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The region and its multiple images

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Abstract

The growth or decline of a region depends on its power to "pull" and retain both business activities and the right blend of people to run them; this pulling power depends on what we call the Image of the region. Hence, it can be argued that, at each point in time, the region "sends out" its Image and, depending on its impact on the receivers (both employers and employees), the region may be considered attractive or non-attractive. The available evidence suggests that all the receivers groups or in other words the potential movers react similarly to a basic set of factors; more precisely, a set of minimum standards, largely common to all the potential movers, must be satisfied if the region is to be considered as a potential choice by any of them. On the other hand, the potential movers may belong to a number of different groups that have a different type of interaction with a region and as result each of these groups is likely to have a different image of the particular region. Hence, a region does not have a single image, but multiple ones.

To reconcile these two views we refine the concept of a region's Image by introducing the following two concepts: the Basic Image and the Specific Image. The Basic Image of a given region measures the degree to which the region satisfies a set of basic criteria, common for all movers. A region satisfying those criteria is considered by all potential movers as worth a closer examination and as a potential final choice. On the other hand the Specific Image of a given region, as perceived by a particular group of potential movers, measures the degree to which movers belonging to that particular group consider the region as their best final choice.

A detailed exposition of the concept of a region's Basic Image has been presented in some of the authors' earlier papers. In the present paper emphasis will be placed on a region's Specific Image as perceived by the various groups of potential movers. More precisely:

- The groups of potential movers will be determined.
- The factors affecting each group will be identified and ways for their measurement will be suggested.
- The form of each Specific Image function will be defined.

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The theoretical findings will be applied to a number of regions and their Basic and Specific Images will be calculated. The main results will be presented and discussed

1. Introduction

The development of an area depends on its ability to attract business units and the proper workforce to run them. Mobility, however, is largely a voluntary process. Business units and employees move into or out of a given area on the basis of their perception of the area's relative attractiveness. Their mobility is a function of a multitude of factors. In the early stages of a country's industrialization the dominant factors are economic. However, as the industrialization process progresses, the role of the social factors is gradually strengthened and in some cases becomes decisive. Environmental factors are usually the last to be considered when people realize that the rapid growth of the socioeconomic subsystem has begun to overload some of the capabilities of the ecosystem locally as well as globally.

Mankind's relationship with the environment has gone through several stages, starting with primitive times in which human beings lived in a state of symbiosis with nature, followed by a period of increasing mastery over nature up to industrial age, and culminating in the rapid material-intensive growth pattern of the 20th century which adversely affected natural resources in many ways, thus becoming a serious impediment to further growth.

Environmental assets provide various types of services to human society, ranging from simple amenities to irreplaceable life support functions and there is an urgent need for the people to incorporate the consequences of those assets' degradation into their decision making process. The scope of the present paper is to:

- Give a brief overview of the concept of sustainable development.
- Present a measure of a region's overall attractiveness.
- Identify the main groups of potential movers into and out of a region.
- Present a measure of a region's attractiveness as perceived by those groups of movers.
- Apply the theoretical findings on the 13 Greek regions and discuss the results.

2. Sustainable Development

The concept of development is used to express the achievements or the positive changes in the basic elements of human socio-economic behaviour. Those who seek a scientific definition for development disregard the fact that development is not only a technical subject. It has an important ideological content and reflects a strong set of values. Thereby the term "development" is identified in the 20th century with the terms economic growth and industrialisation. Economic policies have typically measured development as the growth of per capita income or consumption. Discussions about the limits and implications of economic growth and the need for a social dimension of growth have been recurrent in economic history. Recently, a new environmental dimension of development has been added to the economic and social and the blending of all three dimensions in defining sustainable development has been examined.

Sustainable development is not a new concept. J.S. Mill (1883), one of the great economists of the 19th century showed his concern by focusing on issues such as the ultimate point to which society is tending by its industrial progress and the conditions mankind will have to face when this progress seizes (Nelson, 1995). Many years later, R. Solow (1991), another leading and Nobel prize winner economist, focusing on the same subject stated that sustainability must be understood as an obligation to conduct ourselves so that we leave to the future the option or the capacity to be as well off as we are. Furthermore, he urged the decision makers to take all the measures needed to ensure a distributional equity between the present and the future.

