Tourism Resilience and the EU Regional Economy

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ABSTRACT: Regions around the world have faced many unexpected events, such as terrorist attacks, political crises, economic crises and pandemics, and these have affected their functions and structures, leading to destabilization. Each region responded differently to these shocks and crises: some regions overcame successfully, while others did not, some regions reacted directly and quickly, and others more slowly. Following the economic crisis of 2008-2009, the tourism industry has shown in some regions that it is more resilient to the economy of those regions. Given the current context caused by the new coronavirus COVID-19, the tourism industry has felt the effects as hotels and restaurants have been closed, international flights canceled, and depending on each region or country, various measures have been taken to ban travel, isolation and social distancing, and these measures can make major differences in the recovery of tourism. This paper presents a method of measuring the economic resilience of the European Union's tourism industry, assuming that regions based on domestic tourism will recover much faster than the rest of the regions. The questions that determined me to choose this research topic starting from the approach that in conditions of crisis the tourism industry is affected but it recovers would be: The tourism industry recovers faster than the regional economy following an economic crisis? Are the cycles of the regional economy and the tourism industry correlated?

KEYWORDS: tourism, regional resilience, tourism resilience, crisis

Introduction

An analysis of the reaction of the tourism industry to the economic crisis of 2008-2009 can give us a more detailed view of its contribution to regional economic resilience, and to achieve this general objective we have set the following objectives: Identifying the resilience and recovery of the regional economy and the tourism industry following the economic crisis of 2007-2008, analysis of the cycles of the regional economy and the tourism industry and correlation analysis of the cycles of the regional economy and the tourism industry.

Simmie and Martin, (2010) note that there is no universal definition of resilience, but Fingleton, (2012) defined the notion of resilience starting from the basis of its latin root, "resilire", which means "to jump back or recoil". They note that resilience can be defined as the ability of an entity or system to recover from a shock, but Foster (2006) defines resilience as "the ability of an economy to anticipate, to prepare, to respond and to recover from a shock."

Palekiene, Simanaviciene and Bruneckiene (2015) consider that economic resilience is a multidimensional property involving four interdependent dimensions, which fully and accurately describe economic resilience to shock: resistance, recovery, reorientation and renewal.

- Resistance - indicates the initial impact of the shock; in other words, resilience measures the depth of reaction of the regional economy to shock.

- Recovery - indicates the speed of returning to the initial phase and is determined by the degree of shock resistance at the first moment, in other words how the region recovers.

- Reorientation - the property indicates the extent to which the region adapts

- Renewal - ownership indicates the resumption of growth in the region's economy before the shock.

These different interpretations of resilience suggest that these four interdependent dimensions are needed to begin to fully understand the notion as a description of how economies respond to recessionary shocks or other such shocks.
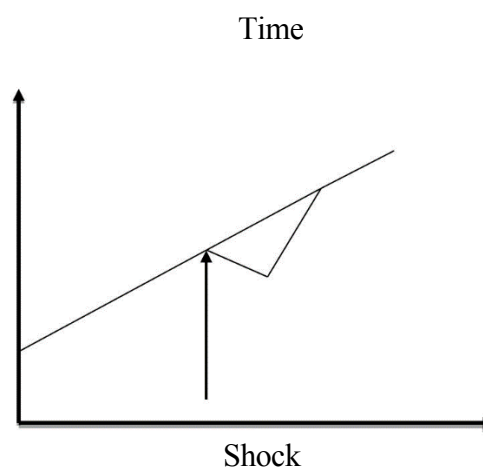
Rose (2005, 2016) considers that economic resilience takes place at three levels: microeconomic, mesoeconomic and macroeconomic. At the microeconomic level, static

economic resilience includes redundant systems, improved delivery logistics and planning exercises. At the mesoeconomic level, resilience can strengthen an industry or a market and includes, for example, the pooling of industry resources and information and innovative pricing mechanisms. At the macroeconomic level, resilience is largely influenced by interdependencies between sectors. Consequently, macroeconomic resilience is not only a function of the resilience measures implemented by enterprises, but is also determined by the actions taken by all companies and individual markets, including their interaction. Examples of macro-resilience models would be economic diversity that stops the impact on individual sectors and geographical proximity to non-disaster-affected economies, in order to facilitate access to goods or aid.

