Determinants and Spatial Patterns of Counterurbanization in Times of Crisis: Evidence from Greece

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Abstract

The main purpose of this paper stems from the need for a systematic study of the multiple components that determine the factors that attract residents of urban centers to rural areas in Greece. Based on Multicriteria Analysis (Explanatory Factor Analysis and Hierarchical Analysis) of the last censuses data (2001-2011), the main types (spatial patterns) of Greek municipalities that have potential prospects for settlement are assessed. At the same time, age profiles of people who tend to enter specific types of municipalities are explored, highlighting both the attractiveness factors of the rural areas and what the internal migrant is looking for at the settlement destination. Distinct spatial patterns of counterurbanization can be identified in Greece based on age, physical amenities, employment structures, offer of services, degree of isolation, and the cost of living in the recipient location. Finally, the results identify that spatial, demographic, social and economic inequalities are decisive in the interpretation of internal migration flows.

Keywords

Human geography, demography, internal migration, Greek rural areas, Greece, pull factors, spatial patterns, multivariate analysis

Introduction

Migration, as a field of study, offers a wide range of bibliographical and research information. Its multidimensional nature makes it timeless and perpetual, and allows for its ongoing exploration. The interaction between the factors that determine the decision to migrate is extremely complex. Population and spatial balances are constantly changing, new cultural and social landscapes and living standards rise, and new forms of mobility emerge – motivated by a multitude of causes and incentives. Economic conditions differentiate equally from a spatial point of view, enhancing the dynamics of internal flows.

Migration in Greece, and more precisely internal migration, has remained a popular demographic trend of interest for many decades. The current economic crisis in Greece has caused policy reforms (Angelaki 2016; Kourachanis, Lalioti, and Venieris 2018; Mavridis 2018) and an obvious mismatch between the labor market and labor force qualifications (Labrianidis and Vogiatzis 2013). It is generally admitted that the impacts of this lengthy crisis are more pronounced in urban centers, especially in the two agglomerations of Athens and Thessaloniki, which concentrate around 36% of the Greek population (2011 census).

In this context, the crisis has led to new thinking on mobilities (Gkartzios and Scott 2015). Counterurbanization may be the answer to the major difficulties emanating from the economic crisis. The rural space has been transformed into a multidimensional space of goods and services consumption. It is essential to explore the migrants pull factors in the countryside because they constitute attractiveness factors to rural areas. Counterurbanization, like all types of migratory movements, causes demographic changes in the destination place. Consequently, population redistribution, leads to the revitalization of certain areas, especially remote areas. The volume of the counterurbanization cannot in any case be compared to that of urbanization. Nevertheless, it remains worthy to capture the motives of the rural 'in movers', as well as their spatial settlement patterns, in order to examine the possible benefits to social cohesion and population stabilization in remote and less privileged (i.e., in terms of basic amenities) areas.

This paper is structured into five sections. A brief overview provides the context of counterurbanization in Europe, mainly in times of crisis. Subsequently, the context of urban to rural migration in Greece is presented during the period 2001-2011. An introduction to the data follows, including the internal migrants pull factors, and the presentation of the methods of the analysis. The results are structured in two subsections: first, the main pull factors that attract newcomers to the Greek countryside are presented; and second, the spatial patterns of the counterurbanization in Greece are explored. Finally, basic conclusions of the analysis are presented.

The context of counterurbanization in Europe

Since 2000, an intense scientific discussion on population deconcentration has emerged. Despite the increasing academic dialogue on counterurbanization, the dominant flows highlight population shifts to urban spaces. Counterurbanization embraces many strands, but the main idea concerns human relocation from urban to non-metropolitan (rural, semi-rural) areas. Mitchell (2004) defined three main types of movements out of the urban space (ex-urbanization, displaced-urbanization, anti-urbanization) based on household employment location and motivation (environmental amenities

and/or economic need). In Europe, it is evident that the contribution of migration to counterurbanizationis more significant in the recent past than in the 1990's decade, with higher intensities located in the South and West countries (Rowe et al. 2019).

Prior to 2000, suburbanization and counterurbanization were the main mobility tendencies. For example, in Germany, after 2000, the urban exodus changed radically and a re-urbanization process was observed, further reinforced by the economic crisis (Gans 2017). The Spanish urban to rural movement started after the 1980s, although the gentrification of rural areas was connected to poverty and not the desire for rural living (Alonso González 2017). At the beginning of the economic crisis, the urban sprawl stopped and a suburbanization development trend was initiated until 2013, which retained the urban exodus (Gil-Alonso, Bayona-i-Carrasco, and Pujadas-i-Rúbies 2016). In Spain, a relationship exists between residential strategies and rural transitions, involving many incentives, such as the family cycle, the sense of integration into a community, childhood echoes (Esscribano and Rivera 2007), and the degree of urban identity of the remote rural area (Pallarès-Blanch, Prados Velasco, and Tulla Pujol 2014).

In France, the share of the rural population declined from 2006 to 2018 (Statista 2020). The urban-rural mobilities observed at this period mainly concerned retirement movements (White 2018). In the United Kingdom, since 1991, a 'counterurbanization cascade' has taken place due to a downward trend in the urban-rural hierarchy (Champion 2001) – led, in part, by state policies for rural activities, decentralization of employment and housing opportunities. According to Champion (2001), the English preference for the ideal rural life was, however, the dominant incentive for counterurbanization. Retirees are actively involved in this type of mobility (Stockdale 2017) in the United Kingdom. This pattern, however, changed radically from 2001-2011, where both the intensity and the direction of the urban to rural flows decreased (Lomax et al. 2014).

Longitudinal data in Norway suggest that urban to rural shifts have remained at a minimum level, and that the migrants' motives concern family bonds and economic worries (Grimsrud 2011). An empirical survey using microdata in Denmark (Hansen and Aner 2017) revealed limited urban to rural mobilities in the era of crisis. In Denmark, professional rehabilitation is an important aspect that determines settlement to a non-urban location, especially from highly educated people. As regards families' rural in-migration in Denmark the decision to relocate centers on housing opportunities and the desire to secure a child-friendly environment close to nature (Aner 2016). In Sweden, register data for the period 2003-2013 reveal mobility patterns among families to non-urban recipient locations. More specifically, families with men engaged in arts and crafts prefer to live in rural areas (Sandow and Lundholm 2020). A significant mobility trend has been observed in the Netherlands. Seeking a child-friendly environment, households with young children are moving out of the city of Amsterdam towards new non-urban residential locations (Karsten 2020).

Greece contributes significantly to the urbanization/counterurbanization debate. Recent studies on internal migration indicate a trend to leave urban centers for rural regions (Gkartzios 2018; Pratsinakis, Hatziprokopiou, and King 2017), but with a lesser frequency compared with other European countries (Duquenne, 2009; Gkartzios, 2013). At a local level (NUTS 2), attempts to look for balance in Greek internal mobility during the period 2009 (starting 31 December) to 2011, when the last population census took place, indicate that Attica and Thessaloniki are the only metropolitan regions with negative numbers, while other regions depict either slightly more positive or explicitly positive numbers in terms of internal migration balance. This result indicates a possible exodus from these large urban centers towards other areas.

