Tourism Demand: Understanding its Determinants and Contribution to Poverty Reduction in Colombia

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Abstract

Tourism has become a vital economic activity in Colombia and other Latin American nations. As a large service sector, tourism contributes significantly to employment and is a key instrument for the reduction of poverty in Colombia. This thesis empirically examines the determinants of demand for tourism in Colombia and its contribution to poverty reduction. The study investigates the factors that influence the destination choices of international tourists, the risk factors, and whether man-made attractions for leisure and recreational activities also increase domestic tourism. An important aspect analysed here focuses on whether the effects of politically motivated violence on international tourists' choices differ for tourists from countries with different per capita income and from countries with trade linkages with Colombia. The analysis contributes to enhancing tourism activities, markets of international tourists and address the politically motivated violence.

The study further analyses the impact of provincial attributes that attract domestic tourists in Colombia. Large increases in inbound and domestic tourists are associated with financial development activities, growth in tourism expenditures, and reduction in monetary poverty. The analysis involves then identification of factors that explain differences in tastes between domestic tourists around man-made attractions for leisure and recreation. This chapter also contributes to the scholarly literature that examines the effect of distance on domestic tourists' preferences, and considers the extent to which distance can be moderated through man-made attractions for leisure and recreation.

The third empirical chapter involves an assessment of the impact of tourism on poverty and extreme poverty in the short and long run with further estimations at the provincial levels that are economically lagging provinces. These evaluations contribute to the discussions on the hypothesised positive impact of tourism to poverty reduction. The findings of this research suggest some policy implications related to the need to increase the demand for international and domestic tourism in Colombia through reduction of politically motivated violence incidents, and increase in man-made visitor attractions for leisure and recreation, respectively. Policy implications for sectoral approaches are crucial to improve growth in the tourism sector for poverty reduction in Colombia and close the poverty gap between economically lagging and economically leading provinces.

Dedication

I dedicate this study to my wife Solangy and my adorable daughter Alison. You are the inspiration of my life. I also dedicate this research to my parents, Dora and Hugo, and to my extended family. To my late friend Leo Roche, your memory will be with me always.

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List of Abbreviations

2SLS	Two-Stage Least Squares
3SLS	Three-Stage Least Squares
ARDL	Autorregressive Distributed Lag
BP	Business/professional tourism
BVAR	Bayesian Vector Autorregressive
CGE	Computable General Equilibrium
DANE	Colombia's National Administrative Department of Statistics
DNP	Colombia's National Planning Department
ECM	Error Correction Model
EGIT	National survey of domestic tourism spending in Colombia
FMOLS	Fully Modified Ordinary Least Squares
GDP	Gross Domestic Product
GEE	Generalised Estimation Equations
GLM	Generalised Linear Models
GMM	Generalised Method of Moments
GTD	Global Terrorism Database
HLR	Holidays, Leisure and Recreation tourism
IIA	Independence from Irrelevant Alternatives
ISIC	International Standard Industrial Classification
MANVO	Man-made Visitor Attractions for Leisure and Recreation
MCIT	Colombia's Ministry of Commerce, Industry and Tourism
ML	Maximum Likelihood
MNL	Multinomial Logit
OLS	Ordinary Least Squares
PMV	Politically Motivated Violence
SAM	Social Accounting Matrix
UCLG	the United Cities and Local Governments
START	National Consortium for the Study of Terrorism and Responses to Terrorism
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNWTO	World Tourism Organization
VAR	Vector Autorregression
WEF	World Economic Forum
WHS	World Heritage Sites
WTTC	World Travel and Tourism Council

Chapter 1

Introduction

1.1 Background of the Study

Since the end of Second World War, the number of inbound visitor arrivals across the world has increased in size and importance.[1] According to the United Nations World Tourism Organization (UNWTO), there were 25 million foreigners visiting various countries in 1950, a number that has reached 1.2 billion in 2016 (UNWTO, 2017). It is estimated to reach 1.8 billion people travelling abroad by 2030 if visitor arrivals continue to grow by 3.3 percent per annum (UNWTO, 2017). International tourist numbers have also been mirrored in domestic tourist numbers as well. There were four billion residents travelling domestically within their countries in 2005 according to the UNWTO and the United Nations Environment Programme (UNEP) (UNWTO and UNEP, 2008), and between five to six billion in 2015 (UNWTO, 2016b).[2]

