

Examining the connection between economic growth, tourism, and terrorism in Council of Europe countries

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Resumo

Esta dissertação pretende examinar as conexões entre crescimento económico, medido através do Produto Interno Bruto, turismo internacional e terrorismo para trinta e três países do Conselho da Europa. O período considerado para análise contempla dados de 1995 a 2018. O método *Panel Autoregressive Distributed Lag* foi selecionado para aferir os impactos de curto e longo prazo. Os efeitos da globalização e da taxa de câmbio efetiva real também foram considerados. Dois modelos econométricos foram estimados. A presença de *cross-sectional dependence*, heterocedasticidade e autocorrelação de primeira ordem nos modelos inferiu na utilização do estimador de Driscoll & Kraay (1998). No Modelo I foi verificado o impacto do crescimento económico no turismo internacional dos países do Conselho da Europa; e no Modelo II foi verificado o impacto do turismo internacional no crescimento económico dos países do Conselho da Europa. Ambos foram positivos e estatisticamente significantes no curto prazo. No entanto, na análise de longo prazo apenas foi verificado o impacto positivo do turismo internacional no crescimento económico dos países do Conselho da Europa. Através do Modelo I foi ainda possível verificar o impacto positivo, a curto e longo prazo, da globalização no turismo internacional; o impacto positivo, a curto prazo, da taxa de câmbio efetiva real no turismo internacional; e por fim, o impacto negativo, a curto e longo prazo, do terrorismo no turismo internacional. O Modelo II possibilitou ainda verificar o impacto positivo, a longo prazo, da globalização no crescimento económico. Não foram encontrados resultados estatisticamente significantes entre o terrorismo e o crescimento económico dos países do Conselho da Europa. Os resultados aqui encontrados suportam que os decisores do Conselho da Europa devem desenvolver medidas públicas que promovam as atividades do turismo. Em simultâneo, podem propor medidas que visem reduzir cada vez mais o terrorismo e desenvolver medidas de incentivo à atração e captação de turismo internacional através das vantagens intrínsecas ao fenómeno da globalização.

Palavras-chave

Crescimento económico; turismo; terrorismo; Conselho da Europa; análise em painel; globalização.

Resumo alargado

A forma como o turismo internacional e o crescimento económico se relacionam é importante para diversas economias do mundo. Recentemente devido à pandemia causada pela COVID-19 muitos destinos turísticos sofreram sem a chegada de turistas e consequentemente tiveram de lidar com diversos impactos negativos a nível micro e macroeconómicos.

Entre os diversos fatores que podem afetar o setor do turismo, a segurança é um dos que mais preocupação gera. Os países investem muito capital todos os anos em segurança interna com o objetivo de minimizar a criminalidade e a possibilidade de terrorismo. Os terroristas por sua vez, selecionam destinos turísticos e locais movimentados para os seus ataques, sendo as suas motivações para os ataques terroristas as mais diversas, desde questões políticas, culturais ou religiosas. Mas a intenção dos criminosos é sempre a mesma, prejudicar de alguma forma a economia que atacam e/ou os seus líderes.

Nas últimas décadas o fluxo de turistas aumentou em todo o mundo, as chegadas e partidas internacionais cresceram a números surpreendentes até a chegada da nova pandemia. Esse resultado positivo que diversas economias experienciaram através do turismo pode ter como explicação o rápido crescimento da globalização nas últimas décadas. A era da informação proporciona mais informações sobre os destinos turísticos, facilidade e comodidade na hora de fazer compras, partilha de experiências e avaliações sobre os produtos e serviços do destino turístico.

Os países do Conselho da Europa não são imunes a essas questões. Por isso, o objetivo geral desta dissertação centra-se na compreensão da relação entre crescimento e turismo nos países do Conselho da Europa através da elaboração de dois modelos econométricos onde se irá verificar o impacto do crescimento económico no turismo dos países do Conselho da Europa; e o impacto do turismo no crescimento económico dos países do Conselho da Europa.

O horizonte temporal considerado para as estimações econométricas desta dissertação contempla dados de 1995 a 2018. O Conselho da Europa é constituído por quarenta e sete países membros, no entanto, foi possível selecionar apenas trinta e três países. Os principais critérios que levaram à exclusão de países foram as informações estatísticas não estarem disponíveis em bases de dados públicas e a série de dados ter quebras em anos consecutivos da estrutura. O método *Panel Autoregressive Distributed Lag* foi selecionado para aferir os impactos de curto e longo prazo entre as variáveis. A presença de *cross-sectional dependence*, heterocedasticidade e autocorrelação de primeira ordem nos modelos inferiu na utilização do estimador de Driscoll & Kraay (1998).

Uma vantagem do método selecionado é a utilização de variáveis *dummies* para corrigir choques causados por *outliers* eventualmente presentes na estimação. Nesta dissertação foram elaborados dois modelos distintos. No Modelo I foi verificado o impacto do crescimento económico no turismo internacional dos países do Conselho da Europa; e no Modelo II foi verificado o impacto do turismo internacional no crescimento económico dos países do Conselho da Europa.

Através dos modelos econométricos foi possível verificar o fenómeno de *feedback* nos impactos de curto prazo entre o Produto Interno Bruto e o turismo internacional. No entanto, no longo prazo apenas se verificou o impacto do turismo internacional no Produto Interno Bruto, esse efeito é comumente conhecido como hipótese de crescimento sustentando pelo turismo.

Verificou-se também a forma como o terrorismo está relacionado com o turismo internacional dos países do Conselho da Europa. Os resultados revelam que há impacto negativo entre o terrorismo e o turismo internacional no curto e no longo prazo. Esse resultado sugere que os decisores de políticas públicas, que estabelecem medidas visando aumentar o crescimento económico através do turismo internacional, têm de ter em atenção as questões relacionadas com a segurança do destino, para diminuir qualquer possibilidade de ataques terroristas. Ainda relativamente à variável terrorismo, não foram encontrados resultados diretos estatisticamente significantes entre o terrorismo e o crescimento económico dos países do Conselho da Europa.

Os resultados aqui encontrados suportam que os decisores do Conselho da Europa devem desenvolver medidas públicas que promovam o turismo dos seus países para atrair estrangeiros. Os resultados suportam que medidas que visem inibir o terrorismo são benéficas para o setor do turismo, beneficiando indiretamente o crescimento económico dos países do Conselho da Europa, e devem por isso ser incentivadas. Por fim, os decisores também podem aproveitar as oportunidades intrínsecas à globalização para desenvolver parcerias para a atração e captação de turismo internacional.

Abstract

This dissertation intends to examine the connections between economic growth, measured by Gross Domestic Product, international tourism, and terrorism for thirty-three Council of Europe countries. The period considered for the analysis includes data from 1995 to 2018. The Panel Autoregressive Distributed Lag Model method was selected to measure the short-and long term impacts. The effects of globalization and the real effective exchange rate were also considered. Two econometric models were estimated. The presence of cross-sectional dependence, heteroscedasticity, and first-order autocorrelation in the models implied the use of the Driscoll & Kraay (1998) estimator. In Model I, the impact of economic growth on international tourism in the Council of Europe countries was verified. In Model II, the impact of international tourism on economic growth in the Council of Europe countries was verified. Both were positive and statistically significant in the short term. However, in the long term analysis, only the positive impact of international tourism on economic growth in the Council of Europe countries was verified. Through Model I, it was still possible to verify the positive impact, short and long term, of globalization on international tourism; the positive, short term, impact of the real effective exchange rate on international tourism; and finally, the negative impact, in the short and long term, of terrorism on international tourism. Model II also made it possible to verify the positive long term impact of globalization on economic growth. No statistically significant results were found between terrorism and economic growth in the Council of Europe countries. The results found here support the decision-makers of the Council of Europe to develop public measures that promote tourism activities. At the same time, they can propose measures to increasingly reduce terrorism and develop measures to encourage the attraction and capture of international tourism through the intrinsic advantages of the phenomenon of globalization.

Keywords

Economic growth; tourism; terrorism; Council of Europe; panel analysis; globalization.

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List of Acronyms

APEC	Asia-Pacific Economic Cooperation
ARDL	Autoregressive Distributed Lag
ARRI	International tourism, number of arrivals
α	Model constant
β	Short term parameters
CD	Cross-section Dependence
CO ₂	Carbon dioxide
CoE	Council of Europe
D	First differences
DEA	Data Envelopment Analysis
ECM	Error Correction Mechanism
EXC	Real effective exchange rates
ε_{1it}	Estimation error term or residuals
GDP	Gross Domestic Product
GMM	Generalized Method of Moments
GTD	Global Terrorism Database
KOF	KOF Globalization Index
L	Natural logarithm
LW_{it-1}	Long term coefficient of lagged dependent variable
MERS	Middle East respiratory syndrome
n.a.	Not applicable
OCDE	Organization for Economic Cooperation and Development
OLS	Ordinary Least Squares
PARDL	Panel Autoregressive Distributed Lag Model
PCA	Principal Component Analysis
PVAR	Panel Vector Autoregressive
QQ	Quantile over quantile
TERROR	Number of terrorist incidents
TLG	Tourism-Led Growth

UNWTO	World Tourism Organization
γ	Long term parameters
VIF	Variance Inflation Factor
W_{it}	Dependent variable

1. Introduction

The tourism sector can be affected by several issues, from internal security problems, natural disasters or political instability. Even before the COVID-19 crisis (officially declared by the World Health Organization as a world pandemic in March 2020), the world had been showing signs of uncertainty for the tourism sector, for example, Brexit, the crisis of low-cost airlines in Europe, and other geopolitical tensions. The countries of the Council of Europe are not immune to these issues. For Gopinath (2019), global economic growth continues to be weakened due to increased trade barriers and increased geopolitical tensions.

The COVID-19 pandemic has had a strong impact on the world economy (Pham et al., 2021). The crisis triggered by the disease directly impacted global international tourism. The tourism sector was growing rapidly around the world and was responsible for the economic growth of several countries (e.g., Perles-Ribes et al., 2017; Shahzad et al., 2017; Tang & Abosedra, 2016; Pavlic et al., 2015). In addition, contemporary literature shows the existence of economic growth sustained by tourism in the regions (e.g., Fuinhas et al., 2020; Tugcu, 2014).

As the global outlook remains uncertain one year after the start of the COVID-19 pandemic (International Monetary Fund, 2021), it would be important to predict the behavior of international tourists after controlling the pandemic, but this is a difficult task. Even more so with the containment measures that have taken place in several countries around the world (e.g., Silva et al., 2021; Molina-Montes et al., 2021; Theodorou et al., 2021; Velasco, 2021).

The tourism sector was responsible for 10.4% of the global Gross Domestic Product (GDP) in 2019. However, that number dropped to 5.5% in 2020, a decrease of 49.1% of the global GDP in relation to 2019 (World Travel & Tourism Council, 2021). Several externalities occur due to the general increase in tourism (Belucio et al., 2020b), which can be positive and/or negative. Externalities and shocks with a negative causal relation in demand for international tourism directly compromise the revenues and economic growth generated by the sector. Data from the World Development Indicators (World Bank, 2021) allow showing the global results of the income and expenses of the tourism sector (see details in Figure 1).

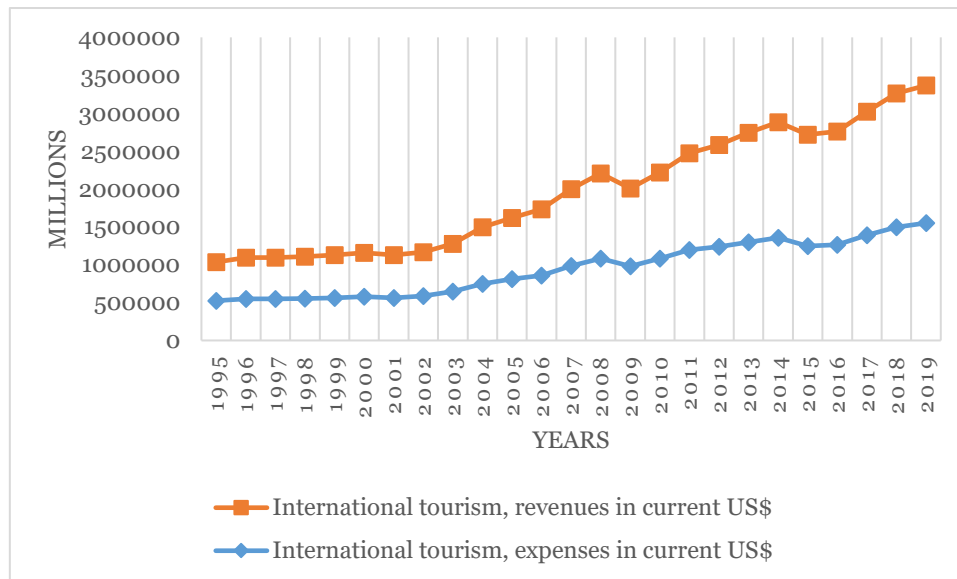


Figure 1 - International tourism revenues and expenses, in current US\$

It is possible to observe that until 2019 spending on tourism continued to grow. The ten largest importers of tourism services in the world maintained their positions in the latest report by the World Tourism Organization (UNWTO) as the most “spending” countries (World Tourism Organization, 2021). However, there has been talk of a scenario of global economic slowdown (Gopinath, 2019).

It is known that tourism involves a set of different business activities, namely, accommodation, catering, transport, equipment, services, leisure industries, all generating employment, and economic growth. It is, therefore, an extremely important sector in terms of job creation, generating millions of direct and indirect jobs (World Tourism Organization, 2021).

2017 UNWTO data showed that the sector was responsible for one in ten jobs in the world (World Tourism Organization, 2018), thus contributing to global economic development and growth. However, in 2020, 62 million jobs were lost, representing a drop of 18.5% across the sector globally (World Travel & Tourism Council, 2021). However, in 2020, 62 million jobs were lost, representing a fall of 18.5% across the sector globally (World Travel & Tourism Council, 2021), reflecting the decrease in spending by domestic visitors, which fell by about 45%, and international visitor spending fell by about 69.4% (World Travel & Tourism Council, 2021).