Briguglio, Cordina and Farrugia (2009) indicate that the term resilience has been used in at least three ways in relation to its ability to: recover quickly from adversity, to withstand the effect of adversity, and to avoid adversity altogether. According to studies, the term economic resilience can be used in two ways, namely related to the ability of an economy to absorb the effect of external economic shocks and to counteract the harmful effects of such shocks. The ability of an economy to absorb external shocks is associated with the flexibility of an economy, allowing it to recover after being hit by a shock. This capacity will be severely limited if, for example, there are market rigidities. The ability of an economy to counter shock will be enhanced when the economy has room for maneuver, such as in a strong fiscal position, when policy makers can use discretionary spending or tax cuts to counteract the effects of negative shocks.

The definition of resilience is largely based on the concept of energy conservation. Taken in economic terms, energy conservation means that nothing is lost or changed permanently if an individual, a market or an economy as a whole faces a temporary shock, no matter how big. This implies that shocks have a transient effect on savings, returning them to the pre-shock equilibrium position. The graph proposed by Fingleton (2012) represents the level of growth of the variable, and while the growth rate will vary from shock to shock, the variable is assumed to return in all cases to the initial level. This model therefore assumes that shocks are temporary and have no permanent effect on the long-term growth rate of the economy.

Figure 1. Engineering resilience

Time

Shock
Source: Fingleton (2012)

Fingleton, Garretsen and Martin (2015) analyze the impact of economic crises on EU regions. They emphasize the role of monetary union in explaining the spread of shocks in regions. They note that several geographically isolated regions are being hit harder by the crisis. These regions also happen to be the regions most affected by the debt crisis. Psycharis, Kallioras and Pantazis (2014) design a composite indicator of regional resilience for Greek regions to identify the ability of these regions to withstand the economic crisis of 2007-2008. They consider that metropolitan regions with a high

degree of employment in industry are the most exposed to the crisis, while the specialty in tourism proves to be a factor that confers resilience.

In another analysis of the Greek economy, Giannakis and Bruggeman (2015) use the exchange rate and input-output models to analyze the impact of the economic crisis on the Greek regions. The results are similar to those of Psycharis et al. (2014) and indicate that rural areas are more resilient to recessionary shocks than urban areas. They also find again that the tourism sector in the island regions has shown an increased level of resilience. The studies also focus on specific sectors, as opposed to studying the general structure of the industry.

Bellini et al. (2017) analyzes the contribution of tourism to regional economic resilience and focuses on the concept of smart specialization. Emphasis is placed on how decision-makers recognize the importance of tourism and integrate it into regional development strategies to increase the resilience potential of regions. Bellini et al. (2017) identify that the role of tourism in determining resilience lies in its own growth dynamics, its own resilience and also its links with other sectors of the economy. Tourism is seen as having the ability to sustain economies in a stable and reliable way and may be able to offset declines in other sectors of the economy.

In addition to studies of the structure of the industry, other authors have focused on factors such as innovation and entrepreneurship. In terms of innovation, Webber, Healy and Bristow (2018) link the concept of regional innovation capacity with that of regional economic resilience. It proposes more innovative regions that can be more resilient and analyzes data for EU regions for 28 countries. Their findings indicate that innovation is closely linked to resilience. Regions that are more innovative are much more able to recover from an economic shock.

Williams and Vorley (2014) analyze the link between economic resilience and entrepreneurship in urban areas, especially the Sheffield region. They use a case study approach focusing on interviews with decision makers to draw conclusions about the importance of entrepreneurship for the development of a resilient urban region. They suggest from their analysis that entrepreneurship is integrated in promoting the diversification and consolidation of regional economies, the characteristic feature of resilient economies.

