

The Impact of Financial Crisis on Tourism Disparities: The Case of Greek Regions

Eleni Gaki

Department of Business Administration, University of the Aegean, Greece

Panagiotis Arsenos

Department of Accounting and Finance Administration, University of West Attica, Greece

Chrysanthi Balomenou

EPOKA University, Hellenic Open University

Panoraia Poulaki

Department of Economics and Management of Tourism, University of Aegean, Greece

Maria Lagou

Department of Accounting and Finance Administration, University of West Attica, Greece

Abstract: Tourism is an economic and social activity that can be used to achieve desired regional outcomes, as it has been remarkably resilient in recent years even in the financial crisis and is therefore used by tourism policy makers as a means to reduce regional disparities. This, of course, also applies to Greece, since it is a dominant sector of the Greek economy. The aim of this paper is to investigate the tourist inequalities in the 13 administrative regions of Greece through various techniques and indicators of regional science (e.g. Diaspora and Concentration Measures, Gini Factor, Hotel Density Index, Defert Index, Location Quotient, Tourist Density, Tourist Occupancy, Tourist Intensity Ratio, Tourist Penetration Index) and the identification of factors influencing the regional tourism development model in order to assess the situation before and after the financial crisis to formulate a strategic and policy framework for achieving balanced tourism development. The resulting conclusions from the investigation of this issue can lead to the establishment of a framework for regional tourism policy, which is expected to contribute to the qualitative formation, enrichment, and diversification of the Greek tourist product in order to overcome the structural problems that fuel the tourist inequalities.

Keywords: Tourism development, regional inequalities, financial crisis, Greece

1. Introduction

Tourism is a complex socio-economic phenomenon with environmental and cultural dimensions, which showed rapid growth and spatial expansion in the second half of the twentieth century and became one of the most important economic activities internationally. People's need for recreation, contact with nature and familiarity with other places and cultures is now the focus of one of the world's largest industries, whose development is influenced by international economic and political circumstances and affecting national, regional and local economies.

The ability to produce new tourist products and the emergence of new tourist destinations that attract more and more tourist groups allows for an ever-growing number of countries and regions to become involved in the tourist industry. The nature, capabilities and constraints of tourism development of a region depend on the quantitative and qualitative characteristics of local tourist resources, for example, natural environment, climate, cultural heritage. The unequal distribution of tourism resources in the area leads to unequal spatial distribution of tourism activity and its problematic concentration in certain regions and at specific times of the year. The spatial asymmetric tourism development is presented in various forms, evolving according to the stage of development of the host country.

The role of tourism in national and regional development is important for Greece, a traditionally popular tourist destination. Greek tourism has emerged as a complex economic and social phenomenon since the 1920s, it has taken on a massive character since the first post-war period and since then it has been increasing with ever-increasing rates. The general upward trends of Greek tourism do not negate the phenomenon of uneven distribution in space and time, resulting in the development gap of the problematic areas that are not tourist destinations and the saturation of the tourist areas under pressure in their natural, social and residential environment. Greece is characterized by uneven regional tourism development (Krabokoukis & Polyzos, 2021), due both to the particular geomorphology of its territory and to the uneven regional distribution of its natural and human resources (Polyzos et al., 2013) as well as to the regional and tourist development policy followed in the first post-war decades when the state supported traditional tourist destinations.

However, according to Poon (Poon, 1993) in countries such as Greece and Spain, mass tourism has shown a decrease, indicating that the model of mass consumption of tourist goods and services has already reached its limit. This has also emerged the necessity for the host countries to develop new forms of tourism, such as alternative forms of tourism, which base their development on diversified and quality tourism goods and services.

This paper examines regional disparities in tourism development in Greece. For this aim, a brief presentation of the theoretical approaches is conducted. The role of tourism in the national economy and the position of Greece in the international tourism market are examined, as well as the development of regional tourist inequalities in Greece before and after the financial crisis. A quantitative analysis and assessment of the existing inequalities between the regions are presented. Finally, the conclusions and the policy proposals are recorded.

2. Regional Inequalities in Tourism: An Overview

According to the neoclassical theory of comparative cost, international tourism is considered to be embedded in the global system of division of labor between developed and less developed countries, that is countries producing

high-cost industrial goods and countries where their society is oriented towards the production of raw materials and where natural resources are suitable for the development of tourism. Thus, under conditions of free trade and on the principle of comparative advantage, the least developed countries of destination of tourist flows are driven to specialize in the production of tourism products, which have a lower relative cost and, consequently, an absolute advantage in their marketing over the rest countries (Lagos, 2016: 71).

According to Ricardo's classical theory of comparative advantage (1817), the international trade between developing and industrialized countries or regions is usually complementary. This means that developing countries or regions who provide raw materials or have natural resources (beaches, islands, beautiful landscapes) must specialize in that field and exchange these goods with industrial or technologically advanced products not produced by them (Availability Case). Developed countries or regions which have commodities such as climate, beaches, islands and mountains, or culture or special technical knowledge are not specialized to the same degree.

According to the theory of Heckscher's, (Production Factors), (1949) and Ohlin (1933), known as model H-O, some necessary factors must be suspended in order for the production process to take place, which differ for each country or periphery. The production and distribution of tourist goods and services is relatively labor-intensive, while the production of industrial goods is correspondingly capital intensive. Capital intensity is higher in industrialized regions compared to developing ones. As a result, regions which are characterized as developing ones concentrate on the service sector such as tourism, while regions who are industrialized focus on the production of capital goods.

Unlike most orthodox theories of international trade, which assume a certain demand and emphasize more on the supply side, neoclassical theory attempts to create a combination between supply and demand. The "neoclassical hypothesis" has a high degree of abstraction and a very low empirical context and focuses its attention on the demand side. Demand theory illustrates the countries' international specialization, the international distribution of tourist flows and the significance of tourism development the countries' economies. Different levels of demand describe the characteristics of the development of international tourism and, especially, tourist trade between similar countries of great economic development (Lagos, 2018: 99). Demand for Differentiated Product between cooperating countries was formulated by Linder (1961), who pointed out that the difference in the level of inputs between countries does not always represent international trade. According to Linder, the international specialization of a country depends to a large extent on domestic demand. In fact, the development of international tourism is the result of the conditions created by domestic tourism. The comparative advantage of a country stems from the quality of its superstructures and infrastructures, as well as from its tourist know-how, the level of technology and its advantageous environment. However, the volume of

international tourism is higher in countries with similar domestic tourism structures.