During the decade of 2001-2011, the movement of people ranging from 10 years of age and older from urban areas to rural ones rose to 27% (Anastasiou and Duquenne 2017). Studies on urban to rural mobilities in Greece during the economic crisis are enriched by findings of field-related studies. Internal migrants who relocate to rural areas during the economic crisis (Gkartzios, Remoundou, and Garrod 2017; Remoundou, Gkartzios, and Garrod 2016) attribute their decision to the belief that rural spaces generate new opportunities, especially among younger and unemployed households (Gkartzios and Scott 2015), not exclusively in the primary sector (Anthopoulou et al., 2017; Daudon and Vergos, 2015; Kasimis and Zografakis, 2013). Furthermore, there is evidence that rural space cultivated solidarity among groups of people during crisis (Anthopoulou, Kaberis, and Petrou 2017).

It appears, therefore that, during the last decade, some rural areas have effectively benefited from new residents coming from urban centers. Inflows like these are an opportunity for local communities, considering that newcomers constitute an important human capital and can contribute actively to the development of new activities. This is especially the case among newcomers who had maintained close cultural and social bonds with people in their native, rural territory while living in urban areas.

At this point, an important question emerges: Does internal migration and more specifically counterurbanization contribute to population redistribution or not? Population shifts are often relatively balanced, resulting in an imperceptible population redistribution (Rowe et al. 2019). Furthermore, this is a nonlinear function where more interpretative variables must be considered, such as socioeconomic (Anastasiou 2020), seasonal residences (Adamiak, Pitkänen, and Lehtonen 2017) and urban development (Rees et al. 2017).

Data and methods

The measure of entry flows and detection of areas with high intensity

The present analysis was implemented at the municipal level (LAU 1), based on Kapodistria's administrative classification (2001). The territorial organization in Greece (Kallikratis Program) was redefined in 2011 (O.J. 87A/7-6-2010 2010), reducing the number of municipalities from 1,034 to 325.[1] Nevertheless, the previous scale of analysis was chosen because it offers more detailed spatial information, especially on internal migration (see Map 4, p.89, which shows the administrative regions in Greece, NUTS-2 level).

According to the 2001 and 2011 Censuses data, the internal migration examined in the present study is based on movements that exclusively originated from urban areas to non-urban municipalities. Migration within urban areas as well as within rural areas is not taken into consideration. For each municipal unit, the intensity of internal migration was estimated as the ratio between the inflows of individuals 20 years and over in this municipal unit to its total population of the same age,

$$Intensity_{inflows} = \frac{\text{inflows}_i}{\text{reference population}_i} \quad (1)$$

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[1] The last administrative reform (2010) in Greece has conduced to the fusion of the former 1,034 municipalities (established in 1998 through the Kapodistrian Law) in a limited number of new large municipalities (335). Each new municipality is divided into municipal units, corresponding to the former Kapodistrian municipalities. All the analysis is based on the municipal units.

Map 4: Administrative Regions of Greece

Source: Authors' compilation

where the reference population in municipal unit$_i$ = Greek population 20 years and over, and i = 1, 2,...,1034 municipal unit (former Kapodistrian municipalities).

In accord with previous research by Anastasiou and Duquenne (2015), three main zones regarding the origins of new citizens installed in rural regions were highlighted: (i) areas of Western Greece, Southern Greece, as well as the Aegean islands, all under the broader influence of Athens as the nearest larger urban center; (ii) the majority of rural regions in Western and Central Macedonia, under the influence of Thessaloniki; (iii) and a large part of Eastern Macedonia and Thrace, Ipiros and Thessaly, which depict a more complex situation with very limited entries from Athens and Thessaloniki. The Greek islands (including the Ionian Islands) tend to attract new migrants from Attica, while migrants in Central Macedonia are, to a large extent, from Thessaloniki. The overall picture of these migration tendencies, however, is more diversified since the role of urban centers is particularly pivotal (regional capitals, as well as medium-sized cities). Internal migration exclusively

from urban areas towards rural zones focuses on two spatial models: a) neighboring regions, and b) regions within the same municipality.

**Map 1: Intensity of inflows (entries) to rural areas from urban centers, 2001-2011**
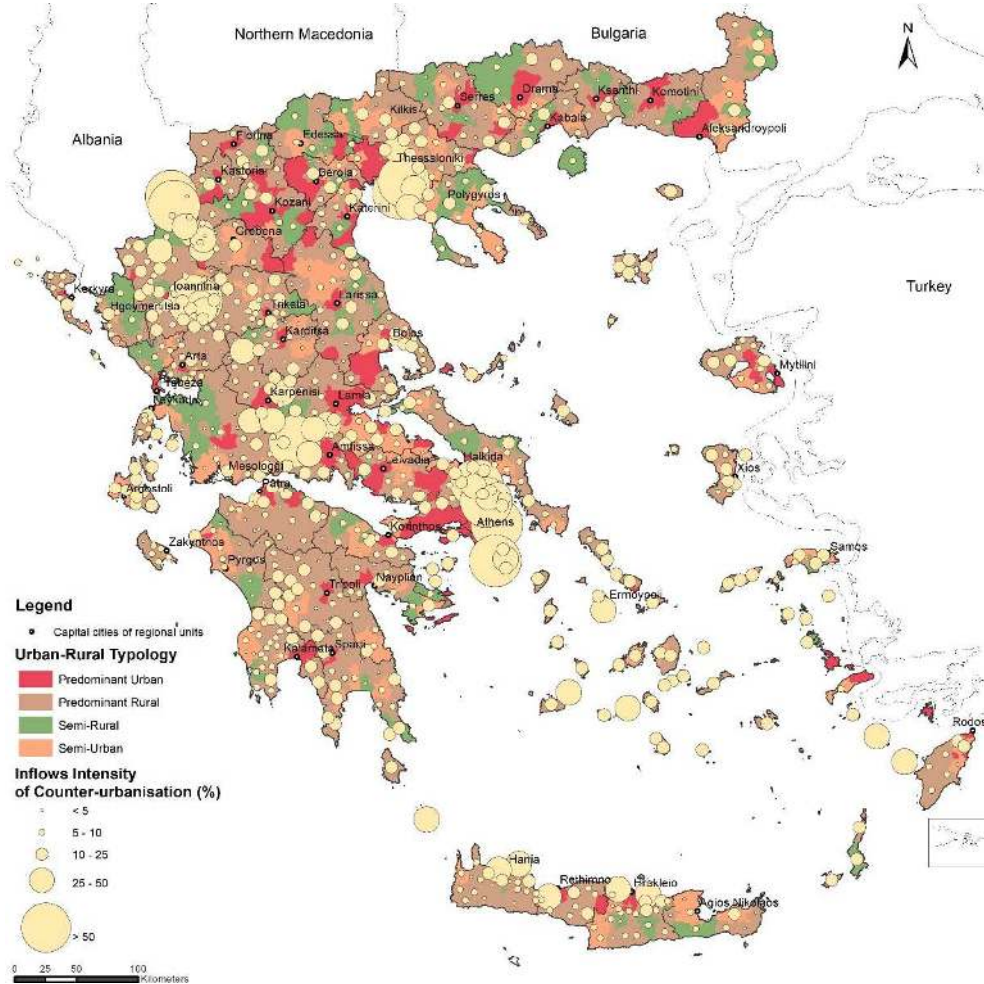
Source: Anastasiou and Duquenne, 2017

The intensity of internal migration reflects the importance of the inflows coming from urban areas and can be interpreted as the potential attractiveness of each region. This intensity during the decade 2001-2011 is characterized by high variability (see Map 1). New spatial dynamics, therefore, emerge – especially if we consider that newcomers create new households in these regions.

