The impact of criminal activity on tourism: Evidence from Latin America and Caribbean countries

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Resumo

O impacto da atividade criminosa no turismo é analisado para um painel de 14 países da região da América Latina e Caribe entre 1995 e 2016. As repercussões do crescimento económico, da inflação, da taxa de câmbio e da desigualdade de rendimento também são estudadas. A execução dos pré-testes sugeriu que a melhor abordagem para analisar as relações dinâmicas entre as variáveis no curto e longo prazo é o modelo autorregressivo de defasagem distribuída (ARDL). Os resultados para os catorze países, conforme esperado, revelaram um impacto negativo do crime e um impacto positivo do PIB na atividade turística, tanto no curto quanto no longo prazo.

Palavras-chave

Turismo; crime; crescimento económico; América Latina e Caribe; dados em painel; ARDL.

Resumo Alargado

A literatura académica depara-se com conclusões divergentes sobre o impacto do crime no turismo, constantemente, em diferentes partes do mundo. Apesar da globalização, o turismo e o crime desenvolvem-se de forma diferente em todo o mundo. A região da América Latina e Caribe é conhecida por ser considerada um destino turístico paradisíaco à escala mundial, com potencial para se desenvolver rapidamente. No entanto, a enorme atividade criminosa na América Latina e no Caribe pode vir a prejudicar o desenvolvimento da região, uma vez que a contribuição do setor turístico é indispensável para o crescimento do PIB da região.

O impacto da atividade criminosa no turismo é analisado para um painel de 14 países da região da América Latina e Caribe entre 1995 e 2016. O horizonte temporal e os países foram selecionados com base nos dados disponíveis para cumprir a condição de painel equilibrado. A análise econométrica foi realizada no software Stata. As repercussões do crescimento económico, da inflação, da taxa de câmbio e da desigualdade de rendimento também são estudadas. A execução dos pré-testes sugeriu que a melhor abordagem para analisar as relações dinâmicas entre as variáveis no curto e longo prazo é o modelo autorregressivo de defasagem distribuída (ARDL). Um grupo de testes de especificação geralmente aplicados a modelos com dados em painel, para selecionar o estimador mais robusto e obter os resultados menos distorcidos possíveis foram aplicados. Além disso, também se apresenta a estimativa das semi-elasticidades e elasticidades para observar os efeitos de curto e longo prazo, respetivamente. Os resultados dos testes de especificação revelaram que o estimador mais adequado a ser utilizado é Driscoll e Kraay (1998), um estimador padrão robusto com efeitos fixos, uma vez que os erros padrão produzidos pelo estimador são robustos para modelos com presença de heterocedasticidade, dependência transversal, correlação contemporânea e autocorrelação de primeira ordem. O Mecanismo de Correção de Erros (ECM) é estatisticamente significativo e negativo, o que indica a presença de cointegração, que por sua vez, significa que existem relações de longa memória entre as variáveis em estudo.

Os resultados para os catorze países, conforme esperado, revelaram um impacto negativo do crime e um impacto positivo do PIB na atividade turística dos países da região da América Latina e Caribe, tanto no curto quanto no longo prazo. A variável

inflação é relevante para o modelo, porém, apenas se tornou significativa após a correção dos choques.

Abstract

The impact of criminal activity on tourism is analysed for a panel of 14 countries in the Latin America and Caribbean region between 1995 and 2016. The repercussions of economic growth, inflation, the exchange rate and income inequality are also studied. Pre-tests' performance suggested that the best approach is an autoregressive distributed lag (ARDL) to analyse the dynamic relationships between variables in the short and long- run. The results for the fourteen countries, as expected, revealed a negative impact of crime and a positive impact of GDP on tourism activity, for both the short- and long run.

Keywords

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Acronyms List

ADF	Augmented Dickey-Fuller test
ARDL	Autoregressive Distributed Lag Model
CD	Cross-section Dependence
CIPS	Cross-sectionally Augmented Im, Pesaran and Shin test
CO_2	Carbon Dioxide Emissions
CR	Crime Rate
DK	Driscoll Kraay
ECM	Error Correction Mechanism
FE	Fixed Effects
FIFA	International Football Federation
GDP	Gross Domestic Product
GMM	Generalized Method of Moment
INF	Gross Domestic Product deflactor
LCU	Local Currency Unit
MW	Maddala and Wu (1999) Panel Unit Root test
OECD	Organization for Economic Co-operation and Development
RE	Random Effects
SMEs	Small and Medium-sized Enterprises
TA	Tourism Arrivals
TX	Real Effective Exchange Rate
VIF	Variance Inflation factor
UECM	Unrestricted Error Correction Model
UNEMP	Unemployment
UNODOC	United Nations Office on Drugs and Crime
UNWTO	United Nation of The World Tourism Organization
WTTC	World Travel & Tourism Council

1 Introduction

In the academic literature on the subject, it has become widely accepted that dissimilar conclusions are reached about the crime's impact on tourism, in different parts of the world. The increasingly global tourism sector and greater international cooperation, raise uncertainties about the impact of criminal activity. Despite this globalization, tourism and crime are developing differently throughout the world in the past few years. The region of Latin America and the Caribbean is known for being considered a paradisiacal tourist destination on a world scale, with the potential to develop quickly. However, the huge crime activity in Latin America and the Caribbean can harm the tourist sector, contributing a lot to GDP growth in the region.

In order to understand, a certain comprehension of some aspects about the subject is needed, not only on the impact of criminal activity on the tourism sector, but also to verify if the economic growth, the increase of inflation, the volatility of the exchange rate, and the increase of the unemployment that is a strong factor on the increase in the income inequality, have repercussions in the tourist activity.

For this reason, the following objective was established for this article: to isolate the effect of variables of an economic nature and to verify whether they are an explanation (albeit a determinant one) of the phenomenon of tourist visits in the region of Latin America and the Caribbean. Given the proposed objective, five hypotheses were raised. Hypothesis 1: crime has a negative impact on tourism. Hypothesis 2: GDP has a positive impact on tourism. Hypothesis 3: inflation has a negative impact on tourism. Hypothesis 4: unemployment has a negative impact on tourism. Hypothesis 5: the exchange rate has a positive impact on tourism.

The analysis is based on a panel data set, with a 21-year time horizon between 1995 and 2016, for fourteen Latin America and Caribbean countries. To comply with the objective and answer the proposed hypotheses, the autoregressive distributed lag (ARDL) model was adopted to analyse the dynamic relationships between variables in the short and long run.

2 Literature review

2.1 Tourism and economy

All nations are taking economic, socio-cultural, political, and environmental decisions to develop citizens quality of life (Crouch & Ritchie, 1999). In the last decades, globalization progress has boosted information, and development has motivated young people to travel. All the recent investigations are related to the relationship between tourism and economic growth (Du et al., 2016), and also the effects of tourism on the economy have been a matter of great importance (Croes et al., 2018; Pérez-Rodríguez et al., 2015).

According to the World Travel & Tourism Council (WTTC), the impressive and successful tourism development has made it, on becoming the largest industry in the world, representing more than 10% of the global production of gross domestic product (GDP) and employment, with

more than 50% of GDP to the top four countries on WTTC list (WTTC, 2016). In this way, the tourism sector becomes one of the main export industries. It has an essential role in economic growth, making some economies dependent on tourism (Belucio et al., 2018).

The tourism results of activity can be considered a high weight in these destinations' budgets (Stabler & Sinclair, 1997). Therefore, it may replace other less profitable economic activity sectors (Ainura et al., 2014). However, tourist activity stands for its ability to make common revenue and contribution to new job opportunities (Garsous et al., 2017) and infrastructure investment (Belucio et al., 2018).