The territorial organisation of economies and societies is undergoing a dramatic change. Globalisation, technological innovation, migration and population ageing make it increasingly difficult to predict the future of

regions. Sustainable development is a strategy by which communities seek economic development approaches that also benefit the local environment and quality of life. It has become an important guide to many communities which have discovered that traditional approaches to planning and development are creating, rather than solving, societal and environmental problems. Where traditional approaches can lead to congestion, sprawl, pollution, and resource overconsumption, sustainable development offers real, lasting solutions that will strengthen our future. Sustainable development provides a framework under which communities can use resources efficiently, create efficient infrastructures, protect and enhance quality of life and create new businesses to strengthen their economies. It can help us create healthy communities that can sustain our generation, as well as those that follow us.

3. Measuring Sustainable Development

Many tools and methodologies have been used over the past years to measure the progress towards sustainability. According to Munda (2006), the majority of them make use of a single: (1) measurable indicator such as GDP per capita, (2) dimension i.e. one of the economic, environmental or social dimensions, (3) scale of analysis, (4) objective, e.g. maximization of economic efficiency; (5) time horizon.

Many approaches for measuring sustainable development have led to very detailed frameworks, from which long lists of indicators have been derived. The criteria, according to which indicators are selected, are exhausting in literature. Key requirements include (i) the rigorous connection to the definitions of sustainability (Pezzey, 1992), (ii) the selection of meaningful indicators representing holistic fields (Custance and Hillier, 1998), (iii) reliability and availability of data for quantification over longer time horizons (Barrios and Komoto, 2006).

A number of researchers include to their measurement frameworks aspects such as social capital (Putnam, 2000), personal capital (Tomer, 2003), freedom rights (Sen, 1999) well-being (Helliwell, 2006) which are seen as important inputs leading to significant socioeconomic outcomes, in order to explain differential sustainable development

On the basis of all the above, it can be said that sustainable development means ensuring economic efficiency while respecting social equity and safeguarding ecological integrity. Hence, measuring sustainable development means going beyond a purely economic description of human activities - at a minimum, requires integration of economic, social and environmental concerns. This is not an easy task and requires the design of a specific tool. Hence, in this paper we introduce the concepts of Basic and Specific Image, measures of an area's overall progress towards sustainable development which encompass all the three dimensions; economic, social and environmental and suggest ways of measuring it.

4. The concept of a Region's Image

The ability of a region to attract business activities and competent people to run them , depends on what we call the Image of the region. The term image is currently used in a variety of contexts. Image is a sum of beliefs, ideas and impressions. It is the total impression an entity makes on the minds of people and exerts a powerful influence on the way people perceive things and react to them (Dowling, 1998; Dichter, 1985). Marketing literature refers to place images and makes the distinction between projected and received images (Kotler et al., 1993). Projected place images can be seen as the ideas and impressions of a place that are available for people's consideration. Those images reach the potential mover by a transmission or diffusion process through various channels of communication, which themselves can alter the character of the message. The received place images are shaped from the interaction between these projected messages and the movers' own needs, motivations, prior knowledge, experience, preferences, and other personal characteristics. In this way, potential movers create their own unique representations or mental constructs, resulting in their own personal images of place (Ashworth and Voogd, 1990; Gartner, 1993; Bramwell, and Rawding, 1996).

This paper defines Image in an alternative way as a function of objectively measured factors affecting the movement of both business activities and employees. Obviously a region's Image may be improved through marketing and promotion but only temporarily. The only lasting improvement is the "real" and objective endorsement of the region's Image attributes which increases in competitiveness and makes it a "sticky place" for business and people (Markunsen, 1996; Malecki, 2004).

Different people hold quite different images of the same place. Because a region may be related to a number of potential movers' groups that have a different type of interaction with it, each of these groups is likely to have a different image of the particular region. Hence, a region does not have a single image, but multiple ones (Dowling, 1998). Based on the above, it can be argued that, at each point in time, the region "sends out" its Image and, depending on its impact on the people (both employers and employees), the region may be considered attractive or non attractive.