Another alternative methodology is used in Capello, Caragliu and Fratesi (2015) which analyzes the role of cities as vectors of regional economic resilience in Europe. The focus is on 2007/08 - economic crisis. Their analysis is based on the analysis of scenarios, accompanied by the use of a macroeconomic model for forecasting regional growth. Their findings suggest that political intervention is needed in the post-crisis recovery phase, without which the regional impact is unlikely to be differentiated, with some regions recovering much faster than others.

In order to determine the resilience of the tourism industry and the regional economy, we consider that the engineering resilience model is appropriate to measure the degree of resilience and recovery by relating the values of GDP growth rates and those of the Direct and Total Tourism Contribution to pre-crisis values, respectively the year 2007 and the year 2008. The resilience in the field of engineering can be considered from the perspective of economics as the ability to return after a shock, respectively the ability to withstand a shock correlated with the speed of return to the initial state before the shock (Martin 2012) It can be considered that the system is in equilibrium before the shock and that the shock temporarily changes the system on this equilibrium. One economy is more resilient than another if it is better able to withstand the initial shock and returns to its pre-shock equilibrium faster, and we can link this notion of resilience to economic theories about the self-correcting forces of the economy. which assumes that the economy is self-balancing so that any shock that moves it from its equilibrium point automatically involves compensation mechanisms that restore the economy to equilibrium (Martin 2015).

In the field of tourism, the concept of resilience has generated relatively great interest, both in the field of research and public and private sector decision-makers, and in the literature, the resilience or resilience of the tourism industry is still insufficiently deepened. We can define tourism resilience as the ability of the tourism industry to withstand the disruptions and changes generated locally, regionally and globally, and we can emphasize that this concept of resilience helps us understand how

the tourism industry can respond effectively and it can adapt positively to global changes, disturbances or changes.

Methodology

In order to determine the resilience of the tourism industry and the regional economy, the engineering resilience model is suitable to measure the degree of resilience and recovery and we can use as measurement indicators the growth rates of the Domestic Product (GDP), annual time series. at NUTS2 level (179 series) for 21 countries in the period 2004 - 2016, taken from Eurostat, the Direct Contribution of tourism to GDP and the Total Contribution of tourism to GDP at national level.

The Direct Contribution of Tourism to GDP is the GDP generated by industries directly related to tourists and includes hotels, travel agencies, airlines and other transport services, as well as restaurant activities and leisure services directly related to tourists, and the Total Contribution of Tourism to GDP represents the GDP generated directly by the Travel and Tourism sector. To determine the Contribution of Tourism at regional level we calculated the distribution of accommodation nights by each region in relation to the total number of nights of accommodation at national level, and the Direct and Total Contribution of tourism to GDP at national level is calculated as a percentage by WTTC (World Travel and Tourism Council).

For the calculation of the value of the Tourism Contribution in GDP at regional level, we propose the following formulas:

DCGDP =NCR/NCN x CDTN/100 xGDP

TCGDP = NCR/NCN x CTTN/100 xGDP

Table 1. Database - sources

	Indicator	Source
TCGDP	Total Contribution of tourism to GDP	
DCGDP	Direct Contribution of tourism to GDP	
NCN	Number of nights accommodation at national level (Nuts1)	Eurostat (2020a).
NCR	Number of nights accommodation at regional level (Nuts2)	Eurostat (2020a).
CDTN	Direct Contribution of tourism at national level(Nuts1)	WTTC (2020)
CTTN	Total Contribution of tourism at national level(Nuts1)	WTTC (2020)
GDP	Gross Domestic Product in current prices (Nuts1)	Eurostat (2020b).

In order to determine the degree of resistance, we reported the values of the growth rates of the GDP and those of the Direct and Total Tourism Contribution to the values prior to the crisis, respectively the year 2007 and the year 2008.

