2016 for France; Golini & Bartolomeu, 2009 for Italy; Jayet et al., 2010; Jayet et al., 2016 for Belgium; Melguizo & Royuela, 2020, and Viñuela et al., 2019 for Spain). As far as we know, this is the first comparative analysis at local level that manages to compile data for three large European countries.

Knowing what the factors are that make one place more attractive than another within the same country and then within the same region will make us be able to assess the uneven distribution of the foreign-born population and its drivers. Only after analysing these determinants will we be able to understand these spatial concentration patterns, a topic that has been broadly treated at national level but has received little attention at regional/local level, at least in Europe. As Lewis and Peri (2015) point out, while "… immigration policies are typically national, the effects of international migrants are often more easily identified on local economies. The reason is that their settlements are significantly concentrated across cities and regions, relative to natives."

Only a more fine-grained analysis will reveal significant differences between the regional and local patterns. Apparently, in the European countries, the foreign-born population is highly concentrated in regions that contain the large cities, such as the regions of

FIGURE 2 Percentage of foreign-born population at local level (2011)

Madrid and Cataluña in Spain, Île-de-France in France, or Greater London in the UK. However, only by "going local" can we discover whether there are some unattractive localities within very attractive regions and/or attractive localities within very unattractive regions. In those countries where local information is available (Figure 2), we can also observe the attractiveness to immigrants of the medium- and small-sized cities. We can also observe the attractiveness of some localities that do not belong to the city-region but that are at a close distance to the large metropolises, which shows, as predicted by the NEG, that not only "size" but also "distance" matters. NUTS regions are very broad and heterogeneous and some of the most attractive localities for the immigrant population in, for instance, Spain, France, Italy or the UK are located in regions which, in average terms, do not show high levels of immigrant concentration.

Nevertheless, not all countries are clearly following such spatial patterns and there might be other factors explaining those high levels of concentration, which raises a series of questions. For example, why do those localities and not others attract foreign-born population? What are the factors behind such spatial patterns? Can the main factors explaining foreign-born population concentration in, for instance, France be applied to the analysis of the concentration patterns in Spain or Italy?

In the next section, a simple model to explain the attractiveness of a territory to foreign-born population is presented in order to shed light on these questions.

3 | LOCALITIES VERSUS REGIONS: DATA, MODEL, AND RESULTS

3.1 | Data description and restrictions

To analyse the factors explaining the attractiveness of a *locality* as opposed to a *region* and the extent to which these factors can explain the foreign-population concentration (y_{pj}), following Viñuela et al. (2019) and the literature cited therein we can divide the set of plausible explanatory variables (x_{ipj}) into three groups: (a) socio-economic and demographic variables related to the labour opportunities and the demographic and economic structure of the territory; (b) NEG variables; and (c) other geographical variables that act as indicators of the quality of life or the existing natural amenities.

Variable selection is strongly subject to availability not only for NUTS 2 regions but especially at LAU level. Although the IMAJINE Project offers a comprehensive local dataset for many European countries derived from the 2011 Population Censuses,[8] unfortunately not all desired variables are available for all countries or are measured in a similar fashion. Due to these data restrictions our analysis will be performed for three EU countries: France, Spain and Italy. A list of the variables selected and their sources is presented in Table 3.

Some descriptive statistics for each country at NUTS2 (regional) level and at LAU (local) level are presented in Table 4. In Italy and Spain, the lowest spatial unit for which variables are available is LAU2 areas, called *comuni* and *municipalities* respectively. In France there is

TABLE 3 Variable selection and sources

Socio-economic and demographic variables			
Income	Average Household Income	LAU	*IMAJINE Project Estimates[a]
		NUTS 2	**EU-SILC
AROPE	Percentage of population at risk of poverty and exclusion	LAU	*IMAJINE Project Estimates
		NUTS 2	**EU-SILC
Unemp	Unemployment rate (proxy)[b]	LAU and NUTS2	Population Census 2011. ISTAT/INE/CSO/INSEE
LQ1	Location Quotient (Primary Sector)	LAU and NUTS2	Population Census 2011. ISTAT/INE/CSO/INSEE
65Pop	Percentage of population over 65 years of age	LAU and NUTS2	Population Census 2011. ISTAT/INE/CSO/INSEE
Depend	Dependency Rate	LAU and NUTS2	Population Census 2011. ISTAT/INE/CSO/INSEE
TerEd	Percentage of population with 3rd Grade education	LAU and NUTS2	Population Census 2011. ISTAT/INE/CSO/INSEE
NEG variables			
Size	Size measured by total population	LAU and NUTS2	Population Census 2011. ISTAT/INE/CSO/INSEE
Dist	Distance to the nearest metropolitan area	LAU	Eurostat. LAU2 coordinates
		NUTS2	LAU2 distances weighted by their population
PopDens	Population density	LAU and NUTS2	Eurostat/2011 Population Census
Other geographical variables			
Coast	Percentage of population from the region living beside the coast	LAU	Eurostat/2011 Population Census
	Percentage of LAU2 in the region that have coast	LAU	Eurostat/2011 Population Census
	Dummy variable. 1 = coastal region	NUTS2	Eurostat/2011 Population Census

[a]Average household income and AROPE figures at local level were estimated by the IMAJINE project using the European Statistics on Income and Living Conditions (EU-SILC) and Microcensus Datasets through entropy techniques. For more details, see Fernandez-Vazquez et al. (2018).
[b]Due to data constraints at local level, the figures show unemployed population as a percentage of the potentially active population.

TABLE 4 Descriptives for NUTS2 regions of Italy, Spain and France (2011)

Italy			% Foreign-born population	Population (size)	Population density	Distance to nearest MA (weighted by Pop)	Unemployment rate*	LQ primary sector
Piemonte			**0,0818**	**4393838**	**150,4894**	**0,3522**	**0,0590**	**0,7486**
ITC1		*Min*	0,0036	32	0,5455	0,0000	0,0055	0,0603
# LAU2	1206	*Max*	0,2417	871377	5839,6633	1,5101	0,1410	9,7965
(communi)		*s.d.*	*0,0349*	*26064*	*272,5919*	*0,2297*	*0,0179*	*1,4520*
Valle d'Aosta/Vallée d'Aoste			**0,0654**	**128664**	**34,1328**	**0,7422**	**0,0399**	**0,8619**
ITC2		*Min*	0,0053	87	1,0483	0,5172	0,0120	0,2959
# LAU2	*74*	*Max*	0,1320	34399	1411,6995	1,0470	0,0681	4,7023
(communi)		*s.d.*	*0,0266*	*4058*	*174,3377*	*0,1210*	*0,0117*	*0,9242*
Liguria			**0,0694**	**1605728**	**261,2105**	**0,4705**	**0,0558**	**0,5421**
ITC3		*Min*	0,0087	65	4,5756	0,0100	0,0095	0,1321
# LAU2	235	*Max*	0,2748	600591	2204,8604	1,2773	0,1942	5,8524
(communi)		*s.d.*	*0,0462*	*40070*	*337,4454*	*0,3400*	*0,0227*	*1,2177*
Lombardia			**0,0966**	**9807372**	**353,1324**	**0,3617**	**0,0501**	**0,4181**
ITC4		*Min*	0,0018	29	2,0459	0,0100	0,0025	0,0449
# LAU2	1544	*Max*	0,3867	1241616	6891,8283	1,6331	0,8914	9,7435
(communi)		*s.d.*	0,0438	33181	685,0918	0,2737	0,0256	0,9197
Provincia Autonoma Bolzano/Bozen			**0,0729**	**540218**	**62,0897**	**1,1570**	**0,0227**	**1,7142**
ITD1		*Min*	0,0031	193	5,5505	0,8493	0,0049	0,5087
# LAU2	116	*Max*	0,1995	100520	1640,3561	1,6082	0,0521	5,4791
(communi)		*s.d.*	*0,0342*	*10168*	*204,8536*	*0,1683*	*0,0083*	*1,0935*
Provincia Autonoma Trento			**0,0853**	**536101**	**65,4037**	**0,7820**	**0,0380**	**1,0540**
ITD2		*Min*	0,0017	135	1,4130	0,6023	0,0052	0,1839
# LAU2	*217*	*Max*	0,2354	118192	642,3101	1,0408	0,1441	6,7688
(communi)		*s.d.*	*0,0380*	*8657*	*109,0754*	*0,0865*	*0,0138*	*1,2512*
Veneto			**0,0923**	**4954952**	**240,5112**	**1,1543**	**0,0478**	**0,7532**
ITD3		*Min*	0,0046	111	4,3066	0,7173	0,0127	0,0881
# LAU2	581	*Max*	0,2099	285647	1982,8796	1,8991	0,5410	6,6643
(communi)		*s.d.*	*0,0394*	*19948*	*248,6636*	*0,2532*	*0,0245*	*0,7624*
Friuli-Venezia Giulia			**0,0783**	**1237025**	**137,7181**	**0,8942**	**0,0544**	**0,5919**
ITD4		*Min*	0,0048	124	2,2046	0,8037	0,0102	0,1798
# LAU2	218	*Max*	0,2096	206142	2088,3012	1,1389	0,1087	5,7400
(communi)		*s.d.*	*0,0339*	*16216*	*241,1514*	*0,0681*	*0,0134*	*0,7557*
Emilia-Romagna			**0,1016**	**4449067**	**171,9776**	**1,9248**	**0,0510**	**1,0566**

TABLE 4 (Continued)