The increase in tourist numbers has resulted in positive economic impacts at a global level. The World Travel and Tourism Council (WTTC) has noted that the tourism sector's direct contribution to global Gross Domestic Product (GDP) was 3 percent in 2016, and its overall contribution (including indirect and induced effects) was 10.2 percent in that year (WTTC, 2017a).[3] The tourism sector was responsible for 7 percent of worldwide exports in 2016 (equivalent to US$1.4 trillion), an amount that contributes 30 percent of global services exports (UNWTO, 2017). The market share of tourism in global employment reached 3.6 percent in 2016 (WTTC, 2017a). The sector contributed US$806 billion in total investments in 2016, which accounted for 4.4 percent of global investment (WTTC, 2017a).

The UNWTO has recognised the economic contribution of tourism to poverty reduction. In their words, "tourism has increasingly been viewed as a promising area of economic activity that could become a structural part of poverty alleviation" (UNWTO, 2010a, p. 5). The contribution of the tourism sector to monetary poverty reduction has been evidenced in

[1] Inbound tourism accounts for the activities carried out by non-resident visitors within their country, for less than a year, and for any main purpose other than to be employed by a resident entity (UNWTO, 2010a).
[2] Domestic tourism comprises the activities done by resident visitors within their country (UNWTO, 2010a). The length and purpose are as noted for inbound tourism.
[3] The direct contribution of the tourism sector to global GDP is reaching that of the agricultural sector, which was 3.7 percent in 2015 (World Bank, 2016a).

several countries (Croes and Vanegas, 2008; Vanegas, 2014; Vanegas, Gartner, and Senauer, 2015), although heterogeneous results between countries have also been recognised (Croes, 2014b; Kim, Song, and Pyun, 2016). Croes (2014b) has also noted the need for further studies on the contribution of tourism to poverty alleviation in light of reducing the number of people living in poverty in developing countries.

Colombia is a developing country in Latin America with the potential to benefit both socially and economically through tourism development. Increased awareness of what Colombia has to offer as the traveller's destination of choice is critical to driving tourism growth, which can be achieved by investing in tourism development and targeted promotional initiatives. Colombia possesses several attributes as a tourist destination that captivate both international and domestic travellers, including its tropical weather without seasons, high natural and cultural diversity, among other nature-based and man-made attractions for leisure and recreation (Procolombia, 2012, June). For the UNWTO, Colombia has increased its reputation as a tourist destination since 2003, and can potentially become one of the leading destinations in Latin America (UNWTO, 2009). In 2017, Colombia reached a GDP per capita of US$14,500; a population of 49 million inhabitants, a poverty rate of 26.9 per cent; an inflation and unemployment rates of 4.3 and 8.8 percent, respectively (World Bank, 2017b); and a Human Development Index (HDI) of 74.7, according to the United Nations Development Program-UNDP (UNDP, 2019) (UNDP, 2019).

In Colombia, the number of inbound visitor arrivals has increased on average by 5.7 percent per annum since the implementation of the new constitution in 1991.[4] While there was an average decline in inbound tourist numbers of 6.8 percent between 1995 and 2002, there was an average increase of 11.9 percent between 2003 and 2016.[5] Tourism receipts for Colombia saw similar growth between 1995 and 2016, according to data from the World Bank (World Bank, 2017a). At the end of 2016, there were nearly 2.7 million trips recorded as inbound visitor arrivals in Colombia, and US$4.7 billion registered as tourism receipts (World Bank, 2017a). According to Colombia's National Administrative Department of Statistics (DANE) and the Ministry of Commerce, Industry and Tourism (MCIT), the most frequent activities

[4] The new Constitution put an end on the protectionist model that Colombia had held from the 1960s.
[5] Data obtained from the World Tourism Organization and the Immigration office of Colombia. The figures do not include: i) the arrivals of Colombians whose residence is abroad, ii) the number of cruise ship tourists, and iii) tourist arrivals at the bordering integration areas (Zonas de Integración Fronteriza-ZIF in Spanish) set between Colombia-Peru, Colombia-Venezuela, and Colombia-Ecuador. Details about ZIF in Ramírez (2009).

carried out by foreigners in the period 2000-2005 and during 2016 were for holidays at around 61 percent and 71 percent, respectively, and business/professional at about 15 percent (DANE, 2011; MCIT, 2016).