Great intensities are observed in suburban regions. Particularly interesting is the obvious high intensity in suburban areas, especially around the two metropolitan centers of Greece, Athens (see Map 2), and Thessaloniki. In these regions, migration exceeds 50% of the total reference population, which means that in 2011, one resident out of two moved during the decade. Particularly attractive are the rural regions of Crete and, specifically, the regions that are close to the cities of Chania, Rethymnon and Heraklion.

Map 2: Intensity of inflows (entries) to Attica's rural areas from Athens, 2001-2011
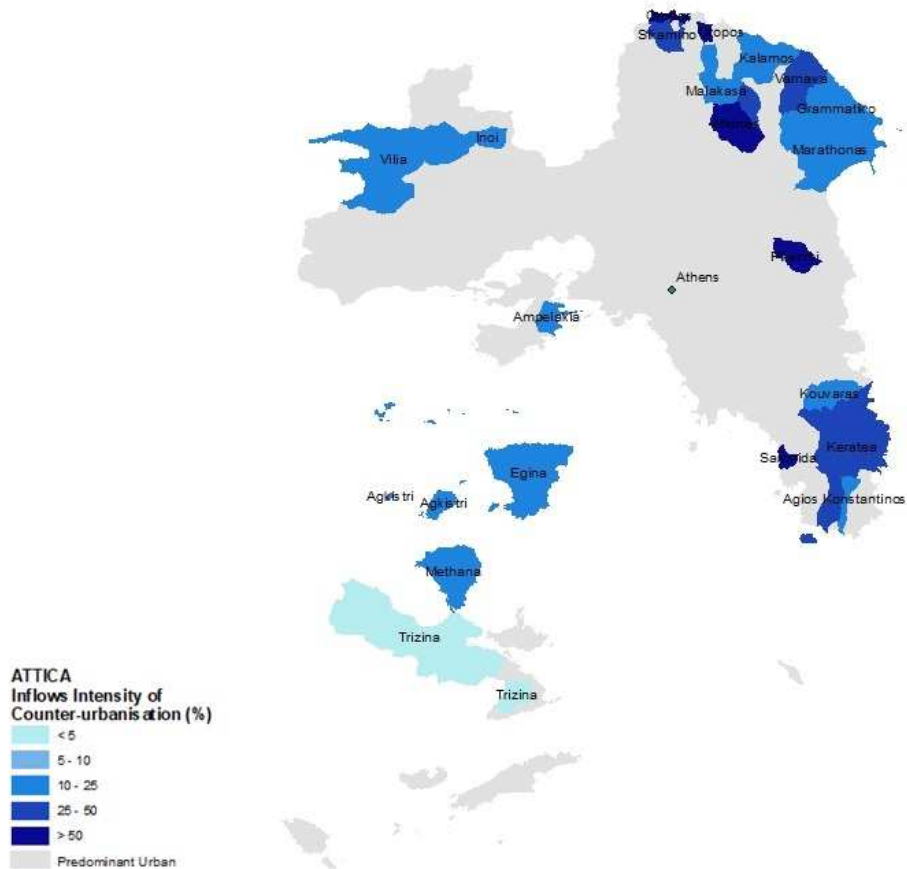
Source: Authors' compilation

The intensity of mobility is significantly differentiated in the rest of Central Greece, especially Ipiros. Overall, 244 spatial entities are characterized by a medium level of attractiveness, and roughly 80% of these areas refer to regions exclusively rural or semi-rural, while only 20% of these areas reflect semi-urban areas. The majority of these rural regions are not close to any urban center and are mainly located in the mountainous regions of the country. This better explains that counterurbanization in Greece is not simply an expansion of the city towards the neighboring area. Population shifts are definitive for the examination of this phenomenon and consequently re-structure rural areas socially, economically and population-wise.

The category for which the intensity of mobility is less significant (index < 5%) consists primarily of rural and semi-rural regions (166), with an average population of 4,000 residents. The second category with low-intensity migration (5-10%) concerns 357 former Kapodistrian municipalities from which 17% are semi-urban areas, 11% semi-rural and 72% predominant rural. What makes this category distinctive is that it consists of five capital cities that do not have a pure urban identity (Pyrgos, Grevena, Zakynthos, Edessa, Agios Nikolaos), which are also less attractive areas.

Finally, 247 municipalities (LAU 1) present a relatively high inflow intensity (>10% of the destination's total population) during the 2001-2011 period (Anastasiou and Duquenne 2017). Part of these non-urban municipalities is mountainous, coastal or insular facing a broad framework of specific problems arising from their location in an outlying region.

Consequently, the identification of spatial patterns of rural attractiveness which is proposed below concerns the spatial units (247) for which internal migration can be considered as sufficiently significant.

Data and variables on migrants' pull factors

The particular characteristics of migration, as well as the multiple factors lying behind the attractiveness of the place of destination, have been the subject of an increasing number of studies (Castells 1989; Harris and Todaro 1970; Hyndman 1997; Massey et al. 1993; Silvey 2006; Stark and Bloom 1985). According to Push-pull factors theory (Lee 1966), the migratory decision-making originates from the socio-economic fabric, and it separates a person's push factors from both their place of residence (preliminary conditions of abandonment), from a person's pull factors to a new destination (what a migrant is seeking in a destination). Pull factors *de facto* add value to the migration decision as they aim to improve the migrants' quality of life.