The tourism sector becomes one of the main drivers of economic growth, especially for developing destinations, as it encourages the creation of efficient strategies that support this growth, such as investment in human capital and infrastructure, the supply of jobs and foreign currency (Fuinhas et al., 2020).

The impact of tourism on many countries' economies made this industry one of the most important goals for small regions, such as islands and developing countries in tourism resources (Cannoier & Burke, 2019) (Biagi & Detotto, 2014). In developing economies, the tourism activity has given a contribution to reducing poverty (Croes & Vanegas Sr., 2008) through the creation of different kinds of jobs such as souvenir sales, food services, infrastructure construction and leisure activities that employ the youngest, women, migrants, and rural population with less access to the labour market (UNWTO, 2006). Several surveys have been used to study both tourism development and the results of developed economies. They agree that the results are significantly different than in developing economies (Cárdenas-García et al., 2013; Tosun, 2001).

However, the impact of tourism is also growing in developed countries, so the impact on developing countries promotes economic growth. It also demonstrates unity and relief for tourists (Cárdenas-García et al., 2013; Yap & Saha, 2013). Furthermore, a strong economy with government support is more attractive for foreign investment in the tourism industry, making it more likely to reach economic growth and economic stability (Naudé & Saayman, 2005).

According to this opinion, it is essential to remember that the tourism sector is always connected to other sectors: energy, technology, broadcasting, agriculture, and transports. Therefore, all the sectors must be developed to increase the tourism sector for sustainable global prosperity. Nowadays, we know that tourism has contributed to achieving economic goals, but also social goals and social goals because tourism development implies community development (Crouch & Ritchie, 1999).

Economic, environmental, and social impacts are caused by tourist activity in tourist destinations. These can be both significantly positive and negative. However, it is possible to find in literature foundations an explanation towards negative outwardness caused by the

extreme tourist activity. The crowding of roads and infrastructure, the increase in unused and CO_2 emissions, noise pollution, the loss of cultures and traditions, the degradation of nature and the scarcity of natural resources, the increase in the crime incidence are all effects that should not be discriminated (Schubert, 2009). Overcrowding in more attractive destinations causes a change in tourists and residents' behaviour, leading them to compete to satisfy their needs and personal well-being. The change in residents' attitudes was the object of study by several authors (Lindberg & Johnson, 1997; Akis et al., 1996) tourists' reaction to these changes. The tourist activity is, metaphorically, "a double-edged sword" since it is one of the leading promoters of economic growth, but simultaneously collects social costs (Poon, 1993).

Nowadays, the relationship between tourism and crime is evident. However, the result of its analysis has been questioned by several authors in the past few decades, absorbed on the impact of criminal activity on tourist requests. Others highlight the effect of tourist activity on the criminality of tourist destinations.

A large number of studies argue that a country's international tourism depends on its competitiveness compared with other countries (Mendola & Volo, 2017; Ritchie & Crouch, 2005; Dwyer & Kim, 2003; Crouch & Ritchie, 1999). Therefore, it is essential to provide a memorable stay, that attracts the largest possible number of tourists, provides the residents' well-being, and preserves the natural resources.

2.2 Tourism demand and security

It was essential for the authors fascinated by studying that the control of tourism requests (Baimai & Daniel, 2009; Song & Li, 2008; Garín-Mun, 2006) and estimating the elasticity of tourism demand (Crouch, 1995).

Tourist income, and the price of goods and services were the first and most important factors determining tourism demand (Croes, 2000).

Also, the exchange rate plays an essential role in the development and the economic growth of tourist destinations (Lee & Chang, 2008). This result is an important element that can discourage tourists from visiting specific destinations. The entrance of foreign investment is essential for economic evolution. However, the exchange degree variation can benefit or damage the employment balance of the tourist destination. Sometimes, there is negligence on foreign exchange policy-makers that still worsen the situation (Dogru et al., 2019).

Later other significant determinants that influence tourism demand started to be studied as transport costs, marketing activities and political stability. Government stability, the perception of corruption and the crime rate are indicators of a country's political stability (Assaf et al., 2015; Assaf & Josiassen, 2012; Crouch & Ritchie, 1999).

Therefore, countries with political stability are even more attractive for domestic and foreign investment, building infrastructure, marketing, and security services. However, the increase in political instability has a significant negative impact on tourism demand (Eilat & Einav, 2004; Neumayer, 2004). It creates uncertainties in travellers' security, causing a decrease in tourist arrivals, consequently affecting tourism profits (Yap & Saha, 2013).

Nonappearance of violence is considered a requirement for the journey's end development (Israeli & Reichel, 2003; Sönmez, 1998). There are several ways to describe the concept of security. A simple one is "A low probability of damage to acquired values" (Baldwin, 1997). However, it is necessary to bear in mind that the concept of security or national security is not something independent, quite the contrary, it is strongly related to human rights, environmental issues, political stability, biosafety, crime, among others (Baldwin, 1997; Buzan, 1997). Tourism and security are so connected that it is correct to say that security is undoubtedly the primary determinant of tourist appreciation. Mass studies in different parts of the world reveal that perceptions of security and the authorities' measures affect tourist destinations' development (Boakye, 2012). Weak security measures that may question security in a tourist destination are barriers that affect investors' decision-making when selecting tourist destinations (Hall et al., 2004).

Nevertheless, the same factors also influence a tourist when it is selecting a destination. It was found that the consumer has independent perceptions when deciding (Fowler et al., 2012; Harper Jr., 2001) and the changes in his preferences concern the quality attributes of the tourist product, the disposition to pay for accommodation services and quality of the urban environment increased in relation to the other attributes. In addition, the concept of security is influenced by each person's characteristics such as age, nationality, and the reason for the trip (George, 2010).

An extensive choice of studies settles that the deficiency of security in tourist destinations causes severe failures in the number of international tourist arrivals (Pizam & Mansfeld, 2006; Fallon, 2004; Beirman, 2003), and consequently, influence tourist demand (George, 2003; Harper Jr., 2001). The tourists' safety standards are very much appreciated by tourists when deciding on a tourist destination and therefore compared with unsafe destinations (Sönmez et al., 1999). Safe and secure destinations are the most wanted by tourists because security is one of their biggest concerns. Many studies prove that safety and protection are necessary conditions for tourism activity success (Fowler et al., 2012) and are strong influencers of tourist demand (Chan et al., 2005).

Several authors have been studied the importance of the feeling of security and the impact of fear of tourists on tourism demand in different regions and countries (Seabra et al., 2013; Pizam & Mansfeld, 2006) (George, 2003) (Demos, 1992), stressing the fact that tourists are not encouraged to travel or return to danger and unsafe regions (Alegre & Cladera, 2006) and how a negative impression can lead to an eventual drop in tourists (George, 2010). For this reason,

many investigators have studied the effects of these incidents over time and have achieved different results. Some concluded that the shocks in the number of tourist arrivals are manifested in the short term, while others, in turn, support that these are felt in a long period (Sönmez, 1998). Media News about crime and violent events can harm tourists, deteriorate the tourist destination's image, and influence consumer choice, changing or cancelling reservations and leading them to choose other safer destinations (Hall, 2010; Pizam & Mansfeld, 2006). Sometimes the information took by the media is not completely clear, and the image transmitted does not completely correspond to reality. Since it is difficult to measure the exact dimension of violence and individual dangers, but also, because the media sometimes use such events to attract viewers (Huhn et al., 2006). Therefore, it is important to be aware of the risk, so some studies highlight and distinguish perceived risk from real risk and its impact on the tourist destination (Floyd & Pennington-Gray, 2004). Nevertheless, travel safety risks and threats have been a concern since the beginning of history. At the time of expansions and discoveries, thefts and smuggling nets were operated by both land and sea.