Domestic tourism in Colombia has reflected the growth in inbound tourism, and has led to a marked increase in the number of vehicles and buses travelling nationwide since 2002, and the rise in guest nights since 2001 that has been reported by the National Planning Department of Colombia (DNP, 2005a). In 2013, 1.5 million households (2.5 million Colombian residents) participated in domestic tourism activities, spending roughly COP$57,000 per capita/day (equivalent to US$30 per capita/day) on tourism characteristic products (DANE, 2013). Approximately, 45 percent of domestic tourists travelled to nearby destinations for holidays, leisure and recreational activities (DANE, 2013).

The contribution of the tourism sector to the Colombian economy has reflected similar ratios to the worldwide average. Its direct contribution to GDP was nearly 2 percent per year between 2000 and 2016 (DANE, 2011; WTTC, 2017b).[6] The sector's direct contribution to employment was 2.3 percent in 2005 (DANE, 2011), and averaged around 2.5 percent per year between 2007 and 2016 (WTTC, 2017b). In the period 1995-2015, the contribution of tourism to Colombia's exports averaged at 6.3 percent per annum.[7] The sector's contribution to Colombia's total investment rose to 3.6 percent in 2016 (WTTC, 2017b), after growing at 3 percent in 2005 according to Colombia's Tourism Satellite Accounts (DANE, 2011). This growth in investment is evident when one considers the number of international hotel chains opened in the recent years in Colombia (including Marriot, Radisson, Hyatt, Best Western, Holiday Inn, Hilton), which is demonstrative of new business opportunities and market potential in the country (Elpaís, 2012).

In spite of the increase in the number of inbound and domestic tourists in Colombia, and the sectoral contribution to the economy, little attention has been paid to the evaluation of both inbound and domestic tourism demand and the contribution of tourism sector to poverty alleviation in the country. Bonilla and Moreno (2010) studied inbound tourism demand in

[6] Based on data from DANE and Colombia's Superintendency of Corporations, tourism value added contributed an average of 3.9 percent per year to GDP between 2002 and 2014.

[7] The percentage share is calculated based on the World Development Indicators (World Bank, 2017b). The ratio is close to that of Argentina and Peru (7 percent), lower than those of tourism-oriented nations, such as Costa Rica and Puerto Rico (17 percent), and higher than the one recorded for Brazil (2.4 percent).

Colombia between 2004 and 2007, and Cerda and Leguizamon (2005) examined domestic tourism demand in Colombia for 2003. No study to date has analysed the contribution tourism has made towards poverty reduction in Colombia.

This study, in focusing on international tourism demand, examines the factors that influence the choices of international tourism destinations, including tourists' income, relative prices of the country visited, exchange rates, transport costs, international trade, and qualitative variables (Li, Song, and Witt, 2005; Lim, 2006). Politically motivated violence is a factor that has been found to influence international tourists' choice of a destination (Neumayer, 2004). This factor is of particular interest in this study in light of the armed conflict that Colombia has faced for decades between subversive left and right wing groups and the public force of Colombia. Statistics by the National Consortium for the Study of Terrorism and Responses to Terrorism (START) (2015) show that Colombia had a significant average increase in the number of politically motivated violence incidents in the period 1976-1997 of 38 percent per annum, and a lower average increase in the number of incidents between 1998-2014 of 17 percent per annum.[8] According to Bonilla and Moreno (2010), the number of kidnappings recorded between 2012 and 2015 in Colombia negatively affected the number of tourist arrivals in the country. The incidents of politically motivated violence in Colombia (perpetrated against combatant and non-combatant targets) are likely to have affected the choice of the country as a destination for international tourists and therefore, Colombia's tourism receipts.

This study also investigates the set of factors that influence domestic tourists' choices, including their age, education level, and gender (Alegre, Mateo, and Pou, 2013); the distance between domestic tourists' place of origin and destination (Nicolau and Mas, 2006); and the attributes of the regional destination (Huybers, 2003; Marrocu and Paci, 2013). Factors likely to influence the choices of domestic tourists in Colombia include climate, beaches, and man-made attractions built for reasons other than leisure. Man-made attractions for leisure and recreational activities are of fundamental interest in this study due to their unknown role in attracting domestic tourists to the regions of Colombia. Within the list of man-made attractions for leisure and recreation of Swarbrooke (2002), museums and restaurants have

[8] Palacios (2003) has documented the historical reasons of more than fifty years of Colombia's armed conflict, its causes and consequences. Cosoy (2016) summarised the reasons of Colombia's armed conflict (given special attention to guerrilla groups), and the strategies led by the national government to reach the end of this armed conflict.

been found to influence the trip decisions of domestic tourists (Marrocu and Paci, 2013). This attraction category could serve as a tool to promote domestic tourism demand in key regional destinations in Colombia where the poverty level is high.