Italy			% Foreign-born population	Population (size)	Population density	Distance to nearest MA (weighted by Pop)	Unemployment rate*	LQ primary sector
ITD5		*Min*	0,0128	84	3,0805	0,4346	0,0017	0,2123
# LAU2	348	*Max*	0,2066	397430	2496,6341	2,5666	0,9646	12,0795
(communi)		*s.d.*	*0,0347*	*31497*	*277,9211*	*0,5386*	*0,0632*	*1,0564*
Toscana			**0,0856**	**3760077**	**144,3942**	**1,9050**	**0,0596**	**0,7418**
ITE1		*Min*	0,0166	329	6,2373	0,8884	0,0115	0,1837
# LAU2	*287*	*Max*	0,2658	362215	3166,2048	2,4988	0,4348	6,3112
(communi)		*s.d.*	*0,0365*	*29279*	*326,5441*	*0,3471*	*0,0295*	*1,1537*
Umbria			**0,0956**	**917784**	**98,3815**	**1,1043**	**0,0648**	**0,8774**
ITE2		*Min*	0,0295	132	2,9956	0,5283	0,0159	0,3512
# LAU2	92	*Max*	0,2014	167643	728,0218	1,6892	0,1243	4,2457
(communi)		*s.d.*	*0,0331*	*22449*	*99,9423*	*0,2718*	*0,0146*	*0,7378*
Marche			**0,0837**	**1591265**	**149,8611**	**1,8051**	**0,0630**	**0,7777**
ITE3		*Min*	0,0175	114	2,1715	1,2026	0,0105	0,2512
# LAU2	239	*Max*	0,2156	108914	1729,1384	2,0954	0,9262	5,9446
(communi)		*s.d.*	*0,0346*	*13049*	*244,9495*	*0,1966*	*0,0592*	*0,9455*
Lazio			**0,0750**	**5679484**	**303,7205**	**0,2872**	**0,0766**	**0,5330**
ITE4		*Min*	0,0061	88	3,5652	0,0100	0,0023	0,1288
# LAU2	378	*Max*	0,1950	2752020	2730,6111	1,1269	1,6900	4,6051
(communi)		*s.d.*	*0,0346*	*141812*	*285,4926*	*0,2366*	*0,0888*	*0,8573*
Abruzzo			**0,0518**	**1314045**	**111,5714**	**1,4083**	**0,0733**	**0,9294**
ITF1		*Min*	0,0051	73	3,2902	0,6104	0,0005	0,1776
# LAU2	305	*Max*	0,2838	119329	3143,0041	1,7514	0,1605	5,6466
(communi)		*s.d.*	*0,0344*	*10640*	*260,6492*	*0,2193*	*0,0222*	*0,9343*
Molise			**0,0260**	**308967**	**64,3035**	**0,9484**	**0,0883**	**1,4680**
ITF2		*Min*	0,0021	110	7,3334	0,5912	0,0083	0,3055
# LAU2	136	*Max*	0,1047	48598	804,8900	1,3483	0,1825	6,4829
(communi)		*s.d.*	*0,0165*	*5386*	*87,9113*	*0,1826*	*0,0273*	*1,1619*
Campania			**0,0254**	**5840408**	**400,7402**	**0,3240**	**0,1288**	**1,3124**
ITF3		*Min*	0,0017	264	6,7675	0,0100	0,0055	0,2868
# LAU2	551	*Max*	0,1290	985450	11362,2409	1,6149	0,6787	9,0655
(communi)		*s.d.*	0,0150	44143	1531,2906	0,3802	0,0552	1,3402
Puglia			**0,0202**	**4090452**	**197,3706**	**2,7987**	**0,1030**	**2,1818**
ITF4		*Min*	0,0021	165	8,4490	1,0042	0,0451	0,5025

TABLE 4 (Continued)

Italy			% Foreign-born population	Population (size)	Population density	Distance to nearest MA (weighted by Pop)	Unemployment rate*	LQ primary sector
# LAU2	258	*Max*	0,1163	326191	2606,1718	4,2822	0,1801	12,2494
(communi)		*s.d.*	*0,0169*	*29351*	*266,6653*	*1,0735*	*0,0232*	*1,7894*
Basilicata			**0,0225**	**573458**	**54,0369**	**1,8898**	**0,1077**	**2,0538**
ITF5		*Min*	0,0025	291	9,1967	1,1735	0,0174	0,5197
# LAU2	*131*	*Max*	0,0692	67902	366,6115	2,5620	1,1266	7,0383
(communi)		*s.d.*	*0,0124*	*8516*	*47,2036*	*0,3300*	*0,0940*	*1,4163*
Calabria			**0,0340**	**1936577**	**123,4485**	**2,6965**	**0,1155**	**3,0964**
ITF6		*Min*	0,0010	248	7,0985	1,8221	0,0069	0,3743
# LAU2	409	*Max*	0,1423	183417	1789,0741	3,4202	1,2293	14,1457
(communi)		*s.d.*	*0,0190*	*12224*	*183,8341*	*0,3257*	*0,0757*	*2,4467*
Sicilia			**0,0243**	**5151096**	**196,2297**	**1,1748**	**0,1272**	**1,9888**
ITG1		*Min*	0,0019	198	3,2153	0,0000	0,0201	0,2361
# LAU2	390	*Max*	0,1970	731958	5424,7954	2,6342	4,9363	11,6963
(communi)		*s.d.*	*0,0200*	*43811*	*641,2324*	*0,6263*	*0,3244*	*2,0164*
Sardegna			**0,0187**	**1641331**			**0,1226**	**1,3783**
ITG2		*Min*	0,0004	81	3,8087	3,0125	0,0310	0,3191
# LAU2	377	*Max*	0,0916	150752	3260,8388	4,4985	0,3233	7,7410
(communi)		*s.d.*	*0,0133*	*11954*	*241,7252*	*0,3122*	*0,0345*	*1,2738*

TABLE 4 (Continued)

Italy	%Aged population (>65)	Dependency Rate	Average household INCOME	%POP_3rdED	Coast	
Piemonte	**0,2340**	**0,5953**	**32196**	**0,0935**	**No**	
ITC1	0,1135	0,3273	20277,48	0,0085	% population living coastal LAU2	0,0000
# LAU2	0,6563	1,4412	42497,46	0,2607	% of coastal communi	0,0000
(communi)	*0,0602*	*0,1084*	*2647,15*	*0,0250*		
Valle d'Aosta/Vallée d'Aoste	**0,2103**	**0,5684**	**27093**	**0,0950**	**No**	
ITC2	0,1316	0,4231	22644,06	0,0187	% population living coastal LAU2	0,0000
# LAU2	0,3678	0,7842	31079,43	0,1432	% of coastal communi	0,0000
(communi)	*0,0456*	*0,0707*	*1606,68*	*0,0245*		
Liguria	**0,2684**	**0,6595**	**29594**	**0,1079**	**Yes**	
ITC3	0,1077	0,4886	21523,54	0,0165	% population living coastal LAU2	0,9214
# LAU2	0,5588	1,4390	42118,87	0,2017	% of coastal communi	0,5957
(communi)	*0,0642*	*0,1285*	*2527,26*	*0,0296*		
Lombardia	**0,2058**	**0,5610**	**34528**	**0,1044**	**No**	

TABLE 4 (Continued)

Italy	%Aged population (>65)	Dependency Rate	Average household INCOME	%POP_3rdED	Coast	
ITC4	0,0466	0,3167	20121,82	0,0056	% population living coastal LAU2	
# LAU2	0,5366	1,2516	42619,19	0,2779	% of coastal communi	0,0000
(communi)	0,0500	0,0779	2339,99	0,0283		
Provincia Autonoma Bolzano/Bozen	**0,1713**	**0,5611**	**37811**	**0,0786**	**No**	
ITD1	0,0696	0,4175	26107,28	0,0118	% population living coastal LAU2	0,0000
# LAU2	0,2399	0,7568	41900,05	0,1382	% of coastal communi	0,0000
(communi)	*0,0310*	*0,0528*	*2448,81*	*0,0221*		
Provincia Autonoma Trento	**0,1933**	**0,5682**	**31804**	**0,1015**	**No**	
ITD2	0,0000	0,4444	25490,51	0,0074	% population living coastal LAU2	0,0000
# LAU2	0,3233	0,7771	36225,35	0,1640	% of coastal communi	0,0000
(communi)	*0,0414*	*0,0654*	*1965,85*	*0,0243*		
Veneto	**0,2019**	**0,5567**	**32715**	**0,0917**	**Yes**	
ITD3	0,1052	0,4255	26167,14	0,0126	% population living coastal LAU2	0,1546
# LAU2	0,3950	0,9407	44193,96	0,2119	% of coastal communi	0,0620
(communi)	*0,0388*	*0,0561*	*2464,24*	*0,0222*		
Friuli-Venezia Giulia	**0,2364**	**0,5983**	**31794**	**0,1020**	**Yes**	
ITD4	0,1382	0,4333	21658,15	0,0240	% population living coastal LAU2	0,3151
# LAU2	0,5484	1,2333	36714,92	0,1722	% of coastal communi	0,1560
(communi)	*0,0457*	*0,0745*	*2635,60*	*0,0248*		
Emilia-Romagna	**0,2240**	**0,5915**	**33568**	**0,1079**	**Yes**	
ITD5	0,1254	0,4387	20885,41	0,0209	% population living coastal LAU2	0,1336
# LAU2	0,6786	1,8750	44561,97	0,2034	% of coastal communi	0,0661
(communi)	*0,0663*	*0,1337*	*2978,71*	*0,0225*		
Toscana	**0,2340**	**0,6015**	**32487**	**0,1024**	**Yes**	
ITE1	0,1716	0,4548	21804,53	0,0150	% population living coastal LAU2	0,2502
# LAU2	0,4490	1,1070	33958,96	0,2065	% of coastal communi	0,1463
(communi)	*0,0436*	*0,0788*	*2667,74*	*0,0262*		
Umbria	**0,2286**	**0,6020**	**30805**	**0,1094**	**No**	
ITE2	0,1621	0,5267	23733,01	0,0233	% population living coastal LAU2	
# LAU2	0,5076	1,1429	33473,80	0,1694	% of coastal communi	0,0000
(communi)	*0,0440*	*0,0773*	*2236,29*	*0,0208*		0,0000
Marche	**0,2224**	**0,5923**	**31801**	**0,1049**	**Yes**	
ITE3	0,1303	0,4559	22595,68	0,0067	% population living coastal LAU2	0,4836
# LAU2	0,3996	1,2239	35156,58	0,1724	% of coastal communi	0,1967

TABLE 4 (Continued)