In addition, according to regional development theories, tourism is interpreted in various ways. According to the theory of a "life cycle of a tourist destination" (Butler 1980), a tourist area can offer many different vacation lifestyles. The earlier 'supply' theory oriented approach accepted that a tourist destination could not have only one 'life cycle'. But the application of the life-cycle theory of a tourist product is nothing more than a mixture of interpretative factors starting from demand, production and trade theory. The "life cycle", alone, cannot offer any interpretation, it is just a statistical document.

New Economic Geography (Geographical Economics) or Geographic Economic Analysis (Krugman, 1998) supports that in the liberalization of trade there is a crucial threshold for concentrating activities in some regions, from this point the concentration is self-sustaining, as in these regions firms have very serious benefits because of the centripetal forces. So, some regions still concentrate on the activities and some others continue to lose them. The logic of this new theoretical approach can also include tourist activity, due to "tourist urbanization" (Lagos, 2001), which favors local or regional development.

Within the framework of the above theoretical approaches to the development process, tourist activity is interpreted on a case-by-case basis. Regarding to sustainable tourism, it is argued that all forms of tourism can be turned into sustainable as long as they follow the principles of sustainable development. But practice has shown that mass tourism cannot be reconciled with sustainable tourism development. They are two entirely different forms of tourism, as the development of sustainable tourism will mean the simultaneous renunciation of mass tourism. Therefore, tourist inequalities are inherent in the dominant mode of production and theoretically interpreted on a case by case basis.

3. Tourism's Contribution to Greek Economy

In the context of the post-war international economic conjuncture that favored the growth of mass tourism but also due to the economic policy pursued in Greece, there is a steady rise in the size of tourist traffic. In the European and international tourist market, Greece is revealed one of the most attractive tourist destinations with rich natural and cultural tourist resources.

In Greece, tourism in 2019 had contributed 10.3% directly and 20.8% in total to the formation of GDP and created a total employment of 946,200 people (WTTC, 2020). Inbound tourism in the year 2020 decreased by 78,22% and reached 7,406,000 arrivals, compared to 34,004,600 arrivals in the year 2019.

Travel revenues in 2020 amounted to 4,318,800,000€, showing a decrease of 76.25% compared to 2019, when they reached 18,178,800,000€ (Bank of Greece, 2021).

Based on international arrivals in 2019, Greece retained 4.5% of the European tourism market and 2.31% of the global tourism market. Respectively, in 2020, Greece retained 3.1% of the European tourism market and 1.8% of the global tourism market.

In addition, according to the World Economic Forum (WEF), in 2019 Greece ranked 25th among 140 countries in the Index of Travel and Tourism Competitiveness, while according to an OECD study (OECD, 2020:21) in 2018 Greece ranked 9th in the world based on the number of international tourist arrivals. From all these data, it is obvious that Greece's dependence on tourism is significant.

Basic economic indices of the economy and tourism, during the period of the financial crisis, represent differentiated types of development. On one hand, the economic indices (GDP, employment) are on a descending trend or they are stagnating, and the local production base is declining and undergoing descending pressure. Simultaneously, in Greece the number of arrivals of international tourists is increasing at a very intense rate, but this trend is not escorted by a corresponding growth in revenues. This is particularly important for the further development of tourism, as it has not suffered the shrinkage and decline of production capacity, as it has happened for the other economic sectors. However, the difference between the growth of arrivals and the decline of the domestic productive base can only weaken tourism's relations with the other sectors of the economy and hence diminish the multiplier effects of tourism on the local economy.

Despite the relatively good tourist image of the tourist industry in Greece, the criticism of its tourist development focuses both on the turbulent developmental design of the post-war period, which has led to the overconcentration of supply in certain areas, to the unreasonable burden on the natural environment, the saturation and deterioration of certain regions, and the fact that Greece has not managed to solve major structural problems which act inhibit to achieve balanced tourism development. The main problems focus on the following:

- The recent financial crisis that has hit the Greek economy, has drastically reduced internal tourism.
- The competition between the Mediterranean countries has become more acute, because the tourist product of Greece is not quite diversified and improved.
- The seasonality is a very significant problem, which is not yet feasible to deal with.
- The country's inability to improve its basic infrastructure (transport, health services) and activate mechanisms (spatial planning, regional planning, staffing) is a negative factor for the development of tourism across its regions.
- The non-significant diversification of tourist destinations. The most popular places are still very specific and haven't changed over time (e.g. Mykonos, Corfu, Crete, Rhodes, Halkidiki, Kos).

- The market's inability to support specific and alternative forms of tourism that reflect the new trend in tourism and greatly promote regional development. This weakness is caused by entrepreneurial crunches by investing in alternative and innovative types of tourism and the lack of infrastructure in regions where natural resources are present (rivers, lakes, hot springs, forests).

Concluding it is undoubtful that tourism has an important role in Greece's economic development as it is an activity that generates income. In addition, it contributes to GDP, attracts investments and accelerates employment. It is therefore, reasonable to say that tourism could be the key for the country's recovery from the ongoing financial crises.

4. A Quantitative Approach to the Problem of Tourist Inequalities

The quantitative evaluation of the regional tourist inequalities is made with the assistance of the familiar representative measures of the regional statistics, which are implemented both in intra-regional and inter-regional level. In the following section, the most important measures and the indices that will be used for the evaluation of tourist inequalities in the Greek peripheral area are presented.

A. Total Dispersion Measures

1. The Average Deviation (AD) is the average of the sum of the difference of all values of observation from the numeric average.

$$AD = \sum [x_i - \bar{x}] / N$$

2. The Standard Deviation (σ) allows us to calculate the average deviation of the values of observation from the numeric average.

$$\sigma = \sqrt{\sum [x_i - \bar{x}]^2 / N}$$

3. The Variance (σ^2) is the square of the Standard of Deviation.

$$\sigma^2 = \sum (x_i - \bar{x})^2 / N$$

4. The Coefficient of Variance (CV) gives us the deviation from the numeric average as a percentage of the numeric average.

$$CV = \sigma / \bar{x} * 100$$

B. Concentration Measures

1. The simplest way to define the concentration rate is the diagrammatic one, which lies on the construction of the Lorenz curve. This curve shows the relation between the regional distribution of the income and the population. In the case of regional equal distribution, the concentration curve coincides with the diagonal of equal distribution. From the analysis of the Lorenz curve, we find the Concentration and Gini coefficients.