To boost the growth of tourism, the Colombian government has developed the sectoral policy of tourism "CONPES 3397" (DNP, 2005a), the tourism marketing policy (MCIT, 2009), and sectoral plans in 2008, 2011 and 2014 (MCIT, 2008; MCIT and DNP, 2011, 2014). The government recognises the role that tourism sector could play towards poverty reduction in the country (MCIT, 2008; MCIT and DNP, 2014). In light of these reports the sectoral policies and plans, competitiveness-associated diagnostics are the primary input for developing strategies and actions in tourism (the supply side of tourism). The choices of international and domestic tourists and the contribution of tourism to poverty and extreme poverty reduction are some areas to be further explored in Colombia. The views shed light on public-private initiatives for the development of this vital sector.[9]

1.2 Aim and Objectives

The aim of this research is to investigate the determinants of the demand for tourism in Colombia and the contribution of tourism to poverty reduction. Inbound and domestic tourism are the forms of tourism investigated that account for a country's internal tourism (UNWTO, 2010a). This research answers questions in three main areas of tourism demand in a Colombian context. The first key questions to answer are: What is the effect of politically motivated violence in Colombia on the choices of international tourists? Does the effect of politically motivated violence in Colombia on the likelihood of travelling there vary between countries according to the level of per capita income and trade ratio between the tourist's country of origin and Colombia? Answers to these questions will provide valuable information for the government of Colombia on the extent to which incidents of politically motivated violence affect the preferences of international tourists and the kinds of tourists that are more averse to politically motivated violent incidents. Accordingly, the government will be able to develop policy initiatives aimed at increasing the choice of Colombia as an international tourist destination, and rise tourism receipts in the country.

[9] Research initiatives were prompted after the UNWTO's General Assembly held in Colombia in 2007. UNWTO (2009).

From the domestic tourism perspective, the second hypothesis examines, in the case of holidays, leisure and recreational (HLR) activities, the impact of man-made attractions such as museums and restaurants, and distance on domestic tourists' choices.[10] Given that 44.5 percent of Colombian residents travel to different regions within the country to enjoy holidays, leisure and recreational activities, the key questions in this area that the study seeks to answer are: How significant are man-made attractions for leisure and recreation for domestic tourists in Colombia at the time of choosing a regional destination? Are there differences in tastes between domestic tourists around the mean effect of man-made attractions for leisure and recreation? If that is the case, what are the sources of this taste heterogeneity? Finally, can more man-made attractions for leisure and recreation in a province moderate the effect of distance on domestic tourists' preferences? The findings provide inputs for the design of policy initiatives to promote domestic tourism in Colombia through man-made attractions for leisure and recreation (including museums, restaurants, and amusement parks), and to reduce regional poverty levels as a result.

The third major area of consideration in this research is the impact of the tourism sector on poverty reduction. Activities carried out within Colombia by the international and domestic tourists are reflected in financial terms in the production of tourism characteristic products by tourism industries (UNWTO, 2010a). As the UNWTO has recognised tourism as a potential strategy to reduce poverty (UNWTO, 2010b), the third hypothesis examines if the increase in tourism sector's value added contribute to a reduction in poverty and extreme poverty at the provincial level in Colombia. These effects are further estimated on poverty and extreme poverty reduction between economically lagging and economically leading provinces. The next step measures the Granger-causality relationships between poverty alleviation and growth in tourism sectors' value added. The findings will provide crucial information for the government and other tourism stakeholders on the extent to which tourism economic activities contribute to poverty reduction at the provincial levels, and the extent to which tourism can help to reduce the poverty gap between economically lagging and leading provinces.

[10] Holidays, leisure and recreational activities include sunlust activities (relaxation, rest, and sun-sea-sand) and wanderlust (new experiences with culture and people) (Gray, 1970 as cited in Dasgupta, 2011). See Huybers (2003), Nicolau and Mas (2006), and Marrocu and Paci (2013).