Italy	%Aged population (>65)	Dependency Rate	Average household INCOME	%POP_3rdED	Coast	
(communi)	*0,0454*	*0,0809*	*2556,77*	*0,0238*		
Lazio	**0,1959**	**0,5366**	**31724**	**0,1323**	**Yes**	
ITE4	0,1236	0,4082	18823,56	0,0278	% population living coastal LAU2	0,6334
# LAU2	0,6023	1,3095	41535,75	0,1816	% of coastal communi	0,0767
(communi)	*0,0607*	*0,0919*	*2235,44*	*0,0240*		
Abruzzo	**0,2158**	**0,5525**	**26978**	**0,1114**	**Yes**	
ITF1	0,1354	0,3281	17264,57	0,0184	% population living coastal LAU2	0,4111
# LAU2	0,7905	1,8471	43343,44	0,1816	% of coastal communi	0,1377
(communi)	*0,0844*	*0,1895*	*2737,44*	*0,0277*		
Molise	**0,2247**	**0,5504**	**24638**	**0,1120**	**Yes**	
ITF2	0,1472	0,3882	16600,05	0,0105	% population living coastal LAU2	0,1931
# LAU2	0,5521	1,3904	27176,01	0,1921	% of coastal communi	0,0515
(communi)	*0,0770*	*0,1514*	*1643,73*	*0,0303*		
Campania	**0,1627**	**0,5111**	**25381**	**0,0896**	**Yes**	
ITF3	0,0727	0,4108	15321,27	0,0274	% population living coastal LAU2	0,5598
# LAU2	0,4192	0,8870	34125,11	0,1997	% of coastal communi	0,2396
(communi)	0,0616	0,0802	1849,14	0,0249		
Puglia	**0,1886**	**0,5329**	**25707**	**0,0852**	**Yes**	
ITF4	0,1061	0,4170	17019,85	0,0315	% population living coastal LAU2	0,5246
# LAU2	0,4454	1,0468	33831,50	0,1883	% of coastal communi	0,4457
(communi)	*0,0462*	*0,0743*	*2236,43*	*0,0200*		
Basilicata	**0,2064**	**0,5329**	**25549**	**0,0960**	**Yes**	
ITF5	0,1228	0,4238	17979,93	0,0330	% population living coastal LAU2	0,1238
# LAU2	0,4296	0,9615	31968,31	0,1608	% of coastal communi	0,0687
(communi)	*0,0555*	*0,0899*	*1906,32*	*0,0238*		
Calabria	**0,1931**	**0,5230**	**24160**	**0,1013**	**Yes**	
ITF6	0,0973	0,4122	17411,14	0,0141	% population living coastal LAU2	0,6439
# LAU2	0,4586	0,9110	34618,71	0,2279	% of coastal communi	0,4694
(communi)	*0,0548*	*0,0835*	*1665,44*	*0,0286*		
Sicilia	**0,1831**	**0,5359**	**21620**	**0,0835**	**Yes**	
ITG1	0,0766	0,3787	15680,69	0,0245	% population living coastal LAU2	0,7295
# LAU2	0,3614	0,8967	33381,65	0,2103	% of coastal communi	0,4897
(communi)	*0,0499*	*0,0773*	*1806,79*	*0,0248*		
Sardegna	**0,2001**	**0,4965**	**24422**	**0,0906**	**Yes**	

TABLE 4 (Continued)

Italy			%Aged population (>65)	Dependency Rate	Average household INCOME	%POP_3rdED	Coast	
ITG2			0,0809	0,3742	16543,58	0,0085	% population living coastal LAU2	
# LAU2			0,4954	1,0714	26546,47	0,2057	% of coastal communi	0,2865
(communi)			*0,0598*	*0,1083*	*1469,64*	*0,0234*		
Spain			**% Foreign-born population**	**Population (size)**	**Population density**	**Distance to nearest MA (weighted by Pop)**	**Unemployment rate***	**LQ primary sector**
Galicia		Avg	**0,0649**	**2731510**	**84,6399**	**5,2803**	**0,2132**	**1,7894**
ES11		Min	0,0000	212	2,6614	1,3389	0,0290	29,0851
#LAU2	315	Max	0,3438	295623	5851,0321	6,0885	0,4176	684,4668
(municipalities)		*s.d.*	*0,0384*	*24561,913*	*389,5912*	*0,5878*	*0,0598*	*61,8662*
Asturias		Avg	**0,0606**	**1055895**	**89,7563**	**3,7031**	**0,1991**	**0,8446**
ES12		Min	0,0051	166	3,0163	2,9836	0,0563	39,6740
#LAU2	78	Max	0,1285	276969	2780,0442	4,5269	0,3089	247,8661
(municipalities)		*s.d.*	*0,0247*	*41017,448*	*377,7328*	*0,4203*	*0,0441*	*45,4104*
Cantabria		Avg	**0,0752**	**583685**	**100,2511**	**2,9677**	**0,2032**	**0,9109**
ES13		Min	0,0000	72	2,5416	2,3889	0,0581	30,5138
#LAU2	102	Max	0,2127	178095	4535,6885	3,0171	0,3258	304,5428
(municipalities)		*s.d.*	*0,0354*	*18801,166*	*580,9567*	*0,1349*	*0,0433*	*46,1074*
País Vasco		Avg	**0,0697**	**4028320**	**154,4293**	**1,7305**	**0,2224**	**1,5154**
ES21		Min	0,0000	16	0,5481	0,5366	0,0303	21,4151
#LAU2	567	Max	0,2813	351356	19772,3020	2,8450	0,4721	391,5940
(municipalities)		*s.d.*	*0,0471*	*26075,642*	*1431,8139*	*0,5487*	*0,0748*	*40,6582*
Rioja La		Avg	**0,1403**	**306110**	**55,7628**	**1,7247**	**0,1970**	**1,5057**
ES23		Min	0,0000	9	0,5374	1,0244	0,0435	25,8194
#LAU2	174	Max	0,3915	152698	1762,1550	2,2667	0,3333	272,5174
(municipalities)		*s.d.*	*0,0801*	*11816,194*	*142,5299*	*0,3076*	*0,0623*	*43,0232*
Aragon		Avg	**0,1276**	**1270580**	**24,6938**	**0,4143**	**0,1890**	**1,2727**
ES24		Min	0,0000	7	0,3836	0,0100	0,0417	13,9855
#LAU2	731	Max	0,4500	678115	1581,2230	1,8234	0,5833	582,3493
(municipalities)		*s.d.*	*0,0750*	*25241,323*	*89,9541*	*0,3422*	*0,0741*	*53,1175*
Madrid		Avg	**0,1602**	**6380710**	**748,5426**	**0,1298**	**0,1907**	**0,1913**
ES30		Min	0,0157	48	1,5821	0,0100	0,0870	19,5164
#LAU2	179	Max	0,3444	3198645	6626,8791	0,8414	0,3605	157,6105
(municipalities)		*s.d.*	*0,0557*	*240891,89*	*1031,6061*	*0,1483*	*0,0511*	*18,9424*
Castilla y León		Avg	**0,0746**	**2299620**	**22,6282**	**2,1999**	**0,1952**	**1,0855**

TABLE 4 (Continued)

Spain			% Foreign-born population	Population (size)	Population density	Distance to nearest MA (weighted by Pop)	Unemployment rate*	LQ primary sector
ES41		Min	0,0000	5	0,2646	0,5059	0,0323	8,9507
#LAU2	2248	Max	0,3478	311682	3567,3105	3,9571	0,5000	554,9446
(municipalities)		*s.d.*	*0,0600*	*9424,4055*	*122,3691*	*0,6795*	*0,0712*	*51,8425*
Castilla - Mancha		Avg	**0,1028**	**2028555**	**24,3676**	**1,2304**	**0,2582**	**1,7864**
ES42		Min	0,0000	1	0,1043	0,3486	0,0500	19,3913
#LAU2	919	Max	0,3918	171999	1673,9499	2,3728	0,5062	285,6332
(municipalities)		*s.d.*	*0,0669*	*8936,2942*	*98,3146*	*0,4143*	*0,0793*	*38,4215*
Extremadura		Avg	**0,0397**	**1080540**	**24,9384**	**1,8140**	**0,2913**	**3,8366**
ES43		Min	0,0000	66	1,1236	0,6926	0,1250	9,3237
#LAU2	385	Max	0,2873	151214	771,3861	2,9634	0,5517	323,3808
(municipalities)		*s.d.*	*0,0343*	*10266,61*	*54,2667*	*0,5356*	*0,0744*	*29,2466*
Cataluña		Avg	**0,1552**	**7410600**	**212,9932**	**0,4264**	**0,2113**	**0,5377**
ES51		Min	0,0000	28	0,7942	0,0100	0,0278	11,6749
#LAU2	947	Max	0,5015	1611013	17578,4850	1,9995	0,4340	431,8330
(municipalities)		*s.d.*	*0,0737*	*55773,957*	*1458,6792*	*0,4216*	*0,0626*	*44,5858*
C Valenciana		Avg	**0,1572**	**4965795**	**204,0966**	**0,5904**	**0,2660**	**1,3654**
ES52		Min	0,0000	20	0,6143	0,0100	0,0357	15,0067
#LAU2	542	Max	0,7073	792054	20511,3830	1,5910	0,7000	473,2455
(municipalities)		*s.d.*	*0,1177*	*40231,025*	*1647,5767*	*0,3464*	*0,0621*	*34,5109*
Balears, Illes		Avg	**0,2136**	**1095045**	**208,9090**	**1,9845**	**0,2667**	**0,5355**
ES53		Min	0,0281	258	1,7574	1,7132	0,1312	19,3251
#LAU2	67	Max	0,3558	402044	4182,5204	2,6305	0,4352	110,2856
(municipalities)		*s.d.*	*0,0770*	*49300,441*	*548,0892*	*0,2261*	*0,0726*	*21,6282*
Andalucía		Avg	**0,0930**	**7076725**	**86,7836**	**0,7594**	**0,2994**	**3,5258**
ES61		Min	0,0000	69	2,6584	0,0100	0,1332	14,3933
#LAU2	727	Max	0,6879	698042	7694,1272	2,6263	0,6349	394,1204
(municipalities)		*s.d.*	*0,0915*	*39291,918*	*658,6791*	*0,6176*	*0,0672*	*17,7459*
Murcia		Avg	**0,1547**	**1457670**	**125,5294**	**1,7774**	**0,2556**	**3,3414**
ES62		Min	0,0281	578	8,4552	1,1346	0,2103	27,1234
#LAU2	45	Max	0,4239	437667	2489,2955	2,3726	0,4167	51,1866
(municipalities)		*s.d.*	*0,0850*	*70580,208*	*458,6247*	*0,2544*	*0,0415*	*5,2863*
Canary Islands		Avg	**0,1560**	**2075490**	**302,6427**	**13,4961**	**0,2734**	**1,1133**
ES70		Min	0,0080	770	8,0950	11,1471	0,1549	19,0435