One may argue that since people "receiving" the image of the region belong to various distinct groups (i.e. employers, unskilled workers, skilled workers etc.) and are sensitive to different factors, the impact of the region's Image on the members of each particular group will be different (Kotler et al., 1999). This is a plausible argument but, on the other hand, evidence suggests that all groups of potential movers react similarly to a basic set of factors; more precisely, a set of minimum standards, largely common to all groups, must be satisfied if the region is to be considered as a potential choice by any of them. Every community must provide some basic standards of services to attract and retain people, business and visitors. Admittedly, no uniform standards exist. Hence, every region, in order to be/remain attractive, should determine the standards pertaining each time and try to meet them (Kotler et al., 1999).

To reconcile these two views we refine the concept of a region's Image by introducing the following two concepts: the Basic Image and the Specific Image.

The Basic Image of a given region measures the degree to which the region satisfies a set of basic criteria, common for all movers. A region satisfying those criteria is considered by all potential movers as worth a closer examination and as a potential final choice.

The Specific Image of a given region, as perceived by a particular group of potential movers, measures the degree to which movers belonging to that particular group consider the region as their best final choice. This Specific Image, however, although a function of specific factors appealing mainly to members of that group, is primarily a function of the Basic Image.

Concluding, it should be mentioned that the growth of a region may be expressed both in absolute or relative terms. In the latter and most interesting case, the development pattern of a given region is compared to that of a hypothetical region, which is referred to as the "typical" region and expresses, as far as possible, an average of the main regions of a similar type to that under study. In this paper, we shall be looking at the relative development patterns of a region. Hence, all the factors affecting its Images (Basic and Specific) should be expressed in relative terms, as compared to the corresponding values of the "typical" region.

5. The concept of a Region's Basic Image

The concept of a region's Basic Image, has been extensively studied in some of the authors' previous works (Angelis and Dimaki, 2011; Angelis et al., 2015) (Reference). A brief outline of the main findings is given below.

Basic Image, is a summary measure of a region's state of development and future prospects as perceived by all potential movers. A physically realizable measure for the Basic Image is difficult to find. What may be measured more easily, are the changes of a region's population and industrial stock during a time period. However, those measurable changes may be generally considered as the delayed and smoothed consequence of prior changes in the Basic Image. Hence, the study of the mechanisms governing the shaping and the changes of a region's Basic Image is a task of imperative importance.

On the basis of all the above the Basic Image of a region may be defined as a function of a number of variables which may be divided into two sets according to whether they express the economic or the social /environmental function of the region.

The factors of the first set (e.g. Accessibility to Centers of Influence, Land Availability, Financial Conditions) provide a measure of the region's economic development prospects. This measure is referred to as the Economic Indicator of region i (IND_i^1). Similarly, the factors of the second set (e.g. Housing Conditions, Environmental Conditions, Social Conditions) provide a measure of a region's social profile. This measure is referred to as the Social Indicator of region i (IND_i^2). Hence, $Basic\ Image = \varphi(IND_i^1, IND_i^2)$.

We have so far defined a region's Basic Image as a function of two indicators. In order to get a first feeling of the shape of its graph we start by stating the following simple observations describing the way in which the two indicators operate.

- The higher the Economic Indicator of a region, the more attractive its Basic Image.
- The higher the Social Indicator of a region, the more attractive its Basic Image.
- If the Economic Indicator of a region is continuously increasing but, at the same time, its Social Indicator is continuously decreasing, the Basic Image of the region may be either attractive or non-attractive and sudden changes in its state may be expected.