2. Gini Coefficient calculates the divergences of one observation from all the other observations that refer to one variant.

$$G = 1/2 \sum_{t=1}^r \sum_{r=1}^r P_t \Pr \left| \frac{Y_t}{P_t} - \frac{Y_r}{Pr} \right|$$

where:

P_r = the participation of the population of the region r in the total population,

Y_r = the participation of the income of the region r in the total national income of the country,

t, r = every possible pair of spatial units.

The marginal values of the coefficient are 0 and 1. In case of complete equality of the regions in one characteristic the Gini coefficient is 0 and, in case of complete inequality, it is 1.

3. The Gini-Hirshman Coefficient gives more precise information about the observed rate of concentration.

$$GH = 100 * \sqrt{\sum_i^n \left(\frac{A_r}{A_n} \right)^2}$$

A_r = the value of the characteristic A in the periphery r .

A_n = the value of the characteristic A in the whole country.

n = the number of regions.

The value of the coefficient varies from 100 (perfect concentration) to $100/\sqrt{n}$ (equal distribution).

C. Location, Establishment

The Location Quotient allows comparisons between peripheries and activities, “indirectly”, that is, with reference to the national sizes (Lagos, 2003:325-358):

$$LQ = \frac{Air/Aim}{Ar/An}$$

Where:

Air = employment of the economic sector/branch i in region r .

Ar = the total employment of the region r

Ain = the employment of branch i in the whole country.

An = the total employment of the country.

The interpretation of the location quotient is the following:

If $LQ = 1$, then the activity of branch i is as developed in the region as it is in the whole country and is considered basic or exporting.

If $LQ > 1$, the activity of branch i is more developed in the region than in the whole country and is considered non-basic.

If $LQ < 1$, the activity of branch i is less developed in the region than in the whole country and is considered to be balanced.

D. Other Measures

In tourism analysis, the following measures are used, which offer the opportunity to quantitatively estimate tourism inequalities with the comparative method (Lagos, 2018:117-123):

1. Correlation between the existing tourist infrastructure (i.e., main lodgings) and the area (in km^2) and the population:
 - i. Area per bed.
 - ii. Population per bed.
2. Correlation between the existing tourist infrastructure (i.e., available lodgings) and the population (Defert index).

$$TF = \frac{M * 100}{p}$$

where:

TF = Defert index or tourist operation index

M = number of available lodgings (beds)

p = the population of the area

When $TF = 100$, the number of tourists is equal to the number of residents of the reception place.

When $TF = 0$, the area or the region does not have tourist lodgings.

When TF is indefinite, there is no local population.

3. Tourist Density

$$di = \frac{Vi * 100}{pi * 365}$$

di = density index

Vi = the number of annual overnight stays made in region i by foreigners and locals.

pi = population of region i

4. Tourist Occupancy

$$T.O. = \frac{N * 100}{CH * P}$$

$T.O.$ = occupancy index (total: foreigners & locals)

N = overnight stays (total: foreigners & locals)

CH = rooms or beds

P = period of operation of the hotel business

5. Spatial Distribution of Tourist Resources

The estimation of this index is achieved by using the technique of factor analysis, and it composes a general average of the various categories of tourist resources (natural, ecological, social, cultural, reception) for each area.

6. Intensity Ratio (TIR)

The tourist intensity index is the ratio of the total number of tourists to the local population and the extent to a destination over a period.

$$TIR = \frac{N}{A}$$

TIR= Intensity Ratio

N = Overnight stays (total: foreigners & locals)

A= Arrivals

7. Tourist Penetration Index (TPR)

The tourist penetration index is the ratio of the number of tourist nights spent in the tourist accommodation of an area during the tourist season to the surface of the area.

$$TPR = \frac{N}{E}$$

TPR= Tourist Penetration Index

N = Overnight stays (total: foreigners & locals)

E= Area (in km²)

4. Empirical Evaluation of the Regional Tourist Inequalities

With the aid of the representative measures of the regional statistics, we tried to empirically evaluate tourism inequalities among Greek regions. The evaluation was made with the selective application of specific statistics, due to the lack of many statistical data at a regional level.

From the examination of the available statistical tourism data, we deduce that Greece does not have a balanced tourism development among all Greek regions.

More specifically:

The measures of total diversification based on the number of beds show these deviations as a percentage of the central price for comparisons. Table 1 shows that there are significant divergences between regions and intraregions as well. This is related to the concentration of tourist activity in certain destinations and especially in Greece's island complex.

Table 1: Estimated Measures of Total Diversification Based on The Number of Beds

REGION	2000	2008	2016	2017	2020
1. Eastern Macedonia & Thrace	15.763	20.569	21.324	22.048	22.533
2. Central Macedonia	70.627	81.335	89.788	90.727	93.840
3. Western Macendonia	3.996	5.210	6.090	6.252	6.644
4. Epirus	9.643	12.733	16.831	17.060	18.638
5. Thessaly	23.730	28.055	29.101	29.333	29.200
6. Ionian Islands	66.488	86.120	92.350	93.440	102.492
7. Western Greece	16.374	21.800	18.821	18.851	19.621
8. Central Greece	22.123	24.610	28.905	29.122	29.841
9. Attica	79.032	61.816	59.022	59.878	64.172
10. Peloponnese	25.150	32.945	37.614	37.733	39.521
11. Southern Aegean Islands	15.785	23.289	21.944	22.253	23.124
12. Northern Aegean Islands	128.766	165.698	195.247	205.073	228.534
13. Crete	116.513	151.677	171.516	174.275	190.550
TOTAL	593.990	715.857	788.553	806.045	868.710
<i>Mean (M.O).</i>	45.691,538	55.065,923	60.657,923	62.003,46 2	66.823,84 6
<i>Mean Average Deviation (AD)</i>	35.841,278	41.740,982	47.118,355	48.538,63 9	53.557,01 8
<i>Standard Deviation (σ)</i>	42.061,754	52.443,422	60.888,682	63.111,02 9	70.142,20 1
<i>Variance (σ^2)</i>	1.769.191.129,6 03	2.750.312. 528,244	3.707.431. 584,410	3.983.002 .040,936	4.919.928. 426,641
<i>Coefficient of Variance (C.V.)</i>	92,06 %	95,24 %	100,38 %	101,79 %	104,97%

SOURCE: National Statistics Service of Greece

The Tourism Lorenz Curve confirms the unequal tourist development (Diagram 1), and the coefficient of variance (Table 2) shows the diachronic ambling of the phenomenon.