TABLE 4 (Continued)

Spain			% Foreign-born population	Population (size)	Population density	Distance to nearest MA (weighted by Pop)	Unemployment rate*	LQ primary sector
#LAU2	88	Max	0,4928	381271	4080,8983	15,4815	0,3986	82,6160
(municipalities)		*s.d.*	*0,1233*	*49039,492*	*676,7834*	*1,0088*	*0,0509*	*9,5425*

Spain	%Aged population (>65)	Dependency rate	% Population at risk of poverty and exclusion	Average household income	%POP_3rdED	Coast	
Galicia	**0,2276**	**0,5420**	**0,2681**	**27294,46**	**0,1342**	**Yes**	
ES11	0,1048	0,3757	0,2233	22580,29	0,0070	% population living coastal LAU2	**0,5920**
#LAU2	0,5529	1,5000	0,3637	31728,82	0,2855	% of coastal LAU2	**0,2889**
(municipalities)	*0,0914*	*0,1764*	*0,0273*	*2849,27*	*0,0508*		
Asturias	**0,2258**	**0,5115**	**0,2315**	**27819,24**	**0,1619**	**Yes**	
ES12	0,0000	0,4290	0,2007	24811,96	0,0163	% population living coastal LAU2	**0,4948**
#LAU2	0,4157	1,0385	0,3048	30956,93	0,2529	% of coastal LAU2	**0,3205**
(municipalities)	*0,0681*	*0,1195*	*0,0124*	*1170,41*	*0,0467*		
Cantabria	**0,1875**	**0,4892**	**0,2790**	**26411,18**	**0,1457**	**Yes**	
ES13	0,0000	0,4041	0,2471	25107,23	0,0142	% population living coastal LAU2	**0,7614**
#LAU2	0,3934	0,8261	0,3085	29171,12	0,2225	% of coastal LAU2	**0,4314**
(municipalities)	*0,0726*	*0,0878*	*0,0071*	*509,71*	*0,0497*		
País Vasco	**0,1755**	**0,5033**	**0,2104**	**34710,80**	**0,1643**	**Yes**	
ES21	0,0000	0,2500	0,1066	19605,54	0,0127	% population living coastal LAU2	**0,4523**
#LAU2	0,6667	2,5000	0,5853	43642,04	0,3597	% of coastal LAU2	**0,1640**
(municipalities)	*0,0834*	*0,1742*	*0,0771*	*5572,87*	*0,0646*		
Rioja La	**0,1906**	**0,5163**	**0,2164**	**26264,66**	**0,1392**	**No**	
ES23	0,0000	0,2308	0,1968	25256,54	0,0154	% population living coastal LAU2	**0,0000**
#LAU2	0,6429	2,2500	0,2246	26901,57	0,1900	% of coastal LAU2	**0,0000**
(municipalities)	*0,1438*	*0,2793*	*0,0022*	*242,83*	*0,0432*		
Aragon	**0,2038**	**0,5258**	**0,1993**	**28999,56**	**0,1540**	**No**	
ES24	0,0000	0,2222	0,1791	22417,90	0,0125	% population living coastal LAU2	**0,0000**
#LAU2	0,7857	3,6667	0,2600	35241,18	0,3256	% of coastal LAU2	**0,0000**
(municipalities)	*0,1367*	*0,2881*	*0,0103*	*1979,15*	*0,0534*		
Madrid	**0,1510**	**0,4625**	**0,1896**	**34537,91**	**0,2324**	**No**	
ES30	0,0000	0,1111	0,1121	28288,41	0,0152	% population living coastal LAU2	**0,0000**
#LAU2	0,5385	1,0000	0,2652	142705,40	0,4066	% of coastal LAU2	**0,0000**
(municipalities)	*0,0710*	*0,1054*	*0,0286*	*11526,66*	*0,0894*		
Castilla y León	**0,2440**	**0,5487**	**0,2421**	**26517,48**	**0,1500**	**No**	

TABLE 4 (Continued)

Spain	%Aged population (>65)	Dependency rate	% Population at risk of poverty and exclusion	Average household income	%POP_3rdED	Coast	
ES41	0,0000	0,1538	0,1592	22209,97	0,0124	% population living coastal LAU2	
#LAU2	0,8462	5,5000	0,3049	30368,81	0,3537	% of coastal LAU2	**0,0000**
(municipalities)	*0,1533*	*0,3688*	*0,0191*	*1510,93*	*0,0551*		
Castilla - Mancha	**0,1769**	**0,5140**	**0,3104**	**24318,50**	**0,1118**	**No**	
ES42	0,0000	0,1250	0,2098	20116,28	0,0081	% population living coastal LAU2	**0,0000**
#LAU2	0,7500	3,5000	0,4078	31059,77	0,2821	% of coastal LAU2	**0,0000**
(municipalities)	*0,1524*	*0,3451*	*0,0188*	*1361,45*	*0,0467*		
Extremadura	**0,1918**	**0,5264**	**0,3858**	**22486,62**	**0,1158**	**No**	
ES43	0,0976	0,2500	0,2907	17976,50	0,0106	% population living coastal LAU2	**0,0000**
#LAU2	0,6154	1,4667	0,4626	27464,62	0,2481	% of coastal LAU2	**0,0000**
(municipalities)	*0,0858*	*0,1825*	*0,0238*	*1490,79*	*0,0373*		
Cataluña	**0,1680**	**0,5011**	**0,2164**	**31211,58**	**0,1669**	**Yes**	
ES51	0,0000	0,2000	0,1600	25022,55	0,0079	% population living coastal LAU2	**0,5803**
#LAU2	0,5294	1,6154	0,3226	38388,70	0,3591	% of coastal LAU2	**0,1774**
(municipalities)	*0,0703*	*0,1172*	*0,0205*	*1252,58*	*0,0557*		
C Valenciana	**0,1700**	**0,4957**	**0,2944**	**26012,09**	**0,1462**	**Yes**	
ES52	0,0000	0,1667	0,2220	20086,46	0,0092	% population living coastal LAU2	**0,6771**
#LAU2	0,5455	1,8000	0,3731	31824,64	0,3380	% of coastal LAU2	**0,2768**
(municipalities)	*0,0853*	*0,1496*	*0,0214*	*1277,27*	*0,0495*		
Balears, Illes	**0,1410**	**0,4394**	**0,2644**	**28589,82**	**0,1404**	**Yes**	
ES53	0,1022	0,3000	0,1748	20854,54	0,0322	% population living coastal LAU2	**0,9087**
#LAU2	0,2697	0,7259	0,3095	33068,47	0,2720	% of coastal LAU2	**0,6418**
(municipalities)	*0,0393*	*0,0925*	*0,0314*	*2348,70*	*0,0435*		
Andalucía	**0,1539**	**0,4905**	**0,4044**	**23866,65**	**0,1368**	**Yes**	
ES61	0,0000	0,2830	0,2703	16755,29	0,0071	% population living coastal LAU2	**0,3197**
#LAU2	0,4348	1,0000	0,5492	29345,69	0,2976	% of coastal LAU2	**0,0922**
(municipalities)	*0,0648*	*0,0895*	*0,0310*	*1593,77*	*0,0489*		
Murcia	**0,1411**	**0,4916**	**0,3218**	**23989,60**	**0,1266**	**Yes**	
ES62	0,1016	0,3810	0,2761	17499,92	0,0159	% population living coastal LAU2	**0,3203**
#LAU2	0,2552	0,6452	0,4620	25699,76	0,1779	% of coastal LAU2	**0,1778**
(municipalities)	*0,0392*	*0,0532*	*0,0325*	*1319,48*	*0,0346*		
Canary Islands	**0,1379**	**0,4229**	**0,3894**	**22828,10**	**0,1378**	**Yes**	
ES70	0,0641	0,3191	0,3098	16788,60	0,0042	% population living coastal LAU2	**0,9916**

TABLE 4 (Continued)

Spain	%Aged population (>65)	Dependency rate	% Population at risk of poverty and exclusion	Average household income	%POP_3rdED	Coast
#LAU2	0,3174	0,7164	0,5273	25004,17	0,2517	% of coastal LAU2
(municipalities)	*0,0562*	*0,0810*	*0,0296*	*1346,84*	*0,0488*	