Observation (iii) is the most interesting because it implies that the graph we want to draw may be discontinuous. In Angelis and Dimaki (2011) and Angelis et al. (2015), it has been argued that the process of shaping a region's Basic Image has all the properties characterizing phenomena which may be modeled in terms of Catastrophe Theory, the general mathematical theory of discontinuous and divergent behaviour for continuous underlying forces. It is also reminded that the Basic Image of a region has been defined as a function of two potentially conflicting indicators. Therefore, according to Catastrophe Theory, the appropriate elementary catastrophe for its description is the Cusp Catastrophe Model (Thom, 1975; Zeeman, 1973; Gilmore, 1993; Poston and Stewart, 1996). More specifically, the value x_i, $i = 1, 2,...,n$, of the ith region's Basic Image, at each point in time, is given as a solution of the equation:

$$x_i^3 - bx_i - a = 0 \tag{1}$$

with

$$\begin{cases} a = m\left(IND_i^1 - IND_0^1\right) + \left(IND_i^2 - IND_0^2\right) \\ b = \left(IND_i^1 - IND_0^1\right) - m\left(IND_i^2 - IND_0^2\right) \end{cases} \quad if\ m \leq 1$$

and

$$\begin{cases} a = \left(IND_i^1 - IND_0^1\right) + (1/m)\left(IND_i^2 - IND_0^2\right) \\ b = (1/m)\left(IND_i^1 - IND_0^1\right) - \left(IND_i^2 - IND_0^2\right) \end{cases} \quad if\ m > 1$$

Equation (1) is referred to as the Basic Image Equation and (IND_i^1), (IND_i^2) express the values of the Economic and the Social Indicator for the ith region, while (IND_0^1) and (IND_0^2) express the values of those two Indicators for the "typical" region. The variable m expresses the relative weights attached to each one of the two indicators in defining the Basic Image. The values of all Indicators lie in the interval [0,1], whereas the resulting from the model respective values of the Basic Image lie in the interval [-1,1] (Angelis & Dimaki, 2011, Angelis et al., 2012, Angelis et al., 2013). The value of the "typical" region's Basic Image is 0. Hence, positive Basic Image indicates an attractive region that may be considered as a potential final choice by the various groups of prospective movers.

For the purposes of this work, each of those Indicators is expressed as the geometric mean of several Sub indicators, as shown in Table 1.

A clear overview of the variables affecting a region's Basic Image and their conversion through Sub Indices, Relative Sub indices, Relative Indices and Sub-indicators into Indicators and, finally, into the region's Basic Image is given in Table 2. One may argue that some significant variables expressing the region's power to retain/attract movers belonging to various groups are missing from Table 2. Such variables include investment opportunities, quality of labour and financial incentives for investors, as well as employment prospects, payment prospects and financial incentives for employees. This is a plausible argument but, on the other hand, it must be noted that those factors will be used in the next step, for the estimation of a region's Specific Images, as perceived by the various groups of potential movers.

Table 1. Indicators and Sub indicators

$IND_i^1 = \sqrt{\prod_{j=1}^{2} SbI_{ij}^1}$, $i = 1, 2, \ldots, n$	$IND_i^2 = \sqrt[3]{\prod_{j=1}^{3} SbI_{ij}^2}$, $i = 1, 2, \ldots, n$

where

IND_i^1	The Economic Indicator of region i	IND_i^2	The Social Indicator of region i
SbI_{i1}^1	The Location Sub indicator of region i	SbI_{i1}^2	The Housing Conditions Sub indicator of region i
SbI_{i2}^1	The Land Availability Sub indicator of region i	SbI_{i2}^2	The Social Conditions Sub indicator of region i
SbI_{i3}^1	The Financial Conditions Sub indicator of region i	SbI_{i3}^2	The Environmental Conditions Sub indicator of region i