Diagram 1 : Tourism Lorenz Curve for the Year 2020

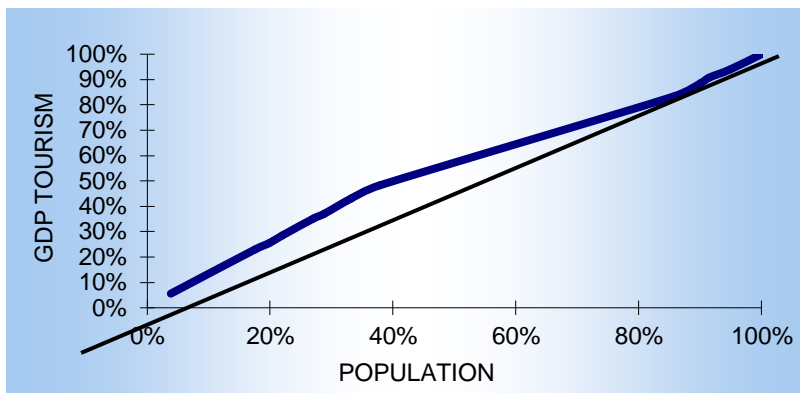


Table 2: Estimation of GINI Coefficient Per Region for The Year 2020

REGION	POPULATION (2021)	GDP (*) IN TOURISM (2020)	Yr	Pr	Yr/Pr
1. Eastern Macedonia & Thrace	594.905	6.322	0,038	0,056	0,686406
2. Central Macedonia	1.858.755	22.636	0,137	0,174	0,786596
3. Western Macedonia	262.052	3.778	0,023	0,025	0,931213
4. Epirus	330.985	3.618	0,022	0,031	0,706049
5. Thessaaly	709.808	8.334	0,050	0,066	0,758380
6. Ionian Islands	202.371	2.928	0,018	0,019	0,934539
7. Western Greece	646.670	7.306	0,044	0,061	0,729745
8. Central Greece	553.235	7.684	0,046	0,052	0,897123
9. Attica	3.736.737	79.034	0,478	0,350	1,366142
10. Peloponnese	569.345	7.382	0,045	0,053	0,837477
11. Southern Aegean Islands	229.155	2.273	0,014	0,021	0,640685
12. Northern Aegean Islands	347.848	5.687	0,034	0,033	1,056010
13. Crete	636.766	8.344	0,050	0,060	0,846387
TOTAL	10.678.632	165.326	1,000	1,000	

(*) Estimations, at current prices and million Euros

Pr = the participation of the population of the region r in the total population

Yr = the participation of the income of the region r in the total national income of the country

$$\text{GINI COEFFICIENT} = 0,074642731$$

The Gini Coefficient was estimated to be 0.074642731 in 2020 (Table 2). This value is far from full inequality that is expressed by the value of one (1). It is considered that this estimated value is mainly due to the intra-regional rather than to the inter-regional inequalities.

The Gini-Hirschman coefficient was estimated to be 43,3 (2000), 44,5 (2008) και 44,1 (2015) και 43,4 (2020) (Table 3). This shows that there is a tendency for concentration and uniformity of tourism activity during time.

Table 3: Estimation of GINI-Hirschman Coefficient Per Region for The Years 2000, 2008, 2015, 2020

REGION	EMPLOYMENT				Ar /An			(Ar/An) ²			
	2000	2008	2015	2020	2000	2008	2015	2000	2008	2015	2020
1. Eastern Macedonia & Thrace	240.372	243.252	210.204	232,5	0,0557	0,0501	0,0517	0,0031	0,0025	0,0027	0,0028
2. Central Macedonia	721.387	802.478	649.403	721,6	0,1673	0,1652	0,1598	0,0280	0,0273	0,0255	0,0273
3. Western Macedonia	100.502	108.445	90.510	110,6	0,0233	0,0223	0,0223	0,0005	0,0005	0,0005	0,0006
4. Epirus	128.300	139.872	116.908	115,0	0,0297	0,0288	0,0288	0,0009	0,0008	0,0008	0,0007
5. Thessaly	279.634	317.032	261.248	304,2	0,0648	0,0653	0,0643	0,0042	0,0043	0,0041	0,0048
6. Ionian Islands	85.395	96.728	83.992	71,6	0,0198	0,0199	0,0207	0,0004	0,0004	0,0004	0,0003
7. Western Greece	268.954	283.637	228.117	263,2	0,0624	0,0584	0,0561	0,0039	0,0034	0,0032	0,0036
8. Central Greece	205.245	232.488	194.018	213,1	0,0476	0,0479	0,0477	0,0023	0,0023	0,0023	0,0024
9. Attica	1.595.101	1.876.689	1.557.110	1.623,2	0,3699	0,3864	0,3831	0,1368	0,1493	0,1468	0,1379
10. Dodecanese	228.967	244.325	214.898	232,7	0,0531	0,0503	0,0529	0,0028	0,0025	0,0028	0,0028
11. Southern Aegean Islands	65.432	76.732	68.578	77,7	0,0152	0,0158	0,0169	0,0002	0,0002	0,0003	0,0003
12. Northern Aegean Islands	122.555	150.812	144.782	145,7	0,0284	0,0311	0,0356	0,0008	0,0010	0,0013	0,0011
13. Crete	270.941	283.873	244.270	259,4	0,0628	0,0585	0,0601	0,0039	0,0034	0,0036	0,0035
TOTAL	4.312.785	4.856.363	4.064.038	232,5				0,188	0,198	0,194	0,188

where:

A_r = the value of the characteristic A in the periphery r.

A_n = the value of the characteristic A in the whole country.

n = the number of regions

Gini-Hirschman (G-H)			
2000	2008	2015	2020
43,3	44,5	44,1	43,4

The value of the coefficient (equal distribution) is $100 / \sqrt{n} = 27,77$

The Tourism Location Quotient (LQ) (Table 4) constitutes one of the most important indices related to the tourist activity of each region. The highest values are presented in the regions of Northern Aegean Islands (4,813), Ionian Islands (3,411), Crete (1,699) and Central Macedonia (1,283). For the remaining regions, Location Quotient (QL) is estimated to be smaller, meaning that in these regions the other branches of economic activity are more developed than tourism.