Figure 2 shows the data for international arrivals and departures. Annual data are available from the World Development Indicators (World Bank, 2021).

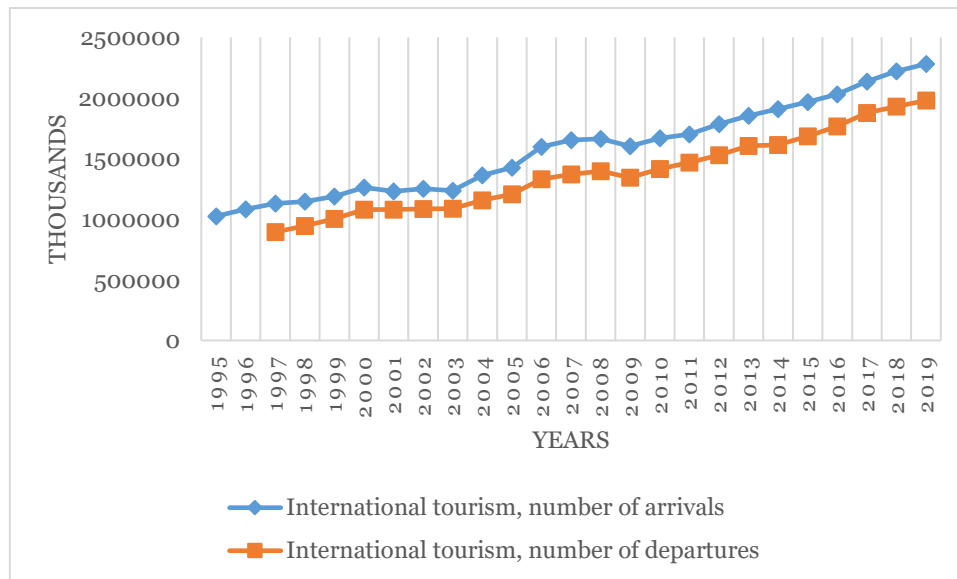


Figure 2 - Arrivals and departures of world international tourism

The year 2019 proved to be quite strong in the number of international arrivals. However, these numbers did not exceed the rates of 2017 and 2018 (World Tourism Organization, 2021). Europe is responsible for almost one in two trips in the world (World Tourism Organization, 2021), and four out of five tourists travel within their own region (World Tourism Organization, 2021).

The effects of globalization are potentiating international tourism. Internet access as a means of mass communication has led to a decline in the cost of acquiring and disseminating information (e.g., Denzer et al., 2020). This fact harmed several services but benefited the tourist destinations that wanted to promote themselves more efficiently. Therefore, countries focused on the task of disseminating a good image as a tourist destination, aiming to attract more visitors. Recent literature corroborates that globalization and tourism are related (e.g., Balsalobre-Lorente et al., 2020; Belucio et al., 2020a).

With the acceleration in the exchange of information, the terrorist attacks started to worry the countries for several reasons: the victims that are made, the exposure of the security flaws, for damaging the country's image as a tourist destination, among others. Countries perceive tourism as an ally for economic growth and seek to pass on an image of security and reliability. In 2019, the global economic impact of terrorism was \$ 16.4 billion (Cision PR Newswire, 2020).

There are several motivations for these attacks by radical groups. Commonly, the targets are tourist spots in large cities, places with a large influx of people. In macroeconomic analysis, it can be said that Central America and the Caribbean had the least impact on terrorism. On the other hand, South Asia is the region with the greatest impact (Cision PR Newswire, 2020). The number of terrorism deaths worldwide decreased in 2019, but 13826 victims were still counted (Cision PR Newswire, 2020).

International initiatives are increasingly seeking to achieve peace and conflict resolution through dialogue. Council of Europe member states have signed, for example, the European Convention on Human Rights, which purpose is to protect human rights, democracy, and the rule of law (Council of Europe, 2021a). Around the world, several countries have recently also signed agreements aimed at ending conflicts, for example, Israel and the United Arab Emirates (ONU News, 2020), Ethiopia and Eritrea (ONU News, 2019), Morocco and Israel (Atlantic Council, 2020). Nevertheless, even though the Council of Europe is the largest human rights organization on the European continent (in addition to countries with geographical proximity) and counts among its members the twenty-seven countries of the European Union (Council of Europe, 2021a), the member countries of the Council have repeatedly been victims of terrorist attacks, for example, Madrid-Spain (ONU News, 2004), Paris-France (ONU News, 2015), Berlin-Germany (ONU News, 2016), London-United Kingdom (ONU News, 2017).

Based on the importance of tourism for economies, it was decided to first present the two central issues for this dissertation, namely: (i) what is the impact of economic growth on tourism in the Council of Europe countries in the presence of parameters of terrorism and globalization? and (ii) what is the impact of tourism on the economic growth of the Council of Europe countries in the presence of parameters of terrorism and globalization?

As far as is known, there is no econometric study on the relationship between economic growth, tourism, and terrorism for the Council of Europe countries. Therefore, the general objective of this dissertation focuses on understanding the relationship between growth and tourism in the Council of Europe countries through the development of two robust econometric models that allow verifying: (i) the impact of economic growth on tourism in the Council of Europe countries; and (ii) the impact of tourism on economic growth in the Council of Europe countries. This general objective was established to shed light on the literature on the relationship between tourism and economic growth for this group of countries. Thus, it fills a gap in the literature that had never been addressed for this group of countries as far as we know.

In this sense, in order to answer the research questions that have been outlined, the specific objectives of this dissertation will be presented below:

(a) Review the literature, seeking theoretical support on:

a.1 – topics relating to economic growth and tourism;

a.2 – the importance of the phenomena of globalization and terrorist attacks in international tourism and economic growth; and

a.3 – insights and other gaps in the relationship between economic growth and tourism.

(b) Collect statistical data:

b.1 – for the largest number of Council of Europe countries;

b.2 – with the widest possible time series; and

b.3 – ensure a balanced panel, that is, without breaks in the structure.

(c) Identify the indicated econometric method(s) to analyze the selected statistical data.

(d) Ensure a robust econometric model in compliance with statistical precepts.

(e) Make public policy recommendations supported by econometric results, which can collaborate in the resumption of international tourism and economic growth in the Council of Europe countries after the COVID-19 pandemic.

The hypotheses established in this dissertation, which were inspired by contemporary literature, are presented below:

The first hypothesis (Hypothesis 1) is that economic growth has a positive impact on tourism in Council of Europe countries in the short and long term. The studies of Machado et al. (2020) and Aslan (2014) support the existence of a positive relationship between economic growth and tourism.

The second hypothesis (Hypothesis 2) is that tourism has a positive impact on economic growth in Council of Europe countries in the short and long term. The studies of Fuinhas et al. (2020), Perles-Ribes et al. (2017), Salifou & Haq (2017), Shahzad et al. (2017), Tang & Abosedra (2016), Pavlic et al. (2015), and Tugcu (2014) show the existence of a positive relationship between tourism and economic growth.

The third hypothesis (Hypothesis 3) suggests that there is a negative impact between terrorism and international tourism in the Council of Europe countries in the short and long term. This hypothesis corroborates the result found by Belucio et al. (2019), who studied a panel composed of countries around the world.

The fourth hypothesis (Hypothesis 4) indicates that the impact of terrorism on the economic growth of the Council of Europe countries is negative in the short and long term. Mohamed et al. (2019) addressed this topic by looking at France and revealed that the rise in terrorism negatively impacts economic growth in the long term.

The fifth hypothesis (Hypothesis 5) points out that globalization has a positive impact on tourism in the Council of Europe countries in the short and long term. This hypothesis arose after reflection on the issue raised by Song et al. (2018), how does a destination increase its competitiveness by reacting to the influential forces behind globalization? Therefore, the first step that contributes to answering the author's question is to identify the dimension of the impact of globalization on tourism. Furthermore, Ivanov & Webster (2013) suggested that future research

should investigate a more sophisticated approach to how globalization impacts tourism and the tourism industry, so Hypothesis 5 was established.

The sixth hypothesis (Hypothesis 6) proposes that globalization has a positive impact on the economic growth of the Council of Europe countries in the short and long term. Samimi & Jenatabadi (2014) found a positive and statistically significant coefficient that measures the effect of economic globalization on the economic growth of the Organization of Islamic Cooperation countries. Another study that supports this hypothesis was the one by Gurgul & Lach (2014) which confirms a positive role of the expansion of globalization in the GDP growth in the region of Central and Eastern Europe, being considered especially robust for the social and economic aspects of globalization. Salifou & Haq (2017) also contribute to this direction, demonstrating the positive impact of economic globalization on the economic growth of the Economic Community of West African States.

The seventh hypothesis (Hypothesis 7) is the existence of a positive exchange rate parameter on international tourism in the short and long term. Until now, this variable had not been mentioned in this dissertation, but it is known that the exchange rate is related to tourism. The literature points out that the positive component of the real effective exchange rate is inherent in the concept of appreciation (that is, a national currency appreciates in relation to foreign currencies) (Irandoost, 2019). Furthermore, other studies considered the real exchange rate taking into account its impact on the competitiveness of the tourism industry (Pavlic et al., 2015).

The seven hypotheses raised in this dissertation will be verified through the results of the econometric models to be estimated and validated by the existing literature; the results and inherent discussion will be presented at an opportune time in this dissertation.

After this introductory chapter (Chapter 1), the dissertation will be organized as follows: Chapter 2 will present the literature review; then, Chapter 3 will present the statistical data, as well as the databases where the information was collected; Chapter 4 will describe the method used to analyze the statistical data and the corresponding mathematical equation; Chapter 5 will display the econometric results of the robustness tests to validate the results obtained; in Chapter 6 the relevant discussions regarding the results will be presented; and finally, in Chapter 7 the conclusions and suggestions for future investigations will be outlined.

2. Literature review

In this chapter, topics on tourism and economic growth will be addressed, defining the concepts of tourism and trying to make the connection with its relevance for economic growth. Aspects intrinsic to the phenomenon of terrorism and globalization will also be addressed in other subchapters in order to relate them.

2.1. Economy and tourism

Balaguer & Cantavella-Jorda (2002) confirmed the hypothesis of economic growth caused by tourism through long term cointegration and causality tests in Spain. Therefore, it is possible to affirm that, directly or indirectly, the work mentioned above is one of the ones that most influences the contemporary literature on tourism economics, especially those that have focused on the tourism-growth nexus (Balsalobre-Lorente et al., 2020; Fuinhas et al. ., 2020; Perles-Ribes et al., 2017; Shahzad et al., 2017; Tugcu, 2014).

Tourism is one of the oldest activities in the world, and it is complex to define tourism activity. Simplicio & Camelo (2015) point out that there is no single, consensual definition of tourism, which varies according to the perspective from which it is formulated. And it is known that throughout the 20th century, international organizations have recognized the need to define the basic concepts of tourism in order to obtain comparable statistics (Cunha, 2010).

Cunha (2010) presents the first official definition of “tourist” that emerged in 1937, within the scope of the Society of Nations to help establish comparisons on international statistics. For this purpose, the term “tourist” came to apply to all persons who traveled for a period of 24 hours or more in a country other than the one where they had their usual residence (Cunha, 2010).

Since the 20th century, there has been a concern with the creation of statistics that make it possible to analyze the sector. However, with all the advantages that the globalization process has brought, a simple internet search can reveal surprising data: for example, in 2019, China became home to the largest number of international travelers in the world, with more than 154 million travelers visiting other countries (Lee et al., 2021).

Tourism and economy are connected in many subjects, for example, at the level of international trade, inflation, interest, savings, growth, and economic development (Santos & Kadota, 2012: 17). Although, currently, tourism is considered a vital economic activity at the global level, Belucio et al. (2019) argue that tourism is one of the most important activities worldwide. In addition, the

sector (alone) was responsible for 5.5% of world GDP in 2020 (World Travel & Tourism Council, 2021).

GDP remains one of the most common ways of measuring a country's economic growth. The literature is rich in investigations that use this variable in studies in economic sciences (e.g., Neves & Marques, 2021; Newell et al., 2021; Fuinhas et al., 2020; Machado et al., 2020; Marques et al., 2019; Neves et al., 2019; Belucio et al., 2019; Afonso et al., 2019; Stauvermann & Kumar, 2016; Pavlic et al., 2015). Of these studies, those applied to the area of tourism economics are Fuinhas et al. (2020), Machado et al. (2020), Belucio et al. (2019), Stauvermann & Kumar (2016), and Pavlic et al. (2015).

The authors choose to work with different units of GDP, for example, per capita (Neves & Marques, 2021; Marques et al. 2019; Afonso et al., 2019), growth rate (Machado et al., 2020), and others with the base variable (Newell et al., 2021; Fuinhas et al., 2020; Neves et al., 2019; Belucio et al., 2019). Furthermore, most choose to calculate the natural logarithms and first differences.

Several factors can influence GDP growth and simultaneously impact the tourism sector (or vice versa), for example, pandemic crises such as Ebola (Novelli et al., 2018) on the African continent, Zika (Jamil et al., 2016) in Latin America, MERS (Joo et al., 2019) in the Middle East, and more recently, with global effects, COVID-19 (Abbas et al., 2021).

Baker (2014), referring to tourist activity, indicates that one of the biggest threats are socio-economic problems, leading to increased crime rates. Since safety is an important factor for tourists (Liu & Pratt, 2017), the crime rate can be a risk factor for the destination. However, Baker (2014) still points out that the threat of terrorism is more worrying than the socioeconomic problems.