Table 2. Conversion of the variables affecting the Basic Image of region i

Indicators of region i	Sub indicators of region i	Relative Indices of region i	Relative Sub Indices of region i	Sub Indices of region i	Variables
Economic Indicator $\left(IND_i^1\right)$	Location Sub indicator $\left(SbI_{i1}^1\right)$	Relative Location Index $\left(RI_{i1}^1\right)$			Size of Influence Centres
					Distance/Cost from Influence Centres
	Land Availability Sub indicator $\left(SbI_{i2}^1\right)$	Relative Land Availability Index $\left(RI_{i2}^1\right)$			Area
					Population
	Financial Conditions Sub indicator $\left(SbI_{i3}^1\right)$	Relative Financial Conditions Index $\left(RI_{i3}^1\right)$			Gross Domestic Product,
					Population
Social Indicator $\left(IND_i^2\right)$	Housing Conditions Sub indicator $\left(SbI_{i1}^2\right)$	Relative Housing Conditions Index $\left(RI_{i1}^2\right)$	Relative Housing Availability Sub index $\left(RSI_{i1_1}^2\right)$	Housing Availability Sub index $\left(SI_{i1_1}^2\right)$	Total Number of Houses
					Population
			Relative Housing Quality Sub index $\left(RSI_{i1_2}^2\right)$	Housing Quality Sub index $\left(SI_{i1_2}^2\right)$	Number of New Houses
					Total number of Houses
	Social Conditions Sub indicator $\left(SbI_{i2}^2\right)$	Relative Social Conditions Index $\left(RI_{i2}^2\right)$	Relative Health Services Sub index $\left(RSI_{i2_1}^2\right)$	Health Services Sub index $\left(SI_{i2_1}^2\right)$	Number of Doctors
					Number of Hospital Beds
					Population
			Relative Educational Services Sub index $\left(RSI_{i2_2}^2\right)$	Educational Services Sub index $\left(SI_{i2_2}^2\right)$	Number of Teachers
					Number of Classrooms
					Population
	Environmental Conditions Sub indicator $\left(SbI_{i3}^2\right)$	Relative Environmental Conditions Index $\left(RI_{i3}^2\right)$	Relative Industrial Pollution Sub index $\left(RSI_{i3_1}^2\right)$	Industrial Pollution Sub index $\left(SI_{i3_1}^2\right)$	Industrial Electricity Consumption
					Total Electricity Consumption
			Relative Car Pollution Sub index $\left(RSI_{i3_2}^2\right)$	Car Pollution Sub index $\left(SI_{i3_2}^2\right)$	Number of Cars
					Population

6. The concept a Region's Specific Image

As it has already been mentioned, different persons hold quite different images. For the purposes of this work, we may say that potential movers into or out of a region, may be divided into two groups: business units and employees. Furthermore, each of those two groups may be further divided, into smaller groups on the basis of certain characteristics. For example, business units may be divided according to their stage of the development into new, mature and declining and according to their type into manufacturing units, wholesale and retail trade business units

and professionals scientific and technical business units. Similarly, employees may be divided according to their skill into professional, skilled and unskilled employees. For the purposes of this work, we will remain at the first two groups i.e. business units and employees and we will try to define a region's Specific Image, as perceived by each of those two groups.

6.1. The case of business units

Empirical evidence suggests that investment opportunities, quality of labour and financial incentives are the key factors affecting the movement of business units. A closer look at each one of those factors is given below.

- Investment opportunities

For the purposes of this work, investment opportunities are expressed as the relative capital formation in the region i.e. the ratio of the region's capital formation over that of the typical region. Capital formation may be seen as a measure of the utilization or mobilization of capital resources for investment purposes. Hence, a value of this ratio greater than one, indicates a favorable business environment. This ratio is referred to as Relative Investment Opportunities Index.

- Quality of labour

Quality of labour is expressed as the relative ratio of employees occupied in high technology and knowledge intensive sectors, i.e. the ratio of such employees in the given region over that of the typical region. High technology and knowledge intensive sectors may be considered as sectors employing high skilled employees. Hence, a ratio greater than one, indicates high labour quality. This ratio is referred to as Relative Labour Quality Index.

- Financial incentives for business units

Financial incentives for business units include lower taxation and favorable terms for borrowing money (lower interest rates, longer repayment periods), which may be combined into a financial incentives index. For the purposes of this work, financial incentives are measured as the ratio of the region's financial incentives index, over that of the typical region. This ratio will be referred to as the Relative Financial Incentives Index for Business Units.

On the basis of all the above, the Specific Image of a region as perceived by the Business Units (SPIBU) is a function of four multipliers as follows.

$$SPIBU = \sqrt[4]{(BIM)(INOM)(LBQM)(FIBM)} \qquad (2)$$

where:

BIM: Basic Image Multiplier
INOM: Investment Opportunities Multiplier
LBQM: Labour Quality Multiplier
FIBM: Financial Incentives for Business Multiplier

These four multipliers are respectively functions of the region's Basic Image and of the three indices as defined above. They are used to standardize the Basic Image and the three indices and let them take values in the interval [0,2]. Hence, for the purposes of this work, the Specific Image of a region as perceived by business units, takes values in the interval [0,2]. Specific Image value greater than one, indicates a region with a high probability of being considered as the best final choice by this group of movers.