Table 4: Estimation of tourism location quotient based on employment (LQ) in the Year 2020

REGION	Air	Ar	Air/Ar	LQ
1. Eastern Macedonia & Thrace	5.062	200.717	0,025	0,501
2. Central Macedonia	40.325	623.909	0,065	1,283
3. Western Macedonia	2.147	90.868	0,024	0,469
4. Epirus	3.994	111.136	0,036	0,714
5. Thessaly	6.712	245.474	0,027	0,543
6. Ionian Islands	11.878	69.157	0,172	3,411
7. Western Greece	7.486	238.293	0,031	0,624
8. Central Greece	6.542	193.081	0,034	0,673
9. Attica	47.058	1.235.861	0,038	0,756
10. Peloponnese	8.417	219.543	0,038	0,761
11. Southern Aegean Islands	1.538	55.123	0,028	0,554
12. Northern Aegean Islands	21.647	89.320	0,242	4,813
13. Crete	17.068	199.475	0,086	1,699
TOTAL	179.874	3.571.957	0,0503573	

Where:

Air = employment of the economic sector/branch i in region r .

Ar = the total employment of the region r

The correlation between the existing accommodation (beds), the area (in Km²) (Table 5) and the population (Table 6) highlights the same, as presented above, regions, as the most developed ones in terms of tourism. In 2020, the region with the highest correlation in terms of area/bed is that of Western Macedonia, followed by Eastern Macedonia and Thrace. In the same year, the region with the highest correlation in terms of area/population is that of Attica, followed by Western Macedonia.

The Defert Index, which shows the level of tourist attraction for a region (Table 7), is estimated (in 2020) to be extremely high for all island regions, (65.70) for Northern Aegean Islands, (45.26) for the Ionian islands and (50.65) for Crete. For Attica, it is only 1.72, but this is due to the fact that half the Greek population lives in Attica. The average for the whole country is 8.14.

Table 5: Correlation of the Existing Accommodation (BEDS) with Area

REGION	2000	2008	2015	2020
1. Eastern Macedonia & Thrace	0,02	0,69	0,64	0,63
2. Central Macedonia	0,27	0,24	0,21	0,20
3. Western Macedonia	2,37	1,81	1,51	1,42
4. Epirus	0,95	0,72	0,54	0,49
5. Thessaly	0,59	0,50	0,48	0,48
6. Ionian Islands	0,03	0,03	0,02	0,02
7. Western Greece	0,69	0,52	0,60	0,58
8. Central Greece	0,70	0,63	0,53	0,52
9. Attica	0,05	0,06	0,06	0,06
10. Peloponnese	0,62	0,47	0,41	0,39
11. Southern Aegean Islands	0,24	0,16	0,17	0,17
12. Northern Aegean Islands	0,04	0,03	0,03	0,02
13. Crete	0,07	0,05	0,05	0,04
TOTAL	0,22	0,18	0,16	0,15

Table 6: Correlation of the existing accommodation (beds) with population

REGION	2000	2008	2015	2020
1. Eastern Macedonia & Thrace	38,45	29,50	27,58	26,40
2. Central Macedonia	26,49	23,80	20,74	19,81
3. Western Macedonia	73,65	56,34	45,38	39,44
4. Epirus	34,89	27,63	19,75	17,76
5. Thessaly	31,23	26,24	24,98	24,31
6. Ionian Islands	3,15	2,65	2,22	1,97
7. Western Greece	44,09	33,90	36,06	32,96
8. Central Greece	25,30	22,55	18,80	18,54
9. Attica	49,16	65,70	63,94	58,23
10. Peloponnese	23,79	18,01	15,32	14,41
11. Southern Aegean Islands	12,99	8,61	8,95	9,91
12. Northern Aegean Islands	2,31	1,85	1,51	1,52
13. Crete	5,08	4,00	3,58	3,34
TOTAL	18,38	15,66	13,42	12,29

Table 7 : Estimation of Defert Index

REGION	2000	2008	2015	2020
1. Eastern Macedonia & Thrace	2,60	3,39	3,64	3,79
2. Central Macedonia	3,78	4,20	4,84	5,05
3. Western Macedonia	1,36	1,78	2,22	2,54
4. Epirus	2,87	3,62	5,07	5,63
5. Thessaly	3,20	3,81	4,01	4,11
6. Ionian Islands	31,80	37,68	45,26	50,65
7. Western Greece	2,27	2,95	2,77	3,03
8. Central Greece	3,95	4,43	5,33	5,39
9. Attica	2,03	1,52	1,57	1,72
10. Peloponnese	4,20	5,55	6,48	6,94
11. Southern Aegean Islands	7,70	11,61	11,25	10,09
12. Northern Aegean Islands	43,36	54,16	66,45	65,70
13. Crete	19,67	25,02	28,05	29,92
TOTAL	5,44	6,38	7,47	8,14

The Average Annual Hotel Occupancy Rate per Region (Table 8) is impressive in Crete, Ionian Islands and Southern Aegean Islands. A relative stagnation is observed in the case of the region of Western Greece.

Table 8: Average Annual Hotel Occupancy Rate Per Region

REGION	2015	2019	2020
1. Eastern Macedonia & Thrace	36	34	19
2. Central Macedonia	46	44	23
3. Western Macedonia	17	15	23
4. Epirus	26	30	21
5. Thessaly	30	32	21
6. Ionian Islands	60	57	42
7. Western Greece	17	15	13
8. Central Greece	23	27	18
9. Attica	47	49	23
10. Peloponnese	27	32	22
11. Southern Aegean Islands	59	58	40
12. Northern Aegean Islands	39	35	20
13. Crete	62	57	42
TOTAL	49	49	30

The Annual Tourism Density per Region (Table 9) is significantly increased in the island regions. The increase of tourism density was remarkable in the region of the Northern Aegean Islands, which, during the last few years, increased from 7.09 (2008) to 12.12 (2015) and decrease in 2020 to 1.31, probably, due to the COVID-19 outbreak.