2.3 Tourism in Latin America and the Caribbean

In the last few decades, the Latin American and Caribbean region has suffered significant changes (Bianchi et al., 2019; Lowenthal & Baron, 2014), which have been felt in the main markets and sectors such as technology and tourism (Vendrell-Herrero et al., 2017).

Political instability is present in these countries, causing several economic and social crises. Even so, they have been growing economically, 1.3% in 2017 and 1.6% in 2018 (IMF, 2018). Much of this growth is due to the contribution of the tourism sector that represents 15.2% of the region's GDP (WTTC W., 2018). Tourism activity in Latin American and Caribbean countries has grown and its importance (Cannoier & Burke, 2019) and its spread effects on economies, especially in the developing countries of this region where the wealth of natural and cultural capital has become a world attraction.

Mexico is the most competitive country of this region, followed by Brazil, which also stands out for holding events worldwide, such as the World Youth Days 2013 religious' event, the most iconic sports events such as The FIFA World Cup 2016 and The 2016 Olympic Games.

Nicaragua, a country with a lack of economic and social opportunities, has extreme poverty levels and is one of the Western Hemisphere countries with the lowest Human Development Index and GDP per capita (Croes, 2014). Spending and investments in tourism in Nicaragua, contribute to GDP development (Rivera et al., 2007) and provide new jobs with better conditions than other economic sectors, fighting the extreme poverty that the country faces (ECLAC, 2007). The most impoverished population becomes the main beneficiary of tourism activity (Hara, 2008), given that the realization of employment contracts and the increase in income, suggests that the Nicaragua government will raise higher taxes, which should be invested in sectors such as health, education and security (Croes, 2014).

Unlike Nicaragua, Costa Rica has a higher development level where tourism is not the primary job creation driver. Most job offers in the industry are seasonal (Ferguson, 2010) and mainly filled by residents with higher education or foreigners (Honey et al., 2010), without the humblest population. The education system is weak, with high failure rates that collect costs (World Bank, 2009). In addition to the fact that students are not prepared to assume administrative and management positions. Despite Costa Rica's economic growth, the poverty rate has decayed, and levels of discrimination and crime have increased (Gindling, 2009), leading to increased duties for payments on health and other punished sectors (Acevedo-Arreguin, 2008).

In developing countries in the Latin American and Caribbean region, small and medium-sized enterprises (SMEs), where many of them are family businesses, play an essential part in the growth and development of the local economy, given that they encourage the creation of jobs (Beck et al., 2007) ensuring almost 65% of the workforce in the countries of the region (ILO, 2013) while constantly struggling against extreme poverty (Nichter & Goldmark, 2009).

However, security systems have not kept pace with Latin American and Caribbean countries' tourist and economic development. Local crime is an issue current in some countries in the region (Maximiliano, 2014). In this way, difficulties such as crime, theft, vandalism, or other violent crimes, delay local development (Motta, 2016; Detotto & Otranto, 2010).

2.4 Crime activity in Latin America and the Caribbean

Latin America and the Caribbean are home to the largest number of crimes committed with firearms and have become one of the most violent regions globally, with criminal activity being one of its main concerns. The region has the highest murder tolls like no other region globally. Forty-two of the fifty most violent cities worldwide belong to Latin America and the Caribbean's countries. However, they are not the countries with the world's largest population (UNODC, 2019). Even today, a region is subjected to several repeated acts of extreme violence, such as authoritarian liners and state terrorism, that activate civil wars, rebellious schedules, revolutions, and violent social revolts. Simultaneously, other crimes occur in the same region, such as domestic violence, theft, drug trafficking and money laundering, resulting from the integration of more and more young people into violent gangs (Imbusch et al., 2011).

The repercussions of criminal activity in these countries are higher than in other developing countries in the world's breather (Ayyagari et al., 2008) with high economic and social costs that hinder the development of the region. Today, economists reflect that violence and crime are seen as a social pandemic since the direct and indirect budgets associated with these performances negatively affect public health and the socio-economic development of the surrounding society (Imbusch et al., 2011).

Authors prove that high crime rates have a negative impact on business performance (Amin, 2009), unemployment rates (Machin & Meghir, 2014), the poverty index, the capacity of the

State to govern effectively and provide economic growth (Islam, 2014). In addition, the high number of crimes creates uncertainty that discourages investments and companies' competitiveness (Kelly, 2000).

Dangerous social and wage inequality, social exclusion, and corruption by the authorities are problematic issues that negatively influence individuals' behaviour, who resort to violence to defend their interests, consequently, increasing the number of crimes (Imbusch et al., 2011). The crime rate is positively related to income inequality (Ehrlich, 1973). In turn, the economic growth contributing to reducing the unemployment rate by creating jobs can discourage criminal activities (Motta, 2016). Considering that crime is an economic activity that considers the cost-benefit of the criminal act, the individual's disposition to commit crimes decreases with the increase in the cost of promising the crime and the probability of detention (Ehrlich, 1973; Becker, 1968).

Violence is often seen as a legacy of Mexico's history, took a long time to be considered a social problem. Disorders such as religious disagreements, the dominance of "Marxism" that devalues domestic violence and triggers torture and rape against women, political instability and heavy drug trafficking are the leading causes of the high crime rates in this country (Imbusch et al., 2011). Despite efforts, most domestic violence instances are neglected, with incomplete records and insufficient reliable analysis data. However, it is a real and constant phenomenon, resulting in several forms of physical and verbal violence such as poundings, violation, and embarrassment. Fear is executed in women and children under the defence of legal rights and duties (Bowden, 2010). Organized crime is a fact in the Latin American and Caribbean region and is associated with records of sub-surcharges in homicide rates. The increase of crimes resulting from drug trafficking, namely cocaine, are devastating, cartels always struggle to rule directions and territories, and young people join these gangs at an earlier age (UNODC, 2019) (Freeman, 2006). The demographic increase in youth, the scarcity of jobs, and the lack of a decent education system allowing people to join gangs (Gaviria & Pagés, 2002).

Several countries of this region, if not all, have already suffered authoritarianism, severe conflicts, and civil wars. Nicaragua is one of those countries. The lack of support provided to the devastating earthquake victims in 1972 in Capital Managua has generated unhappiness and social tension. In 1979 the Sandinista revolution put an end to the autocracy. However, instability in Nicaragua continued and later, the country suffered from the civil war against the Contras until 1990 (Rodgers, 2004). These moments of tension and violence prevented any type of reform on the State and led to an increase in violent crimes such as butcheries, pain, violation, and the presence of death squads. The consequences of these violent acts devastated the economy and local society and are still felt today. On the other hand, Nicaragua and Costa Rica have the lowest criminal activity, and today, gangs are almost extinct (Jütersonke et al., 2009).

Like the others, Colombia's path is filled with constant and violent civil wars between liberals and conservatives, rebel and paramilitary groups, wage and social inequality (Waldmann, 2007). A country with marked political instability leaves the population vulnerable to criminal activity (World Bank, 1999). Exterminations, pains, disappearances, murders, extortion and drug marketing are daily crimes committed by rebel and fighter groups (Pécaut, 2001). Roadblocks by illegal armed groups are real and a danger to travellers at risk of theft and capture. It is projected that a large part of killings and kidnappings are related to drug trafficking, mainly cocaine. Colombia is the world's largest producer of cocaine, with 70% of the country's global area under cocaine farming in 2017, and as a result, the largest exporter (UNODC, 2020). The youngest, often under the age of 18, is dominated by this climate of tension and, to a certain extent, recruited into illegal groups such as cartels or soldiers, or as militaries performing enforced military service (Imbusch et al., 2011).