France			% Foreign-born population	Population (size)	Population density	Distance to nearest MA (weighted by Pop)	Unemployment rate*	LQ primary sector
Ile de France		Avg	0,1266	11852851	923,0607	0,1942	0,0939	0,0984
FR10		Min	0,0250	712	22,8164	0,0000	0,0487	0,0000
#LAU1	267	Max	0,3637	2249975	25062,1694	1,0479	0,1868	3,4763
(Cantons)		s.d.	0,0610	136811,809	4872,9866	0,2043	0,0286	0,3519
Champagne-Ardenne		**Avg**	**0,0379**	**1336053**	**49,4633**	**1,9053**	**0,1007**	**2,0651**
FR21		Min	0,0029	762	4,4842	1,2158	0,0417	0,0000
#LAU1	146	Max	0,1628	180752	4369,9620	2,7604	0,1973	18,5947
(Cantons)		s.d.	0,0241	16372,2398	636,6677	0,3635	0,0295	3,4613
Picardie		**Avg**	**0,0337**	**1918155**	**92,9475**	**0,8636**	**0,1070**	**0,9668**
FR22		Min	0,0030	1243	19,9792	0,3522	0,0552	0,0000
#LAU1	133	Max	0,2170	133327	2823,2575	1,4985	0,1721	5,9402
(Cantons)		s.d.	0,0267	14248,7224	470,1119	0,2673	0,0252	1,2047
Haute-Normandie		**Avg**	**0,0298**	**1839393**	**139,4046**	**1,5589**	**0,1020**	**0,6998**
FR23		Min	0,0032	2736	25,1285	0,7948	0,0477	0,0000
#LAU1	103	Max	0,1202	174156	4889,8795	2,3557	0,1521	4,5855
(Cantons)		s.d.	0,0224	20257,3718	925,4295	0,3656	0,0255	1,0460
Centre		**Avg**	**0,0422**	**2556835**	**60,4466**	**1,5561**	**0,0899**	**1,2415**
FR24		Min	0,0061	2035	7,1982	0,5929	0,0480	0,0237
#LAU1	185	Max	0,1390	134633	3852,3542	2,4992	0,1922	8,7993
(Cantons)		s.d.	0,0252	14702,606	558,5899	0,5001	0,0222	1,8143
Basse-Normandie		**Avg**	**0,0200**	**1475684**	**76,4580**	**2,0641**	**0,0871**	**1,7991**
FR25		Min	0,0017	674	16,1815	1,3221	0,0309	0,0000
#LAU1	147	Max	0,0702	108793	3978,4765	2,4447	0,1499	11,0248
(Cantons)		s.d.	0,0142	10382,3721	469,2132	0,2810	0,0201	2,0051
Bourgogne		**Avg**	**0,0402**	**1642734**	**49,0037**	**1,3881**	**0,0883**	**1,7620**
FR26		Min	0,0068	1134	5,2401	0,4947	0,0470	0,0350
#LAU1	177	Max	0,1302	151672	3461,8717	2,1852	0,1428	14,6057
(Cantons)		s.d.	0,0196	12856,1901	416,7042	0,4065	0,0204	2,5119
Nord-Pas-de-Calais		**Avg**	**0,0323**	**4042015**	**307,2870**	**0,4847**	**0,1183**	**0,5177**

TABLE 4 (Continued)

France			% Foreign-born population	Population (size)	Population density	Distance to nearest MA (weighted by Pop)	Unemployment rate*	LQ primary sector
FR30		Min	0,0028	4995	32,5200	0,0000	0,0519	0,0000
#LAU1	170	Max	0,1505	227533	7851,8553	1,4742	0,2053	6,7034
(Cantons)		s.d.	0,0226	22385,1966	1337,8949	0,3768	0,0327	1,0329
Lorraine		**Avg**	**0,0518**	**2350657**	**95,3005**	**3,3120**	**0,0987**	**0,6832**
FR41		Min	0,0039	257	8,9650	2,4021	0,0429	0,0000
#LAU1	156	Max	0,1996	119962	6739,3364	4,2161	0,1693	7,9325
(Cantons)		s.d.	0,0355	14400,5712	706,2086	0,3986	0,0232	1,6856
Alsace		**Avg**	**0,0767**	**1852325**	**214,5267**	**3,7058**	**0,0929**	**0,4965**
FR42		Min	0,0119	2777	42,9721	2,9497	0,0434	0,0135
#LAU1	64	Max	0,2035	272222	4719,7576	4,5970	0,1795	2,9046
(Cantons)		s.d.	0,0425	35452,8336	935,4518	0,4457	0,0235	0,6410
Franche-Comté		**Avg**	**0,0440**	**1173440**	**68,8358**	**2,0871**	**0,0915**	**1,1195**
FR43		Min	0,0080	311	10,8159	0,8811	0,0444	0,0000
#LAU1	116	Max	0,1766	115879	2781,6336	2,8960	0,1654	8,3358
(Cantons)		s.d.	0,0280	12132,3546	431,5224	0,5674	0,0247	1,5625
Pays de la Loire		**Avg**	**0,0218**	**3601113**	**102,0795**	**0,8338**	**0,0828**	**1,5947**
FR51		Min	0,0037	2219	18,6477	0,0000	0,0358	0,0000
#LAU1	192	Max	0,0596	287845	4024,9432	2,0773	0,1282	9,6138
(Cantons)		s.d.	0,0119	25924,5323	481,2756	0,5804	0,0179	2,0595
Bretagne		**Avg**	**0,0209**	**3217767**	**106,4181**	**2,3003**	**0,0793**	**1,7024**
FR52		Min	0,0040	883	18,2790	0,5483	0,0438	0,0320
#LAU1	188	Max	0,0912	1863833	404995,7013	7,9359	0,2321	9,9755
(Cantons)		s.d.	0,0160	136068,546	29525,6754	0,8690	0,0190	1,9790
Poitou-Charentes		**Avg**	**0,0282**	**1777773**	**63,0188**	**1,3278**	**0,0921**	**1,8973**
FR53		Min	0,0048	1066	8,6882	0,5029	0,0460	0,0000
#LAU1	158	Max	0,1559	87906	2240,6701	2,3044	0,1635	8,2186
(Cantons)		s.d.	0,0245	10682,4397	331,4386	0,4354	0,0201	1,9554
Aquitaine		**Avg**	**0,0438**	**3254233,43**	**71,1421**	**0,8274**	**0,0907**	**1,4616**
FR61		Min	0,0103	707	4,2474	0,0000	0,0386	0,0550
#LAU1	231	Max	0,2052	239399	4495,4680	1,8940	0,1537	13,9490
(Cantons)		s.d.	0,0274	19625,9591	606,2932	0,4834	0,0205	2,4830
Midi-Pyrénées		**Avg**	**0,0466**	**2903420**	**58,8194**	**0,6132**	**0,0903**	**1,8894**
FR62		Min	0,0031	137	4,0843	0,0000	0,0315	0,0175

TABLE 4 (Continued)

France			% Foreign-born population	Population (size)	Population density	Distance to nearest MA (weighted by Pop)	Unemployment rate*	LQ primary sector
#LAU1	286	Max	0,1270	447340	3499,6785	1,8973	0,1483	25,3259
(Cantons)		s.d.	0,0222	27738,4023	334,4758	0,4332	0,0218	3,6629
Limousin		**Avg**	**0,0448**	**741072**	**40,4329**	**2,0207**	**0,0812**	**2,4625**
FR63		Min	0,0038	1086	5,3342	1,4424	0,0371	0,0000
#LAU1	96	Max	0,1464	137758	1597,6241	2,6457	0,1220	12,5836
(Cantons)		s.d.	0,0258	14597,6973	205,7567	0,3461	0,0167	2,8847
Rhone-Alpes		**Avg**	**0,0647**	**6283541**	**133,3694**	**0,7157**	**0,0858**	**0,7735**
FR71		Min	0,0041	460	3,4372	0,0000	0,0185	0,0000
#LAU1	313	Max	0,3132	491268	9254,1331	2,0270	0,1590	9,5248
(Cantons)		s.d.	0,0408	32587,3087	1155,0943	0,4657	0,0246	1,8593
Auvergne		**Avg**	**0,0329**	**1350682**	**48,4469**	**1,6185**	**0,0817**	**2,3844**
FR72		Min	0,0026	171	4,8996	0,7032	0,0267	0,0204
#LAU1	156	Max	0,0950	140957	4460,2844	2,4250	0,1322	25,1412
(Cantons)		s.d.	0,0154	12324,7807	585,1242	0,3937	0,0194	4,6737
Languedoc-Roussillon		**Avg**	**0,0574**	**2670046**	**89,8417**	**1,5155**	**0,1190**	**1,2137**
FR81		Min	0,0066	852	4,3226	0,4707	0,0337	0,0699
#LAU1	170	Max	0,1128	264538	4352,6945	2,0339	0,1795	17,8671
(Cantons)		s.d.	0,0231	26215,2543	416,5847	0,3570	0,0282	3,2508
Provence-Alpes-Cote D'Azur		**Avg**	**0,0641**	**4916069**	**146,7584**	**0,4029**	**0,1040**	**0,5312**
FR82		Min	0,0105	388	3,6989	0,0000	0,0247	0,0000
#LAU1	193	Max	0,3243	850636	5209,8996	1,5811	0,1654	9,5932
(Cantons)		s.d.	0,0350	67727,0548	839,7869	0,3817	0,0235	1,8098
Corse		**Avg**	**0,0874**	**314486**	**34,7250**	**2,4274**	**0,0859**	**1,1456**
FR83		Min	0,0218	1041	4,7932	1,9339	0,0520	0,1661
#LAU1	43	Max	0,2135	66809	2065,2583	2,9962	0,1352	5,8181
(Cantons)		s.d.	0,0507	11564,8262	331,7249	0,2404	0,0175	1,4632

France	%Aged population (>65)	Dependency rate	%POP_3rdED	% Population at risk of poverty and exclusion	Average household income	Coast	
Ile de France	0,1300	0,5680	0,3731	0,1637	44952,72	No	
FR10	0,0548	0,4513	0,0491	0,0666	37994,73	% population living coastal LAU1	0,0000
#LAU1	0,2097	0,7666	0,5344	0,3292	54163,64	% of coastal LAU1	0,0000
(Cantons)	0,0281	0,0575	0,1064	0,0525	3928,35		
Champagne-Ardenne	**0,1744**	**0,6458**	**0,1873**	**0,1841**	**34702,27**	**No**	

TABLE 4 (Continued)