1.3 Data and Methodology

The various hypotheses on the demand for international tourism are tested using a linear multinomial logit model on panel data with appropriate diagnostic tests. The estimated probability for travelling to Colombia (the response variable) is calculated using the number of visitor arrivals published by the World Tourism Organization. The study covers a 19-year period (between 1995 and 2013) and comprises a dataset of 29 countries where most overseas tourists who visit Colombia come from. A further 53 countries are included as tourists' set of alternative destinations. The data source for incidents of politically motivated violence is from the National Consortium for the Study of Terrorism and Responses to Terrorism (START) (2015). Data for the remaining group of regressors are taken from the World Bank's World Development Indicators; Colombia's Administrative Department of National Taxes (DIAN); the Global Financial Data website (www.globalfinancialdata.com); and the website www.timeanddate.com operated by the company Time and Date AS.

A mixed logit model for cross-sectional data is used to test hypotheses for domestic tourism demand. The likelihood of travelling within Colombia is taken from the Colombia's national survey of domestic tourism spending (EGIT) carried out by Colombia's National Administrative Department of statistics (DANE) in 2013. The dataset is a cross-section from the survey on domestic tourism for holidays, leisure and recreation of 3011 individuals. Tourists' demographic variables are taken from EGIT. Data on the number of man-made visitor attractions for leisure and recreation by each attraction category are collected from the yellow pages website www.paginasamarillas.com (Publicar Publicidad Multimedia SAS, 2015). Statistics for the remaining group of destination attributes are drawn from Colombia's Institute of Hydrology, Meteorology and Environmental Studies (IDEAM); Colombia's official travel website www.colombia.travel (Procolombia, 2015); and the website www.lasdistancias.net. The destination attributes are collected for 368 cities clustered into 28 provinces.

For the impact of tourism on poverty, a binary logit model using aggregate data is employed for panel data with appropriate diagnostic tests. Statistics on the monetary incidence of poverty and extreme poverty are taken from DANE. The panel data set consists of 24 Colombian provinces across a 15-year period (from 2002 to 2016). The value added by the tourism sector is calculated from statistics published by Colombia' Superintendency of

Corporations and DANE. The International Standard Industrial Classification ISIC Rev 3.1 A.C is used to identify the industries that belong to the tourism sector. Data for the remaining classification of various sectoral values added are taken from DANE.

1.4 Chapter Outline

The study is organised as follows: Chapter 2 presents the literature review of empirical evaluations carried out on the demand for international and domestic tourism studies, as well as on the contribution of tourism to poverty reduction. In chapter 3, tourists' preferences for an international destination are examined at the macro level. Colombia is taken as a case of study to test the hypotheses outlined in the aims and objectives. Chapter 4 examines the motivations for the choice of a domestic tourism destination for leisure and recreational activities. The provinces of Colombia are considered to test the hypotheses on domestic tourism demand. Chapter 5 provides an assessment of tourism and its contribution to poverty and extreme poverty reduction at the provincial levels, and the dynamic relationship between tourism and poverty reduction in the economically lagging and least lagging provinces. Finally, chapter 6 presents the conclusions, policy implications, and the areas for future research.

Chapter 2
Literature Review

2.1 Introduction

A significant number of studies in the field of tourism economics have established the importance of tourism development over the last fifty years. One of the areas of tourism economics where most research endeavours have been placed is the demand for tourism (Song, Dwyer, Li, and Cao, 2012).[11] Tourism demand has become a prominent research focus in terms of theoretical model analysis (see Brida and Scuderi, 2013; Divisekera, 2013b; Mak, Moncur, and Yonamine, 1977; Stabler, Papatheodorou, and Sinclair, 2010), and empirical research (Crouch, 1994a; Divisekera, 2013a). International (Alegre and Pou, 2006; Hsu, Li, and Yang, 2013; Seddighi and Theocharous, 2002) and domestic tourism (Alegre et al., 2013; Cerda and Leguizamon, 2005; Coenen and Van Eekeren, 2003) are some of the forms of tourism demand investigated in the literature, including their determinant factors.

The choices of international and domestic tourists for alternative locations are then followed by the systematic consumption of local tourism characteristic products, which are produced by tourism industries. The economic activities of the tourism sector have resulted in both positive and negative effects on socioeconomic factors, as well as on the environment (see Reece, 2010; Stabler et al., 2010; Vanhove, 2005). Amidst the gamut of prevalent impacts, the effect of tourism economic activities on poverty has received further scholarly attention in the last years (Croes and Vanegas, 2008; Vanegas, 2014). The studies on the tourism-poverty link have examined whether the tourism economic activities contribute to poverty alleviation as stated by the United Nations World Tourism Organisation (UNWTO) (UNWTO, 2010b).