2.5 Relationship between tourism and crime

Nowadays, it is evident that there is a relationship between tourism and crime. Its analysis has been the entity of study by several authors in the previous periods. Some absorbed the impact of criminal activity on tourist demand. In contrast, others highlight the effect of tourist activity on the criminality of tourist destinations.

The crime frequency is one of the three most relevant determinants and. It is the one that has a most negative impact on the performance of the tourism industry, because when it decreases there is an increment of the attractiveness of a destination (Assaf et al., 2015; Assaf & Josiassen, 2012; Harper Jr., 2001; Kozak & Rimmington, 1999). The increase in criminal activity in tourist destinations is one of the negative social impacts of tourism and it also affects tourist activity. Security is a factor that influences the desire of tourists not to want to visit a particular region. Therefore, the high crime rates hinder the growth of tourism (Bloom, 1996).

International tourist destinations such as Rio de Janeiro and Mexico City have high crime rates, many of the crimes are spread by the media and have depraved effects on the destinations' reputation, and even with marketing and promotional strategies (Assaf & Josiassen, 2012) are avoided by tourists (Ryan, 1993)

Despite the concerning arguments of the significance of the relationship between tourism and crime, criminals generally take advantage of their activity in places with a large flow of tourists. SMEs in the hotel and restaurant industry are among the most affected by criminal activity (Gill et al., 2002), whether street crimes or organized crimes (Krkoska & Robeck, 2009) since the resources and profits that should be used to expand SME activities are abstracted to support security measures (BenYishay & Pearlman, 2014).

Nowadays, criminal activity has accompanied the development of tourism and has also developed into becoming more organized. For example, due to the scale of tourist activity, it has become one of the main marks of terrorist attacks (Sönmez et al., 1999) and organized crime. Records of past events from all over the world, such as the September 11 terrorist attack, the high number of crimes in

South Africa, among others, prove the vulnerability of tourism and its inevitable relationship and concern with the concept of security (Hall et al., 2004). Tourism demand and supply are sensitive to extreme violent events (Ryan, 1993; Ritcher, 1986).

3 Data and Methodology

This section has been divided into two subsections. The first subsection presents the variables used throughout the study, but also the approaches designed to test. The second subsection, in turn, presents the method and the preliminary tests to verify the quality of the model estimate.

3.1 Data

This study is focused on assessing the impacts of crime on tourism of a group of 14 Latin America and the Caribbean countries: Brazil, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guyana, Mexico, Nicaragua, Panama, Puerto Rico, St. Lucia and Uruguay and Venezuela. The countries chosen for the sample have the common characteristics of all tourist destinations with high crime rates. The time horizon used includes annual data between the years from 1995 to 2016. The time horizon and countries were selected based on the available data to accomplish its condition as a balanced panel. The econometric analysis was performed using Stata software. Table 1 presents the name, definition, and source of selected variables.

Table 1. Variables Description

Variable	Definition	Source
TA	Number of international tourism arrivals	World Tourism Organization
CR	Crime rate as intentional homicides per 100,000 people	World Bank
GDP	Gross Domestic Product in constant local currency unit (LCU)	World Bank
UNEM	Unemployment percentage of total labour force	International Labour Organization
INF	Gross Domestic Product deflator in annual percentage	World Bank
TX	Real effective exchange rate, based on Consumer Price Index	International Monetary Fund

Source: authors.

The dependent variable is the number of international tourism arrivals (TA), as representative of the tourist activity, because it is the most common used by researchers (Fuinhas et al., 2020; Zhang et al., 2019; Ghaderi et al., 2017; Biagi & Detotto, 2014).

The number of deliberate homicides per 100,000 people (CR) is a precise indicator, subject to temporal and earthly contrasts, a crime of universal denunciation (Marshall & Summers, 2012) that affect the victim and the involving community (UNODC, 2019). Homicide rates, usually associated with social and economic pointers, suffer slow instabilities. Therefore, since almost all murders are recorded, and homicide statistics are reliable, this is the indicator chosen to represent criminal activity in this study to investigate the link between crime and tourism (Rosselló et al., 2020; Zhang et al., 2019). The series and effects caused by violence and crime affect Latin American nations differently, so recording, describing, and evaluating each country's criminal activity are necessary procedures to compare the situation in each country.

The GDP in constant LCU is the most frequent variable used in literature to measure economic growth (Fuinhas et al., 2020; Belucio et al., 2018).

Unemployment (UNEM) indicates formality in the main job and instability in employment (Biagi & Detotto, 2014).

Inflation (INF) is also included to measure the instability and increase in the prices of goods and services, as a drastic increase in inflation could raise economic vulnerability (Canh & Thanh, 2020). Most tourists intend to get the most out of their money, so they select destinations where prices are relatively favourable to the tourist's country of origin. On the other hand, the possibility of increasing the number of visitors decreases if the price levels of tourist destinations are higher than the price levels of the country of origin. Thus, the exchange rate (TX) is expected to impact tourism positively, while inflation has a negative sign (Fuinhas et al., 2020; Belucio et al., 2018).

3.2 Method and preliminary tests

To assess whether a crime has an impact on tourist arrivals, and to confirm the hypothesis of a negative impact, the autoregressive distributed lag (ARDL) model in the form of an unrestricted error correction mechanism (UECM) was applied (Fuinhas et al., 2020; Santiago et al., 2020).

The adopted methodology provides the dynamic effects of the variable in the short and long-run study, is robust in terms of the presence of endogeneity, deals with cointegration and supports the inclusion of variables with different orders of integration such I(0) and I(1). The variables were transformed into natural logarithms 'L' and first differences 'D' to turn the series into stationary and convert the non-linear relations as linear as possible. Once the unpredictability of obtaining consistent results from non-stationary series does not allow them to be used in constructing economic models (Fuinhas et al., 2019), however, some variables have not been transformed into logarithms, such as INF for containing negative values, UNEM for being a percentage and TX for being a rate. Therefore, the equation that represents the short-run specification of the ARDL model is as follows:

$$LTA_{it} = \alpha_{1i} + \beta_{1i1}LCR_{it} + \beta_{1i2}LCR_{it-1} + \beta_{1i3}LGDP_{it} + \beta_{1i4}LGDP_{it-1} + \beta_{1i5}UNEM_{it} +$$
(1) $$\beta_{1i6}UNEM_{it-1} + \beta_{1i7}INF_{it} + \beta_{1i8}INF_{it-1} + \beta_{1i9}TX_{it} + \beta_{1i10}TX_{it-1} + \varepsilon_{it}$$

Equation 1 includes variables at the level and with one lag. In turn, the specification adopted for the short and long term is presented as follows:

$$DLTA_{it} = \alpha_{1i} + \beta_{1i1}DLCR_{it} + \beta_{1i2}DLGDP_{it} + \beta_{1i3}DUNEM_{it} + \beta_{1i4}DINF_{it} + \beta_{1i5}DTX_{it} +$$
(2) $$\gamma_{2i1}LTA_{it-1} + \gamma_{2i2}LCR_{it-1} + \gamma_{2i3}LGDP_{it-1} + \gamma_{2i4}UNEM_{it-1} + \gamma_{2i5}INF_{it-1} + \gamma_{2i6}TX_{it-1} + \varepsilon_{it}$$

Equation 2 includes variables at first differences and with one lag. To explain the dynamic relationships among variables, equation (3) is reparametrized into the general UECM form, into the following specification:

$$DLTA_{it} = \alpha_i + \beta_{1i1}DLCR_{it} + \beta_{1i2}DLGDP_{it} + \gamma_{2i1}LTA_{it-1} + \gamma_{2i2}LCR_{it-1} + \gamma_{2i3}LGDP_{it-1} +$$
(3) $$\gamma_{2i4}INF_{it-1} + \mu_{it} + \varepsilon_{it}$$

Where i = 1, 2…14 denotes the countries, α"i" the intercept, βi and γi the short and long-run estimated parameters, μit the control dummies and εit the error term.