6.2. The case of people

Empirical evidence suggests that employment prospects, payment prospects and financial incentives are the key factors affecting the movement of employees. A closer look at each one of those factors is given below.

- Employment prospects

A region's employment prospects depend on the composition of its business units stock, i.e. on the number and the size of business units belonging to specific groups (manufacturing units, wholesale and trade units, accommodation and food services units and professional, scientific and technical units), which may be combined into defining the region's business stock composition index. These groups are considered to be fast growing and hence, expected to provide a high number of workplaces. For the purposes of this work, employment prospects are

the ratio of the region's business stock composition index over that of the typical region. This ratio is referred to as the Relative Employment Prospects Index.

- Payment prospects

Employment prospects are not the only concern of the potential movers. Wage levels fare equally high in their list of preferences. For the purposes of this work, payment prospects are expressed as the ratio of the compensation per employee for the given region over that for the typical region. This ratio is referred to as the Relative Payment Prospects Index.

- Financial incentives for employees

Financial incentives for employees include lower taxation and favorable terms for borrowing money (lower interest rates, longer repayment period) and relocation expenses, which may be combined into a financial incentives index. For the purposes of this work, financial incentives are measured as the ratio of the region's financial incentives index, over that of the typical region. This ratio will be referred to as the Relative Financial Incentives Index for Employees.

On the basis of all the above, the Specific Image of a region as perceived by employees (SPEM) is a function of four multipliers as follows.

$$SPEM = \sqrt[4]{(BIM)(EMPM)(PAPM)(FIEM)} \qquad (3)$$

where:

BIM: Basic Image Multiplier
EMPM: Employment Prospects Multiplier
PAPM: Payment Prospects Multiplier
FIEM: Financial Incentives for Employees Multiplier

These four multipliers, as in the case of business units, are used to standardize respectively the Basic Image and the three indices and let them take values in the interval [0,2]. Hence, for the purposes of this work, the Specific Image of a region as perceived by employees, takes values in the interval [0,2]. Specific Image value greater than one, indicates a region with a high probability of being considered as the best final choice by this group of movers.

7. Application of the proposed model

The methodology presented in the previous section is now used for the estimation of the Basic Image and the Specific Image of the 13 Administrative Regions of Greece (Figure 1). The required data have been drawn from the official site of the Statistical Office of the European Union (Eurostat, 2015).

1. East Macedonia & Thrace
2. Central Macedonia
3. West Macedonia
4. Epirus
5. Thessaly
6. Ionian Islands
7. West Greece
8. Central Greece
9. Attica
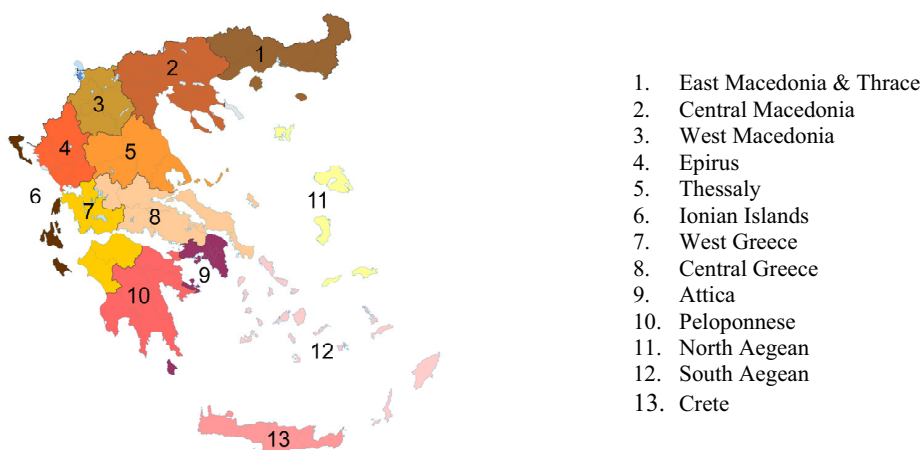10. Peloponnese
11. North Aegean
12. South Aegean
13. Crete

Figure 1. The 13 Administrative Regions of Greece

The results are presented in Tables 3 and 4 and Figures 2 and 3. Table 3 gives the values of Economic Indicator, Social Indicator and Basic Image for all 13 regions of Greece for the year 2012. The values of Economic and Social Indicator for the typical region have also been calculated and found to be 0.49 and 0.50 respectively.