France	%Aged population (>65)	Dependency rate	%POP_3rdED	% Population at risk of poverty and exclusion	Average household income	Coast	
FR21	0,1096	0,5021	0,02	0,0570	30734,27	% population living coastal LAU1	
#LAU1	0,3066	0,8927	0,2456	0,2837	39108,64	% of coastal LAU1	0,0000
(Cantons)	0,0342	0,0674	**0,0306**	0,0357	1415,09		
Picardie	**0,1543**	**0,6367**	0,1928	**0,2421**	**31978,25**	**Yes**	
FR22	0,0885	0,5088	0,0291	0,1166	27878,59	% population living coastal LAU1	0,0432
#LAU1	0,2509	0,8125	0,2087	0,3362	37975,40	% of coastal LAU1	0,0677
(Cantons)	0,0287	0,0526	0,0351	0,0428	1437,76		
Haute-Normandie	**0,1633**	**0,6448**	0,1995	**0,2200**	**34645,58**	**Yes**	
FR23	0,0771	0,4480	0,0282	0,1166	31897,95	% population living coastal LAU1	0,2652
#LAU1	0,2323	0,7751	0,2653	0,3226	37812,37	% of coastal LAU1	0,2039
(Cantons)	0,0289	0,0516	0,0403	0,0443	1407,68		
Centre	**0,1912**	**0,6889**	**0,2089**	**0,1413**	**35269,78**	**No**	
FR24	0,1177	0,5266	0,0355	0,0709	29873,31	% population living coastal LAU1	0,0000
#LAU1	0,3363	0,9692	0,2065	0,2546	76127,79	% of coastal LAU1	0,0000
(Cantons)	0,0500	0,0852	0,0338	0,0364	3481,89		
Basse-Normandie	**0,1937**	**0,6937**	0,1927	**0,2094**	**37938,84**	**Yes**	
FR25	0,1131	0,4799	0,0276	0,1614	31745,62	% population living coastal LAU1	0,3990
#LAU1	0,3081	0,9749	0,3098	0,3506	40681,93	% of coastal LAU1	0,3265
(Cantons)	0,0432	0,0817	**0,0359**	0,0370	1611,69		
Bourgogne	**0,2054**	**0,6921**	0,1979	**0,1929**	**34898,14**	**No**	
FR26	0,1116	0,4660	0,0308	0,1185	28210,41	% population living coastal LAU1	0,0000
#LAU1	0,3426	0,9993	0,1974	0,3202	42288,50	% of coastal LAU1	0,0000
(Cantons)	0,0490	0,0841	0,0281	0,0368	1768,08		
Nord-Pas-de-Calais	**0,1467**	**0,6306**	0,2141	**0,2604**	**32494,83**	**Yes**	
FR30	0,0897	0,4002	0,0249	0,1337	29725,28	% population living coastal LAU1	0,1498
#LAU1	0,2240	0,7686	0,3103	0,4007	34426,64	% of coastal LAU1	0,1588
(Cantons)	0,0205	0,0506	0,0480	0,0544	795,03		
Lorraine	**0,1713**	**0,6172**	**0,2088**	**0,2293**	**34635,28**	**No**	
FR41	0,1204	0,3893	0,0269	0,0686	30222,98	% population living coastal LAU1	0,0000
#LAU1	0,2772	0,8311	0,2685	0,4088	38614,27	% of coastal LAU1	0,0000
(Cantons)	0,0258	0,0641	0,0357	0,0510	1378,81		
Alsace	**0,1590**	**0,5982**	0,2429	**0,2025**	**34441,74**	**No**	
FR42	0,1323	0,5014	0,0436	0,1140	30366,08	% population living coastal LAU1	0,0000

TABLE 4 (Continued)

France	%Aged population (>65)	Dependency rate	%POP_3rdED	% Population at risk of poverty and exclusion	Average household income	Coast	
#LAU1	0,2092	0,7087	0,2376	0,3385	34780,25	% of coastal LAU1	
(Cantons)	0,0185	0,0441	**0,0358**	0,0450	902,75		
Franche-Comté	**0,1766**	**0,6617**	0,2154	**0,1846**	**39300,87**	**No**	
FR43	0,1222	0,4975	0,0329	0,0662	37679,70	% population living coastal LAU1	0,0000
#LAU1	0,2959	0,8737	0,1998	0,3387	53115,07	% of coastal LAU1	0,0000
(Cantons)	0,0320	0,0658	0,0301	0,0520	2770,38		
Pays de la Loire	**0,1746**	**0,6797**	0,2268	**0,1744**	**34816,16**	**Yes**	
FR51	0,1051	0,4773	0,0304	0,1034	29760,87	% population living coastal LAU1	0,1438
#LAU1	0,3346	0,9596	0,247	0,2668	37930,26	% of coastal LAU1	0,1198
(Cantons)	0,0464	0,0803	0,0366	0,0283	1128,29		
Bretagne	**0,1891**	**0,6861**	**0,2445**	**0,1711**	**34419,53**	**Yes**	
FR52	0,1052	0,4285	0,0373	0,0721	30660,56	% population living coastal LAU1	0,7432
#LAU1	0,3614	1,0201	0,2729	0,3125	37308,50	% of coastal LAU1	0,5319
(Cantons)	0,0543	0,0895	0,0403	0,0342	1111,88		
Poitou-Charentes	**0,2108**	**0,6999**	0,2016	**0,1474**	**34615,89**	**Yes**	
FR53	0,1259	0,4300	0,0326	0,0993	28757,65	% population living coastal LAU1	0,2283
#LAU1	0,4125	1,1551	0,2275	0,2458	39679,34	% of coastal LAU1	0,1582
(Cantons)	0,0530	0,0982	**0,0354**	0,0303	1590,12		
Aquitaine	**0,1981**	**0,6644**	0,2427	**0,2079**	**36376,80**	**Yes**	
FR61	0,1018	0,4020	0,0379	0,1100	30817,35	% population living coastal LAU1	0,1775
#LAU1	0,4601	1,3127	0,2863	0,2669	90348,60	% of coastal LAU1	0,1039
(Cantons)	0,0503	0,0946	0,0377	0,0276	3912,40		
Midi-Pyrénées	**0,1942**	**0,6581**	0,2741	**0,2496**	**35993,36**	**No**	
FR62	0,1017	0,3824	0,0386	0,1167	24213,31	% population living coastal LAU1	0,0000
#LAU1	0,3757	1,0614	0,3598	0,3458	45433,06	% of coastal LAU1	0,0000
(Cantons)	0,0534	0,0916	0,0429	0,0404	2127,56		
Limousin	**0,2314**	**0,7078**	**0,2049**	**0,2768**	**28436,40**	**No**	
FR63	0,1429	0,5607	0,0330	0,1690	23188,24	% population living coastal LAU1	0,0000
#LAU1	0,3760	1,0321	0,1650	0,4435	183073,50	% of coastal LAU1	0,0000
(Cantons)	0,0539	0,0982	0,0231	0,0523	15987,38		
Rhone-Alpes	**0,1645**	**0,6458**	0,2780	**0,1427**	**40857,88**	**No**	
FR71	0,0579	0,3952	0,0345	0,0278	33512,75	% population living coastal LAU1	0,0000
#LAU1	0,3413	1,0263	0,4016	0,2621	53889,58	% of coastal LAU1	0,0000

TABLE 4 (Continued)

France	%Aged population (>65)	Dependency rate	%POP_3rdED	% Population at risk of poverty and exclusion	Average household income	Coast	
(Cantons)	0,0419	0,0739	**0,0534**	0,0338	2653,16		
Auvergne	**0,2079**	**0,6721**	0,2091	**0,1856**	**30465,92**	**No**	
FR72	0,1244	0,4656	0,0248	0,0985	26344,70	% population living coastal LAU1	0,0000
#LAU1	0,4450	1,3064	0,2903	0,5188	34902,13	% of coastal LAU1	0,0000
(Cantons)	0,0513	0,0925	0,0354	0,0464	1529,75		
Languedoc-Roussillon	**0,2001**	**0,6891**	0,2421	**0,2350**	**36351,02**	**Yes**	
FR81	0,1280	0,4700	0,0373	0,0789	31823,06	% population living coastal LAU1	0,2614
#LAU1	0,3429	0,9619	0,3556	0,3404	46334,95	% of coastal LAU1	0,1647
(Cantons)	0,0453	0,0769	0,0424	0,0412	1969,52		
Provence-Alpes-Cote D'Azur	**0,2006**	**0,6860**	**0,2592**	**0,1925**	**36517,51**	**Yes**	
FR82	0,1268	0,5106	0,0469	0,0995	26208,04	% population living coastal LAU1	0,6038
#LAU1	0,3528	1,0090	0,3029	0,3236	44957,85	% of coastal LAU1	0,2953
(Cantons)	0,0402	0,0721	0,0420	0,0360	2185,00		
Corse	**0,2051**	**0,6411**	0,2096	**0,3082**	**28907,78**	**Yes**	
FR83	0,1231	0,3748	0,0529	0,1821	30949,12	% population living coastal LAU1	0,9451
#LAU1	0,3669	0,9748	0,2031	0,4003	36704,28	% of coastal LAU1	0,8605
(Cantons)	0,0633	0,1068	**0,0267**	0,0393	1001,43		

suitable information for 3,690 *cantons* or LAU1 regions, grouped in 22 NUTS2 regions. The Italian and Spanish administrative division is very similar, with 8,092 *comuni* grouped into 21 NUTS2 regions in Italy and 8,114 *municipalities* grouped into 17 NUTS2 regions in Spain. Regardless of the spatial unit of analysis chosen, for all countries we can observe strong spatial disparities in both the dependent and independent variables.

3.2 | The model

As the dependent variable in the empirical models is the share of foreign-born population (at either regional or local level) and therefore a continuous variable takes values between 0 and 1, what we have is a fractional dependent variable. In our empirical model, the dependent variable y, $0 \le y \le 1$ will be explained by a vector of explanatory variables $x \equiv (x_1, x_2, ..., x_K)$. While in principle $E(y|x)$ can be estimated by linear regression, there is no guarantee that the predicted values of y lie within the unit interval, and it is more natural in this setting to use fractional regression techniques. Following Papke and Wooldridge (1996) we model this as:

$$E(y|x) = G(x\beta) \quad (1)$$

where $G(\cdot)$ is a known function satisfying $0 < G(z) < 1$ for all $z \in \mathbb{R}$ and β is a set of parameters to be estimated. Equation 1 is well defined even if y takes values of 0 or 1, which is important in our setting as there may be observations where y takes value 0. We will estimate a fractional probit model, so that $G(z) \equiv \Phi(z)$ where $\Phi(z)$ is the standard normal cumulative distribution function.

As the estimated coefficients do not have an intuitive interpretation, in our results we will present the marginal effects of the explanatory variables, $\frac{\partial y}{\partial x}$, which can be interpreted as semi-elasticities, namely the effect on the proportion of foreign-born population of a 1% change in the explanatory variable.

3.3 | Results by NUTS2 and LAU region

The results obtained for Equation 1 are reported in Table 5 for each country at *regional* level (NUTS2 regions) and then at *local* level (LAU). In the local level estimations, regional fixed effects have been included to control for possible correlation between the covariates and unobserved regional-level heterogeneity.