This chapter is organised as follows: Section 2.2 examines literature on the determinants of international tourism demand, focusing on the effects of politically motivated violence. Section 2.3 surveys studies that have examined the factors that influence demand for domestic tourism, with particular attention to man-made attractions for leisure and recreation. In Section 2.4, studies that have looked at the contribution of tourism to poverty alleviation are assessed. Section 2.5 presents the significance of the study. Section 2.6 provides some conclusions.

[11] The author found that 37 out of 186 studies in the field of Tourism Economics focused on tourism demand issues.

2.2 International Tourism Demand

Studies on the demand for international tourism and its determinants date back to the seminal work of Guthrie in 1961 (Crouch, 1994b). Consumer choice theories and trip-generation models are the two main theoretical streams applied in international tourism demand studies. From the neoclassical theory of demand, studies have shown that the choices of international tourists are determined by their income (Schiff and Becken, 2011; Seetaram, 2009), the prices of the country visited (De Vita and Kyaw, 2013; Thompson, 2013), the prices of other destinations (Divisekera, 2003; Li et al., 2005), and transport costs (Louviere and Woodworth, 1983; Thompson, 2013). Using trip-generation models, studies have found that cultural and spatial distance between countries (Vanhove, 2005) and international trade (Balli, Balli, & Cabeci, 2013) influence the flows of international tourists. Trip-generation models emerged from Tinbergen's (1962) gravity model of trade;[12] although they also include factors from consumer choice theory.

From Lancaster's (1966) alternative theory of consumer demand, the choices of international tourists are derived from the characteristics (attributes) of the place visited (Papatheodorou, 2001, 2006; Rugg, 1973). As compared to the neoclassical theory of consumer choice and demand, Lancaster's (1966) model suggests that the utility function is explained by the characteristics of the goods and not by the products themselves. Terrorism, political instability, and/or politically motivated violence are social characteristics of a country that negatively affect international tourists' perception of risk at a destination (Lepp and Gibson, 2003).[13] These risk factors for international tourists are the focus of this section of the literature in light of the high number of politically motivated violent incidents that occur in several destination countries. Based on Jong-A-Pin (2009), the incidents of politically motivated violence include actions amid guerrilla warfare, revolutions, civil war, and medium civil conflict. In 2014, 93 countries experienced politically motivated violent incidents under terrorist action according to the Institute for Economics & Peace (2016).

2.2.1 The Effects of Politically Motivated Violence

Politically motivated violence is the bridge between terrorism and political instability (Neumayer, 2004; Sönmez, 1998). Terrorism is "politically motivated violence perpetrated

[12] More details on the gravity model of trade can be found in Anderson (2011).
[13] The other group of risk factors noted by Lepp and Gibson (2003) are framed into cultural barriers, strange food, a nation's political and religious dogma, health, and crime.

against non-combatant targets by subnational groups or clandestine agents" (Title 22 USC 222656f(a) and 222656f(d), cited by the United States Department of State (2014)).[14] Political instability, on the other hand, includes actions of politically motivated violence, mass political violence, instability within the political regime, and instability of the political regime (Jong-A-Pin, 2009). There is consensus in the literature that terrorism, political instability and/or politically motivated violence adversely affect the demand for international tourism, although an exception exists (see Table 2.1).

Table 2.1 International Tourism and Politically Motivated Violence

Study	Data period	Dependent variable	Regressor	Interaction term	Methodo-logy	Analysed Country	Effect
Enders and Sandler (1991)	1970-1988 (monthly)	Tourist arrivals	Terrorism	No	VAR SURE	Spain	Negative
Enders, Sandler, and Parise (1992)	1970-1988 (quarterly)	Share of tourism receipts	Terrorism	No	ARIMA (Box-Jenkins)	Greece, Italy, Austria	Negative
Drakos and Kutan (2003)	1991-2000 (monthly)	Share of tourism arrivals	Terrorism	No	SURE VAR	Greece, Israel, Turkey	Negative
Llorca-Vivero (2008)	2001-2003	Tourist arrivals	Terrorism	No	Gravity model	134 countries	Negative
Bonilla and Moreno (2010)	2004-2007 (monthly)	Tourist arrivals	Kidnapping	No	RE Panel data	Colombia	Negative
Sönmez and Graefe (1998)	1994	Choice of travel international or domestically	Terrorism	No	Cross-Section Regressions	USA, Puerto Rico, US Virgin Island	Negative
Saha and Yap (2014)	1999-2009 (yearly)	Tourist arrivals, tourism revenues	Terrorism, Political instability	Terrorism with political instability	FE and RE Panel data	139 countries	Positive
Yap and Saha (2013)	1999-2009 (yearly)	Tourist arrivals, tourism revenues	Terrorism, Political instability, Corruption	Political instability with UNESCO's heritage sites	FE Panel data	139 countries	Negative (Heritage sites moderate the effects)
Neumayer (2004)	1977-2000 (yearly)	Tourist arrivals	Politically motivated violence	Politically motivated violence with land area	First-differenced GMM	World	Negative (more in long-run)