To validate the choice of the model and ensure compliance with the mandatory econometric requirements in the panel analysis is necessary to carry out some diagnostic tests before and after the estimation (e.g., Santiago et al., 2020; Dogru et al., 2019; Belucio et al., 2018; Marques et al., 2017).

Considering the common characteristic of all countries in the sample being tourist destinations with high crime rates, the presence of cross-section dependence is expected, so the Cross-section Dependence test (CD-test) was carried out. In Table 2 are presented the characteristics of the series through the descriptive statistics and the results from CD-test. The CD-test results prove the presence of cross-section dependence in almost natural logarithms and first differences variables, except for the TX because of the constant 1 in countries that have the dollar as local currency units.

Table 2. Descriptive Statistics and Cross-Section Dependence (CD-test)

	Descriptive Statistics					**Cross-Section Dependence (CD)**		
Variable	**Obs**	**Mean**	**Std. Dev.**	**Min**	**Max**	**CD-test**	**Corr**	**Abs(corr)**
LTA	308	13.8190	1.4507	11.0021	17.3731	27.92***	0.624	0.626
LCR	308	2.8953	0.6874	1.6487	4.9572	2.85***	0.064	0.398
LGDP	308	26.5490	3.2969	21.5957	34.3421	39.53***	0.883	0.883
UNEM	308	8.6740	4.5415	2.3000	24.0900	5.18***	0.116	0.246
INF	308	10.4025	23.7265	-26.3000	321.3100	4.76***	0.106	0.246
TX	308	90.5193	82.0919	1.0000	1288.5880	NA	NA	NA
DLTA	294	0.0417	0.1333	-0.7962	0.7848	6.69***	0.153	0.219
DLCR	294	0.0007	0.1577	-0.5265	0.5836	2.62***	0.060	0.222
DLGDP	294	0.0301	0.0360	-0.1870	0.1679	11.81***	0.270	0.306
DUNEM	294	-0.0076	1.1750	-5.4800	5.0600	7.05***	0.161	0.241
DINF	294	0.1612	16.1658	-81.5773	142.2895	2.88***	0.066	0.200
DTX	294	4.3258	48.5368	-46.4543	757.2049	NA	NA	NA

Notes: The CD-test has N(0,1) distribution, under the H0: cross-section independence; *** denotes statistically significant at 1% level; NA: not applicated; The Stata commands *sum* and *xtcd* were used to achieve the results of descriptive statistics and to test the presence of cross-sectional dependence.
Source: authors.

The correlation matrices were generated to verify the degree of correlation between the variables, and variance inflation factor (VIF) statistics were calculated to test the presence of collinearity or multicollinearity. Multicollinearity is a problem in adjusting the model that can impact the estimation of the parameters, so the importance of this calculation. The results Table 3 show a high positive level of correlation but still less than 0.9 between INF and TX, which means that variables have similar behaviour. If one increases or decreases, the other accompanies it. On the other hand, variables with negative values have an opposite behaviour. If one increases, the other decreases or contrariwise. In addition, when the value is 0, there is no

relationship between the variables. When the value is 1 or -1, the variables have perfect behaviour whether identical or opposite. The lower VIF and mean VIF values prove that multicollinearity is not a problem for the estimation.

Table 3. Correlation Matrices and VIF statistics

	LTA	LCR	LGDP	UNEM	INF	TX
LTA	1.0000					
LCR	-0.0903	1.0000				
LGDP	0.3073***	-0.0203	1.0000			
UNEM	-0.2454***	0.1813***	-0.1632***	1.0000		
INF	-0.0281	0.1543***	0.0128	0.0015	1.0000	
TX	-0.0885	0.1489***	0.0788	-0.0145	0.7948***	1.0000
VIF		1.06	1.04	1.06	2.74	2.76
Mean VIF				1.73		
	DLTA	DLCR	DLGDP	DUNEM	DINF	DTX
DLTA	1.0000					
DLCR	-0.1561***	1.0000				
DLGDP	0.3903***	-0.1366**	1.0000			
DUNEM	-0.2752***	0.0894	-0.4413***	1.0000		
DINF	-0.1636***	0.0585	-0.3456***	0.0806	1.0000	
DTX	-0.1565***	0.0076	-0.3551***	-0.0203	0.6250***	1.0000
VIF		1.02	1.53	1.30	1.70	1.78
Mean VIF				1.47		

Notes: ***, **, * denote significant at 1%, 5% and 10% level, respectively.
Source: authors.

First and second-generation panel unit root tests were executed with two lags to check the correction time of possible shocks in the tourism sector. To check if it will be necessary to include a trend in the model, Table 4 shows the results of the first and second-generation panel unit root tests with and without a trend. The first-generation panel unit root test by Maddala and Wu (1999) was performed, under the crucial assumption of cross-sectional independence. The results show that the level variables are I(1) and non-stationary, and the first differences of the variables are I(0) and stationary, which is not a problem for an ARDL estimation.

As almost all variables registered the presence of cross dependence, the first-generation unit root panel test became ineffective. As a result, the second-generation unit root panel test, namely the augmented cross-sectional IPS test (CIPS) by (Pesaran, 2007), was performed with the advantage of being robust for heterogeneity. The results reveal that some variables are I(1), others are I(0), but none is I(2), which prove that the ARDL model is the best approach once it allows these two levels of integration simultaneously. In addition, the variables show an unwanted and less significant behaviour in the presence of the trend. Therefore, it will not be included in the model.

Then, once we deal with panel data, it is important to check the presence of individual effects. Therefore, the Hausman test was performed, to confront the random and fixed effects and choose the most appropriate model. The result presented in Table 5, shows that the Hausman

test rejects the null hypothesis at 1% and considers the fixed effects model as the best approach. In summary, there are signs of correlation between individual country effects and independent variables. As in previous studies, the command sigmamore was used to get the most significant result (Fuinhas et al., 2020; Fuinhas et al., 2019; Özokcu & Özdemir, 2017).