Tourism is indeed more important for some countries than for others, mainly because it contributes to economic growth (e.g., Perles-Ribes et al., 2017; Shahzad et al., 2017; Tang & Abosedra, 2016; Pavlic et al., 2015). However, as several countries have an important part of their economy generated by this economic sector, it is important to examine its behavior. Figure 3 presents data on the growth of international tourism revenues between 2018 and 2019¹. It was chosen to present only the seventy-two countries with positive results for the period². Data are available at the World Bank (2021).

¹ The quantification of growth was obtained through the following equation: $Y=X-R$ where, "X" is the value of the contemporary period and "R" corresponds to the value of the immediately preceding period.

² Afghanistan, Albania, Armenia, Aruba, Australia, Bahamas, Bahrain, Bangladesh, Belarus, Belgium, Bermuda, Bosnia and Herzegovina, Cabo Verde, Cambodia, Cameroon, Cayman Islands, Colombia, Costa Rica, Croatia, Curacao, Ecuador, Egypt, Arab Rep., El Salvador, Finland, Georgia, Ghana, Greece, Guinea, Hungary, India, Indonesia, Iraq, Israel, Italy, Japan, Jordan, Kazakhstan, Korea, Rep., Kuwait, Kyrgyz Republic, Lao PDR, Lebanon, North Macedonia, Madagascar, Malawi, Malaysia, Maldives, Mauritania, Mexico, Moldova, Mongolia, Montenegro, Morocco, Myanmar, Nepal, Oman, Pakistan, Paraguay, Peru,

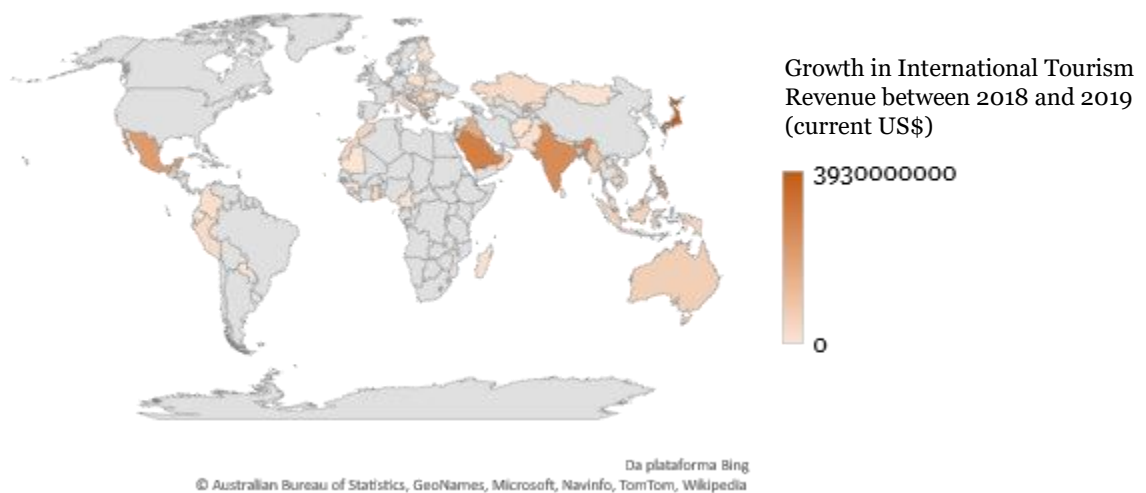


Figure 3 - Growth in International Tourism Revenue between 2018 and 2019

Several agents are involved in a country's economy, and they can vary according to the internal and/or external scenario. Santos & Kadota (2012: 21) indicate that, in general, the economic agents of a country can be divided into (i) individuals, (ii) companies, (iii) government, and (iv) external sectors. In the economy-tourism relation, individuals are responsible for the consumption of services in the tourism sector. They have a direct relation with investments, and in addition, they are strongly linked to the search for jobs in the sector. Companies for offering services to the tourism sector. At the same time, the government is the agent responsible for regulating companies' and individuals' activities and providing vital infrastructure for the tourism sector and the entire economy. Finally, the external sector, i.e., foreign individuals, companies, and governments, are all essential for international tourism, which in turn is responsible for generating economic growth, as it is about the export of tourism services.

The tourist offer in the world is diverse, from cultural tourism, nature, studies, health, rural, business, sports, sun, and beach, religious, among others. Some tourist cities offer different types of tourism, while others are focused on a single type (Belucio et al., 2020a, 2020b). There are also cases in the literature that are little discussed, such as, for example, the specific factors of small islands with a market structure that is not perfectly competitive in the tourism industry (Stauermann & Kumar, 2016) due to the limitation of physical space, which can harm the tourism sector.

The preferences of Japanese tourists exhibit a predilection for the variety of tourism products (Adachi, 2018), but this characteristic can be extended to most tourists. This fact may benefit some countries, as long as policies and regulations lead the tourism industry to have strong

Philippines, Poland, Portugal, Puerto Rico, Qatar, Romania, Rwanda, Samoa, Saudi Arabia, Serbia, Seychelles, Sint Maarten (Dutch part), and Slovak Republic.

competition, aiming to maximize the growth rate and, consequently, national income, as noted by Stauvermann & Kumar (2016).

A country's economy should not be dependent on a single sector such as tourism. Therefore, capital investment in the industry must occur efficiently, aiming at the win-win "game" so that the country's economic agents are benefited as much as possible.

2.2. Relation between economy, terrorism, and tourism

Meierrieks & Schneider (2021) said that, in the field of economics and political science, terrorism is generally understood as a violent dispute between a terrorist organization and the government it is defying. For Shahbaz (2013), the components of terrorism include bullying, violence, and social, political, and ideological objectives. Certain countries are more likely to suffer from terrorism than others. Such propensity can depend on several factors: economic development, educational level, and geopolitical issues.

Terrorists use violence as a means to achieve their goals, for example, a favorable redistribution of power, influence, land, or wealth (Meierrieks & Schneider, 2021). Anywhere in the world can be a possible target for terrorists (e.g., Estrada et al., 2018). Raja & Raghu (2021) show that recently, there are many threats to historic destinations such as the White House, London's Big Ben, the Eiffel Tower. Most tourists are apprehensive about terrorist attacks, and this phenomenon has a negative impact on any destination country (Raja & Raghu, 2021).

Tourists are often easy targets for terrorist activities, especially with the increase in attacks by "lone wolves" (Agarwal et al., 2021). Moreover, the effects of terrorism and political instability can affect the countries involved in the conflicts and infect neighboring countries (Belucio et al., 2019), thereby damaging several tourist images with a single attack.

Estrada et al. (2018) show that the economic effects of conflicts can range from loss of human life and destruction of capital to high transaction costs, capital flight, and human resources. For Raja & Raghu (2021), terrorism is a significant threat to nations' economies, resulting in loss of currency value and property damage. (Raja & Raghu, 2021).

For Meierrieks & Schneider (2021), when being attacked by a terrorist organization, the government will resort to two counterterrorism measures: (i) ways to make future terrorist attacks less likely; and (ii) trying to mitigate the adverse effects that terrorism can inflict on victim economies and societies. On the other hand, the literature indicates that countries affected by terrorism direct their policies more towards defensive measures than towards education and health (Raja & Raghu, 2021).

Shahbaz et al. (2013) contribute to the discussion by showing that terrorism has the potential to harm economic activity through its multifaceted effects, due to the redirection of government expenditure from investment activities that increase growth to less productive expenditures, such as related activities with the defense (Shahbaz et al., 2013).

Agarwal et al. (2021) report that globalization has exposed the tourism industry to a wide range of risks, one of which is terrorism. Nevertheless, the literature also points out that vandalism and terrorism attacks can be triggered by internal crises (Belucio et al., 2019). Meierrieks & Schneider (2021) argue that governments seek less liberal international economic policies in response to terrorism to disrupt the organization and financing of terrorism.

It is known that terrorism is a global challenge (Estrada et al., 2018), and one of the fundamental requirements for travelers is the security of the chosen destination. Therefore, unsafe destinations can and are replaced by alternative ones as being safer. Criminal acts, terrorism, natural disasters undermine the image of the destination, city, country and provoke fear in potential tourists (Baker, 2014). Liu & Pratt (2017) also note that personal safety is a major concern of tourists. The September 11 attacks in the United States of America leave a legacy of fear to international tourism. In this sense, after the attacks, greater importance is given to tourism services, emphasizing security (Araña & León, 2008).

As tourism is primarily chosen for moments of rest and leisure, terrorist attacks tend to intimidate potential tourists, who prefer calm, peaceful, and tranquil environments (Belucio et al., 2019). Baker (2014) also indicates that tourists' decision-making processes are influenced by multiple factors, including those associated with sanitary conditions, crime (terrorism), and the possibility of natural disasters.

Meierrieks & Schneider (2021), among others, analyzed the political consequences of terrorism, analyzing the effect of terrorism on international economic policy for a panel of 170 countries. The authors' main conclusions are that countries resort to less liberal international economic policies when facing the threat of terrorism (Meierrieks & Schneider, 2021). In their study, Raja & Raghu (2021) show that tangible and intangible tourism services and their multiplier effects can represent significant losses for developing tourist destinations.

The literature shows that a bidirectional causal relation exists between terrorism and capital in Pakistan (Shahbaz et al., 2013). However, this is not a particular phenomenon of a city or country. Terrorism has affected advanced economies and developing economies (Estrada et al., 2018). Belucio et al. (2019), who studied a panel composed of several countries from around the world, found results that show how terrorism can be an unwanted social and economic antagonist. Another empirical study shows that inflation increases terrorist attacks and economic growth also contributes to terrorism (Shahbaz, 2013).

The media, in turn, play a key role in shaping the decision to choose potential tourist destinations. However, Agarwal et al. (2021) show that these incidents' uncontrollable, involuntary and random nature makes managing these risks and ensuring tourist safety extremely challenging for the tourism industry. In this way, the perceived risk may be higher than the real risk for tourists. Therefore, it is up to professionals in the tourism sector to identify marketing strategies to reinforce the positive image of the destination (Baker, 2014).

Regarding media coverage, Brown (2015) describes the results of a mixed-method study carried out after the disappearance of Natalee Holloway in Aruba in 2005, which confirms the hypothesis that prolonged negative coverage was responsible, at least in part, for the decline in American tourist arrivals to Aruba.

A country can be safe. However, the image associated with its neighbors can tarnish its image, as negative media coverage of these incidents affects tourists' perception (Belucio et al., 2019). Also, Brown (2015) argues that prolonged “storms” in the media, which often follow a crime or murder, can be devastating for countries that rely on tourism as a major economic driver.

Countries or regions that rely heavily on tourism and that are targets of terrorist acts suffer colossal damage to their economy. Therefore, countries increasingly have a duty to act in favor of public safety and ensure the well-being of their citizens and tourists. With the facilities of the digital age, the cost of learning is lower, which provides more joint action measures, which may be the path to combating terrorism.

2.3. Relation between economic factors, globalization, and tourism

Berggren & Nilsson (2015) praise the importance of tolerance in an era of globalization. The potential for economic, social, and personal development is increasingly a function of interaction with others different from us. The authors found that globalization (economic and social) increases the willingness to transmit social values such as tolerance (Berggren & Nilsson, 2015).

For some decades now, economics has been considering globalization as an important factor for economies. Since Romer (1993) suggested a hypothesis where more open economies have high inflation, economists pay more attention to issues inherent to globalization. It is known that globalization can be decomposed into several sub-areas. For example, Song et al. (2018) show that globalization integrates the economic, social, political, and cultural spheres of the modern world.

Globalization is related to several economic factors. In the literature, the number of authors who guide economic variables and globalization is abundant (Leal & Marques, 2020; Sharif et al.,

2020; Santiago et al., 2019; Zaidi et al., 2019; Marques et al., 2017). Among the economic variables present in studies on globalization are GDP (Belucio et al., 2020a), tourism (Balsalobre-Lorente et al., 2020; Belucio et al., 2020a; Saint Akadiri et al., 2019), financial (Pleninger & Sturm, 2020; Zaidi et al., 2019), environmental (Leal & Marques, 2020; Balsalobre-Lorente et al., 2020; Saint Akadiri et al., 2019), level industry (Petreski, 2021), studies carried out by the most varied methods.

For Gurgul & Lach (2014), globalization is seen as a process of unification of goods and capital markets around the world, which reduces barriers to international trade and foreign investment. But Petreski (2021) shows that it is a wrong strategy for governments in transition countries to try and/or take advantage of globalization by offering cheap labour, as these measures contribute to labor stagnation in economies.

Gurgul & Lach (2014) indicate two reasons for globalization (i) technological progress that reduces transport costs and improves information flows; and (ii) economic and political changes aimed at reducing protectionism, liberalizing foreign investment and migration rules. Samimi et al. (2012) suggest that the measure of economic globalization, the KOF index, as a comprehensive and broader index, is a better proxy for openness.

There are several cases in the world in which globalization positively impacts economic growth (Gurgul & Lach, 2014; Salifou & Haq, 2017). Nevertheless, Santiago et al. (2019) show that globalization could have indirectly hindered Latin American countries' economic growth indirectly due to its contribution to the increase in income inequality. On the other hand, for Ivanov & Webster (2013), the fact that a country is open to the world and the degree of openness in economic, social, and political aspects do not seem to influence how much economic growth per capita the tourism industry will generate.

Pleninger & Sturm (2020) also use the KOF globalization index to examine the effect of economic globalization on income redistribution in highly ethnically fractioned countries. There were found results that support that the total effect of financial globalization by the law on redistribution is negative for this type of country (Pleninger & Sturm, 2020).

For Ivanov & Webster (2013), both the high and low levels of globalization in the country can positively and negatively influence the contribution of tourism to growth. Furthermore, travel ceased to be a luxury service within reach of the few and has become a necessity. For Song et al. (2018), tourism has been considered a crucial force in shaping globalization; the development of the tourism sector is under the influence of growing interdependence across the world. Belucio et al. (2020a) show that the relationship between religious tourism and globalization grows as more international pilgrims travel to Fátima, Portugal. Song et al. (2018) further indicate that as globalization advances, tourist destination countries become increasingly susceptible to local and global events.