The process of measuring the business cycle takes place in several stages. First, we need to define and detect a cycle, and second, we need to determine the turning point, and the most direct technique for separating the cyclical trend component is to calculate the first differences to obtain stationary data series. Most studies use nonparametric filters such as the Hodrick-Prescott filter and the Baxter King and Christiano-Fitzgerald pass band filters, but the most commonly used filter is the HP filter. The HP filter is a very common parametric method used to break down time series into two unobservable components, trend and cycle.

To measure the degree of correlation of business cycles, we propose to use the Pearson correlation coefficient calculated for the period 2004-2016 between the regional economy and Direct Tourism for regions where Direct Tourism has shown a faster recovery than the region's economy

and between the regional economy and Total Tourism in the regions where Total Tourism showed a faster recovery. As a means of measuring the degree of synchronization of business cycles, we used the Pearson correlation coefficient calculated for the period 2004-2016 between the regional economy and Direct Tourism for regions where Direct Tourism showed a faster recovery than the region's economy and between the regional economy and Total Tourism in the regions where Total Tourism has shown a faster recovery. The Pearson coefficient can vary between -1 and 1, and a negative / positive correlation indicates the negative / positive link between the variables considered.

r = Pearson's correlation coefficient ($r \in [-1,1]$)

r = 0 → there is no correlation;

r = +/- 1 → the correlation is perfect

· $r \in [0; 0.2]$ → very weak correlation

· $r \in [0.2; 0.4]$ → weak correlation

· $r \in [0.4; 0.6]$ → reasonable correlation

· $r \in [0.6; 0.8]$ → strong correlation

· $r \in [0.8; 1]$ → very strong correlation

Results

For the application of the above mentioned methods, we propose as measurement indicators the Gross Domestic Product (GDP) in current prices, annual time series at NUTS2 level (179 series) for 21 countries in the period 2004 - 2016, taken from Eurostat, Direct Contribution of Tourism in GDP and the Total Contribution of Tourism to GDP at National Level.

Following the analyzed data, we have presented a group of regions where the effects of the economic crisis did not affect the economic structure, and these regions showed a resistance both in 2008 and in 2009. We can also observe that out of a total of 179 series in the analyzed regions, only in 10 regions the effects of the economic crisis were not felt. Direct Tourism and Total Tourism in the regions where the economy did not feel the effects of the crisis experienced a recovery period that varied between 1-5 years depending on the specifics of each region. (see Tab.2)

Table 2. Representation of the regional economies that resisted to the Economic Crisis 2008-2009

Cod	Region	GDP			Turism direct - GDP			Turism total - GDP		
GEO	GEO(L)/TIME	Year of crisis	Year of rec.	Time for rec.	Year of crisis	Year of rec.	Time for rec.	Year of crisis	Year of rec.	Time for rec.
ES12	Principado de Asturias	2009	0	0	2008	2016	8	2008	0	0
ES13	Cantabria	2009	0	0	2008	2015	7	REZ	REZ	REZ
ES23	La Rioja	2009	0	0	2009	2015	6	REZ	REZ	REZ
ES43	Extremadura	2009	0	0	2009	2016	7	REZ	REZ	REZ
ES52	Comunidad Valenciana	2009	0	0	2009	2015	6	2009	2015	6
ES61	Andalucía	2009	0	0	2009	2016	7	2009	2015	6
HR	Croatia	2009	0	0	2009	2016	7	2009	2015	6
HR03	Jadranska Hrvatska	2009	0	0	2009	2016	7	2009	2015	6
HU23	Dél-Dunántúl	2009	0	0	2009	2014	5	2009	2015	6
ITC3	Liguria	2009	0	0	2008	2012	4	2008	2014	6
ITF2	Molise	2008	0	0	2008	2011	3	2008	0	0
ITF3	Campania	2009	0	0	2008	2013	5	2008	2015	7

ITF6	Calabria	2009	0	0	2008	2012	4	2008	2015	7
ITG1	Sicilia	2009	0	0	2008	2012	4	2008	2013	5
ITG2	Sardegna	2009	0	0	2009	2013	4	2008	2014	6
ITI2	Umbria	2009	0	0	2008	2013	5	2008	2014	6
ITI3	Marche	2008	0	0	2008	2014	6	2008	2015	7
PT30	Madeira (PT)	2009	0	0	2009	2011	2	2009	2011	2

In the analysis of data on economic recovery from the crisis of 2008-2009, only the regions where Total Tourism (Table 3) and Direct Tourism (Table 4) showed a shorter recovery period than the regional economy, and as a way, were extracted for measurement we reported the values of GDP and CTD, respectively CTT to the value of the year before the crisis 2007-2008.