Notes: VAR: vector autoregression model; SURE: seemingly unrelated regression equation; RE: random effects; FE: fixed effects

[14] For Aksenova (2015), there is not a universally accepted concept of terrorism, although for Ramsay (2015) this is not necessary in light of the heterogeneous context the concept of terrorism is utilised.

Enders and Sandler (1991) examined the effect of terrorism on international visitor arrivals in Spain from 1970-1988 using a vector autoregression (VAR) model and seemingly unrelated regression equations (SURE). Increases in terrorist events were found to have an adverse impact on tourists visiting Spain. The negative effect became most evident after the third month of the terrorist incident. An increase in the numbers of visitor arrivals started to occur in the sixth month following the event, although numbers fluctuated for several months afterwards. A full recovery of tourism occurred twenty-one months after the terrorist attacks, which suggest that terrorism has a long run effect on international destination choice.

Using an autoregressive integrated moving average (ARIMA) model, Enders et al. (1992) investigated the effect of terrorism on the market share of tourism receipts of Greece, Italy and Austria from 1970-1988. The results showed that tourism begins to negative respond to a terrorist event six to nine months after the incident. The reason for this delay is that tourists cannot change their trip plans immediately, unless a fine is paid (Enders et al., 1992). The findings also showed that a terrorist incident in any of these countries, e.g. Greece, causes negative effects in the demand for tourism in Italy and Austria (countries in continental Europe), and positive effects in the demand for tourism in the United Kingdom.

Drakos and Kutan (2003) extended the work of Enders et al. (1992) to include cross-country effects of terrorism in Greece, Israel and Turkey in the period 1991-2000. Using the Seemingly Unrelated Regression Equations (SURE) method, the study of Drakos and Kutan initially found that terrorist incidents in each of these Mediterranean countries negatively affect the own market share of tourists. Drakos and Kutan noted that the adverse effect is higher when the terrorist attack is of high intensity; that is, when there are more than three casualties, as compared to those of low and medium intensity. Moreover, the terrorist events were found to create negative and positive spillover effects in the market share of tourists of other countries; these spillover effects also depend on the intensity of attack. For instance, when there is a high-intensity attack in Turkey and Israel, the choices of tourists shift from these Mediterranean countries toward safer destinations, such as Italy. However, when there are low-intensity attacks in Turkey and Israel, the market share of tourists in Greece increases.

Using the gravity model of trade, Llorca-Vivero (2008) studied the repercussion of terrorism on the flow of tourists from the G-7 countries (Germany, Italy, Canada, France, UK, Japan

and USA) to 134 nations from 2001-2003. The results show that, when the total figures of terrorist incidents are included, the greater the number of victims recorded, the greater the negative effect on international tourism flows. In fact, the total number of incidents alone did not explain the decline in tourism flows. This result differs from Drakos and Kutan (2003), Enders and Sandler (1991), and Enders et al. (1992), in which the number of terrorist incidents did explain the negative reaction of international tourists. When the number of victims was split into international and domestic, the findings of Llorca-Vivero showed that both types of victims adversely influence the trips of international tourists. Therefore, having terrorist attacks on a domestic scale (that is, targeting locals only) also affect the trips of international tourists.

Bonilla and Moreno (2010) studied the impact of kidnapping in Colombia on the number of visitor arrivals from 2004-2007 using a random-effect panel data model. Kidnapping is a terrorist tactic in which people are seized, detained, injured or threatened to kill (Mahan and Griset, 2008). The findings showed that an increase in the number of kidnappings in Colombia resulted in a significant reduction in the number of international visitors from 20 countries. The study highlighted the importance that the Ministry of Defence was seen to actively work on security issues, as this ultimately negatively affected the numbers of visitor arrivals in Colombia. Based upon previous research there is a need for further studies to include the set of incidents of politically motivated violence that occur amid armed conflicts, as this influences international tourists' preferences for Colombia,[15] and a longer study period.