Table 4. First and Second-Generation Panel Unit Root Tests

| Variable | lags | First-Generation (MW) | | | | Second-Generation (CIPS) | | | |
| | | without trend | | with trend | | without trend | | with trend | |
		chi_sq	p-value	chi_sq	p-value	Zt-bar	p-value	Zt-bar	p-value
LTA	0	34.229	0.193	41.095*	0.053	-2.115**	0.017	-1.219	0.111
LTA	1	30.693	0.331	66.439***	0.000	-1.756**	0.040	-0.691	0.245
LTA	2	26.285	0.557	107.935***	0.000	-2.425***	0.008	-2.362***	0.009
LCR	0	21.050	0.823	15.711	0.970	2.579	0.995	1.540	0.938
LCR	1	30.130	0.357	28.454	0.441	1.260	0.896	1.284	0.900
LCR	2	33.269	0.226	27.061	0.515	1.085	0.861	1.919	0.972
LGDP	0	14.072	0.987	15.799	0.969	0.893	0.814	3.007	0.999
LGDP	1	13.216	0.992	33.331	0.224	-0.436	0.331	2.104	0.982
LGDP	2	9.246	1.000	32.381	0.259	-0.294	0.384	2.102	0.982
UNEM	0	20.751	0.836	26.221	0.561	-0.509	0.305	-0.138	0.445
UNEM	1	32.393	0.259	33.731	0.210	-0.773	0.220	-0.063	0.475
UNEM	2	24.180	0.672	35.080	0.168	-1.776	0.038	-0.836	0.202
INF	0	168.694***	0.000	116.282***	0.000	-6.009***	0.000	-5.426***	0.000
INF	1	96.078***	0.000	65.469***	0.000	-2.404***	0.008	-1.230	0.109
INF	2	88.038***	0.000	58.981***	0.001	-0.068	0.473	1.100	0.864
TX	0	32.403	0.258	18.369	0.916	3.438	1.000	5.108	1.000
TX	1	35.966	0.143	29.796	0.373	2.591	0.995	3.362	1.000
TX	2	24.110	0.676	16.307	0.961	3.129	0.999	3.034	0.999
DLTA	0	195.547***	0.000	155.939***	0.000	-9.551***	0.000	-8.627	0.000
DLTA	1	121.270***	0.000	83.602***	0.000	-3.703***	0.000	-2.365	0.009
DLTA	2	136.401***	0.000	94.398***	0.000	-3.836***	0.000	-1.253	0.105
DLCR	0	171.964***	0.000	140.269***	0.000	-6.971***	0.000	-5.807	0.000
DLCR	1	109.194***	0.000	89.765***	0.000	-4.601***	0.000	-3.891	0.000
DLCR	2	73.955***	0.000	64.540***	0.000	-2.900***	0.002	-2.223	0.013
DLGDP	0	119.876***	0.000	92.701***	0.000	-5.037***	0.000	-4.178	0.000
DLGDP	1	87.488***	0.000	69.354***	0.000	-2.571***	0.005	-2.550	0.005
DLGDP	2	58.317***	0.001	34.897	0.173	0.345	0.635	1.442	0.925
DUNEM	0	159.038***	0.000	108.499***	0.000	-6.372***	0.000	-4.070	0.000
DUNEM	1	83.171***	0.000	46.571**	0.015	-3.252***	0.001	-0.811	0.209
DUNEM	2	58.037***	0.000	28.140	0.457	-1.369*	0.085	1.112	0.867
DINF	0	359.859***	0.000	290.398***	0.000	-13.291***	0.000	-11.626	0.000
DINF	1	272.599***	0.000	208.085***	0.000	-8.935***	0.000	-7.196	0.000
DINF	2	124.359***	0.000	79.108***	0.000	-2.994***	0.001	-1.293	0.098
DTX	0	123.593***	0.000	91.643***	0.000	-0.463	0.322	1.292	0.902
DTX	1	104.440***	0.000	79.648***	0.000	0.999	0.841	2.852	0.998
DTX	2	45.827**	0.018	36.911	0.121	1.930	0.973	3.558	1.000

Notes: ***, **, * denote statistically significance at 1%, 5% and 10% level, respectively; Maddala and Wu (1999) Panel Unit Root test (MW) assumes cross-sectional independence and Pesaran (2007) Panel Unit Root test (CIPS) assumes cross-sectional dependence is in form of a single unobserved common factor; For both tests Ho: series are I(1) or are not stationary; For the tests performed, only 2 lags were included; The stata command *multipurt* was used to achieve the results of both tests.
Source: authors.

Table 5. The Hausman Test

Hausman Test	Fixed vs Random
	$x^2(5) = 65.08{***}$

Notes: *** denotes statistically significant at 1% level; H0: difference in coefficients is not systematic or random-effects model is the best approach; The Stata command *sigmamore* was used to achieve the results of Hausman test.
Source: authors.

After the preliminary tests reveal information about the variables' nature for model estimation and the result of the Hausman test approves the fixed effects model, the next step is the execution of a few specification tests.

4 Results and Discussion

The following section explores a group of specification tests usually applied to models with panel data, to select the most robust estimator and obtain the least distorted results possible. In addition, it also presents the estimation of semi-elasticities and elasticities to observe the effects of the short and long-run, respectively.

4.1 Specification Tests

The results of specification tests are available in Table 6.

Since we are in the presence of a fixed-effects model, the presence of heteroscedasticity can be tested using the modified Wald test. The results show that the null hypothesis is rejected at 1% in level, first differences and lags, which reflects the presence of heteroscedasticity. In other words, the variables have different variances. The presence of heteroscedasticity is not a reason to discard the model but controlling the presence of heteroscedasticity is extremely important to obtain correct estimates (Fuinhas et al., 2019).

For the same reason, it is also necessary to control the presence of cross-section dependence so the Pesaran CD test, the Friedman test and the Frees test were performed. The results from the Pesaran CD test show that the null hypothesis is rejected at 1% for variables on level, which indicates that the residues are correlated and cross-section dependent. However, it is possible to observe that the null hypothesis is accepted for the variables in first differences and lags, which means that the residues are not correlated and the presence of cross-section independence. Friedman's test interpretation is similar to that of the Pesaran CD test. However, the results are different. The null hypothesis is accepted for the variables in level. This result means that the residuals are not correlated, so, there is cross-sectional independence.

On the other hand, the variables in first differences and lags rejected the null hypothesis. That is, the residues are correlated and there is cross-sectional dependence. The Frees test rejected the null 1% hypothesis for level variables, which means that the residuals are correlated and have a cross-sectional dependence. The variables in first differences and lags accept the null hypothesis, which means that the residuals are not correlated and have cross-section independence. The results of the Frees test are similar to the results of the Pesaran CD test.

In a panel data analysis, it is necessary to control the phenomena of heteroscedasticity and cross-sectional dependence and the presence of autocorrelation of the models. This is because there is a possibility of obtaining skewed results, as the errors of the coefficients are smaller than what they are and that R2 is higher than what it is. In this way, the Wooldridge test was chosen to detect the presence of serial correlation in the model. The results show that the null hypothesis is rejected at 1% in level, first differences and lags, which reflects the presence of first-order autocorrelation. In other words, the variables have different variances.

Table 6. Specification tests

Test	Statistics		
	level	1ˢᵗ dif	lags
Wald	485.970***	827.330***	450.390***
Pesaran	-1.873*	0.777	0.281
Friedman	14.446	29.770***	24.356**
Frees	1.725***	-0.068	-0.005
Woolldridge	65.322***	22.822***	42.359***

Notes: ***, * denote statistically significant at 1% and 10% level respectively; the null hypothesis for the Wald test is $\sigma(i)^2 = \sigma^2$ for all i or homoscedasticity; the null hypothesis for the Pesaran CD test, the Friedman test and Frees test is that the residues are not correlated or cross-sectional independence; the null hypothesis for the Woolldridge test is that there is no first-order autocorrelation.
Source: authors.

4.2 Results by approach

Given the results of specification tests, the most appropriate estimator to use is Driscoll and Kraay (1998) robust standard estimator with fixed effects, once the standard errors produced by the estimator are robust to models with the presence of heteroskedasticity, cross-sectional dependence, contemporaneous correlation and first-order autocorrelation (Santiago et al., 2020; Fuinhas et al., 2019; Belucio et al., 2018).