Table 9: Annual Tourism Density Region (TDR)

REGION	2000	2008	2015	2020
1. Eastern Macedonia & Thrace	0,94	1,07	1,11	1,28
2. Central Macedonia	0,78	1,13	1,41	1,07
3. Western Macedonia	0,67	0,69	0,47	0,76
4. Epirus	1,35	1,11	1,41	1,25
5. Thessaly	0,97	1,18	1,30	1,16
6. Ionian Islands	4,38	4,74	8,42	1,18
7. Western Greece	0,92	1,10	0,96	1,35
8. Central Greece	1,01	1,13	1,12	0,97
9. Attica	0,84	0,84	1,08	1,68
10. Peloponnese	1,48	1,70	2,07	1,34
11. Southern Aegean Islands	1,57	1,55	1,73	0,78
12. Northern Aegean Islands	7,65	7,09	12,12	1,31
13. Crete	2,83	3,77	6,45	1,35
TOTAL	1,28	1,43	1,97	1,13

Tourism resources (Table 10) are scattered in the whole country but the island regions are at a more advantageous position (indicative of the existing intra-regional inequalities). After the evaluation of 16 different categories of tourism resources, the higher index (Total Average Rate) is found in the region of Attica, Central Macedonia, Northern Aegean Islands, Peloponnese and Crete. These regions have a comparative advantage to develop various forms of tourist activities.

Table 10: Tourism Resources Per Region

Region	PHYSICAL ENVIRONMENTAL RESOURCES			SOCIAL POLITICAL RESOURCES			TOURISM INFRASTRUCTURE "A"				TOURISM INFRASTRUCTURE "B"			Total Average Rate			
	Shore Length	Beach Length	Forest Area km ²	National Parks	Traditional Villages	Imports	Monuments	Monuments of International Interest	Total Number of Beds	Number of Auxiliary Accommodation	Number of Tourist Companies	Environment	Population		Urban Population	Employment in Services Sector	Employment in Tourism Services & Entertainment
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	
1. Eastern Macedonia & Thrace	4,71	7,5	14,94	0	11,45	2,39	1,97	5,76	4,39	7,92	0,89	7,16	6,2	3,011	4,03	4,35	5,46
2. Central Macedonia	6,79	10,94	16,07	6,69	3,74	1,6	5,16	12,78	13,05	19,67	5,43	11,94	16,07	15,54	14,4	13,88	10,85
3. Western Macedonia	0	0	8,43	29,4	0,78	0,8	3,04	3,2	0,62	0,08	0,64	0,72	3,07	1,45	1,81	1,73	3,48
4. Epirus	2,15	4,44	8,5	5,7	6,27	6,16	7,27	5,76	1,92	1,75	0,77	0,72	2,89	1,58	2,44	2,8	3,8
5. Thessaly	7,07	3,75	8,94	3,3	4,62	7,35	5,14	8,08	5,62	8,17	1,9	5,84	7,53	5,06	5,3	5,19	5,81
6. Ionian Islands	6,38	9,06	0,74	4,75	7,79	13,13	2,27	2,56	7,05	6,54	5,68	3,33	2,1	0,67	1,65	2,57	4,78
7. Western Greece	5,52	12,81	9,28	3,21	5,3	2,2	8,18	3,84	5,05	5,9	1,76	5,73	7,23	5,01	5,35	5,02	5,71
8. Central Greece	9,95	7,68	13,63	29,67	8,92	3,98	12,57	8,63	11,07	16,3	1,14	1,93	5,77	2,29	3,9	4,72	8,9
9. Attica	4,17	6,01	3,91	7,96	2,96	2,19	9,55	14,7	21,41	7,4	57,35	43,85	31,91	56,7	48,35	43,71	22,63
10. Peloponnese	8,21	11,42	9,79	0,03	16,8	19,59	25,45	13,41	9,31	8,47	2,53	6,99	6,63	2,47	4,56	4,68	9,37
11. Southern Aegean Islands	12,06	7,79	2,02	0	3,74	4,57	2,87	4,16	2,21	3,05	0,76	1,79	2,41	1,16	1,97	2,25	3,3
12. Northern Aegean Islands	26,01	6,31	2,4	0	15,75	29,42	8,48	12,78	12,83	9,94	10,86	6,44	2,36	1,05	2,4	4,44	9,46
13. Crete	6,96	12,31	1,35	9,3	11,89	7,17	8,03	6,4	5,5	4,83	10,34	3,57	5,22	3,28	3,85	4,66	6,54

The Intension Ratio (TIR) is particularly high in the regions of Northern Aegean Islands and Crete (Table 11), which shows the high level of tourist concentration.

Table 11: Estimation of Intesity Ratio (TIR)

REGION	2000	2008	2015	2020
1. Eastern Macedonia & Thrace	13.283	15.176	15.716	5.826
2. Central Macedonia	14.861	21.617	27.011	9.932
3. Western Macedonia	6.298	6.564	4.389	2.242
4. Epirus	12.465	10.198	12.924	7.509
5. Thessaly	13.664	16.554	18.140	8.154
6. Ionian Islands	10.102	10.929	19.289	7.153
7. Western Greece	10.455	12.467	10.896	4.881
8. Central Greece	15.662	17.520	17.469	8.686
9. Attica	3.218	3.204	4.099	1.357
10. Peloponnese	22.918	26.366	32.363	16.390
11. Southern Aegean Islands	6.004	5.954	6.606	1.567
12. Northern Aegean Islands	40.421	37.485	63.958	24.367
13. Crete	23.614	31.455	53.599	18.467
TOTAL	168.932	188.438	259.907	101.451

The Tourist Penetration Index (TPR) is particularly high in the regions of Northern Aegean Islands, Ionian Islands, Crete and Atica (Table 12) showing the long-term trend of penetration of tourism into those regions.

Table 12: Estimation of Tourist Penetration Index (TPR)

REGION	2000	2008	2015	2020
1. Eastern Macedonia & Thrace	40,17	45,94	47,69	55,94
2. Central Macedonia	75,83	114,12	138,65	144,82
3. Western Macedonia	20,75	21,57	13,94	14,82
4. Epirus	49,52	42,36	51,40	69,39
5. Thessaly	51,39	61,84	67,46	66,52
6. Ionian Islands	396,91	469,36	753,30	1.444,36
7. Western Greece	58,60	71,52	57,51	64,13
8. Central Greece	36,26	40,22	39,55	51,43
9. Attica	862,14	897,47	1.082,23	779,81
10. Peloponnese	57,14	65,20	77,95	94,13
11. Southern Aegean Islands	83,67	81,14	89,44	129,96
12. Northern Aegean Islands	429,64	410,46	707,33	1.556,93
13. Crete	201,31	274,44	480,59	849,70
TOTAL	105,92	121,35	161,45	230,20

The above results of the empirical analysis show, on one hand, the economic strength of specific regions, which is due to the balanced development of tourist activity, while on the other hand, the problems of other regions (i.e., dwindling of population, unemployment) due to strong inter-regional and intra-regional inequalities.