Table 1: Main migrants' pull factors

Prospects	Components	Relevant Literature
Living Conditions	Residence	(Napolitano and Bonasia 2010)
	Health care	(De Haas 2011; Mathauer, Mathivet, and Kutzin 2017; Sen 1999; WHO and Unicef 2018)
	Racial proximity	(Sen 1999)
	Safety and security	(Bonasia and Napolitano 2012; Napolitano and Bonasia 2010; Sen 1999)
	Access to education	(Singh, 2012; De Haas 2011; Sen 1999)
	Population density	(Napolitano and Bonasia 2010; van Oort, Burger, and Raspe 2010)
	Cost of living	(Cebula 2014)
Economic Opportunities	Unemployment	(Etzo 2011; Piras 2012)
	Employment opportunities	(Guerreiro 2018)
	Productivity potential (GDP)	(Etzo 2011)
Social Integration	Access to information	(Okorie, Ojebuyi, and Macharia 2019; SAGE 2019)
	Demographic Dynamics	(Piras 2012; Zheng and Yang 2016)
	Destination size	(Pellegrini and Fotheringham 1999; Zheng and Yang 2016)
	Services provision	(Castles 2002; Sassen 1998)
	Family and friends networks	(Simpson 2017; The World Bank 2006)
Geographical Proximity	Geographical Location	(Duquenne and Kaklamani 2015; Duquenne, Kaklamani, and Dritsas 2017)

Source: Authors' compilation

Table 2: Selected variables (*)

Variables	Description	Mean value	SD
Var_01	Young Population Ratio	13.8	*3.3*
Var_02	Replacement Ratio	77.2	*33.0*
Var_03	Percentage of Households with the capability of Internet Connectivity	27.1	*14.3*
Var_04	Ageing Population Ratio	195.8	*142.9*
Var_05	Age – Dependency Ratio	59.6	*15.3*
Var_06	The proportion of employees in Retail Trade	139.7	*42.9*
Var_07	The proportion of New (after 2000) to Old (before 2000) Residences	17.5	*12.3*
Var_08	The proportion of employees in Agriculture, Forestry and Fisheries	205.3	*139.7*
Var_09	The proportion of Accommodation Service Activities	7.1	*11.1*
Var_10	The proportion of Food and Beverage Service Activities	15.2	*12.7*
Var_11	The proportion of employees in Accommodation and Food Service Activities	117.2	*79.8*
Var_12	The proportion of Sports Activities and Amusement and Recreation Activities	0.4	*1.0*
Var_13	The Proportion of Retail Trade Activities	16.2	*10.3*
Var_18	Private tutoring for middle school students	0.8	*1.8*
Var_20	Number of settlements	15.5	*12.6*
Var_22	Altitude weighted by Population	247.2	*272.7*
Var_23	Altitude weighted by Area	294.4	*272.7*
Var_26	Cost of Heating Oil	1.3	*0.0*
Var_27	Cost of Diesel Fuel	1.8	*0.0*
Var_28	The proportion of vacant to non-vacant residences	125.0	*90.3*
Var_29	The proportion of Personal Service Activities	1.2	*1.5*
Var_30	The proportion of Crop and Animal Production Activities	2.8	*3.2*
Var_31	The proportion of Employees in Other Service Activities	17.3	*6.8*

Variables	Description	Number of units on total	% of total units
Var_14	Island municipal unit	154	62.3
Var_15	Existence of Health Centers	189	76.5
Var_16	Existence of High School	186	75.3
Var_17	Existence of Post Office	129	52.2
Var_19	Distribution of municipalities by population		
	< 200	10	4.0
	< 500	10	4.0
	< 1000	20	8.1
	< 2000	32	13.0
	< 5000	92	37.2
	< 10000	53	21.5
	> 10000	30	12.1
Var_21	Existence of Police Station	193	78.1
Var_24	Coastal Municipal unit	150	60.7
Var_25	Existence of Primary Schools	221	89.5

Four main prospects have been identified to enhance the attractiveness of a destination and thus contribute to its emergence as a migrant destination (see Table 1, p.92). Migrants' prospects focus on finding decent living conditions, on the existence of economic opportunities, social integration and geographical proximity.

Potential determinants of migration that concern living conditions are highly connected to housing stock, housing age, primary and secondary education structures, private tutoring services, the existence of primary care health services, police stations, the cost of heating oil and diesel fuel, and population density. Economic opportunities reflect various variables, such as unemployment rates, spatial concentration of economic activities, and proportion of employees in several economic sectors. Social integration is a multidimensional component that accumulates variables, such as households with the capability of internet connection, ageing, young population ratio, replacement ratio, and public service delivery at the local level. The physical proximity perspective implies spatial and geomorphological attributes, such as altitude, the number of settlements in a region, the geographical proximity to an urban area, and the littoral and insularity of spatial units. Finally, 31 variables were selected (see Table 2, p.93 and Appendix) that directly or indirectly capture migrants' perspectives on choosing migratory destination. Due to the limited availability of data at the administrative scale which used for the analysis, the following empirical research of pull factors is limited, and consequently, some pertinent variables corresponding to the components aforementioned as GDP and racial proximity, were omitted.

Methods

The methodology for this study stems from the need for a systematic study of the multiple components that determine the factors that attract migrants from urban centers to rural areas in Greece. This approach calls for the use of fitting methods for determining the variables and relationships among them. Given the complexity of this problem, data condensation methods (factor analysis EFA) are considered to be the most adequate concerning the econometric models to avoid hypothetical 'deterministic' relationships (Brown 2009). The methodology applied in the current study – in order to find reliable answers to the central questions and examine the hypotheses regarding potential choices of migrants – is based on the combination of two methods of analysis:

(1) First, a multi-criteria analytical method is applied to determine the geographical, population, cultural, social, and economic traits of spatial entities. It should be mentioned that these aspects are integral for structuring the dynamic traits of each area, as well as their disadvantages, that is, those of a non-urban area. The multi-criteria analysis is the basis for the retrospective base of this study to determine the main factors that attract migrants to specific regions. Applying EFA does not require a pre-determined theoretical model (Brown 2009) given that the main goal of this method is to highlight the internal structure between variables and consequently to detect the interdependent relations between these variables (multidimensional analysis).

(2) Second, according to the results from the Explanatory Factor Analysis, the main patterns of regional entities, in which internal migrants consistently migrate, were investigated through hierarchical classification. This refers to an overall estimate of the movements that took place during the last two population censuses in Greece (2001 and 2011).

For the analysis both statistical analysis tools and Geographic Information Systems software were used. These tools facilitated analysis and improved visualization of results through thematic cartography.

Results

In the present model, the numbers of the statistic index KMO (=0.809 >0.6) indicate high correlations between the data; that is, according to the criterion of adequacy, the carrying out of the factor analysis is affirmed and positively verified since the data reflect significant homogeneity. The data are correlated and, as a result, the variables were reduced with relatively low loss of information.

The method allows for a significant reduction in the initial dimensions, from 31 variables to 7 (77%), and consequently offers the opportunity to better interpret the measurable aspects of attractiveness regarding rural areas as destination choices of migrants. Moreover, the seven principal components (new composite variables) explain 70.5% of the total variance – a very satisfactory level.

Rotated Component Matrix (see Table 3, p.96) allows for the explanation of the factors in this study since it contains the needed data to identify and describe them, according to the variables that have a significant factor loading (>0.4). Variables with high loadings also have a higher correlation with the factor, and consequently, their role in the interpretation of factors is especially important. At this point, it is important to mention that determining and interpreting the principal components can also be subjective according to each researcher's concerns. This human aspect plays an important role so much in the demonstration, as well as the design and interpretation of factors that will emerge (Rummel 1988).