The estimation results of the fixed effects (FE) model and Driscoll Kraay fixed effects (FE-DK) model are present in Table 7 and show that some variables initially included in the model are statistical insignificance, for example, the trend, unemployment, and exchange rate, both on short and long-run. For this reason, these variables were excluded from the model.

Table 7. Estimation Results (Dependent Variable: DLTA)

Variables	FE	FE-DK
DLCR	-0.0700	-0.0700**
DLGDP	1.3858***	1.3858***
DUNEM	-0.0119	-0.0119
DINF	0.0008	0.0008
DTX	-0.0003	-0.0003
LTA (-1)	-0.2537***	-0.2537***
LCR (-1)	-0.0716**	-0.0716*
LGDP (-1)	0.3840***	0.3840***
UNEM (-1)	-0.0011	-0.0011
INF (-1)	0.0015*	0.0015*
TX (-1)	-0.0002	-0.0002
Constant	-6.4673***	-6.4673***
Diagnostic statistics		
N	294	
R²	0.3203	
F	$F_{(11,13)} = 99.84$***	

Notes ***, **, * denote statistical significance at 1%, 5% and 10% level, respectively; the Stata command xtreg was used to estimate the fixed effects model; the xtscc was used to estimate the Driscoll Kraay fixed effects model.
Source: authors.

Following these assumptions, equation (3) was replaced by equation (4), representing this more parsimonious model.

(4) $DLTA_{it} = \alpha_i + \beta_{1i1}DLCR_{it} + \beta_{1i2}DLGDP_{it} + \gamma_{2i1}LTA_{it-1} + \gamma_{2i2}LCR_{it-1} + \gamma_{2i3}LGDP_{it-1} + \mu_{it} + \varepsilon_{it}$

The estimation results of the parsimonious model are presented in Table 8. They show that crime has a negative and statistically significant impact on tourist arrivals in both the short- and long run, and GDP has a positive and statically significant impact on tourist arrivals.

Table 8. Estimation Results (Dependent Variable: DLTA)

Variables	FE	FE-DK
DLCR	-0.0700	-0.0700**
DLGDP	1.6093***	1.6093***
LTA (-1)	-0.2495***	-0.2495***
LCR (-1)	-0.0677**	-0.0677**
LGDP (-1)	0.3641***	0.3641***
Constant	-6.0311***	-6.0311***
Diagnostic statistics		
N	294	294
R²	0.3055	0.3055
F	F (5,275) = 24.11***	F (5,13) = 23.77***

Notes ***, **, * denote statistical significance at 1%, 5% and 10% level, respectively; the Stata command xtreg was used to estimate the fixed effects model; the xtscc was used to estimate the Driscoll Kraay fixed-effects model.
Source: authors.

Table 9 presents the results for short-run impacts, the long-run elasticities, and the adjustment speed of the model (ECM). The long-run elasticities are the calculation's result of the ratio between the variable's coefficient and the LTA coefficient, both lagged once, and this ratio was multiplied by –1. In Table 9, it is possible to see that the Latin American and Caribbean countries' tourism arrivals, in both the short- and long- run, were negatively affected by crime rate and positively affected by GDP.

Table 9. Elasticities and Speed of Adjustment (Dependent Variable: DLTA)

Variables	FE	FE-DK
Short-run impacts		
DLCR	-0.0700	-0.0700**
DLGDP	1.6093***	1.6093***
Long-run impacts (computed)		
LCR (-1)	-0.2712***	-0.2712***
LGDP (-1)	1.4598***	1.4598***
Speed of adjustment		
ECM	-0.2495***	-0.2495***

Notes ***, ** denote statistical significance at 1% and 5% level, respectively; the ECM denotes the coefficient of the variable LTA lagged once.
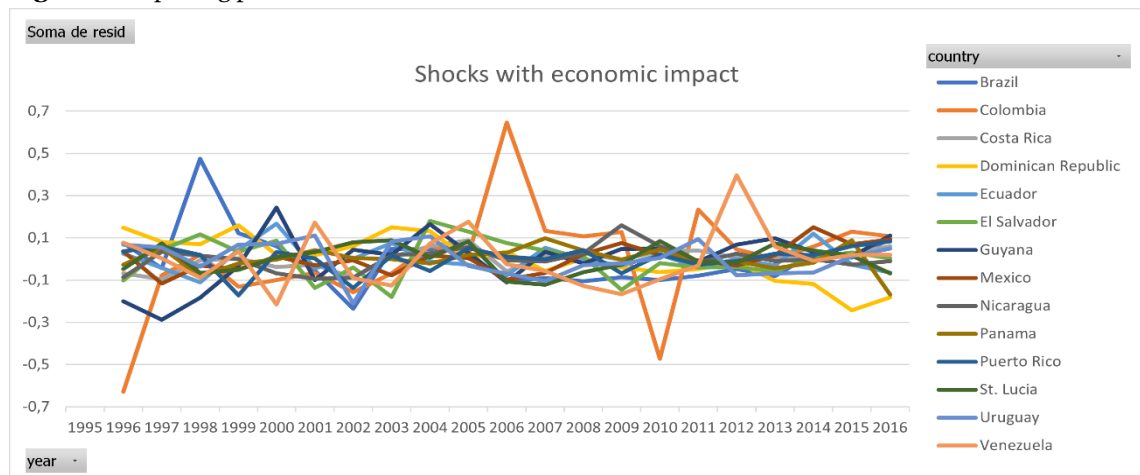Source: authors.

As previously mentioned in the literature review, Latin American and Caribbean countries still experience political instability that raises economic and social problems that affect their economies. Therefore, in Figure 1 we represent the relevant shocks that impacted the economies of this region's countries between 1995 and 2016.

During 1996, Colombia was governed under a state of emergency that restricted citizens' rights and freedom of movement, which empowered the armed forces to carry out apprehensions and arrests without the need for a court order. After the fall of the state of emergency, the Colombian State made substantial efforts to combat the large-scale human rights violations, such as the

political murders and common crimes that claimed thousands of Colombians' lives. Ten years later, the adoption of democratic security measures in 2006 in Colombia was decisive for increasing investor confidence in the country's economy. That said, Colombia's economy emerged in 2006, reaching one of the highest growth rates in Latin America in 2007. However, in 2010, "La Ninã", a climatic phenomenon in Latin America, caused numerous floods and landslides, leaving thousands of people homeless and many others missing or dead. Such a fatality generated infrastructure losses and devastated the country's agriculture, namely the drop in coffee production, which led the Government to declare a state of natural catastrophe.

Figure 1. Exploring panel data

Notes: To compute this graphic, the Stata command xtline was used. Source: Authors.

The year 2011 proved to be very positive for Colombia's economic growth. This was highlighted by the high number of domestic and foreign investments, which boosted exports and created new jobs, leading to a decrease of almost 10% in the unemployment rate.

In 1997, Cheddi Jagan's presidential period in Guyana was characterized by Marxism-Leninism, and later, by adopting a market economy. Liberal orthodox measures, designed to contain inflation, the deficit and solve socioeconomic problems such as extreme poverty, have generated strikes, protests, and violence. In the meantime, the influence of drug lords grew steadily. At the end of 1997, French President Jacques Chirac, after recognizing the critical economic situation in French Guiana, implemented a development plan. Later, in the early 2000s, the development of agricultural and mining activity, the control of the exchange rate, low inflation, and support for business by international organizations, contributed to the growth of Guyana's economy.