Nevertheless, such inequalities in the tourism sector can be expected, not only because the available resources vary among regions, but also because the development model that has been adopted in each case is different. Besides, the legal framework adopted in certain cases either delayed or prevented tourism development of certain areas.

In general, tourism development in Greece has a polar character with the island complexes in the center expressing a specific development model, the one of “massive tourism”, on which the whole structure of Greek tourism industry has been based since World War II. However, there are other regions which have important tourist resources and should be utilized for alternative forms of tourism.

The main problems that contribute to the creation of tourism inequalities can be summarized in the following:

- Insufficient tourism infrastructure (Eastern Macedonia and Thrace, Western Macedonia)
- Unorganized tourism development (Central Macedonia)
- Insufficient transportation system (Epirus)
- Limitation of tourist activity only to coastal areas (Thessaly)
- Unequally distributed tourist activity, either by unorganized development of tourist areas (Central Greece, Ionian Islands, Crete), or by degradation of the available services and environment (Southern Aegean)
- Unorganized development of tourist activity at coastal areas (Peloponnese)

5. Grouping of Greek Regions According to The Degree of Their Tourist Development

The administration regions in Greece are 13. Out of them, 4 regions consist of islands and, apart from Crete which consists of one island, the other regions consist of small island complexes. This clarification is quite important, since the most popular tourist destinations are located in these regions. The regions of the mainland present other peculiarities, each of which contributes - either positively or negatively - in the development of the wider area.

According to the general tourist development level of each region, we can group them in three main tourist groups with partial differentiations:

1. Developed tourist regions

- a) Regions of dynamic tourist development
- b) Regions with tourism saturation

2. Developing tourist regions

- a) Regions with a slow rate of tourist development
- b) Regions with a fast rate of tourist development

3. *Non-developing tourist regions*

- a) Regions which are capable of tourist development
- b) Regions which are stagnated in terms of tourism.

Table 13 presents the regions in tourist groups, according to their level of tourist development. The table shows the characteristic differences in tourist activity existing among the Greek regions.

Table 13: Grouping of the Greek regions according to their level of tourist development (Defert Index-2020)

Defert Index*	Level of Tourism Development	Greek Regions	Tourist Grouping of Regions
50 <	Tourism specialization	Southern Aegean Islands (65.70) Ionian Islands (50.65)	Saturated tourist activity
20 – 50	High level of tourism development	Crete (29.92)	Dynamic tourist development
9,5 – 20	Medium to low, or of relatively small significance, level of tourism development	North Aegean Islands (10,09)	
2 – 9,5	Limited, or of minimum significance, tourism development	East. Maced. & Thrace (3.78) Central Macedonia (5.05) Epirus (5.63) Thessaly (4.11) Western Greece (3.03) Central Greece (5.39) Peloponnese (6.94) Western Macedonia (2.54)	Slow rate of tourism development
< 2	Insignificant tourism development	Attica (1.72)	Tourism stagnation

(*) The limits for each category have been selected arbitrarily, based on the national average, which is 8,1 beds/100 inhabitants.

From the above grouping of the Greek regions, we can conclude the following:

- There are eight (8) regions where tourist activity is developed at a slow rate. This is due to the lack of tourism resources, as well as due to the failure to exploit specific areas for touristic purposes, which offer a series of remarkable tourist attraction poles in each region. These areas usually have their tourist development depending on the extent to which they are related to Athens or other big urban centers. This leads to the conclusion that the dependence relationships created take two forms:

- ✓ The dependence of the local and regional inflows on the national center, where all investing initiatives start and from which there is a big tourist outflow. Of course, during the last few years, this dependence has been limited due to the regional airports that have been created, which help by-pass the urban centers of the country.
- ✓ The dependence of the national center and the regional tourist areas on foreign tourist organizations. These organizations are powerful and operate monopolistically, affecting tourist development of areas via the guidance of tourist inflows towards specific areas/places and, also, via their effect on prices.
- There is one region (Crete) with a dynamic tourist development, where tourist activity is being developed in balance and is functionally connected to the local production system.
- There are two regions (Southern Aegean Islands and Ionian Islands) with a remarkable tourist development based on their endogenous wealth resources that offer them a comparative and competitive advantage. However, tourist mono-cultivation affects, sometimes in a negative way, the local productive grid of these areas and makes them vulnerable to international economic coincidences.
- There is a region (North Aegean Islands) with medium rate of tourism development.

6. Conclusions and Policy Proposals to Mitigate Regional Tourism Inequalities

The review of the theoretical background of regional tourism development has shown that the interpretation of the impact of tourism on developing countries' economies could be done through the framework of the International Labor Division. In particular, the theories about "life cycle of a tourist destination" interpret the tourism development process and provide a good policy framework for tourism. The theory of 'endogenous growth models' can lead to an integrated sustainable regional tourism development, as these models focus more on the interaction of economic activity of tourism and the ecosystem.

The evaluation of the results of the survey revealed that there is no balanced tourism development in Greece, even though tourist inequalities are diminishing over time. It is noted that in Greece there is a high concentration of tourist activity in the island regions, namely about 35% of the total tourist traffic and 60.83% of the total overnight stays in the island area (North and South Aegean, Ionian islands, and Crete). This creates a spatial concentration of tourism development that adversely affects the rest of the area. The concentration of tourist development in the island regions, which have comparative advantages over the other parts of the country, to some extent increases regional disparities and brings to the fore the problem of mitigation with the emergence of new tourist areas.