At regional level the results are significant for almost all the factors under scrutiny but show varying values and even opposite signs from country to country, confirming the well-known heterogeneity of the European regions and countries. Thus, results for the socio-economic determinants suggest that foreign-born population tend to concentrate in large regions beside the coast, not specialised in the primary sector and having high shares of educated population. Aside from these shared results, every other relevant factor seems to be playing a different role in every country.

While the *Size* of the region is important in all cases, foreign-born population in Spain seems to be attracted by large regions that offer good labour opportunities but that have lower income levels, as illustrated by the signs of the estimated marginal effects of the variables *Size* (+), *Income* (−) and *Unemp* (−), all of which are significant. In Italy, the significance and signs of the marginal effects of *Size* (+), *Income* (+), *Unemp* (−), *LQ1* (−) and *TerEd* (+) imply that the foreign-born population seems to prefer to concentrate in large and rich regions, and within those regions, in large localities with good labour opportunities not related to the primary sector, and where there is a highly educated population (i.e., cities). This result lends empirical support to the neoclassical theory of migration and confirms the economic/labour-based nature of the immigrant population in Europe. However, results for France are inconclusive both at regional and local level. The estimated marginal effects of the variables *Size* and *Income* are significant and positive at regional level but the sign for the variable *LQ1* is negative and positive for *Unemp* and for *65Pop*, which suggests that foreign-born populations tend to concentrate in non-rural regions with low economic prospects and an older population. Nevertheless, within those regions, the immigrant population is attracted to the large localities, specialised in rural activities and with little job opportunities (significant effect for *Size* (+), *LQ1* (−) and *Unemp* (+)), and strong demographic challenges (*65Pop* significant and positive).

In Urban and Regional Economics, *Distance* and *Size* go hand in hand and can be interpreted as proxies of non-economic effects that include the quantity and quality of public services or the access to man-made or urban amenities consistent with consumer city/creative class notions. Metropolitan areas also offer a wider range of employment options, as well as the chance for social interaction and convivial contact with co-ethnics (King & Newbold, 2007; Painter & Yu, 2010; Singer, 2004). While the NEG predicts that *Size* is a strong determinant of immigrant concentration, cities of a certain size also have some disadvantages that include tight labour markets, high housing costs or disamenities such as pollution or high crime rates. Allowing also for non-linearity in the variable *Size*, we can test the existence of disamenities such as pollution or crime rates beyond a certain size.

For the three countries, *Size* is statistically significant and shows the expected positive sign using both regional and local data. The results for Spain seem to be strongly in line with the New Economic Geography, with strong agglomeration economies and also diseconomies (proxied by the variables *Size and Size2)* and the variable *Distance* being a strong determinant in immigrant population concentration. In Italy or France, on the other hand, the weight of these determinants is less relevant regardless of the spatial unit of analysis.

In Italy, large regions with high levels of economic activity and income and labour opportunities (positive signs for *Size* and *Income* and a negative for *Unemp* using regional data) are the ones attractive to immigrant population, but within the Italian regions (i.e., at local level) the signs of each of the factors relevant at regional level change, and the parameter estimates are significant. This implies large concentrations of foreign-born population in the most dynamic and prosperous Italian regions, but within those regions they concentrate

TABLE 5 Average marginal effects for NUTS2 regions and LAU (localities): 2011

Model 1. Regional model						
	Spain		**Italy**		**France**	
Variables	**Estimate**	**Std. Err.**	**Estimate**	**Std. Err.**	**Estimate**	**Std. Err.**
Socio-economic and demographic variables						
INCOME	−0.3537***	0.0111	0.0533***	0.0038	0.0125***	0.0026
Unemp	−0.2430***	0.0062	−0.0405***	0.0009	0.0121***	0.0030
LQ1	−0.0382***	0.0009	−0.0056***	0.0006	−0.0265***	0.0006
65Pop	−0.3507***	0.0173	−0.0216***	0.0031	0.1658***	0.0058
Depend	0.0108	0.0601	0.0929***	0.0062	−0.2516***	0.0164
TerEd	0.1519***	0.0134	0.0548***	0.0011	0.0370***	0.0026
NEG variables						
Size	0.1120***	0.0045	0.0388***	0.0008	0.0055***	0.0002
Size (square)	−0.0722***	0.0027	−0.0200***	0.0007	−0.0050***	0.0002
Dist	−0.0061***	0.0007	0.0052***	0.0006	−0.0025***	0.0004
PopDens	−0.0237***	0.0008	−0.0020	0.0011	0.0026***	0.0002
Other geographical variables						
Coastal (dummy)	0.0089***	0.0014	−0.0069***	0.0010	−0.0124***	0.0006
Number of observations	4,935		7,674		3,690	
Wald test: χ^2statistic (p value)	$\chi^2_{12} = 137{,}199$ $(p < 0.000)$		$\chi^2_{12} = 655{,}531$ $(p < 0.000)$		$\chi^2_{12} = 327{,}861$ $(p < 0.000)$	
Model 2. Local model with regional fixed effects						
	Spain		**Italy**		**France**	
Variables	**Estimate**	**Std. Err.**	**Estimate**	**Estimate**	**Std. Err.**	**Estimate**
Socio-economic and demographic variables						
INCOME	−0.0788***	0.0003	0.0009***	0.0059	−0.0028	0.0033
Unemp	0.0147**	0.0072	0.0006**	0.0003	0.0575***	0.0021
LQ1	0.0055	0.0039	0.0083***	0.0006	0.0025**	0.0004
65Pop	−0.0126	0.0083	−0.0599***	0.0040	0.0224***	0.0036
Depend	−0.0103	0.0145	0.0465***	0.0059	−0.0496***	0.0074
TerEd	0.0020	0.0026	0.0076***	0.0012	0.0033**	0.0014
NEG variables						
Size	0.0010***	0.0003	0.0009***	0.0005	0.0022***	0.0005
Size (square)	−0.0002***	0.0000	−0.0001***	0.0001	−0.0003***	0.0001
Dist	−0.0014	0.0015	0.0026**	0.0004	−0.0049**	0.0024
PopDens	−0.0006**	0.0003	−0.0002	0.0024	0.0002	0.0004
Other geographical variables						
Coastal (dummy)	0.0471***	0.0048	−0.0033***	0.0013	−0.0088***	0.0015
Number of observations	4,071		7,917		3,688	
Wald test: χ^2statistic (p value)	$\chi^2_{29} = 1{,}849$ $(p < 0.000)$		$\chi^2_{33} = 7{,}477$ $(p < 0.000)$		$\chi^2_{109} = 11{,}320$ $(p < 0.000)$	

*Significant at 10% level.
**Significant 5% level.
***Significant at 1% level.

in localities with a strong presence of agriculture, ageing population and higher unemployment rates.

For France, the demographic structure of the regions and the localities (*cantons*) seems to have more weight than the NEG in explaining foreign-born concentration. The immigrant population in France tends to concentrate in regions and *cantons* with older-aged populations and high unemployment rates, i.e., regions that are not economically booming. Such a result might suggest the occupation of

immigrant population in providing services such as care of the elderly, or simply confirm that regions with a relatively young population structure will have tighter labour market conditions which may not have an appeal to the immigrant population. Contrary to the Spanish or Italian cases, this observed pattern of concentration can be helpful in alleviating the ageing issues and depopulation of rural/peripheral territories in France, but diminishes the chances of success of any strategy in search for spatial justice (Fratsea, 2019).

Understood in terms of opportunities and capabilities rather than as equal shares of resources, spatial justice describes how certain spatial patterns generate disfavoured areas with poor transport systems, low accessibility, inadequate housing and services, and how certain disadvantaged groups of people are eventually forced to locate to these places. Although studies were initially based in the cities, such as Lefebvre's "Right to the City" in the 1970´s or, more recently, in Dikec (2001) and Soja (2010), when applied to rural areas and peripheral areas "spatial justice is […] largely suggested to be dependent on the capability of residents to take their fate into their own hands" where local characteristics might interact with structural factors (Nordberg, (2020). Thus, immigrant population concentration in rural areas that are not very accessible (as shown by the negative and significant parameter for the *Distance* factor) or that offer low possibilities of social inclusion and labour inclusion (as shown by statistical significance of the *Unemployment* parameters for all countries under study) will reduce their ability to participate in society and "to reach and engage in opportunities and activities", which is a requirement for spatial justice according to Farrington and Farrington (2005).

Nevertheless, location decisions of the foreign population also seem to be strongly influenced by the existence of man-made amenities available in the large cities, captured by the distance to the nearest metropolitan area (*Dist*), for Spain and also for France. On the other hand, location decisions of the foreign population seem to be influenced by the existence of natural amenities in the region (proximity to the sea, as shown by the estimated marginal effects for the coastal dummy, *Coastal*) only in Spain. Our results for Italy and France are in line with previous studies that underline the predominance in Europe of the economic factors over the amenity-related factors (Faggian et al., 2012). Moreover, the variable used as a proxy for natural amenities in those countries is significant but shows a negative (−) sign. Obviously, other natural amenities could and should be accounted for, such as natural parks, forests, quality of the air, etc, but our results suggest differences in the relationship between immigrant population and natural amenities between Spain and the other two countries. Thus, only the results for Spain are in line with Gustafson (2008), who suggests that lifestyle motives and amenities are the most important factors explaining the location of EU-25 foreign citizens. In order to test such hypotheses, however, it would be necessary to have regional and local data on the different groups of foreign-born population.

Regarding the proximity to man-made amenities, in Spain and France a 1% increase in the peripherality condition of the region or distance to a large metropolis would decrease immigrant population concentration in the region by 0.14% and 0.49% respectively, which shows the weight exerted by the distance to size (*Dist*), as predicted in the NEG. In Italy, the estimated marginal effects of the variable *Dist* is significant but *positive*, opening the window to many suggestive interpretations that could be linked to the relatively high housing prices in the large metropolises, the existence of congestion problems in highly-populated regions, or the existence of a good supply of man-made amenities in Italian medium and small size cities.