Balsalobre-Lorente et al. (2020) show that globalization does not appear to be very effective in the short term in promoting economic growth; its impact on growth is determined through a finite lag distribution, as the ideal effect can only be achieved in the long term (Balsalobre-Lorente et al., 2020).

Globalization is a long term driver of energy consumption and economic growth, so it should be promoted (Marques et al., 2017). However, the literature shows that globalization does not always have positive effects. For example, Sharif et al. (2020) discovered through an Autoregressive Distributed Lag (ARDL) quantile model that globalization exerts negative environmental externalities for China.

Leal & Marques (2020) present an important question to be debated, what are the repercussions of globalization on the environment? Moreover, the literature is rich in studies that explore possible answers. For example, Zaidi et al. (2019) sought to determine the dynamic links between globalization, financial development, and carbon emissions in the presence of energy intensity and economic growth for the Asia-Pacific Economic Cooperation (APEC) countries using panel data.

Marques et al. (2017) analyzed the increased energy-growth nexus in the presence of globalization variables with an ARDL model and a panel of 43 countries between 1971 and 2013. The authors show that economic, political, and social globalization has heterogeneous impacts on the nexus. Saint Akadiri et al. (2019) show results where a standard deviation shock in carbon dioxide (CO₂) emissions has a positive and persistent impact on globalization and long term economic growth.

Balsalobre-Lorente et al. (2020) found a direct relationship between economic growth, energy use, and globalization. The authors recommend reshaping regulatory frameworks with a clearer focus on promoting international tourism and more efficient use of energy as a means of increasing sustainable economic growth in developed countries (Balsalobre-Lorente et al., 2020). Leal & Marques (2020) contribute to the debate by showing that political globalization emerges as a tool to mitigate environmental degradation, while economic globalization is something harmful.

It can thus be inferred that the debate on the effects of globalization or its subcategories is still not consensual in the literature. Nevertheless, its importance to the world is undeniable. Ivanov & Webster (2013) also demonstrate that globalization stimulates inbound tourism, which is beneficial to a country's GDP (which is considered a positive impact). On the other hand, Sharif et al. (2020) point out that globalization-led economic growth achieved by emerging economies may not be ecologically sustainable, as globalization may not have been used as a policy tool. Contributing to the debate, Saint Akadiri et al. (2019) show in their study that globalization has insignificant negative impacts on CO₂ emissions.

2.4. Methods used to relate economy and tourism

In the literature, there are several theoretical or econometric models applied to the theme of economy and tourism, for example, Stauvermann & Kumar (2016), Lee et al. (2021), or Tang & Abosedra (2016). Some studies focus on analyzing cases, for example, a country (Machado et al., 2020; Belucio & Fuinhas, 2019; Samitas et al., 2018; Tang & Abosedra, 2016), commonly known as time series analysis, and others address the issue in a macro way, incorporating groups of countries (Balsalobre-Lorente et al. 2020; Fuinhas et al., 2020; Belucio et al., 2019; Perles-Ribes et al., 2017), or companies in the sector tourism (Serrasqueiro & Nunes, 2016), commonly referred as panel analysis.

Araña & León (2008) use a stated preference model, based on two different samples taken at different times for terrorist attacks, to identify the short term impacts of the September 11 attacks in New York on tourists' preferences for competing destinations, such as the Mediterranean and the Canary Islands (Araña & León, 2008).

More recently, Stauvermann & Kumar (2016) use a general theoretical construction to answer the question of how the price-elasticity of demand, the tourist's income-elasticity, and the degree of competition in the services sector influence the economic development of small economies.

On the other hand, the study by Adachi (2018) examines the applicability of the agglomeration economy to the tourism economy, proposing the theoretical model of choice of tourist destination based on the Dixit & Stiglitz (1977) model of monopolistic competition. The author applies the estimate suggested by Berry et al. (1995) for the mixed logit model with aggregated data (Adachi, 2018).

There is a high prevalence of econometric studies applied in the area of contemporary tourism economics (Lee et al., 2021; Castilho, 2020; Machado et al., 2020; Belucio & Fuinhas, 2019; Adachi, 2018). Castilho (2020) uses a combination of Data Envelopment Analysis (DEA) and Panel Autoregressive Distributed Lag (PARDL) to verify the efficiency of Latin American countries, evaluating economic and environmental variables. Fuinhas et al. (2020) use a PARDL to analyze the impact of capital investment and international tourism on Latin America's economic growth.

Liu & Pratt (2017) use an ARDL model to estimate the impact of terrorism on tourism demand in 95 different countries and territories. Machado et al. (2020) use the same methodology to determine the impact of economic growth and CO₂ emissions on Portuguese tourism. Finally, Perles-Ribes et al. (2017) use the ARDL model and the Toda-Yamamoto procedure as alternatives to the usual techniques to analyze the impact of the last economic crisis on the hypothesis of growth driven by tourism in Spain.

Brida et al. (2013) study the relationship between tourism and economic growth through a dynamic model, consider the accumulation of physical and human capital and changes in terms of trade. Pavlic et al. (2015) used Johansen's maximum likelihood cointegration technique to examine the long- and short term relation in tourism, the real effective exchange rate, and Croatia's economic growth.

Salifou & Haq (2017) used the panel cointegration technique, in addition, confirmed the positive effect of physical capital, tourism, and the economic globalization index on economic growth, results obtained through the methods of fully modified ordinary least squares and the dynamic ordinary least squares (Salifou & Haq, 2017).

Samitas et al. (2018) examined the impact of terrorism on tourist demand in Greece and found a bidirectional relation with long term persistence. Long term cointegration and causality tests were performed. In addition, the authors applied a PCA to build a proxy for terrorism according to the severity of the incident (Samitas et al., 2018). Irandoust (2019) used a hidden cointegration approach within the probability-based panel cointegration analysis framework to verify the long term relation between changes in exchange rates and tourism demand.

Shahzad et al. (2017) used a Quantil on Quantil (QQ) approach recently developed by Sim & Zhou (2015). The QQ methodology allows estimating how tourism growth quantiles affect economic growth quantiles (Shahzad et al., 2017).

Belucio & Fuinhas (2019) used an Ordinary Least Squares (OLS) regression to analyze economic and climatic determinants of Portuguese religious tourism. However, Shahzad et al. (2017) already indicated that the QQ approach provides a more accurate description of the general structure of dependence between variables compared to conventional techniques, for example, OLS (used by Belucio & Fuinhas (2019)) or quantile regression.

Tang & Abosedra (2016) estimated a multivariate model that incorporates tourist arrivals, real production, and real exchange rate in Lebanon. In addition, the authors applied Granger causality with the continuous regression technique to assess the stability of the tourism-led growth hypothesis in Lebanon, noting that the result was supported for the case of Lebanon (Tang & Abosedra, 2016). Finally, Aslan (2014) applies Granger causality tests in a panel to assess the development of tourism and economic growth in Mediterranean countries.

Tugcu (2014) uses panel data and adopts a Granger panel causality analysis developed by Dumitrescu & Hurlin (2012) to assess the contribution of tourism to economic growth in the European, Asian and African countries considered. Finally, Balsalobre-Lorente et al. (2020) use the Generalized Method of Moments (GMM) combined with a Pairwise structure proposed by Dumitrescu & Hurlin (2012) for panel causality, validating the tourism-induced growth hypothesis for a panel of selected countries of the Organization for Economic Co-operation and Development (OECD).

Joo et al. (2019) projected the Republic of Korea's monthly non-citizen arrivals numbers and service indices for three travel-related service sectors using seasonal autoregressive integrated moving average models. Belucio et al. (2019) use an Autoregressive Vector Panel (PVAR) considering the relations between international arrivals, GDP, poverty rate, exchange rate, and terrorism.

Lee et al. (2021) adopted structural equation modeling and investigated travelers' multiple impulse buying behavior in airport duty-free shopping for Chinese travelers. Pham et al. (2021), to quantify the economic effects of the pandemic on the international tourism market and other sectors of the Australian economy, employed the computable general equilibrium modeling technique (Pham et al., 2021).

Several models are proposed and used in studies that relate variables of economy and tourism. Some insights emerge from the analysis of the various methods applied to the tourism economy, including those simpler models such as the OLS can be replaced by more robust models, and there is a prevalence of studies in the presence of an autoregressive component.

3. Data

This chapter will describe the selection criteria for the countries to be analyzed and the respective statistical data used for the econometric assessment. There will also be a presentation of databases where statistical information can be accessed.

There were four criteria for the selection of statistical data, namely: (i) the countries are officially member States of the Council of Europe (CoE); (ii) not appearing on the list of the Observer States, namely Canada, the United States of America, Israel, Japan, Mexico, and the Holy See; (iii) statistical information is available in public databases; and (iv) the data series does not have breaks in consecutive years of the structure.

Among the forty-seven member countries of the CoE (Council of Europe, 2021b), it was possible to select thirty-three countries, namely: Albania, Germany, Armenia, Austria, Azerbaijan, Belgium, Bulgaria, Croatia, Cyprus, Slovenia, Spain, Finland, Georgia, Hungary, Netherlands, Iceland, Ireland, Italy, Latvia, Luxembourg, Northern Macedonia, Malta, Moldova, Norway, Poland, Portugal, Romania, Russia, Sweden, Switzerland, Turkey, Ukraine, and the United Kingdom.

Fourteen countries were removed from this analysis by one or more of the aforementioned criteria. The countries removed were: Andorra, Bosnia and Herzegovina, Denmark, Estonia, Slovakia, France, Greece, Liechtenstein, Lithuania, Monaco, Montenegro, Czech Republic, San Marino, and Serbia.

It is important to note that the statistical data were obtained in the first half of January 2021, and the last check of the databases for the purpose of updating the statistical information took place in the first half of April 2021. Thus, any updates and/or corrections in the databases by the respective responsibilities and which are not included here are assumed as limitations of this dissertation.

Four databases revealed the characteristics necessary to provide statistical information for the econometric analysis of this dissertation, namely: (i) World Development Indicators (World Bank, 2021), the result of an initiative by the World Bank that has this robust database that includes hundreds of development indicators; (ii) KOF - Konjunkturforschungsstelle Swiss Economic Institute (ETH Zürich KOF, 2021), which currently offers more than a dozen economic indicators; (iii) Global Terrorism Database (GTD) which is made available by the National Consortium for the Study of Terrorism and Responses to Terrorism (CHC Global, 2021); and (iv) BRUEGEL Datasets, a new database that provides real effective exchange rates for 178 countries (BRUEGEL Datasets, 2021). Table 1 shows the selected variables and their respective databases.

Table 1 - Variables and Databases

Variables	Acronyms	Databases	Units
<i>Gross Domestic Product</i>	GDP	World Development Indicators	Constant Local Currency Unit (LCU)
<i>International tourism, number of arrivals</i>	ARRI	World Development Indicators	Total number
<i>KOF Globalization Index</i>	KOF	KOF Swiss Economic Institute	Index
<i>Number of terrorist incidents</i>	TERROR	Global Terrorism Database	Total number
<i>Real effective exchange rate</i>	EXC	BRUEGEL Datasets	Rate (Base: 2007)

Due to the limited availability of data on the ARRI and KOF variables, the initial time horizon of this dissertation was 1995, and the end was 2018. However, the frequency of statistical information is annual, making it possible to obtain 24 observations per country.

Still, on the data, it should be noted that there was a break in the statistical information of the ARRI variable for Switzerland in the year 2004. Therefore, it was decided to average the data from 2003 and 2005 to overcome this limitation, thus making the country eligible for analysis.

The data for the TERROR variable was initially treated, and it was necessary to add up the different types of terrorist attacks that occurred in the same year to have the total number of terrorist incidents. In addition, the years in which no type of attack occurred were assigned a value of 0, to represent the years without terrorist events.

Several authors use econometric or statistical software to calculate autoregressive methods (e.g., Fuinhas et al., 2020; Castilho, 2020). Among the main software are EViews and Stata, developed by Quantitative Micro Software and StataCorp, respectively. The Stata software was selected for the treatment and analysis of the statistical data collected for this dissertation. The use of this software, in different versions, usually appears in economic and/or tourism literature when studies focus on data panels (e.g., Fuinhas et al., 2020; Santiago et al., 2020; Koengkan & Fuinhas, 2020; Castilho 2020; Belucio et al., 2019; Afonso et al., 2017).

Table 2 shows the descriptive statistics of the variables in level. The acronym “L” in front of the variables means that the natural logarithm of the respective variables was calculated.

Table 2 - Descriptive statistics at level

Variables	Obs.	Average	Standard deviation	Minimum	Maximum
LGDP	792	26.71483	2.138505	22.27234	32.12403
LARRI	792	15.47158	1.852637	9.392662	18.63946
LKOF	792	4.295888	0.181828	3.481399	4.510683
EXC	792	93.31458	12.53365	45.10725	140.533
TERROR	792	12.55051	52.67372	0	895

Note: “Obs.” means the number of observations

The total number of observations is obtained by multiplying the number of countries and the number of years that make up the panel. The minimum value of the **TERROR** (o) variable that is repeated sometimes makes it impossible to calculate the natural logarithm. In addition, it was decided not to calculate the logarithm of the **EXC** variable because it is a rate. The literature reveals that this practice is possible (e.g., Samimi et al., 2012; Belucio & Fuinhas, 2019; Belucio et al., 2019; Castilho 2020). This option occurs due to the statistical nature of the rates or indices.

Table 3 shows the values of the descriptive statistics of the variables after the first differences. The acronym “D” in front of the variables means that the first difference was calculated for the respective variables.