Table 3. Regions where Total Tourism has recovered faster than the regional economy in 2008-2016

Cod	Region	Recovery - GDP			Recovery - Total Tourism - GDP		
GEO	GEO(L)/TIME	Year of crisis	Year of rec.	Time for rec.	Year of crisis	Year of rec.	Time for rec.
BE22	Prov. Limburg (BE)	2009	2011	2	2008	2009	1
DE50	Bremen	2009	2011	2	2009	2010	1
DK04	Midtjylland	2009	2011	2	2009	2010	1
SE11	Stockholm	2008	2010	2	2009	2010	1
SE23	Västsverige	2008	2010	2	2009	2010	1
CZ01	Praha	2009	2015	6	2009	2011	2
ES30	Madrid	2009	2015	6	2009	2010	1
ES51	Cataluña	2009	2016	7	2009	2014	5
HU11	Budapest	2009	2016	7	2009	2010	1
HU31	Észak-Magyarország	2009	2015	6	2009	2011	2
ITC1	Piemonte	2009	2016	7	2009	2011	2
LV	Latvia	2009	2016	7	2009	2013	4
PT15	Algarve	2009	2015	6	2009	2010	1
RO12	Centru	2009	2015	6	2009	2013	4

Table 4. Regions where Direct Tourism has recovered faster than the regional economy in 2008-2016

Cod	Region	Recovery - GDP			Recovery Direct Tourism- GDP		
GEO	GEO(L)/TIME	Year of crisis	Year of rec.	Time for rec.	Year of crisis	Year of rec.	Time for rec.
AT12	Niederösterreich	2009	2011	2	2009	2010	1
AT21	Kärnten	2009	2011	2	2009	2010	1
AT22	Steiermark	2009	2011	2	2009	2010	1
AT31	Oberösterreich	2009	2011	2	2009	2010	1
AT34	Vorarlberg	2009	2011	2	2009	2010	1
BE22	Prov. Limburg	2009	2011	2	2008	2009	1
BE32	Prov. Hainaut	2009	2011	2	2009	2010	1
DE13	Freiburg	2009	2011	2	2009	2010	1

DE50	Bremen	2009	2011	2	2009	2010	1
DEA1	Düsseldorf	2009	2011	2	2009	2010	1
DEF0	Schleswig-Holstein	2009	2011	2	2008	2009	1
DK03	Syddanmark	2009	2011	2	2009	2010	1
ES21	País Vasco	2009	2016	7	2009	2010	1
ES30	Madrid	2009	2015	6	2009	2010	1
HU22	Nyugat-Dunántúl	2009	2014	5	2009	2010	1
ITF4	Puglia	2008	2011	3	2009	2010	1
PT18	Alentejo	2008	2016	8	2008	2009	1
SE11	Stockholm	2008	2010	2	2009	2010	1
CZ01	Praha	2009	2015	6	2009	2011	2
ES22	Navarra	2009	2016	7	2009	2011	2
HU	Hungary	2009	2015	6	2009	2011	2
HU11	Budapest	2009	2016	7	2009	2011	2
HU31	Észak-Magyarország	2009	2015	6	2009	2011	2
HU33	Dél-Alföld	2009	2014	5	2009	2011	2
ITC1	Piemonte	2009	2016	7	2009	2011	2
PT15	Algarve	2009	2015	6	2008	2010	2
RO12	Centru	2009	2015	6	2009	2011	2
SI	Slovenia	2009	2015	6	2009	2011	2
SI04	Zahodna Slovenija	2009	2015	6	2009	2011	2
ES51	Cataluña	2009	2016	7	2009	2012	3
HU21	Közép-Dunántúl	2009	2015	6	2009	2012	3
LV	Latvia	2009	2016	7	2009	2012	3