Also, the above elements of the analysis highlight inter-regional inequalities, the economic robustness of certain regions due to the development of tourist activity and the problems of other regions characterized by population shrinking, unemployment and intense intra-regional disparities. It is expected that there will be disparities in the tourism sector, not only because the available tourism resources vary from region to region but also because of the development options differ. The common problems that contribute to the creation of tourism inequalities are identified in the following:

- Insufficient tourist infrastructure (Eastern Macedonia & Thrace, Western Macedonia).
- Unregulated tourism development (Central Macedonia).
- Insufficient transport system (Epirus).
- Limitation of tourist activity only in coastal areas (Thessaly).
- Unequal distributed tourism activity, either through the deregulated development of tourist areas (Central Greece, Ionian Islands) or with degradation of offered services and environment (South Aegean).
- Unregulated expansion of tourist activities in coastal areas (Peloponnese).
- Unregulated development of tourist activity (Crete).

Overall, tourism development in Greece is of a polar nature with a focus on island clusters, where almost 52% of hotel beds are in three areas (Crete, Dodecanese, Macedonia) in which a certain pattern of development is recognized, that of the mass tourism, a model on which the development of the country's tourism industry was based postwar. However, there are regions that have untapped tourism resources and can be used for tourism in the context of endogenous integrated tourism development. It is also noted that the main causes of the creation of inequalities in tourist development continue to be the basic problem of Greek tourism and, above all, the legislation that has occasionally encouraged the unbalanced concentration of tourist activity and the incorrect planning of the development of the post-war period that led to the overconcentration the tourist supply in certain areas, the unreasonable burden on the natural environment, the saturation and deterioration of certain areas. These have led to a contradiction in tourism development which has led to low profitability and therefore low competitiveness of tourism activity. This contradiction is based on the fact that the increase in the size of incoming tourist is not accompanied by a corresponding increase in the average per capita tourist expenditure, quite the opposite, there are decreasing trends. This is indicative of the low-income level of tourists, which greatly affects the quality and the foreign exchange potential of Greek tourism. On the other hand, the contribution of domestic tourism, which is an essential parameter of a balanced development of tourism, is not considered or evaluated.

However, there is no doubt that Greece has in an international tourist destination with many possibilities to diversify and strengthen its position on the international tourism market. This can be accomplished by exploiting its

comparative advantages so as to be distinct from other Mediterranean destinations. The aim of a balanced regional tourism development requires the implementation of a tourism strategy and policy based on the selection and enhancement of specific forms of alternative and special tourism with the most positive economic impact on the regional economy. This strengthens the productive base of each region's economy and exploits the available tourism resources, in line with the modern perception of endogenous integrated sustainable regional development.

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About the Authors

Dr. Eleni Gaki is an Assistant Professor of Quantitative Methods in Spatial Analysis at the Department of Business Administration of the University of the Aegean. She holds a first degree in Business Administration from the University of the Aegean and a PhD in Economic and Regional Analysis from the same University. Her research interests involve regional resilience, spatial analysis of economic activities and employment, application of quantitative methods in regional and economic development, impact of transportation and Information

and Communication Technologies on regional development. She has published research papers in scientific journals and she has presented her research work in international conferences. She has participated in more than 10 research programmes. Email: e.gaki@aegean.gr

Panagiotis Arsenos is full Professor at the Department of Accounting and Finance of West Attica University, Greece. The scientific discipline of his post is “Accounting Administration – Costing” and his teaching duties involve the following subjects: “Accounting” “Administrative Accounting” “Financial Management” and Banking Accounting. Professor Arsenos graduated from the Department of Economic Sciences, National & Kapodistrian University of Athens. He holds a Master in Business Administration (M.B.A) from the Economic University of Athens. He received a PhD dealing with “Accounting – Costing Management Informatics System – M.I.S applied in Banks” from the Aegean University, Greece. He is an academic with well-established reputation in administrative and educational subjects. His scientific expertise includes Financial Accounting, Managerial Accounting, as well as economic consequences of accounting information and their uses as decision support tools. His research work has been published in scientific journals such as Business and Economic Review, Journal of Applied Business Research, Journal of Economics and Finance, Journal of Financial and Strategic Decisions, The Cyprus Review Managerial Finance, Center of Economic Policy Research (CEPR), etc. Email: parsenos@uniwa.gr

Dr. Chrysanthi Balomenou is a full-time Academic Staff (Lecturer) in Banking and Finance Department, Faculty of Economic and Administrative Sciences, Epoka University, member of the Senate, member of the Scientific Committee, member of the Board of Experts for the quality assurance of the exams and Academic Advisor of the same University. She is also Cooperative Academic Staff (Instructor) at the undergraduate program of MBA, Faculty of Social Science and Supervisor of Mater Thesis at the graduate Master Program in Banking, at Hellenic Open University. Furthermore, Dr. Balomenou is a member of the Faculty of European International University (EIU) (Paris, France) and former Director of Academics in the same University. Moreover, Dr. Balomenou is a Visiting Professor in Budapest University of Technology and Economics (BME) and Mainz University. With the aforementioned Universities as far as and with the University of Pitesti, she is collaborating and under the umbrella of Erasmus and Erasmus-plus programs and also as an invited lecturer. She has a Bachelor in Political Science, Department of Political Science, Panteion University, Msc. In Regional Development from Institute of Regional Development, at Panteion University and a PhD in Banking and Regional Economics from the Department of Economics and regional Development, Panteion University. Regarding her research activities, Dr. Balomenou has published many scientific articles in the field of Regional economics, Monetary economics, Banking and Finance in prestigious journals and books (like

Springer, Emerald etc). Email: cbalomenou@epoka.edu.al,
balomenou.chrysanthi@ac.eap.gr

Dr Panoraia Poulaki (BSc, MSc, PhD) is Academic Laboratory Teaching Staff in Department of Economics and Management of Tourism of the University of the Aegean. She holds a first degree in History and Archaeology from the National and Kapodistrian University of Athens, Master of Science (MSc) in Planning, Management and Policy of Tourism from the University of the Aegean and a Doctor of Philosophy (PhD) in Tourism from the same University. Her research interests focus on the development, planning and management of tourism, with emphasis on special and alternative forms of tourism. Email: panoraia@aegean.gr

Maria Lagou is a graduate of the Department of Economic and Regional Development of the Panteion University of Greece, and she holds an MBA from the Department of Business Administration at the University of the Aegean, in Chios, Greece. Moreover, currently she is a PhD student at the Department of Accounting and Finance of the University of the West Attica in Athens, Greece. Her research focuses on leadership in tourism activity, economic and regional development, special forms of tourism and tourism destination management. Email: la44mar@yahoo.gr