Variables	Obs.	Average	Standard deviation	Minimum	Maximum
DLGDP	759	0.0301346	0.0400968	-0.1596813	0.2961426
DLARRI	759	0.0558126	0.1443256	-0.8803587	1.189584
DLKOF	759	0.0113742	0.0199055	-0.0751088	0.1095443
DEXC	759	0.6445066	5.800956	-33.9934	29.37593
DTERROR	759	-0.1818182	46.58993	-577	890

Note: “Obs.” means the number of observations

The reduction of observations is mandatory after the first differences. The result should be the difference between the number of observations at level (792) minus the number of countries (in this case 33); a result of 759 for all variables indicates that the calculation is correct.

Table 4 presents the results for the Pesaran (2004) test of cross-sectional dependence for the level variables. The test's null hypothesis reveals that the residuals across individuals (in this case, the analyzed countries) are not correlated. On the other hand, the alternative hypothesis indicates the existence of correlation of residues, that is, the presence of cross-sectional dependence.

Variable	CD-test	p value	corr	abs(corr)
LGDP	103.49	0.0000	0.919	0.919
LARRI	79.77	0.0000	0.709	0.728
LKOF	104.79	0.0000	0.931	0.931
EXC	46.59	0.0000	0.414	0.533
TERROR	n.a.	n.a.	n.a.	n.a.

Note: The test has N (0.1) distribution under H₀; “n.a.” means “not applicable”; CD means Cross-sectional Dependence

After performing an analysis of the results of the cross-sectional dependence test, it is possible to conclude that they do support the presence of cross-sectional dependence for all variables. Except for the **TERROR** variable, which cannot be calculated, thus indicating the problem of "missing values", caused by the presence of values "o", which represents that there was no type of terrorist

attack in that country/year, different from the problem of panel unbalanced by default or non-computation of values.

Furthermore, as the test results show correlation, there is an interdependence between the series and that the existence of common shocks that the series share is possibly related. This fact is corroborated by Santiago et al. (2020), who performed the same test in their study and made important observations about the problem of cross-sectional dependence.

Then, the same cross-sectional dependence test was performed for the variables after the first differences.

Table 5 - Cross-sectional dependence test after the first differences				
Variable	CD-test	p value	corr	abs(corr)
DLGDP	47.02	0.0000	0.427	0.440
DLARRI	11.27	0.0000	0.102	0.210
DLKOF	41.45	0.0000	0.376	0.389
DEXC	26.40	0.0000	0.240	0.319
DTERROR	n.a.	n.a.	n.a.	n.a.

Note: The test has N (0.1) distribution under H₀; “n.a.” means “not applicable”; CD means Cross-sectional Dependence

The results did not suffer any drastic change. On the contrary, they reinforced the presence of cross-sectional dependence even after the first differences. This fact indicates the need for attention in selecting the econometric model to be used for the proposed analysis. Furthermore, it points out the importance of careful preliminary analysis, where it is necessary to verify the nature of the statistical data.

The correlation matrix should be highlighted as an important pre-test before the estimations. Correlations can be positive, negative, or null. Belucio et al. (2021) indicate that positive values mean that the variables have a symmetrical behavior, while negative values mean that the variables have asymmetrical behavior. The authors do not discuss the rare phenomenon of nullity that can appear in the matrix of correlations. This phenomenon means that one variable is not correlated with the other, i.e., independent of each other.

Still, on the correlation matrices, it is important to point out that omitting the statistical significance of the matrix does not provide the reader with important information. On the contrary, this parameter contributes to a better understanding of the results and directly impacts how the matrix is interpreted. Tables 6 and 7 show the correlation matrices at level and after the first differences, respectively.

Table 6 - Level correlation matrix

	LGDP	LARRI	LKOF	EXC	TERROR
LGDP	1				
LARRI	0.4380***	1			
LKOF	0.2479***	0.5677***	1		
EXC	-0.1272***	0.0559	0.3420***	1	
TERROR	0.2240***	0.1706***	-0.0033	-0.1296***	1

Note: *** denote statistical significance at the 1% level.

Table 7 - Correlation matrix after the first differences

	DLGDP	DLARRI	DLKOF	DEXC	DTERROR
DLGDP	1				
DLARRI	0.3330***	1			
DLKOF	0.1592***	0.1709***	1		
DEXC	0.1920***	0.1947***	0.0717**	1	
DTERROR	-0.0409	-0.1860***	-0.0209	-0.0535	1

Note: ***, ** denote statistical significance at the 1% and 5% levels, respectively.

After analyzing the correlation matrices, it is concluded that there is no strong correlation between the variables. No absolute value exceeds 0.6 for the variables at level or after the first difference so that this result can be considered within normality. The results of the correlation matrices are also a first indicator for the possibility of the existence of multicollinearity, especially when the values approach 1 (Fuinhas et al., 2019), which does not meet the results presented.

The VIF (Variance Inflation Factor) statistic must be run to verify the existence of the multicollinearity problem. If the VIF value is greater than 10, multicollinearity is a problem (Fuinhas et al., 2019) among the study variables. This statistic also allows the user to identify possible formats for the regressions to be estimated, i.e., it uses one variable as a dependent and the other parameters as an independent. It is recommended that if one or more parameters present the problem of multicollinearity, they should be removed from the analysis to avoid distortions in the estimation results.

Below, in Table 8, the results for the VIF statistic are presented. The statistic was calculated highlighting four different parameters: (i) LGDP as a dependent variable; (ii) DLGDP as a dependent variable; (iii) LARRI as a dependent variable; and (iv) DLARRI as a dependent variable. This configuration indicates that from the statistical data set, only Gross Domestic Product or Number of international arrivals were considered as dependent variables of possible econometric models, in level and/or in after the first differences.

Table 8 - VIF Test		
(i) Level dependent variable LGDP		
Independent variables	VIF	1/VIF
LKOF	1.73	0.577724
LARRI	1.58	0.632389
EXC	1.18	0.845698
TERROR	1.06	0.945906
Average VIF		1.39
(ii) Dependent variable DLGDP, after first differences		
Independent variables	VIF	1/VIF
DLARRI	1.10	0.907337
DEXC	1.04	0.960239
DTERROR	1.04	0.964966
DLKOF	1.03	0.969114
Average VIF		1.05
(iii) Level dependent variable LARRI		
Independent variables	VIF	1/VIF
LKOF	1.26	0.796247
EXC	1.21	0.828743
LGDP	1.18	0.849283
TERROR	1.07	0.938894
Average VIF		1.18
(iv) Dependent variable DLARRI, after first differences		
Independent variables	VIF	1/VIF
DLGDP	1.06	0.941076
DEXC	1.04	0.959358
DLKOF	1.03	0.972754
DTERROR	1.00	0.996007
Average VIF		1.03

The results reveal that all models do not have the multicollinearity problem. Average values vary between 1.03 and 1.39. The largest parameter was found in specification I, the independent variable LKOF. In contrast, the smallest parameter was found in specification IV, independent variable DTERROR.

In Table 9, the first generation unit-roots were performed using the Maddala & Wu (1999) test. Unit roots allow identifying the order of integration of the variables, that is, $I(0)$, $I(1)$ or $I(2)$. This test is important because the unit-roots results can suggest the best econometric model that should be used to analyze the constructed data panel. The test can be run with several different configurations, for example, the number of lags can vary, and the test can be run in the presence of a trend or without the presence of the trend. Furthermore, variables can be at the level or after the first differences.

Table 9 - Maddala & Wu (1999) test of unit roots at level

At level				
	Variable	lags	chi_sq	p-value
Specification without TREND	LGDP	0	70.156	0.3400
	LGDP	1	47.793	0.9550
	LARRI	0	100.351	0.0040
	LARRI	1	56.844	0.7820
	LKOF	0	301.819	0.0000
	LKOF	1	211.027	0.0000
	EXC	0	88.458	0.0340
	EXC	1	129.454	0.0000
	TERROR	0	470.184	0.0000
	TERROR	1	355.806	0.0000
Specification with TREND	Variable	lags	chi_sq	p-value
	LGDP	0	37.997	0.9980
	LGDP	1	74.621	0.2180
	LARRI	0	90.743	0.0230
	LARRI	1	104.685	0.0020
	LKOF	0	76.865	0.1700
	LKOF	1	79.281	0.1260
	EXC	0	53.237	0.8710
	EXC	1	100.925	0.0040
	TERROR	0	398.507	0.0000
TERROR	1	273.875	0.0000	
After the first differences				
Specification without TREND	Variable	lags	chi_sq	p-value
	DLGDP	0	307.311	0.0000
	DLGDP	1	239.524	0.0000
	DLARRI	0	490.95	0.0000
	DLARRI	1	429.637	0.0000
	DLKOF	0	531.091	0.0000
	DLKOF	1	315.226	0.0000
	DEXC	0	453.444	0.0000
	DEXC	1	370.791	0.0000
	DTERROR	0	1411.191	0.0000
DTERROR	1	794.853	0.0000	
Specification with TREND	Variable	lags	chi_sq	p-value
	DLGDP	0	227.180	0.0000
	DLGDP	1	214.775	0.0000
	DLARRI	0	422.770	0.0000
	DLARRI	1	355.577	0.0000
	DLKOF	0	589.158	0.0000
	DLKOF	1	362.573	0.0000
	DEXC	0	369.623	0.0000
	DEXC	1	277.339	0.0000
	DTERROR	0	1198.994	0.0000
DTERROR	1	710.626	0.0000	

After analyzing the results, it is possible to infer that the variable LGDP in level has a unit root, i.e., it cannot be considered stationary in level. On the other hand, the TERROR variable in level is stationary, in the options “with” and “without” a trend. The analysis of the other variables is inconclusive, thus suggesting that they can be I(0) or I(1), depending on the configuration of the parameters. In turn, the variables after the first differences reveal that all are considered, with a statistical significance of 1%, of the order of integration I(1).

Fuinhas et al. (2019) make an important warning regarding the first generation unit root tests that are based on the hypothesis that there is no sectional dependence between countries, which in several studies does not occur, including in this dissertation, so this test is no longer efficient.

The authors thus suggest the second-generation unit root test, which was developed in order to deal with the presence of the sectional dependence phenomenon in the panels (Fuinhas et al., 2019).

Table 10 shows the results of Pesaran's (2007) second-generation test of unit roots in panels.

Table 10 - Pesaran Test (2007) of unit roots at level					
At level					
	Variable	lags	Zt-bar	p-value	t-bar
Specification without TREND	LGDP	0	-1.172	0.1210	.
	LGDP	1	-4.102	0.0000	.
	LARRI	0	-1.290	0.0990	.
	LARRI	1	-2.638	0.0040	.
	LKOF	0	-4.057	0.0000	.
	LKOF	1	-2.455	0.0070	.
	EXC	0	-5.27	0.0000	.
	EXC	1	-8.692	0.0000	.
	TERROR	0	-13.479	0.0000	.
	TERROR	1	-9.354	0.0000	.
Specification with TREND	LGDP	0	0.312	0.6220	.
	LGDP	1	-4.548	0.0000	.
	LARRI	0	1.883	0.9700	.
	LARRI	1	0.110	0.5440	.
	LKOF	0	-2.183	0.0150	.
	LKOF	1	0.303	0.6190	.
	EXC	0	-2.711	0.0030	.
	EXC	1	-6.899	0.0000	.
	TERROR	0	-12.577	0.0000	.
	TERROR	1	-7.192	0.0000	.
After the first differences					
	Variable	lags	Zt-bar	p-value	t-bar
Specification without TREND	DLGDP	0	-8.371	0.0000	.
	DLGDP	1	-6.217	0.0000	.
	DLARRI	0	-11.968	0.0000	.
	DLARRI	1	-8.118	0.0000	.
	DLKOF	0	-17.676	0.0000	.
	DLKOF	1	-8.374	0.0000	.
	DEXC	0	-14.852	0.0000	.
	DEXC	1	-12.641	0.0000	.
	DTERROR	0	-22.662	0.0000	.
	DTERROR	1	-15.805	0.0000	.
Specification with TREND	DLGDP	0	-5.933	0.0000	.
	DLGDP	1	-2.943	0.0020	.
	DLARRI	0	-10.599	0.0000	.
	DLARRI	1	-6.59	0.0000	.
	DLKOF	0	-16.017	0.0000	.
	DLKOF	1	-6.228	0.0000	.
	DEXC	0	-12.994	0.0000	.
	DEXC	1	-9.751	0.0000	.
	DTERROR	0	-21.049	0.0000	.
	DTERROR	1	-13.224	0.0000	.

The results of the second generation unit roots test indicate that the (level) variables EXC and TERROR are stationary. The other variables can be considered inconclusive, thus suggesting that

they can be $I(0)$ or $I(1)$. However, after the first differences, all variables reveal the rejection of the order of integration $I(1)$, being, therefore, stationary, that is, $I(0)$. Based on the test results, it can be concluded that the ideal econometric model to analyze this dataset is robust for the presence of variables with integration order $I(0)$ and $I(1)$ simultaneously.

4. Methodology

This chapter will present the method selected for analyzing the data presented in Chapter 3. Considering the nature of the variables that were identified through the pre-tests and statistics performed, it was possible to select the Panel Autoregressive Distributed Lag model, widely known by its acronym PARDL.

The Autoregressive Distributed Lag model (developed by Pesaran et al. (2001)) for time series analysis or the Panel Autoregressive Distributed Lag model for data panel analysis are often used in economic studies (Sharif et al., 2020; Machado et al., 2020; Machado et al., al., 2020; Fuinhas et al., 2020; Castilho, 2020; Perles-Ribes et al., 2017; Liu & Pratt, 2017; Marques et al., 2017).

The PARDL model has some advantages when compared to other models: it allows the identification of short and long term impacts; handles well with variables with two types of integration order I(0) and I(1), being able to work with both types simultaneously. In addition, the method allows the use of dummy variables to control shocks (e.g., Fuinhas et al., 2020; Machado et al., 2020; Belucio et al., 2020b; Marques et al., 2019; Neves et al., 2019, 2017). As these phenomena happen with some frequency in economies, this capacity of the model is important. However, it is important to emphasize that the method also has some disadvantages. It is not possible to apply it in the presence of variables of the order of integration I(2).