Finally, the estimations were repeated after constructing continuous variables associated with the coastal condition of the region. The first of these reflected the percentage of the regional population living in a locality beside the coast (*%CoastalPop in the region*) and second is the share of localities beside the coast in the region (*%CoastalLAU in the region*). Using either of these variables we see from Table 6 that the results are consistent with the previous estimations and show the extent to which the coast exerts an attraction to immigration concentration in the three different countries.

Surprisingly, regardless of the variable chosen, in Italy a *region* located beside the coast is not a force of attraction to the foreign-born-population, and within coastal regions the *comuni* beside the coast are not an invitation to immigrant population. This may be explained by immigrants not occupying tourism-related jobs, the high prices of housing in locations beside the coast, and/or to the importance of non-amenity-related immigration in Italy. Coastal variables are significant at regional and also local level for Spain and for France, but opposite in sign, which may be a reflection of the type of immigration that each country has received over the last decade (work vs. leisure/retirement). For Spain we can observe a strong positive influence of the sea in attracting foreign-born population, and a significant but negative effect in France. Although this is an interesting and relevant theme, a comprehensive comparative study is strongly restricted by the availability of foreign-born population data and its characteristics at local level, as explained in the previous section. This

TABLE 6 Coastal variable at regional and local level

Spain		**Std Err**
Coastal dummy REGION	0.0089***	0.0014
%CoastalPop in the region	0.0086***	0.0008
%CoastalLAU in the region	0.0097***	0.0008
Coastal dummy LOCAL	0.0563***	0.0051
Italy		**Std Err**
Coastal dummy REGION	0.0089***	0.0010
%CoastalPop in the region	0.0086***	0.0002
%CoastalLAU in the region	0.0097***	0.0002
Coastal dummy LOCAL	0.0563	0.0014
France		**Std Err**
Coastal dummy REGION	−0.0124***	0.0006
%CoastalPop in the region	−0.0031***	0.0002
%CoastalLAU in the region	−0.0020***	0.0002
Coastal dummy LOCAL	−0.0084***	0.0018

Note:
***Significant at 1% level.

provides an opening for potential future exploration if variables capturing additional natural amenities can be constructed at local level.

Aside from the fact that the construction of other variables capturing natural amenities would be desirable in an analysis such as that presented in this paper, it should also be underlined that our coastal variables, which we interpret as capturing natural amenities, may be also capturing other features underlying immigrant location decisions. Some coastal areas, for example, are close to North Africa (Spain and Italy) or close to the UK (northern France). In the case of Spain and Italy, this proximity to North Africa may be a determining factor in some coastal locations for immigrant location, at least initially. In the case of France, the immigrant location decision may have less to do with access to natural amenities than proximity to the UK and a desire to eventually locate to that country. Again, more information on the make-up of the immigrant population would be required to for a more complete analysis.

4 | CONCLUSIONS

While there is an ongoing debate in European countries on the role of immigrant population in counteracting fiscal imbalances and positively contributing to the sustainability of the existing *national* pension systems, little attention has been given to the location of foreign-born population in terms of its contribution to the territorial ageing and depopulation issues currently faced within many EU Member States, both at *regional* and at *local* levels. Identifying the main factors of attraction to immigrant population in order to understand present migration concentration patterns and to anticipate future migration flows is crucial for the design of any regional or place-based policy to promote the settlement of new residents. This requires answers to a series of question. For example, what is behind foreign-born population spatial concentration within countries? Are immigrants attracted by the characteristics of the region or the specific characteristics of the locality where they settle in?

This paper has analysed the attractiveness of regions and localities to immigrant population in three large European countries. Distinguishing between socio-economic factors, amenity-based factors and factors related to the New Economic Geography, comparable results for the Italian, Spanish and French NUTS2 regions confirm how different and heterogenous EU Member States are between one another and between regions. Using the lowest level of administration for which data was available - *comuni* in Italy, *municipalites* in Spain and *cantons* in France - and covering the whole national territories, comparable results at local level also confirm the strong heterogeneity *within* European regions.

The findings suggest that place-based economic and labour market characteristics play a significant role in all countries, but with some surprising results that confirm the heterogeneity of European countries and regions in terms of both economic conditions as well as demographic structures and amenity-based factors.

In Spain, large regions and localities (cities) seem to be, ceteris paribus, more attractive than small ones, which points to the importance of agglomeration economies but also of man-made amenities linked to city size such as cultural and recreational infrastructure. However, for both regions and localities, *Size* does not seem to be the most relevant factor in foreign-born population attraction. The relevance of other factors such as average income both at regional and local level or unemployment rates might suggest a need for urban policies aimed at boosting the local economy and improving the quality of life of regions and localities.

It is not only economic factors that are important to determine the attractiveness of regions/localities but also their *location* in relation to the man-made amenities available in the large cities and to natural amenities such as the seaside. The latter has a significant and *negative* effect on foreign-population concentration in France and Italy. This is open to several interpretations and warrants further research, where the characteristics of the foreign-born population would be key variables.

Although in Europe most migrants belong to the working-age population and therefore are not a burden on public finances and are contributing positively to the pension system, their spatial concentration pattern within the three European countries analysed does not seem to be alleviating regional/local demographic challenges. This is the case at least in Spain and Italy, as there is a negative relationship between the share of aged population in one location and the foreign-born population concentration, using either the NUTS2 regions or the localities as the spatial unit of analysis. In other words, immigrant population has not been the solution for ageing and depopulating regions/localities in those two Southern European countries, and has even accentuated their demographic spatial imbalances. On the contrary, immigrant population in France concentrates in regions/localities with a large share of the population over 65 and away from the coast. France seems to be tackling its demographic spatial challenge but at the expense of more "structural (in)justice" and spatial justice as immigrant population tends to concentrate in areas "under systematic threat of domination or deprivation of the means to develop and exercise their capacities, at the same time that these processes enable others to dominate or to have a wide range of opportunities for developing and exercising capacities available to them" (Young, 2011).

The European Commission proposed in 2020 that demographic challenge should be included in the next 2021–2027 Multiannual Financial Framework. While waiting for a common scheme and specific policies, some EU countries have established strategies and policies aimed at tackling low birth rates, ageing and depopulation (see Margaras & EPRS European Parliamentary Research Service, 2020). In most Eastern European countries, immigrants are the fastest-growing population group and migration balances tend to be more decisive than birth-death rates or in- and out-migration for the evolution of population developments (be it at a country, a regional or a local level), so the decision of where immigrant population locates seems crucial.

In Northern European countries such as Sweden and Norway that have regional development problems related to the existence of sparsely-populated areas, there have been *refugee* immigration policies based on territorial dispersion and clearly related to regional

policies, urban segregation problems and integration policies (Andersson, 2003). In the UK, the principle of dispersing refugee and asylum seekers away from London and the South East has reigned in last decades. Local organisations and authorities often fail to provide effective support, which might translate "into a cycle of exclusion and dependency in their new community" and constrain their long-term opportunities only because they agreed to be dispersed in order to access financial support (Robinson et al., 2003).

However, in the EU only a relatively small percentage of immigrant population falls into the category of refugee and asylum seeker. In 2017, from the estimated 4.4 million immigrants to the EU-28, 2 million were born in an EU country. Although available at national level, basic characteristics of the immigrant population such as the country of birth or nationality are not available at local level, making it impossible to distinguish between intra-EU immigrants and immigrants from third countries. The privileged legal status of the EU-nationals residing in other EU countries based on the right of freedom of mobility and establishment guaranteed under Article 21 of the Treaty on the Functioning of the EU combined with the forecasted increase of intra-EU mobility in the future (Lutz et al., 2019) creates an urgent need for the compilation and creation of databases at regional and local level with detailed characteristics of the foreign-born population.

Understanding the factors determining the *attractiveness* of places to the immigrant population in general, and more specifically to certain types or groups of immigrant population, is a necessary condition for designing, setting or implementing tailored immigration policies or strategies by the European, regional or local governments addressing the issues surrounding spatial concentration.

Although more complex methodologies could be employed, such as multi-level analysis, spatial econometrics or geographically weighted regressions, among others, the model that we use combined with the richness of our dataset delivers precise estimates of the relationships between the location of immigrant population (expressed as the proportion of local population that this collective represents) and the explanatory variables considered. However, the interpretation of some of the explanatory variables is open to question. We have highlighted in our discussion, for example, that the coastal variable may be capturing factors apart from natural amenities. Indeed, the role of natural amenities, but also cultural or man-made amenities, in Europe should be deeper explored in future works. Once again, if attempting such a challenge, the heterogeneity observed at NUTs level for these indicators makes the use of a comprehensive and extensive data al local level for EU countries highly recommendable. While this is a huge task, such a dataset could be gathered by using GIS software.

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CONFLICT OF INTEREST

The author has no conflict of interest to declare.

DISCLAIMER

This document reflects only the author's view. The Commission is not responsible for any use that may be made of the information it contains.

ENDNOTES

[1] In this paper, "immigrant population" and "foreign-born population" are used indistinctly. For a discussion on the differences between those terms, see OECD (2006).

[2] According to Athanasoglou and Dijkstra (2014), the Région de Bruxelles-Capitale is the Belgian region with the worst score in the *Europe 2020 Regional Index* created to measure regional progress in meeting objectives set forth by the Europe 2020 strategy.

[3] See http://imajine-project.eu/

[4] See Table 1 for country and regional values for some selected EU countries.

[5] There are notable exceptions, such as the work of Algan et al. (2010), that combine both local data with detailed information of the immigrant population to study the economic integration for first and second generation of immigrants for Netherlands.

[6] The last Population Censuses for Italy, Spain and France were released in 2011.

[7] Migrant networks are defined by Massey (1988, 396) as "sets of interpersonal ties that link migrants, former migrants, and non-migrants in origin and destination areas through the bonds of kinship, friendship, and shared community origin." The lack of data at local level on the country of origin on the immigrant population precludes this factor from being tested.

[8] Note that the national Population Censuses offer data at LAU2 level but only every 10 years. The last Population Censuses were released in 2011 and data used in this analysis therefore does not include the recent large inflow of asylum seekers and economic migrants.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are openly available online (at http://imajine-project.eu/).

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