Source: Own representation

Comparatively, between the two tables we can see that Direct Tourism has an average recovery period of 1-3 years for 32 of the 179 series analyzed, much lower than Total Tourism (1-5 years) and the regional economy (2- 7 years), but, in order to find explanations for the resilient regions where Direct Tourism and Total Tourism has demonstrated a much faster recovery compared to the region's economy, we propose an analysis of extraction and synchronization of economic cycles. The values of the Pearson correlation coefficient calculated between business cycles and tourism cycles for regions where Direct Tourism and Total Tourism were more resilient than the region's economy are shown in Tables 5 and 6 and vary from region to region, from very weak correlation values. (-0.011) to values that indicate a very strong correlation (0.975), and by this we cannot claim that the presence of the correlation between cycles or its lack can be an explanation for the resilience of the tourism industry.

Table 5. Correlation of economic cycles and Total Tourism cycles

Region	Total Tourism/GDP Correlation - Pearson
BE22T	-0,589980711
DK04T	-0,08981148
HU11T	0,023123403
PT15T	0,157060028
ITC1T	0,38814366

DE50T	0,427594924
HU31T	0,534541184
ES51T	0,773054001
ES30T	0,857121613
RO12T	0,865273681
SE11T	0,871006916
SE23T	0,878558305
LVT	0,973255091
CZ01T	0,975514646

Table 5. Correlation of economic cycles and Direct Tourism cycles

Region	Direct Tourism/GDP Correlation Pearson	Region	Direct Tourism/GDP Correlation Pearson
HU33D	-0,297561088	PT15D	0,4288179
ITF4D	-0,198556713	AT34D	0,441802
BE32D	-0,011577272	DEA1D	0,5688276
ITC1D	0,09865256	CZ01D	0,649221
HU11D	0,141158577	AT31D	0,6812285
DEF0D	0,169064821	HU31D	0,7252658
HU21D	0,199300106	ES51D	0,7485027
AT12D	0,202232664	SID	0,7526662
DE50D	0,223804119	ES21D	0,7713061
DK03D	0,260575104	SE11D	0,7814559
HUD	0,268835811	RO12D	0,8207299
HU22D	0,350705865	DE13D	0,8705999
AT21D	0,35931199	ES30D	0,9219423
PT18D	0,378491095	SI04D	0,9514568
AT22D	0,38166085	ES22D	0,9691272
BE22D	0,401031557		

Conclusions

From the graphic representations of the regional economic cycles and of the cycles of Total Tourism and Direct Tourism it can be observed the existence of gaps both between the regional economy and Tourism, as well as between Direct Tourism and Total Tourism. The presence of cyclical movements in tourism has been measured in many empirical studies, although only a few of them have explicitly isolated this component and even fewer studies have attempted an interpretation of the economic cycle. In most studies on tourism, the effect of the economic cycle introduces models through a set of explanatory economic variables. The detection of tourist cycles is complicated by several factors that generate irregular patterns and structural changes in tourism. First, seasonal patterns may change over time as a result of increased incomes and changes in working hours and holiday entitlements. Second, structural change is accelerated by technological progress and trends in the travel sector, such as the exponential increase in the availability of low cost flights. Third, major events can lead to short- or long-term changes in tourist flows, such as sporting events such as the Olympics or religious events. A difficulty in understanding the relationship between the business cycle and tourism stems from the fact that premiums can affect choices. tourists in any direction, because a general recession can favor cheaper destinations than the most expensive ones. In addition, the assessment of relative prices

between alternative destinations is generally made on the basis of expected tariffs when planning a holiday, which explains the existence of gaps between the business cycle and the tourism cycle.

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