A PARDL model can follow the specification of Equation 1 (below), where the prefix “L” denotes the transformation of variables into natural logarithms.

$$LW_{it} = \alpha_{1i} + \beta_{1i1}LW_{it-1} + \beta_{1i2}LT_{it} + \beta_{1i3}LT_{it-1} + \dots + \beta_{1in}LZ_{it} + \beta_{1in+1}LZ_{it-1} + \varepsilon_{1it}, \quad (1)$$

where, W_{it} is the dependent variable, α is the model constant, the β represent the short term parameters and finally, ε_{1it} is the estimation error term, that is, the residuals.

In order to obtain the dynamic relations between the variables, the general dynamic form of the Error Correction Mechanism (ECM) in a PARDL model (Equation 1) can be reparametrized according to Equation 2, below:

$$\Delta LW_{it} = \alpha_{2i} + \beta_{2i1}DLW_{it-1} + \beta_{2i2}DLT_{it} + \dots + \beta_{2in}DLZ_{it} + \gamma_{2i1}LW_{it-1} + \gamma_{2i2}LT_{it-1} + \dots + \gamma_{2in}LZ_{it-1} + \varepsilon_{2it}, \quad (2)$$

where, DLW_{it} is the dependent variable after the first differences, represented by D . Likewise, the β represent the short term parameters, the γ , in turn, represent the long term parameters; ε_{2it} continues to represent the residuals of the estimation, and finally, LW_{it-1} represents the ECM, that is, the long term coefficient of the lagged dependent variable.

For ECM values, the results between zero and any positive value invalidate the long term model, indicating that there may be only short term effects on the variables analyzed. When the ECM results exceed the -1 mark, presenting lower values, these results tend to be considered unsatisfactory. However, this phenomenon does not always represent a problem, as it can arise in scenarios where there is much volatility, such as in the analysis of stock markets, exchange rate, number of tourists in the destination, among others, and the existence of correction of errors in less time than a period of the series under analysis. The method also tends to better deal with monthly, quarterly, and annual data, being more sensitive weekly, daily, or hourly.

Finally, to obtain the long term elasticities, it is necessary to calculate the ratio between the coefficient of the independent variables and the coefficient of the dependent variable, all lagged once, and then multiply this ratio by -1.

It is recalled that in this dissertation, it was chosen to use Stata software to calculate the pre-tests, presented in Chapter 3. Stata software was also applied to run the specification tests and the PARDL model that will be presented in the next chapter.

5. Results

The specification tests allow us to assess whether the PARDL model has the essential statistical characteristics to consider the model's results as robust. Table 11 presents specification tests. To check whether the panel has fixed or random effects, the Hausman test was performed using Stata's Hausman fixed random function. The result indicates that the individual effects of the countries are significant and must be taken into account, with the fixed effects model being the most adequate to analyze the impacts of the variables. The test's null hypothesis is that the difference in coefficients is not systematic. Next, the Modified Wald test is used to verify the existence of heteroscedasticity. The null hypothesis is the presence of homoscedasticity. Based on the results, the presence of heteroscedasticity was confirmed. This fact implies the use of a robust model for the problem. Stata's xttest3 function was used for this test.

The null hypothesis of the Pesaran test (xtcsd function, Stata Pesaran abs) indicates that the residues do not correlate and follow a normal distribution. However, the result indicates the presence of the phenomenon of contemporary correlation. The Frees and Friedman tests (xtcsd, frees, and xtcsd functions, Friedman from Stata, respectively) confirm the results of the Pesaran test, noting that both tests have transversal independence as the null hypothesis. The Breusch Pagan LM test is also indicated to analyze the transversal correlation, with the null hypothesis being transversal independence. The result of the Breusch Pagan LM test supports the results of the aforementioned tests. However, this test is not suitable for cases where the number of countries (N) is greater than the number of years (T) of the panel, which is verified in this dissertation, is 33 countries and 24 years old (N>T), and can therefore not be considered. In this test, Stata's xttest2 function was used. Finally, the Wooldridge test was performed to test for first-order serial autocorrelation in panels. The null hypothesis that there is no first-order serial autocorrelation was rejected. In this test, Stata's xtserial function was used.

Tests	Statistic	Probability (Prob>chi²)	Critical values of the Q distribution
Hausman	50.56	(0.0000)	n.a.
Modified Wald	13296.13	(0.0000)	n.a.
Pesaran's	7.326	0.0000	n.a.
Frees	0.6450	n.a.	alpha = 0.01 : 0.2129 alpha = 0.05 : 0.1470 alpha = 0.10 : 0.1124
Friedman	83.930	0.0000	n.a.
Breusch-Pagan LM	779.664	0.0000	n.a.
Wooldridge	117.753	0.0000	n.a.

Notes: Ho of Modified Wald test: $\sigma(i)^2 = \sigma^2$ for all I; Ho of Pesaran's test: residual are not correlated; Ho of Wooldridge test: no first-order autocorrelation; "n.a." means "not applicable".

Considering the phenomena of cross-sectional dependence, heteroscedasticity and first-order autocorrelation in the model, the Driscoll and Kraay (1998) estimator is the most suitable estimator according to the literature (Fuinhas et al. 2020; Castilho, 2020; Neves et al., 2017), and this model is capable of producing robust standard errors to the above-mentioned disorders.

It is recalled that in this dissertation, it was chosen to present two models calculated with the Driscoll and Kraay (1998) estimator, distinguishing them by the dependent variable. In the first, the dependent variable is International Tourism, represented by the number of arrivals; and in the second, the dependent variable is the Gross Domestic Product. Thus, in Equation 3, it is possible to observe the arrangement of all parameters of Model I.

$$DLARRI_{it} = \alpha_{3i} + \delta_{3i} + \beta_{3i1}DLGDP_{it} + \beta_{3i2}DLKOF_{it} + \beta_{3i3}DEXC_{it} + \beta_{3i4}DTEROR_{it} + \gamma_{3i1}LARRI_{it-1} + \gamma_{3i2}LGDP_{it-1} + \gamma_{3i3}LKOF_{it-1} + \gamma_{3i4}EXC_{it-1} + \gamma_{3i5}TERROR_{it-1} + \varepsilon_{it}. \quad (3)$$

The results of Model I and diagnostic statistics are presented in Table 12. The estimation has proceeded in the presence of a constant and a tendency. Short term impacts on international tourism have been verified. All variables positively impact international tourism, except for terrorism, which has a negative coefficient. All coefficients are statistically significant, ranging between 1% and 10%. The coefficient of the dependent variable lagged once is negative (-0.1) and statistically significant. This fact indicates that long term elasticities can be calculated, as there are long term effects in the model.

Table 12 - Driscoll-Kraay Results (Model I)						
Dependent variable:	Coefficient	Standard Error	t	P>t	[95% Conf. Interval]	
DLARRI						
Trend	0.004844	0.000724	6.69	0.0000	0.003343	0.006345
Constant	1.59954	1.44539	1.11	0.2800	-1.39802	4.597095
DLGDP	0.840432	0.232506	3.61	0.0020	0.358244	1.32262
DLKOF	0.496259	0.274915	1.81	0.0850	-0.07388	1.066397
DEXC	0.0033	0.001847	1.79	0.0880	-0.00053	0.00713
DTEROR	-0.00064	7.85E-05	-8.14	0.0000	-0.0008	-0.00048
LARRI(-1)	-0.10322	0.020177	-5.12	0.0000	-0.14506	-0.06137
LGDP(-1)	-0.0393	0.056153	-0.7	0.4910	-0.15575	0.077158
LKOF(-1)	0.216193	0.089968	2.4	0.0250	0.029611	0.402775
EXC(-1)	0.000909	0.000952	0.95	0.3500	-0.00107	0.002884
TERROR(-1)	-0.00034	7.69E-05	-4.46	0.0000	-0.0005	-0.00018
Diagnostic statistics						
N	759					
R²	0.2191					
F	F (10, 22) = 42.98***					
Note: *** denote statistical significance at the 1% level.						

Next, the model's residuals were verified, and shocks (or outliers) were identified and corrected with dummy variables. Table 13 shows the impulse dummies introduced in the model and the

theoretical justification for the identified and corrected shocks. Negative or positive shocks can, in some cases, infect other economies. In the case of internal crises, wars, or even terrorist attacks, the effects felt by a country can impact its neighbors. Therefore, in some cases, the effects of the instability of a country can be "felt" by a neighboring economy in the same period or the following. In addition, other diverse phenomena can be directly or indirectly related to the income of countries. For example, the financial crisis that started in the United States of America impacted the European economies more severely in 2009, months after its beginning.

Table 13 – Dummies in Model I

Dummies	Theoretical justification
Albania 1997 (alb1997)	In 1996 the country registered economic growth, however 4.2% lower than the previous year, showing signs of a strong recession. In 1997 the fall in GDP was drastic, around 10.92% (World Bank, 2021); the country was experiencing an internal crisis in this period (Migration grew in a disorderly way, the capital was destroyed by violence (Sikor et al., 2009). The United Nations, through Resolution 1101 (1997), determined that the crisis in Albania constituted a threat to international peace and security; the Security Council welcomed the offer of some Member States to establish a "temporary and limited multinational protection force" to facilitate the rapid and secure delivery of humanitarian aid and to help create a safe environment for international organizations (UN 1997). The following years were also marked by instability; the Kosovo war and the entry of refugees in 1999 after NATO airstrikes (Barutciski & Suhrke, 2002) reflect part of the economic insecurity in the country and region. Another economic factor that haunted the country in 1999 was the high unemployment rate (Council of the European Union 2000).
Albania 1999 (alb1999)	The constant crisis caused by the economic collapse after independence, by war, by the energy crisis has not benefited at all from the lack of experience of an independent government. An emerging wave of emigration that ended in 2001 resulted in a total net emigration of around 30% of the country's population (Makaryan & Galstyan, 2013). In addition, the country received approval from the Executive Board of the International Monetary Fund in 2001 for a new three-year loan under the Poverty Reduction and Growth Facility (International Monetary Fund, 2001).
Armenia 2001 (arm2001)	The instability resulting from the two coup attempts that shook Azerbaijan in 1995 (Freedom House, 2006) is a possible justification for the 1996 shock. It is recalled that the country only regained its independence after the collapse of the Soviet Union in 1991.
Azerbaijan 1996 (aze1996)	Recession indicators for Finland show several periods of recession for the country, with November 1997 to September 1999 and September 2011 to February 2015 being the main ones to stand out (FRED, 2021a). These crises justify that the shocks detected in this dissertation result from economic instability, not only in the period detected but, to a lesser extent, in earlier or later periods.
Finland 1998 (fin1998)	Georgia, from 1995 to 1996, experienced high economic growth, over 11%. However, the country's economy was stagnant from then onwards, and growth was increasingly smaller, just over 1% in the 2000s (World Bank, 2021). Georgia, like its neighbors Armenia and Azerbaijan, experienced several internal problems. In 1999 the national budget failed. The government collected only about 70% of the projected national budget (Papava, 2006), which also happened in the following years. Papava (2006) also shows that since 1999, the country was unable to obtain loans and donations from international financial institutions and donor countries, as it could not meet the International Monetary Fund requirements. In addition, in 2002, the International Monetary Fund suspended its own financing (Papava, 2006).
Finland 2013 (fin2013)	The insurrection in Macedonia, which took place in 2001, was an armed conflict that started after the National Liberation Army (of Albanian origin) attacked the country's security forces. The 2001 recession (World Bank, 2021) is the main indicator of this shock. Furthermore, it is historically the year with the most terrorist attacks (67) since 1995 (CHC Global, 2021) when the data began to be
Georgia 1997 (geo1997)	
Georgia 2001 (geo2001)	
Macedonia 2001 (mac2001)	

	calculated by CHC Global; these attacks were possibly motivated by the conflict between nations.
Moldavia 2004 (mol2004)	This was a particularly complex year for the country: several economic problems such as inflation (Dabrowski, 2003). In addition, Moldova at this time had half the average GDP per capita of the countries of the former Soviet Union and was the poorest country in Central and Eastern Europe (Libman, 2007). However, even with so many economic problems, the country had a growth in international arrivals of 328.6% (World Bank, 2021).
Portugal 2007 (por2007)	This year, the country experienced the so-called “general strike” (Dias & Fernandes, 2016), greatly motivated by revisions to the Labor Code, suggesting signs of internal instability to the world. In addition, the Subprime financial crisis began in the United States of America (e.g., Fuinhas et al., 2021), and Portugal was no exception, and therefore suffered the contagion effects of the crisis, which would become global. Nunes & Serrasqueiro (2017), who studied hotel companies in the country, used a dummy variable representing the financial crisis; this fact confirms the existence of a major shock in the economy that started in 2007.
Russia (1996) (rus1996)	This year's presidential election was the first fully competitive presidential contest in Russia and the first opportunity for Russians to vote at the presidential level since the collapse of the Soviet system (Miller et al., 1998). However, the year was also marked by a decline in GDP, around 3.76% (World Bank, 2021), and 66 terrorist attacks were counted (CHC Global, 2021). The effects of the recession experienced by the country contribute to the detection of this shock (FRED, 2021b).
Sweden 2011 (swe2011)	It can be said that the last decade has been tragic for Sweden. In July 2011 officially began one of the country's recession periods (FRED, 2021c) which ended in August 2013. Nevertheless, a new period of recession started in 2015 and became the longest period of recession in history (FRED, 2021c), lasting until May 2020.
Sweden 2015 (swe2015)	
Ukraine 1997 (ukr1997)	See Table 17

Table 14 presents the results of the short term impacts, the elasticities that were calculated, the dummies that control the shocks, and the adjustment time after correction of the model's shocks. If there is a 1% increase in GDP, international arrivals will positively impact 0.68% in the short term. As far as globalization is concerned, it has positive impacts on international arrivals, both in the short and long term, with the long term effects being stronger than the short term ones. The exchange rate reveals positive impacts in the short term, with the long term effects being slightly not statistically significant. The positive result in the short term aligns with the literature, where the positive component appreciates the national currency concerning foreign currencies (Irandoost, 2019). As far as terrorism is concerned, it had a negative impact in the short and long term, i.e., if the number of attacks increases, international arrivals decrease. The adjustment time after the correction of the shocks presented a value of -0.06. This result reflects a very low speed of adjustment, from short term imbalance to long term equilibrium state (e.g., Fuinhas & Marques, 2012).