First component: population dynamics (17.5% of total Variance)
The first complex component that refers exclusively to the presence and development of the population in the 247 municipal entities reflects a higher degree of intensity entries of internal migrants. Variables regarding the population and demographic indexes are merged in the composition of this component. The main component has high factor loadings in the indexes regarding younger ages, vocational choices work in wholesale and retail, the analogy between newcomers, and the number of households that have access to the internet. The loadings of these variables are positive – suggesting positive correlations among them. Also, the aging index and the age dependency ratio as well as work in the primary sector demonstrate high, negative loadings. The indexes that reflect the young age of population are considerably high and reflect the dynamics of new entrants in the labor market. In areas with population dynamics, it can be observed that the permanent population does not age, and also that the productive age groups do not provide care for a large majority of dependable groups (0-14 years of age and >65). Thus, the absence of a primary sector is low with regards to the intense presence of wholesale and retail trade, high rates of internet access and the large analogy of newcomers. This first component, therefore, reflects the presence of younger groups of the population, and more specifically the potent and productive ages at 17.5% of the total variability of the migrant population.

Second component: degree of specialization in touristic activities (12.3%)
Influenced by the framework of the economic crisis, the Greek financial network is consistently under attack. The regions in which variable economic activities develop and function add a clear momentum in these areas. Areas that depict intense numbers in the secondary sector have large orientations towards tourism, and these activities explain the development of trade in these areas. Economic activities with high correlation rates in relation to 1,000 citizens, namely housing establishments, entertainment, sporting activities and retail trade impact the composition of the second factor. The rise in numbers that is observed in these economic fields results in an increase in the population who work in these fields. The third component of this analysis possibly brings about another interpretation

regarding regions rich with activities related to tourism, and regions where the tertiary sector is highly developed.

Table 3: Rotated Component Matrix

Variables	H² (a)	Population Dynamics	Specialization in Touristic Activities	Establishment of Services/ Structures	Geographical Exclusion	Cost of Living	Possibility of Habitation	Specialization in the Primary Sector
Var_01	.783	.800						
Var_02	.733	.790						
Var_03	.770	.783						
Var_04	.817	-.768						
Var_05	.762	-.720						
Var_06	.664	.692						
Var_07	.490	.674						
Var_08	.664	-.639						
Var_09	.849		.882					
Var_10	.806		.765					
Var_11	.719		.762					
Var_12	.624		.727					
Var_13	.789		.573					
Var_14	.691		.506					
Var_15	.643			.776				
Var_16	.711			.731				
Var_17	.619			.709				
Var_18	.558			.671				
Var_19	.775			.615				
Var_20	.629			.562				
Var_21	.499			.557				
Var_22	.883				-.841			
Var_23	.849				-.838			
Var_24	.740				.700			
Var_25	.507				.540			
Var_26	.822					.875		
Var_27	.848					.841		
Var_28	.769						.796	
Var_29	.754						.743	
Var_30	.702							-.760
Var_31	.494							.490
% of Total Variance		17.5	12.3	11.5	10.5	8.0	6.1	4.6

(a) Communality Index

Third component: the establishment of services/ structures (11.5%)
This component contains the variables that reflect the basic structures and services of a spatial entity. Among many, some important ones are health centers, mail and courier companies, police stations, schools and private learning centers, all of which are closely linked to each other in many positive

ways. There is diversity in the different kinds of services listed under this component's analysis, and as a result, this generates an important background that makes these services independent, while also increases – at important levels – the life quality profile of citizens. The areas that belong to this third analytical component are significantly advantageous with regard to the quality of life. These structures are positively linked with the size (population-wise) and the numbers of the habitable networks present in these regions. The third component, however, obscures to an extent the number of disparities that stem from the geographical place, especially with regard to the rate of satisfactory fulfillment of the citizens' basic public services. Concluding, the third component justifies that the structures and services are positively correlated with the size (population-wise) of a municipal unit.

Fourth component: geographical exclusion (10.5%)
The fundamental core of the fourth component of this study is the altitude calculated by area and by population. As is evident by its high loading, this component refers to a factor that reflects the mountainous character of the areas under study. In an attempt to analyze these regions, a positive factor is the absence of primary educational structures. Isolated areas lack sufficient educational facilities; however, it is in the exclusively isolated areas that the problem is heightened. In these areas, we can see a lack of educational structure since there is an absence of primary schools. The high mountainous range of these areas in combination with the lack of primary education is, therefore, an indication that these geographically isolated territories greatly discourage the movement of populations to these areas, especially if we are talking about families with underaged members. The combination of the variables under examination leads to the conclusion that these areas are exclusively high in altitude, significantly isolated from urban centers and lowland regions.

Fifth component: cost of living (8.0%)
The fifth component of this study indirectly reflects the cost of living at 8% of the total variation. It is comprised of two variables: the cost of heating oil, and the cost of diesel fuel. These variables have considerably high loadings and correlate with the factor both positively and negatively. Despite the limited number of variables, this factor describes the cost of living in these regions with significant accuracy. The increase in the costs of fuels causes a decrease in the purchasing power of each household, which needs more funds to cover gas and fuel. This is not the only increase in cost that a consumer faces. Fuels are integral for the production of other products, and the increase in their cost directly leads to an increase in the cost of other products that depend on fuels. Further, this increase also causes an increase in the cost of transporting these new products, consequently impacting retail prices, particularly the prices of basic, everyday products. In this way, through a chain of interdependent products and their prices, the overall cost of living is radically increased. Some degree of differentiation in the general increase of fuel and gas prices between households located in isolated areas is particularly interesting since this group usually purchases fuels at higher prices.

Sixth component: possibility of habitation (6.1%)
The sixth component is related to access of citizens in housing opportunities and personal care services. This component assesses the ability of each area to provide newcomers with direct and easy accessibility to housing, considering that the possibility of habitation is closely related to the balance between newcomers and vacant housing units. It refers to an index that not only points to the possibility of inhabiting specific areas, but also is concerned with the provision of basic services to each household given the presence of specialized businesses and services of personal care. There is no doubt that the way of living of the incoming population is very different from the way families lived a decade ago. The emergence of new pressing needs, the fast paces of daily life, as well as the intensified tendencies towards 'the modern' and the need for an urbanized lifestyle have brought about significant changes to the values and norms of the traditional family. According to this line of

thinking, new needs have emerged with a persistent emphasis on personal care, especially in families with young children, as well as younger members of the society who call attention to the heightened need for personal care. Businesses that are good examples of personal care are hair salons, laundromats, spas, etc. The sixth component of this study reflects these everyday personal care needs of the population and holds 6% of the total variation.