In 1998, Laws of Nature were implemented with criminal and administrative sanctions for environmental crimes, incentives for family farming, and an investment plan to assist the Ministry in elaborating specific and structural policies to improve Brazilian primary and secondary education. Such measures encouraged access to basic education and reduced the illiteracy rate, which improved the workforce's qualification. However, in the following year, Brazil faced a crisis when there was a strong devaluation of the real after the Central Bank

abandoned the fixed exchange rate regime and started to operate under a floating exchange rate regime, which moderated the slowdown in economic growth in 1999.

Uruguay suffered a very strong economic crisis in 2002, due to its dependence on neighbouring countries such as Brazil and Argentina. As a result, the devaluation of the real in 1999 affected hardly Uruguayan exports. Later, in 2001, Argentina's crises had a devastating impact on Uruguay, such as low GDP and higher unemployment and poverty rates.

In April 2016, the famous investigation into the offshore industry "Panama Paper" was revealed. This disclosure caused economic, political, and social unrest in all corners of the world. Several politicians resigned their positions or were dismissed. The police inspected countless headquarters, offices, and companies, new laws were created to combat tax evasion, money laundering and corruption. Some countries recovered embezzled money.

What was said previously about some economic problems in these countries indicates the existence of outliers in Brazil (1998), Colombia (1996, 2006, 2010), the Dominican Republic (2015), Guyana (1997, 2000) and Venezuela (2012). To control the detected outliers were added dummies to the model to represent these events and correct them. Dummies col1996, col2010, guy1997 and dom2015 represent a break, while col2006, bra1998, ven2012 and guy2000 represents a peak. Details are present in Table 10.

Table 10. Estimation Results (Corrected for Shocks, Dependent Variable: DLTA)

Variables	FE	FE-DK
DLCR	-0.0592*	-0.0592**
DLGDP	1.5734***	1.5734***
LTA (-1)	-0.1670***	-0.1670***
LCR (-1)	-0.0423**	-0.0423**
LGDP (-1)	0.2484***	0.2484***
INF (-1)	0.0007*	0.0007*
COL1996	-0.7459***	-0.7459***
COL2010	-0.5326***	-0.5326***
GUY1997	-0.2900***	-0.2900***
DOM2015	-0.2231***	-0.2231***
COL2006	0.6313***	0.6313***
BRA1998	0.4976***	0.4976***
VEN2012	0.4213***	0.4213***
GUY2000	0.2885***	0.2885***
Constant	-4.1762***	-4.1762***
Diagnostic statistics		
N	294	294
R^2	0.6617	0.6617
F	$F_{(14,266)} = 37.17$***	$F_{(14,13)} = 2061.65$***

Notes ***, **, * denote statistical significance at 1%, 5% and 10% level, respectively; the Stata command xtreg was used to estimate the fixed effects model; the xtscc was used to estimate the Driscoll Kraay fixed-effects model.
Source: authors.

Table 11 reveals the impacts, elasticities, and speed of adjustment of the model. Once more, to achieve the long-run elasticities with the correction of the shocks, we had to calculate the ratio between the variable's coefficient and the LTA coefficient again, both lagged once, and multiply this ratio by -1. The results from Table 11 indicate that the Latin American and Caribbean

countries tourism arrivals was positively affected by the economic growth in the short and long run. In contrast, the crime rate negatively affects the number of tourism arrivals in the short-run and the long run. After the correction of the shocks, the inflation has become statistically significant in the long run, indicating a positive impact on tourism arrivals, becoming one of the main drivers.

Also, in Table 11, it is possible to verify that the ECM value represents the speed of adjustment of the model, that is, the speed at which the dependent variable returns to equilibrium after changes in our independent variables. As can be observed, the ECM coefficient is negative and statistically significant, which indicates the presence of long memory between the variables. Thus, the speed of adjustment of the model is relatively slow.

Table 11. Elasticities and Speed of Adjustment (Model Corrected for Shocks, Dependent Variable: DLTA)

Variables	FE	FE-DK
Short-run impacts		
DLCR	-0.0592*	-0.0592**
DLGDP	1.5734***	1.5734***
Long-run impacts (computed)		
LCR (-1)	-0.2535**	-0.2535***
LGDP (-1)	1.4872***	1.4872***
INF (-1)	0.0042*	0.0042**
Speed of adjustment		
ECM	-0.1670***	-0.1670***

Notes ***, ** denote statistical significance at 1%, 5% and 10% levels, respectively; the ECM denotes the coefficient of the variable LTA lagged once.
Source: authors.

The positive impacts of GDP on tourism arrivals of these countries, both in the short and long-run, were expected, given that economic growth is seen as a driving force for tourism activity. Moreover, a large number of authors consider economic growth to explain tourism activity (Fuinhas et al., 2020). One the other hand, as previously stated, the crime rate had a negative impact on tourism activity in the short and long run. Controlling the crime rate is essential for policymakers and sustainable development in the tourism sector, as it can benefit countries in the early stages of economic development. Once, the countries used in this investigation are developing countries, this impact was expected. Hereupon, the policymakers from Latin America and the Caribbean should be cautious in the adoption of tourism policies since the economic output of these countries seems to be strongly linked with tourism activity.

Regarding the central question of the present study, GDP seems to have a positive impact on tourism arrivals, and crime rate a negative impact, which confirms both hypotheses. Furthermore, the results of this study also support the other authors that studied the relationship between the tourism sector and criminal activity for countries of Latin America and the Caribbean (Fuinhas et al., 2020; Belucio et al., 2018).

Given these results, it is expected that the studied countries continue to attract as many tourists as possible, once the tourism sector becomes one of the main drivers of economic growth, especially for developing destinations as it encourages the creation of efficient strategies that

support this growth, such as investment in human capital and industries directly involved in tourism and security, given that they have a positive impact on economic growth. (Fuinhas et al., 2020).

5 Conclusion

This investigation focuses on analysing the impact of criminal activity on tourism is analysed for a panel of 14 countries in the Latin America and Caribbean region between 1995 and 2016. The repercussions of economic growth, inflation, the exchange rate and income inequality are also studied. Pre-tests' performance suggested that the best approach is an autoregressive distributed lag (ARDL) to analyse the dynamic relationships between variables in the short and long run. The specification tests revealed that cross-sectional dependence, heteroscedasticity, contemporaneous correlation, and first-order autocorrelation were present in the model, which led to the use of the Discroll Kraay estimator with fixed effects. The Error Correction Mechanism (ECM) is statistically significant and negative, indicating the presence of cointegration, which means that there are long-memory relationships between the variables in the study.

Analysing the results is possible to observe that, in the short and long run, GDP has a positive and significant impact on the tourism of the Latin America and Caribbean countries, being the main driver of the tourism activity, which supports Hypotheses 1. In contrast, in the short and long run, the crime rate has a negative and significant impact on the tourism activity of the region countries, as expected, which supports Hypotheses 2. The inflation variable is relevant to the model. However, it only became significant with the correction of shocks, which makes sense. Usually, inflation tends to make countries cheaper for foreign tourists, as the exchange rate tends to over-adjust, and impoverishment allows residents to better use the business opportunities that arise.

One of the main findings of this investigation is that tourism has a positive impact on the economic growth of the studied countries, which means that an increase in tourism intensity leads to an increase in economic growth. Therefore, the policymakers of the Latin America and Caribbean region must continue to develop measures and increase the level of investment in the tourism sector and other sectors directly related to tourism such as human capital and security, so that the countries become more attractive and prepared to receive even more tourists. However, the policymakers also must increase the level of investments in healthcare, once is the main aspect that most tourists consider when choosing their destination.

Nevertheless, although tourism contributes a lot to the region's economic growth, it is necessary to maintain a balance and not forget the other economic sectors equally important for sustainable development.

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