Table 14 – Short term impacts, elasticities, and speed of adjustment based on the results of the Driscoll-Kraay model aftershock correction (Model I)

Short term impacts						
Dependent variable: ΔLARRI	Coefficient	Standard Error	t	P>t	[95% Conf. Interval]	
Constant	1.120097	1.050773	1.07	0.2980	-1.05907	3.299267
Trend	0.004055	0.000845	4.80	0.0000	0.002302	0.005808
ΔLGDP	0.681453	0.15328	4.45	0.0000	0.363569	0.999336
ΔLKOF	0.533735	0.163183	3.27	0.0030	0.195314	0.872157
ΔEXC	0.001424	0.0008	1.78	0.0890	-0.00024	0.003084
ΔTERROR	-0.0006	5.17E-05	-11.52	0.0000	-0.0007	-0.00049
Long term (calculated) elasticities						
	Coefficient	Standard Error	z	P>z	[95% Conf. Interval]	
LGDP(-1)	-0.57556	0.789658	-0.73	0.4660	-2.12327	0.972137
LKOF(-1)	2.411022	1.113302	2.17	0.0300	0.2289914	4.593053
EXC(-1)	0.0060441	0.0064592	0.94	0.3490	-0.0066157	0.0187039
TERROR(-1)	-0.0049761	0.0015223	-3.27	0.0010	-0.0079596	-0.0019925
Adjustment time after correction of shocks						
	Coefficient	Standard Error	t	P>t	[95% Conf. Interval]	
ECM	-0.05728	0.010625	-5.39	0.0000	-0.07931	-0.03524
Dummies						
	Coefficient	Standard Error	t	P>t	[95% Conf. Interval]	
aze1996	0.6274056	0.0615785	10.19	0.0000	0.4996995	0.7551116
arm2001	0.7296321	0.0288964	25.25	0.0000	0.6697045	0.7895596
ukr1997	0.7496909	0.0351879	21.31	0.0000	0.6767157	0.8226661
alb1997	-0.9085683	0.0394095	-23.05	0.0000	-0.9902986	-0.826838
alb1999	0.4503743	0.0370603	12.15	0.0000	0.373516	0.5272325
fin2013	-0.4248016	0.0124585	-34.1	0.0000	-0.450639	-0.3989642
fin1998	0.3217247	0.0127704	25.19	0.0000	0.2952405	0.3482088
geo1997	0.7041047	0.0430807	16.34	0.0000	0.6147608	0.7934487
geo2001	-0.4397081	0.0383664	-11.46	0.0000	-0.5192751	-0.3601412
mac2001	-0.8114053	0.0169073	-47.99	0.0000	-0.8464689	-0.7763417
mol2004	1.099364	0.0291857	37.67	0.0000	1.038836	1.159891
por2007	-0.5651127	0.014206	-39.78	0.0000	-0.5945741	-0.5356513
swe2011	0.7410345	0.0176798	41.91	0.0000	0.7043688	0.7777001
swe2015	-0.4985428	0.026461	-18.84	0.0000	-0.5534196	-0.4436659
rus1996	0.4659165	0.0339647	13.72	0.0000	0.3954781	0.5363549
Diagnostic statistics						
N	759					
R²	0.6618					
F	F (25, 22) = 1.08e+07***					
Note: The ECM denotes the coefficient of the variable LARRI lagged once; *** denote statistical significance at the 1% level.						

By analyzing the results of the specification tests (Table 15), it is possible to state that Model II has the same characteristics as Model I, i.e., the same phenomena of cross-sectional dependence, heteroscedasticity, and first-order autocorrelation are present, being, again, the Driscoll and Kraay (1998) estimator the most appropriate estimator. This phenomenon was expected since only the position between the dependent variable was exchanged with one of the independent variables.

Table 15 - Specification Tests (Model II)			
	Statistic	Probability (Prob>chi²)	Critical values of the Q distribution
Hausman test	40.55	(0.0000)	n.a.
Modified Wald test	2293.35	(0.0000)	n.a.
Pesaran's test	35.163	0.0000	n.a.
Frees' test	2.502	n.a.	alpha = 0.01 : 0.2129 alpha = 0.05 : 0.1470 alpha = 0.10 : 0.1124
Friedman's test	183.018	0.0000	n.a.
Breusch-Pagan LM test	2094.657	0.0000	n.a.
Wooldridge test	29.247	0.0000	n.a.

Notes: Ho of Modified Wald test: $\sigma(i)^2 = \sigma^2$ for all I; Ho of Pesaran's test: residual are not correlated; Ho of Wooldridge test: no first-order autocorrelation; "n.a." means "not applicable"

In Equation 4, it is possible to observe the arrangement of all the parameters of Model II. Thus, it is possible to verify that the Gross Domestic Product is the dependent variable in this equation. Thus, the international arrivals become one more parameter of the group of independent variables.

$$DLGDP_{it} = \alpha_{4i} + \beta_{4i1}DLARRI_{it} + \beta_{4i2}DLKOF_{it} + \beta_{4i3}DEXC_{it} + \beta_{4i4}DTERROR_{it} + \gamma_{4i1}LGDP_{it-1} + \gamma_{4i2}LARRI_{it-1} + \gamma_{4i3}LKOF_{it-1} + \gamma_{4i4}EXC_{it-1} + \gamma_{4i5}TERROR_{it-1} + \varepsilon_{it}. \quad (4)$$

Model II results and its diagnostic statistics are shown in Table 16. The estimation was made in the presence of a constant. Its coefficient is statistically significant at the 1% level. The short term impacts on GDP, which represents economic growth, were verified. Only the international tourism variable has a positive impact on GDP. Its coefficient is statistically significant at the 1% level. The coefficient of the dependent variable lagged once is negative (-0.07) and statistically significant at the 1% level. As in Model I, this fact indicates that long term elasticities can be calculated, as there are long term effects for Model II.

Table 16 - Driscoll-Kraay Results (Model II)

Dependent variable: Δ LGDP	Coefficient	Standard Error	t	P>t	[95% Conf. Interval]	
Constant	1.278532	0.344595	3.71	0.0010	0.5638859	1.993178
Δ LARRI	0.067979	0.019776	3.44	0.0020	0.0269664	0.1089908
Δ LKOF	0.146694	0.195344	0.75	0.4610	-0.2584243	0.5518132
Δ EXC	0.000662	0.000617	1.07	0.2950	-0.0006182	0.0019428
Δ TERROR	-0.000006	0.000036	-0.16	0.8740	-0.0000814	0.0000697
LGDP(-1)	-0.069255	0.019644	-3.53	0.0020	-0.1099939	-0.0285151
LARRI(-1)	0.013843	0.004282	3.23	0.0040	0.0049623	0.0227229
LKOF(-1)	0.096110	0.047057	2.04	0.0530	-0.0014791	0.1936997
EXC(-1)	-0.000333	0.000299	-1.12	0.2760	-0.0009524	0.0002859
TERROR(-1)	-0.000030	0.000051	-0.59	0.5580	-0.0001362	0.0000755

Diagnostic statistics

N	759
R ²	0.1654
F	F(9, 22) = 15.39***

Note: *** denote statistical significance at the 1% level.

Then, the residuals of the model were verified, and the shocks of Model II were identified. In order to correct them, impulse-type dummy variables were also used. Table 17 shows the countries, years of shocks, and the respective theoretical justification for the occurrence.

Table 17 - Dummies in Model II

Dummies	Theoretical justification
Albania 1996 (alb1996)	See Table 13
Armenia 2009 (arm2009)	The global recession, a result of the Subprime financial crisis, brought a great disturbance to the Armenian economy. Banaian (2009) shows that the government had to act on the exchange rate after a drain on foreign reserves. In addition, the loss of reserves was attributed to the loss of revenue from mineral exploration exports. However, it can also be attributed to the effects of the global financial crisis on remittance flows (Banaian, 2009), reinforcing the contagion effect of the crisis. Banaian (2009) also points out other critical points: the closed border with Turkey; trade with Iran that creates problems with Western allies; and Georgia's political uncertainties. All these factors are responsible for internal problems.
Azerbaijan 1996 (aze1996)	See Table 13
Azerbaijan 2005 (aze2005)	In this period, the country experienced several contrasts, for example, the increase in revenue from oil exports (one of the biggest contributions to GDP), which in this period experienced its highest historical high (\$ money of the day) (Looney, 2020) coinciding with Zulfigarov & Neuenkirch (2020), who show that the effects of GDP are proven mainly after oil price increases. For the first time since 1995, there has been a drop in international arrivals (World Bank 2021). This fall probably originated due to a serious breach of the ceasefire with Armenia that took place in March 2005 (Panarmenian, 2005); violations of the ceasefire agreements between Azerbaijan and Armenia continued for years to come (United Nations, 2008), and geopolitical tensions between the countries continue to this day (Taghizade, 2021).
Azerbaijan 2006 (aze2006)	
Azerbaijan 2007 (aze2007)	
Bulgaria 1997 (bul1997)	Between December 1996 and January 1997, with the growing economic depression and the indication of Nikolai Dobrev (by the Socialist Party) for the post of Prime Minister, demonstrations took place in front of Parliament, followed by the invasion of the building and the police used force against the crowd (European Parliament, 1999). Political instability, a transitional government (until the constitution of the government of the United Democratic Forces in May)
Bulgaria 1999 (bul1999)	

	contributed to the economic shock of 1997. In 1999 the Kosovo crisis hit the Bulgarian economy hard (European Parliament, 1999).
Cyprus 2013 (cyp2013)	The country was going through the second year of economic recession since there are statistical data (World Bank, 2021). Nevertheless, the 2013 recession was even worse than 2009, one triggered by the global financial crisis.
Finland 2009 (fin2009)	The country suffered from the worst economic recession since the 1990s. The global financial crisis triggered the crisis in Finland (e.g., Vaitinen & Vanne, 2017), and GDP fell by around 8.1% in the year 2009 (World Bank, 2021).
Ireland 2015 (ire2015)	Ireland completed the European Union-International Monetary Fund financial assistance program in 2013 (European Commission, 2015), and the country's GDP grew by more than 25% between 2014 and 2015 (Tedeschi, 2018). However, the country faced macroeconomic imbalances (European Commission, 2015). In 2015, despite a marked improvement in economic prospects (through GDP), the European Commission (2015) was still concerned about the risks related to the high levels of indebtedness of the public and private sectors and the challenges of the financial sector.
Latvia 2009 (lat2009)	Like its European neighbors and the rest of the world, Latvia has suffered from an economic recession triggered by the global financial crisis. As a result, GDP fell by 14.3% in 2009 (World Bank, 2021).
Romania 1997 (rom1997)	Although this year the government has introduced stricter macroeconomic policies, failed to restructure obsolete industries and institutions, besides living standards fell sharply in 1997 (European Parliament, 2000). The year was also marked by a recession, with the GDP falling by around 4.8% (World Bank, 2021). Furthermore, in 1997, the European Commission expressed doubts about the political neutrality of the members of the judicial power (European Parliament, 2000), a fact that harmed the country on the international stage.
Russia 1996 (rus1996)	See Table 13
Ukraine 1996 (ukr1996)	During this period, several incidents of corruption occurred in the country, so much so that former Prime Minister Pavlo Lazarenko (1995-1996) was convicted of money laundering, electronic fraud, and extortion during his tenure (Transparency International, 2004). In addition, in this period, the country experienced consecutive falls in GDP (World Bank, 2021), a phenomenon that contributed to the unstable situation in the country and in the region in the 1990s.
Ukraine 1997 (ukr1997)	
Ukraine 2003 (ukr2003)	In 2003 and 2004, Ukraine experienced its best economic performance since the late 1980s. The growth was 9.5% and 12.1% in 2003 and 2004, respectively (World Bank, 2021). In addition, during this period, the country experienced incredible growth in international tourism, around 18.5% in 2003 and 22.6% in 2004 (World Bank, 2021).
Ukraine 2003 (ukr2004)	
Ukraine 2009 (ukr2009)	Like Europe's neighbors, Ukraine has experienced a severe economic recession triggered by the global financial crisis. As a result, GDP fell about 14.8% in 2009 (World Bank, 2021), the worst crisis since the 1990s.
Turkey 2001 (tur2001)	Through FRED data (2021d), it is possible to identify that the year 2001 was a year of recession, strengthening the detection of this shock. GDP fell by 5.7% (World Bank, 2021), the worst performance since the 1960s.

Table 18 presents the results of the short term impacts, the elasticities that were calculated, the dummies that control the shocks, and the adjustment time after correction of the model's shocks. An increase in international arrivals will positively impact GDP in the short and long term, with the long term impact being great. On the other hand, globalization has positive impacts on international arrivals in the long term, with no statistically significant effects being captured in the short term. The exchange rate shows a positive impact on GDP only in the short term. Terrorism did not present statistically significant coefficients. The adjustment time after the correction of the shocks showed a negative and low value (-0.05), confirming the persistence of the phenomenon of very low adjustment speed, from the short term imbalance to the long term equilibrium state.