Seventh component: specialization in the primary sector (4.6%)
The last component indicates a classic index that depicts the degree of specialization of each rural municipal unit in the primary sector and represents 4.6% of the total variation. It describes an index that illustrates the agricultural identity of an area through the use of agricultural and animal stocking products. The negative correlation of this component, which describes the provision of various services, reflects a less differentiated economic network since it is in these areas that we observe a lack of services that look towards entertainment, trade and other more specialized fields. The higher the primary sector firms in a municipal unit, the more traditional this area's identity is in a social context. This component indirectly touches upon the unique traits of agricultural communities and their differences as to social organization, that is, the ways in which the relationships of people are structured economically, socially and politically.

The order under which the seven components of this analysis were presented is based on each component's impact in the total variation. There is also a clear and specific hierarchy of these components as to the significance in understanding the degrees to which each area attracts incoming migrants. The fact that the component with the highest loading is the population dynamic component is easily explained since this is a result of a certain degree of attractiveness of these areas in terms of living conditions and the potential for work. Put differently, the population dynamic reflects a pragmatic, socio-economic potential of each area, since the age profile of the incoming population is the factor that determines the needs that emerge in this area. The diversity regarding the economic network, the provision of structures and services, as well as the geographical isolation of areas follow this component with significant rates, while the agricultural identity of a unit and the inhabitability follow with lower rates. This partly results from the fact that the inhabitants of such areas usually own family property and choose to live there.

Illustration of distinct spatial patterns of settlement
All municipal units in this study, as mentioned, are the regions migrants choose to migrate to. The analysis in clusters does not aim to establish a hierarchy of attractiveness between these 247 spatial units since the intensity of entries is significantly high in all these areas; rather, analyzing these clusters provides us with an understanding of the factors that impact a migrant's choice to settle in a new location. The basic assumption at this point is the fact that depending on each area the factors dictating their degree of attractiveness can differ.

Having as variables the factors derived from the analysis of the primary components, the classification of these 247 spatial units into categories will be pursued. A basic prerequisite that is established from the factorial analysis above is the need for the seven components to be independent, that is, they cannot be interrelated. The hierarchical clustering method of Ward was applied with the Euclidean distance metric, in order to obtain compact clusters.

From this classification, five types of areas emerged (see Table 4, p.99; Table 5, p.102; and Map 3, p.101), and consequently five spatial patters that reflect areas, which according to their specific traits, become the choices of settlements for migrants, for various reasons. Each cluster is based on the analysis of the tree diagram and the classic threshold of maximum loss of information (20%). The

classification was tested with five, six, and seven clusters, and their cross-examination was conducted with charts. The credibility of this classification in clusters is verified through an analysis of the average numbers of the factors for each class, for the spatial differentiations and the main traits of each pattern to be estimated.

The spatial patterns that emerged reflect the regions identity and incorporate a combination of variables for all 247 municipal entities. Every pattern represents a type of region with common traits, which conveys homogeneity between these areas while also differentiating them in terms of other patterns. The analysis was based on the evaluation of the seven dimensions of the core areas; it was also conducted after the implementation of t-tests. This is a particularly significant process since it allows assessing the extent to which these clusters can be differentiated conceptually.

Table 4: The impact of settlement factors in spatial patterns

Spatial Patterns	Municipal Units (%)	Geographical Exclusion	Population Dynamics	Establishment of Services/ Structures	Possibility of Habitation	Specialization in Touristic Activities	Specialization in the Primary Sector	Cost of Living
1st	13.8	o	+	+ +	+	–	o	o
2nd	19.9	+	+	–	o	–	+	–
3rd	15	– –	– –	o	–	o	+	o
4th	26.4	+	+	o	o	+	o	o
5th	24.8	+	–	o	o	o	–	–

+ + : very positive impact, + : positive impact, o : no impact, –: negative impact, – – : very negative impact

Source: Authors' compilation

First pattern: settlement of new populations and families in sub-urban areas with high service provision
The areas that belong in the first pattern are directly close to urban centers and are not geographically isolated, something that explains their high population dynamic. The majority of these municipal entities are sub-urban, and they are large municipalities in Greece. Two thirds of the migrants that move to these areas belong to highly dynamic population groups (20-44); however, the total intensity of the entries to this first pattern is not very high (13.6%). Moreover, there is a significant provision of services and structures. The economic network does not vary since there are only a few fields that develop in these areas. An important percentage of the population is involved in the primary sector. The newcomers who settle in these first pattern areas usually take advantage of the high provision of services, the replacement of older groups by the younger and economically active groups, and the various opportunities present in the primary sector. At this point, it is fair to say that the settlement of incoming migrants in this category of areas is partly related to owning (and involvement with) family land, and because of that a 'back-to-the-land' situation often happens (Koutsou, Partalidou, and Petrou 2011). The availability in terms of housing also has a positive impact, since there is a housing surplus in these areas, and the cost of living is manageable. All the above characteristics, combined with the accessibility to urban centers and the benefits that they bring, make this pattern an ideal space of settlement for internal migrants. The first pattern is, therefore, a group that encompasses significant urban traits.

Second pattern: settlement of new households to rural non-isolated areas
This pattern describes non-isolated geographical regions. They are, in most cases, easily accessible lowland areas, which are dynamically involved in the primary sector, without much differentiation in

their economic network. They are particularly attractive because of their lower living cost; housing in these areas is relevantly easy in terms of availability and age. Their population mainly consists of younger groups of people, who have more vocational opportunities in the primary sectors, upon which this spatial pattern centers on. In these areas, there is, however, a significant inadequacy regarding infrastructure and service provision, something that is nevertheless balanced by the fact they are easily accessible. This pattern, therefore, describes a cluster of agricultural areas that are not isolated, with low quality of life. This results from the concentration of daily life of the working population around agricultural activities. Population entries of people up to 44 years of age make approximately 75% percent of the total incoming population. This pattern refers to a choice where proximity to urban centers and vocational opportunities play the most important role.

Third pattern: settlement of pensioners to mountainous isolated areas
Combining the lack of population dynamic in conjunction with the high intensity in migrants that belong to the age group of 55 years and beyond, it can be observed that the third pattern encompasses isolated, mountainous areas, with agriculture and stock-breeding as the primary economic activities. The population group that typically selects this pattern as their area for settlement are pensioners (43% of total incoming entries). Specialization in the primary sector is significantly positive in this case, something that is well-explained by the mountainous character of these areas and by extension the geographical isolation of these municipal units. Given the fact that they are mountainous and isolated areas, new housing opportunities and self-care service provisions are scarce, as is diversity in their economic network. These areas are, therefore, typically less suitable for the settlement of families, especially with under-aged members, since primary education is also inadequate. Education is an unequivocally integral matter for parents and is a significant factor in the choice of settlement from the migrants' perspective. The high level of attractiveness that this pattern demonstrates, however, (total intensity around 20%) can be explained by the fact that these areas have potential in collective consumption services and infrastructure, as well as a relatively more affordable cost of living. The third pattern thus conveys a generally suitable settlement if one thinks about retirement, and it is highly possible that this pattern can also relate to the place of origin of pensioners.