As we can see from Figure 2 all the mainland regions have positive Basic Image with the exception of East Macedonia & Thrace and West Macedonia, two remote border regions with poor accessibility, reflected on the relatively low values of their economic indicators. On the contrary, all the island regions (Ionian Islands, North Aegean and South Aegean), in reality groups of small islands, have negative Basic Image as a result of their high spatial discontinuity which discourages the location of economic activities involving transportation of materials and goods. The only exception to this rule is Crete, a big island which may be considered a complete and wide market in itself.

Table 3: Basic Image values for the 13 Greek Regions, 2012 (m=1, α_0=0.49, β_0=0.50)

Region	Economic Indicator	Social Indicator	Basic Image
East Macedonia and Thrace	0.46	0.48	-0.348
Central Macedonia	0.52	0.53	0.403
West Macedonia	0.45	0.45	-0.443
Thessaly	0.49	0.51	0.132
Epirus	0.53	0.52	0.401
Ionian Islands	0.37	0.47	-0.476
West Greece	0.55	0.50	0.454
Central Greece	0.53	0.46	0.199
Peloponnese	0.52	0.48	0.274
Attica	0.65	0.59	0.668
North Aegean	0.41	0.49	-0.383
South Aegean	0.42	0.47	-0.436
Crete	0.49	0.53	0.285

Table 4. Specific Image values for the 13 Greek Regions, 2012

Region	Specific for Business Units	Specific for Employees
East Macedonia and Thrace	0.502	0.578
Central Macedonia	0.966	1.073
West Macedonia	0.445	0.476
Thessaly	0.716	0.786
Epirus	0.990	1.055
Ionian Islands	0.472	0.446
West Greece	0.953	0.948
Central Greece	0.764	0.761
Peloponnese	0.774	0.816
Attica	1.257	1.307
North Aegean	0.649	0.597
South Aegean	0.502	0.443
Crete	0.791	0.794

Table 4 gives, for all regions, the values of the Specific Images as perceived by both business units and employees. As we can see, those values follow the trend of the respective Basic Image values. In other words, regions with positive Basic Image have in general high Specific Image values while regions with negative Basic

Image display in general low Specific Image values. In particular, the lower Specific Image values correspond to the two remote border mainland regions and the three island regions, mentioned above. This close correlation between Basic and Specific Image values seems to verify our assumption that the Basic Image plays the leading role in defining a region's overall attractiveness.

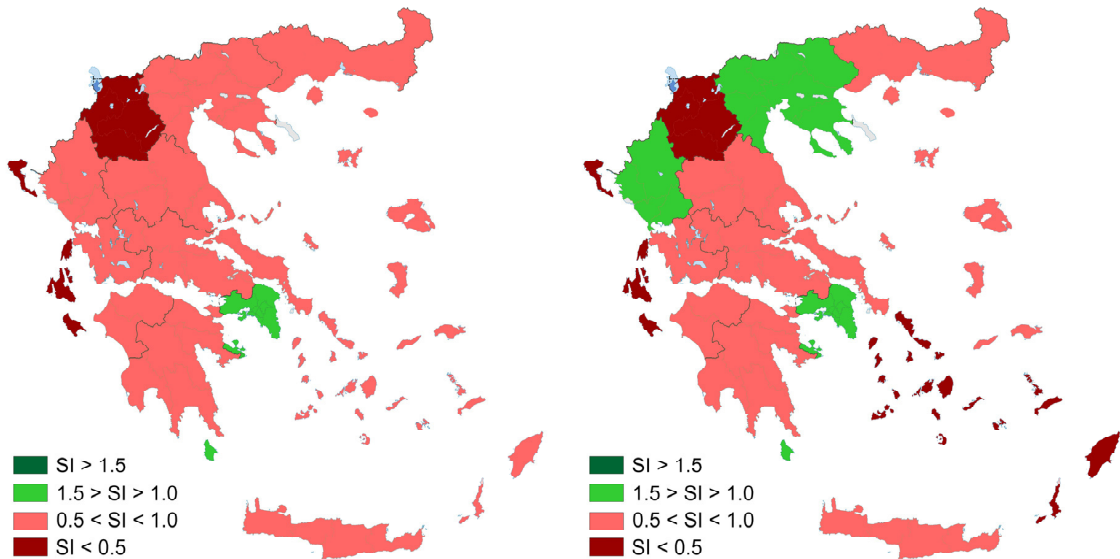Figure 2. Basic Image. The 13 Greek Regions, 2012