Table 18 – Short term impacts, elasticities, and speed of adjustment based on the results of the Driscoll-Kraay model aftershock correction (Model II)

Short term impacts						
Dependent variable: ΔLGDP	Coefficient	Standard Error	t	P>t	[95% Conf. Interval]	
Constant	1.051375	0.2898001	3.63	0.0010	0.4503663	1.652383
ΔLARRI	0.0833603	0.015606	5.34	0.0000	0.0509953	0.1157252
ΔLKOF	0.2263424	0.1387884	1.63	0.1170	-0.0614871	0.5141719
ΔEXC	0.0008968	0.0003389	2.65	0.0150	0.0001939	0.0015997
ΔTERROR	-4.68E-06	0.0000246	-0.19	0.8510	-0.0000557	0.0000463
Long term (calculated) elasticities						
	Coefficient	Standard Error	z	P>z	[95% Conf. Interval]	
LARRI(-1)	0.2618699	0.064219	4.08	0.0000	0.136003	0.3877368
LKOF(-1)	0.7982424	0.4371362	1.8300	0.0680	-0.0585289	1.655014
EXC(-1)	0.0040504	0.0034899	-1.16	0.2460	-0.0108903	0.0027896
TERROR(-1)	-0.0009125	0.0008976	-1.02	0.3090	-0.0026718	0.0008468
Adjustment time after correction of shocks						
	Coefficient	Standard Error	t	P>t	[95% Conf. Interval]	
ECM	-0.0523935	0.0159202	-3.29	0.0030	-0.0854099	-0.0193771
Dummies						
	Coefficient	Standard Error	t	P>t	[95% Conf. Interval]	
alb1996	0.0830437	0.0217314	3.82	0.0010	0.0379755	0.1281119
arm2009	-0.1824791	0.0122113	-14.94	0.0000	-0.2078039	-0.1571544
aze2005	0.1778509	0.0138688	12.82	0.0000	0.1490888	0.206613
aze2006	0.2346285	0.0109954	21.34	0.0000	0.2118255	0.2574315
aze2007	0.1613296	0.0138928	11.61	0.0000	0.1325176	0.1901416
aze1996	-0.1368871	0.0221047	-6.19	0.0000	-0.1827295	-0.0910447
bul1997	-0.2202209	0.0100047	-22.01	0.0000	-0.2409694	-0.1994725
bul1999	-0.1297065	0.0051933	-24.98	0.0000	-0.1404767	-0.1189362
cyp2013	-0.0894914	0.0070737	-12.65	0.0000	-0.1041614	-0.0748214
fin2009	-0.0984324	0.0041922	-23.48	0.0000	-0.1071264	-0.0897384
ire2015	0.1895023	0.012921	14.67	0.0000	0.1627057	0.2162988
lat2009	-0.1676374	0.0129451	-12.95	0.0000	-0.1944839	-0.1407909
rom1997	-0.0994026	0.0120877	-8.22	0.0000	-0.1244709	-0.0743342
rus1996	-0.1396844	0.013499	-10.35	0.0000	-0.1676796	-0.1116892
ukr1996	-0.1686153	0.0175374	-9.61	0.0000	-0.2049856	-0.1322449
ukr1997	-0.138528	0.0140203	-9.88	0.0000	-0.1676044	-0.1094517
ukr2003	0.0571432	0.0063503	9	0.0000	0.0439736	0.0703129
ukr2004	0.0712727	0.0060397	11.8	0.0000	0.0587471	0.0837982
ukr2009	-0.1424968	0.012389	-11.5	0.0000	-0.1681899	-0.1168037
tur2001	-0.109181	0.0144595	-7.55	0.0000	-0.1391681	-0.0791939
Diagnostic statistics						
N	759					
R²	0.5438					
F	F (29, 22)***					
Note: ECM denotes the coefficient of the variable LGDP lagged once; *** denote statistical significance at the 1% level.						

6. Discussion of results

In the short term, the economic development of the countries of the Council of Europe plays a significant role in international tourism. Thus, it can be affirmed that the independent results of Model II in the short term partially validate Hypothesis 1 of this dissertation. Nevertheless, it should be noted that the reverse is also true and significant (results of Model I), that is, international arrivals in the Council of Europe countries impact economic growth. Thus, Hypothesis 2 of this dissertation is also partially validated. Thus, it is possible to affirm that the independent results of Model I and Model II indirectly contribute to the tourism economics literature because they validate the tourism-led growth (TLG) feedback hypothesis (Figure 4).



Figure 4 – Feedback hypothesis between tourism and GDP (short term)

The short term investigations of this dissertation are important for the literature because, as far as is known, this is the first time that the Council of Europe countries is considered. Furthermore, the validation of the TLG feedback hypothesis in the short term can be seen in studies of tourism economics (e.g., Samimi et al., 2011). Furthermore, the feedback relation between Tourism and GDP can be easily found in the literature (e.g., Brida et al., 2016).

Oh (2005) says that scientifically proven information is crucial for the private, public, and government sectors to manage tourism operations and to plan in order to maximize tourism earnings. Thus, the research presented here allows to propose public measures and are in accordance with what the previous author says. A suggestion for the countries of the Council of Europe could be, for example, the implementation of short term public measures to try to minimize the negative effects of the COVID-19 pandemic, which for some time forced the closure of several borders of tourist countries. Furthermore, the quick and assertive dynamization of health safety certificates for companies in the airline, hotel, and restaurant sectors can increase tourist flows. The flow of tourists, in turn, benefits the trade balance of countries with the accumulation of funds through the export of tourism services.

In the long term, the tourism sector continues to play a significant role in the economic development of the Council of Europe countries, which fully validates Hypothesis II of this dissertation. Furthermore, this result supports the hypothesis of sustained growth by the tourism sector (from the Tourism-Led Growth hypotheses) (Figure 6). In fact, the growth relation sustained by tourism is common and can be seen in contemporary literature (Fuinhas et al., 2020; Lin et al., 2019). This discovery contributes so that public policies to encourage activities to attract

international tourism should be supported in the coming years by the countries of the Council of Europe.



Figure 5 – Growth hypothesis supported by tourism (long term)

Among tourists, the safety factor is important. Therefore, measures that make the tourist destination safer are essential for the development of the tourism sector. Belucio et al. (2019) argue that public-private partnerships between security agencies, international organizations, and companies in the tourism sector can contribute to a safer destination for tourists. The results of this dissertation show that this type of public policy is necessary for the Council of Europe countries, as both in short and the long term, the impact of terrorism is negative for international tourism (Figure 6). This result validates Hypothesis 3 proposed in this dissertation.



Figure 6 – Negative relation between terrorism and tourism in the short and long term

No statistically significant impacts between terrorism and economic growth were detected. Therefore, Hypothesis 4 of this dissertation was not verified. This result diverges from the literature (e.g., Mohamed et al., 2019), but its justification is centered on the fact that terrorist attacks generate such insecurity that it is necessary to take urgent public measures. In this way, public security agents quickly try to give a rigorous response to those responsible for the attacks. It is common to see armies supporting the police in cities and countries that suffer attacks shortly after the occurrence. Furthermore, most of the country's economic activities do not stop for an extended period, passing through the attack without having significant impacts.

Relevant consideration for the case is that economic growth may decline indirectly through the tourism sector. Tourists with trips scheduled to a tourist destination that was the target of a terrorist attack may be infected with a feeling of insecurity and give up on the trip. Therefore, rapid actions of the State are fundamental so that the negative effects that the media cause do not occur. Brown (2015) describes these effects of “storms” as devastating for economies that rely on tourism as an economic driver.

Positive impacts of globalization on the number of international arrivals were detected in the short and long term (Figure 7), thus validating Hypothesis 5 of this dissertation. Since the 1990s,

globalization is developing rapidly globally, and the countries of the Council of Europe are no exception. Data that confirm this fact can be seen at ETH Zürich KOF (2021). It is known that tourist destinations explore the outputs of globalization through promotions in digital format, ease of access to air tickets and accommodation, speed of payment, among others. Therefore, the tourism sector in the countries must rely on existing tools such as the internet to further develop their marketing actions.



Figure 7 – Positive relation between globalization and tourism in the short and long term

These results shed light on the question proposed by Song et al. (2018)³. Therefore, policies of international opening can benefit the tourist destination. State support to attract foreign capital investment for the rehabilitation of the tourism sector would be another measure that would benefit the economy in a post-pandemic scenario. With foreign investment, it is possible to create jobs in the tourism sector and improve economic indicators. A counterpart that States could offer would be tax exemptions. Ivanov & Webster (2013) contribute to the debate showing a negative impact on less open economies. Inbound tourism may be limited and subject to government control and a positive impact, where most tourism receipts can remain within the country.

The impact of globalization on economic growth was only statistically significant in the long-term analysis (Figure 8). The positive impact only in the long term partially confirms Hypothesis 6 of this dissertation. Ivanov & Webster (2013) demonstrated that the level of globalization of a country is not related to the contribution of tourism to the economic well-being of its citizens. Nevertheless, Models, I and II presented here have important management implications for tourism policymakers as globalization has a direct and positive impact on the tourism industry. In the long run, it also has an impact on growth.



Figure 8 – Positive relation between globalization and long-term economic growth

The effects of the exchange rate on international tourism in the Council of Europe countries only occur in the short term (Figure 9), partially validating Hypothesis 7 of this dissertation. Furthermore, this result is in line with contemporary literature that points to the discovery as appreciations of the national currency (Irandoost, 2019).

³ Song et al., (2018) how does a destination increase its competitiveness by reacting to the influential forces behind globalization?



Figure 9– Positive relation between the exchange rate and tourism in the short term

Since it is a very volatile variable, its long-term effect is difficult to predict. Of course, stronger currencies like those of developed countries tend to remain valued against currencies of poor or developing countries. For the development of the tourism sector, the exchange rate can be a partner or an antagonist, so monetary policies must be assertive, and countries must have the utmost attention because they may unintentionally harm an important economic sector and drive away tourism.

The effects of internal or regional crises affect the economies of the Council of Europe. In this dissertation, several types of crises were presented that, over time, caused strong impacts on the economies involved. The tourism sector has been no exception and has absorbed many of the shocks that have occurred since the 1990s. In future studies, the pandemic crisis caused by COVID-19 cannot be ignored. Possibly researchers will find this shock starting in 2020 and could extend to 2021. This information is useful as it can save time for tourism economics researchers and other tourism enthusiasts.

A barrier that was not possible to overcome in this dissertation and a subject widely discussed in the literature is the issue of the environment. For example, Leal & Marques (2020) state that climate change is considered a great threat to humanity in an era of globalization. Furthermore, with the growing environmental awareness around the world, the trade-off between the economic benefit of tourism and its adverse implications for the environment has gained relevance (Castilho, 2020). Therefore, in the future, further investigations should also consider the effects of the environment/climate on the tourism-growth relation, globalization, and terrorism.

7. Conclusions

In this dissertation, the connections between economic growth, tourism, and terrorism in the Council of Europe countries were examined. A data panel was built with thirty-three countries of the forty-seven members of the Council of Europe. The time horizon was as wide as possible and without breakdowns in the structure, with data from 1995 to 2018. The PARDL method was selected to analyze short term and long term impacts. The Driscoll and Kraay (1998) estimator was the most robust option for analysis and was thus applied, considering the phenomena of fixed effects, cross-section dependence, heteroscedasticity, and first-order autocorrelation in the model.

Two PARDL econometric models were developed. In Model I, the impact of economic growth on tourism in the Council of Europe countries was verified; and in Model II, the impact of tourism on economic growth in the Council of Europe countries was verified. Both were positive and statistically significant in the short term. However, in the long term analysis, only the impact of tourism on economic growth in the Council of Europe countries was verified. In this way, the general objective of this dissertation was fulfilled, i.e., to contribute to the understanding of the relation between growth and tourism in the Council of Europe countries through the elaboration of two econometric models. In addition, the two central questions of this dissertation were answered: (i) what is the impact of economic growth on tourism in the Countries of the Council of Europe in the presence of parameters of terrorism and globalization? and (ii) what is the impact of tourism on the economic growth of the Council of Europe countries in the presence of parameters of terrorism and globalization? Table 19 presents a summary of the results of the hypotheses proposed in this dissertation.

Table 19 – Results found based on hypotheses		
	Short and long term impacts	Results
Hypothesis 1	GDP → Tourism	Partially validated (short term impact only)
Hypothesis 2	GDP ← Tourism	Validated
Hypothesis 3	Terrorism → Tourism	Validated
Hypothesis 4	Terrorism → GDP	Not validated
Hypothesis 5	Globalization → Tourism	Validated
Hypothesis 6	Globalization → GDP	Partially validated (long term impact only)
Hypothesis 7	Exchange Rate → Tourism	Partially validated (short term impact only)
Note: Arrows indicate the direction of impact		

As far as is known, there is no econometric study on the relationship between economic growth, tourism, and terrorism for the Council of Europe countries. Therefore, the results presented here, in addition to confirming some of the hypotheses raised in this dissertation, bring light to contemporary literature on tourism economics.

This dissertation, like all studies, has some limitations. The first is related to data, where the number of Council of Europe countries could not be the total due to lack of statistical information. It is believed that with the development of the tourism sector in countries, this problem may be overcome in the future, making it possible to add more countries and more years to the time series, thus expanding the data panel. Another item to highlight is the non-use of environment/climate variables. As much as the topic is of global interest, the elaboration of an econometric model that focused attention on the tourism-growth-environment relation for the Council of Europe countries would make the elaboration of this dissertation unfeasible. Therefore, it is suggested that future studies be developed considering these variables for the Council of Europe. It is also suggested the development of studies with the variables presented here and the replication of Models I and II for other groups of countries to verify the prevalence of the results found here.

The results found here support the decision-makers of the Council of Europe to develop public measures that promote tourism in their countries to attract foreigners. Furthermore, the results support that measures aimed at inhibiting terrorism are beneficial to the tourism sector, indirectly benefiting the economic growth of the Council of Europe countries, and should therefore be encouraged. Finally, decision-makers can also take advantage of the opportunities intrinsic to globalization to develop partnerships to attract and capture international tourism.

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