*Fourth pattern: settlement of new families on islands*
The fourth pattern consists of non-isolated islands, in the sense that they can be inhabited and are relatively accessible or close to urban centers or mainland Greece. This pattern represents 25% of municipal units and consists of a group with comparatively important advantages since no negative factors are involved in these communities. There is an array of positive factors that reinforce the decision of migrants to relocate to the Greek islands. Their population is not particularly aged, and there is a high level of population dynamic in these areas. The cost of living on islands is not particularly high since there is diversity in economic activities, despite islands being disconnected from the mainland. Another equally important advantage in these areas is the relative provision of institutions and services, something that makes the lives of the population easier, which in turn involves less spending from the perspective of the citizens. Their vocational choices depend – to a large extent – on tourism, the primary sector, and this explains the fact that these populations consist of 'dynamic-age-wise' groups. More specifically, a majority ranges between the ages of 20-44 and holds a total of 65% of the total number of entries. The possibilities for housing, the provision of self-care services and the combination of these aspects with other benefits of islands inform the choice of younger groups to choose these areas for their settlement. The geographically advantageous location of these areas contributes to the development of a strong economic network because of the consolidation of touristic activities, such as establishments, housing, entertainment and retail trade. The combination of this developed image of an economic network in conjunction with the affordable

cost of living makes these areas attractive centers for internal migration in Greece, and more specifically, the migration of young, dynamic population groups.

Fifth pattern: settlement of the young population and new families on coastal and specific regions.
Even though the regions in the fifth pattern are somewhat or exclusively rural, the incoming migrants

Map 3: Spatial Patterns of Settlement in Rural Regions
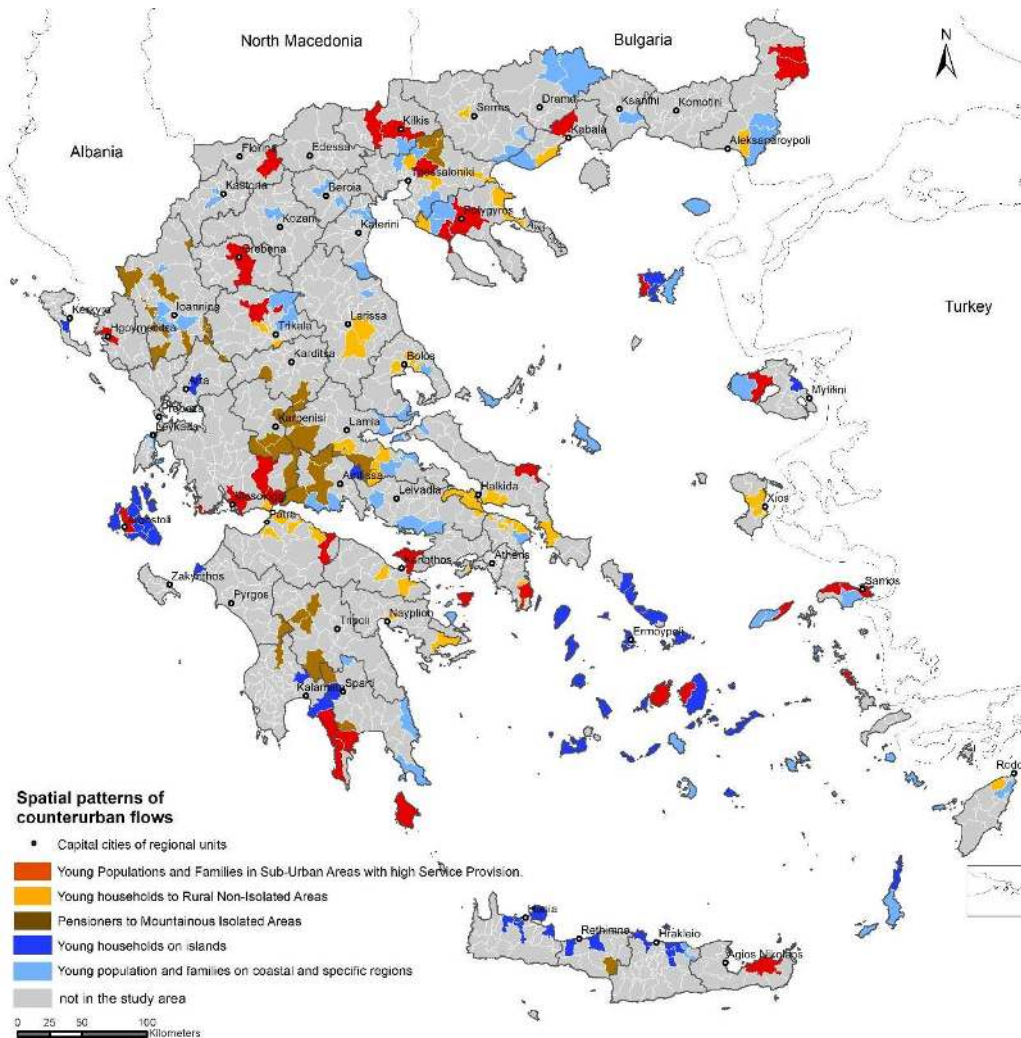
Source: Authors' compilation

do not see the primary sector as the field which can provide vocational opportunities and other possibilities to them. On the contrary, different economic activities are sought. Typically, these regions attract older populations, which are usually not economically active. Migrants aged more than 65 years usually choose these regions as their place of settlement and this is easily explained by the fact that these regions are not isolated, they are affordable, and they are also adequate in terms of service provision.

Apart from older populations, which are the vast majority in these regions, a significant number of young migrants (intensity of entries 60% and ages range between 24 and 44) also chose these areas. This trend can be attributed to the geography of the regions in this pattern, coastal regions, and prairies, which allow access to primary education. Another trait is also important in assessing the

motive for choosing these regions: the fact that several families decide to return to their place of origin. Despite the fact that the fifth pattern shows disadvantages in many a field, it is important to highlight that the affordable ways of living and the accessibility to nearer urban centers counterbalances these regions' drawbacks, and as a result, these regions attract internal migrants at an intensity of 15%.The alternative spatial patterns with regards to internal migration in Greece are based on three main aspects: a) different degrees of intensity, b) different age structure, and c) geographical diversification.

Table 5: Data Composition for Spatial Patterns

Spatial Pattern	Intensity (%)	Most Frequent Age	Spatial Attribute	Description
1st	13.6	20-34 & 35-44	Semi-Urban	Settlement of the young population and families in semi-urban areas with high service provision
2nd	17.1	35-44	Rural - Non-Isolated	Settlement of young households to rural Non-isolated areas
3rd	20.3	55-64 & 65+	Mountainous Isolated	Settlement of pensioners to mountainous isolated areas
4th	16.7	35-44	Islands	Settlement of young families on islands
5th	15.1	20-34 & 35-44	Coastal	Settlement of young population and young families on coastal and specific regions

Source: Authors' compilation

Conclusions

In the last decade, Greece experienced a very critical and unstable phase of its history, in which population shifts were observed at local levels, compelled to a degree by the specificities of this economic and political landscape. Findley (1977) refers to two core approaches when it comes to migration: an active one (willing migration), and a passive one (migration based on need). In the first case, migration is the result of a willing and logical search for better conditions under which one can live and work. In the second case, which reflects need, migration results from a 'passive' reaction to the circumstances that make an individual's life difficult, compelling them to search for new and better living conditions, and eventually relocate. Often these approaches interact with each other and their interactions lead to a holistic understanding of the causes, circumstances and motives for the decision to migrate, as well as the decision for specific locations of settlement.