Figure 3. Specific Image values (a) for Business Units and (b) for Employees. The 13 Greek Regions, 2012

All the efforts aiming to reduce the island regions' geographic discontinuity, by improving transportation infrastructure and means, have limited results. Hence, a realistic alternative way to overcome the problem will be to bypass geographic discontinuity through one of the following measures or a combination of them:

- Development of local business activities, not requiring extensive transportation of physical entities. The effectiveness of this measure, however, is questionable, as the potential markets for the local products are usually very limited.
- Development of business activities, such as tourism, for which unfavourable location is not necessarily a handicap but, on the contrary, in certain cases, a strong comparative advantage. The exclusive dependence of the region's development, however, on a single activity, is vulnerable to external factors and therefore risky.
- Establishment of a communication network, through the use of Information and Communication Technologies (ICT), where no discontinuity occurs. In this way, the regions will be able to attract or develop economic activities involving the production of intangible goods (financial services, computer software) locally, which, then, may be communicated to customers located elsewhere.

The choice of the proper measure or combination of measures depends on the specific characteristics of the given region.

8. Conclusions and Suggestions for Further Research

A region's development is based on its ability to attract potential movers and this ability depends on what we call the Image of a region. The paper introduced the concept of a region's Basic and Specific Images, developed a mathematical model for their estimation, applied the model to the case of the thirteen regions of Greece and presented the results. The application results show that the proposed model expresses a region's attractiveness in a realistic way, in the sense that it quantifies both the region's appeal to the full range of its existing and potential business units and employees but also to each specific group of potential movers in particular. Furthermore, it must be noted that the structure of the Basic Image model, as defined, allows the researcher to determine not only the changes in their values, but also the causes of those changes. As we can see from Table 2, for any changes in the values of two indicators, which affect directly the value of a region's Basic Image, one can go back (indicators $\Rightarrow$ sub indicators $\Rightarrow$ indices $\Rightarrow$ sub indices $\Rightarrow$ variables) and trace the real causes of those changes. Hence, the region's Images may prove a very useful managerial tool both for local authorities, as an early warning of potential problems they may face in order to take the appropriate measures, and potential movers, as a means to assess the region's future prospects and take the proper location and investment decisions.

The model of Basic and Specific Image presented in this paper, may be improved in several ways. Specific Images have been calculated for two large groups of potential movers, business units and employees. A first area of further research would be to split those two large groups into smaller ones on the basis of certain characteristics (type in the case of business units and skill in the case of employees) and estimate the Specific Image values for those groups.

A special note should be made for the island regions. As we have seen, our model gives for all islands, with the exception of Crete, negative Basic Image values expressing their difficulty in attracting economic activities involving heavy transportation of raw materials and finished goods. However, a number of business development alternatives have been proposed, opening up new prospects for those regions' growth. Hence, the Basic Image for the island regions should be redefined so as to take into account these prospects and the effects of measures which could be taken in this direction. This redefinition of a region's Basic Image may be another area for further research.

Concluding, we could say that the estimation of a region's Basic and Specific Images for a given year gives a "snapshot" view of a region's development. A more interesting exercise however, would be to estimate its Images for a number of years, to identify their respective trend, study their changes and try to relate them with changes in the basic factors affecting the values of those images.

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