This paper presented the traits that give shape to the dynamics and drawbacks of rural areas. At a descending scale of significance, complex factors behind the choice of migrants for specific regions are the population dynamic, specialization of touristic activities, service provision, geographical isolation, cost of living, possibilities for habitation, and specialization in the primary sector. Through a systematic examination of multiple components that interpret the counterurbanization trends that potential migrants to Greek rural areas experience, it can be asserted that the possibility for a region to become an attractive destination lays in three important aspects: the intensity of entries into a region, demographic structure of its citizens, and its geographic identity. Spatial and social disparities are integral both for the choice of a region, and at a broader sense, for the interpretation of the flows of internal migration.

The high intensity of entries into specific rural regions indicates the existence of an event that is characterized by multiplicity, according to which people tend to move to regions with high migration flows (Bauer, Epstein, and Gang 2000; Epstein 2002). It is possible then that the settlement to Greek rural regions is boosted, to a degree, by herd behavior – a tendency to imitate and therefore adopt the decisions of other migrants. The geographical diversity that makes Greece's spatial entities unique connects to its provisions and development of activities. Finally, the regions with a diversified demographic network typically tend to attract potential migrants, since this becomes a good prerequisite for covering basic levels of social life.

Finally, examining all the above we can conclude that "Not everyone goes everywhere". The results from the present study identify the need younger people feel to move to regions with high levels of service provision and simultaneously low costs of living – regions where opportunities in the primary sector are abundant, with high degrees of proximity to urban centers, and with good potential to fulfill personal care needs. The new emerging households tend to settle on semi-urban, coastal, or island regions with structures that capture the basic needs of a family with underaged members. Pensioners tend to relocate to mountainous and generally isolated regions where the cost of living is especially low, and where there are possibilities for involvement in agricultural or stock farming activities. There is no concrete method of measuring the possibility of returning to one's place of origin. Therefore, this study has highlighted that some regions, despite their lack of a dynamic population development between 2001 and 2011, are actually the place of origin of the population that has recently relocated to these regions.

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Appendix

Variables	Description	Source	Calculations
Var_01	Young Population Ratio	ELSTAT, census 2011	$\dfrac{population\ 0-14\ years}{total\ population}$
Var_02	Replacement Ratio	ELSTAT, census 2011	$\dfrac{population\ 10-14\ years}{population\ 60-64\ years}$
Var_03	Percentage of Households with the capability of Internet Connectivity	ELSTAT, census 2011	*No calculations*
Var_04	Ageing Population Ratio	ELSTAT, census 2011	$\dfrac{population > 65\ years}{population\ 0-14\ years}$
Var_05	Age – Dependency Ratio	ELSTAT, census 2011	$\dfrac{population\ 0-14\ years}{population\ 15-64\ years}$
Var_06	The proportion of employees in Retail Trade	ELSTAT, Labor Force 2011	$\dfrac{employees\ in\ Retail\ Trade}{total\ employees}$
Var_07	The proportion of New (after 2000) to Old (before 2000) Residences	ELSTAT, census 2011	*Own calculations*
Var_08	The proportion of employees in Agriculture, Forestry and Fisheries	ELSTAT, Labor Force 2011	$\dfrac{employees\ in\ Agriculture,\ Forestry\ \&\ Fisheries}{total\ employees}$
Var_09	The proportion of Accommodation Service Activities	ELSTAT, Statistical Business Register, 2011	$\dfrac{activities\ in\ Accomondation}{total\ activities}$
Var_10	The proportion of Food and Beverage Service Activities	ELSTAT, Classifications of economic activities	$\dfrac{activities\ in\ Food\ and\ Beverage\ Service}{total\ activities}$
Var_11	The proportion of employees in Accommodation and Food Service Activities	ELSTAT, Labor Force 2011	$\dfrac{employees\ in\ Accomondation\ \&\ Food\ Service}{total\ employees}$
Var_12	The proportion of Sports Activities and Amusement and Recreation Activities	ELSTAT, Statistical Business Register, 2011	$\dfrac{activities\ in\ Sports\ \&\ Recreation}{total\ activities}$
Var_13	The Proportion of Retail Trade Activities	ELSTAT, Statistical Business Register, 2011	$\dfrac{activities\ in\ Retail\ Trade}{total\ activities}$
Var_14	Island municipal unit	Own calculations	*Categorical: 1=Yes, 2=No*
Var_15	Existence of Health Centers	Ministry of Health	*Categorical: 1=Yes, 2=No*
Var_16	Existence of High School	Ministry of Education	*Categorical: 1=Yes, 2=No*
Var_17	Existence of Post Office	Hellenic Post	*Categorical: 1=Yes, 2=No*
Var_18	Private tutoring for middle school students	Ministry of Education	*Count*
Var_19	Distribution of municipalities by population	ELSTAT, 2011	*Categorical: 1-7, where 1=municipalities with population<200 residents and 7= municipalities with population>10000 residents*
Var_20	Number of settlements	ELSTAT, Register of Municipalities, Communes and Settlements, 2011	*Count*
Var_21	Existence of Police Station	Hellenic Police, 2011	*Categorical: 1=Yes, 2=No*
Var_22	Altitude weighted by Population	(Duquenne and	*Continuous variable*

		Kaklamani 2010)	
Var_23	Altitude weighted by Area	(Duquenne and Kaklamani 2010)	*Continuous variable*
Var_24	Coastal Municipal unit	Own calculations	
Var_25	Existence of Primary Schools	Ministry of Education	*Categorical: 1=Yes, 2=No*
Var_26	Cost of Heating Oil	Fuel Price Observatory	mean value for the year 2011
Var_27	Cost of Diesel Fuel	Fuel Price Observatory	mean value for the year 2011
Var_28	The proportion of vacant to non-vacant residences	ELSTAT, census 2011	own calculations
Var_29	The proportion of Personal Service Activities	ELSTAT, Statistical Business Register, 2011	$\dfrac{activities\ in\ Personal\ Services}{total\ activities}$
Var_30	The proportion of Crop and Animal Production Activities	ELSTAT, Statistical Business Register, 2011	$\dfrac{activities\ in\ Crop\ \&\ Animal\ Production}{total\ activities}$
Var_31	The proportion of Employees in Other Service Activities	ELSTAT, Labor Force 2011	$\dfrac{employees\ in\ Other\ Services}{total\ employees}$