In a study conducted through a survey for tourists from the USA, Puerto Rico and the US Virgin Islands in 2004, Sönmez and Graefe (1998) found risk perception to be the most important factor in the decision to travel abroad or in the domestic market. Sönmez and Graefe found that 57 percent of tourists are discouraged to travel abroad due to the possibility of terrorist incidents in the country to visit. Moreover, the study showed that 88 percent of the respondents would avoid politically unstable countries, and 77 percent of them would only travel to destinations they regard safe. Sönmez and Graefe also found that the risk perception of international tourists decreases as their international experience increases. Kapuściński and Richards (2016) argue that the lack of experience with terrorism or political instability of

[15] Assassinations, hijacking, bombing, and armed assault are other politically motivated violent incidents recorded by the National Consortium for the Study of Terrorism and Responses to Terrorism (START) (2015).

intended international tourists leads them to rely on secondary sources to make their decisions.

Contrary to the previously discussed findings, Saha and Yap (2014) showed that the presence of terrorist incidents actually increases the demand for international tourism (both visitor arrivals and tourism revenues) to that country in a multi-country study. Saha and Yap's study included 139 countries from 1999-2009, and used panel data models with fixed and random effects. However, using an interaction term between terrorism and political instability, Saha and Yap found that the positive effect of terrorism on international tourism demand for a country only exists in low and moderate political-risk countries of destination. In high political-risk nations, the effect of terrorist actions on tourism is negative. In an early study for the same group of countries, Yap and Saha (2013) found that political instability was more harmful for international tourism demand than terrorism.

Yap and Saha (2013) included an interaction effect between political instability and the United Nations Educational, Scientific and Cultural Organization (UNESCO)'s listed heritage sites on the demand for international tourism. Interaction terms are important, because the partial effect of a response variable respect to a regressor could also depend on the magnitude of another regressor (Wooldridge, 2013). The findings of Yap and Saha showed that the presence of UNESCO's listed heritage sites in a country moderates the negative effect of political instability on the number of international arrivals. The interaction term between politically motivated violence and land area employed by Neumayer (2004) showed no statistical evidence to infer that the impact of politically motivated violence on international tourism demand depends on the size of the country.

The interaction effect of politically motivated violence and the income of international tourists on the demand for an international tourist destination could be explored further. This interaction effect is meaningful as increases in the income of tourists have been found to rise the number of trips to Australia (Divisekera and Kulendran, 2006), New Zealand (Schiff and Becken, 2011), Greece (Thompson, 2013), Aruba (Vanegas, 2009), Uruguay (Altmark, Mordecki, Santiñaque, and Adrián Risso, 2013), Mexico (Guzmán-Soria, De-la-Garza-Carranza, Rebollar-Rebollar, Hernández-Martínez, and García-Salazar, 2011) and Colombia

(Bonilla and Moreno, 2010).[16] The result of this interactive variable could show whether the effect of politically motivated violence on the choices of international tourists differs depending on their income levels (or between countries according to levels of per capita income).

Another interaction term that could be examined is between politically motivated violence and international trade. Turner and Witt (2001) believed that international trade increases the flow of tourists; a theory that was empirically verified in countries such as Turkey (Balli et al., 2013) and Australia (Kulendran and Wilson, 2000). Business tourists travel on behalf of their internationally oriented companies to provide services (consultancy, repair, equipment installation, and other services), to negotiate businesses, and/or to search for business opportunities (UNWTO, 2010a). Business tourists are also less likely to change their trip plans to countries that experience politically motivated incidents (Cook, 1990). It is still unknown whether the effect of politically motivated violence on the choices of business oriented international tourists varies between countries with different trade levels with the country of destination.

In light of the methodologies used to estimate the impact of terrorism, political instability and/or politically motivated violence on international tourism demand, discrete choice models for aggregate data can be used.[17] Theil's (1969) linear multinomial logit (MNL) model can be employed within this pool of studies. This linear MNL model applied to international tourism demand could show the preferences of international tourists (amongst a set of country alternatives) as a function of their personal characteristics and the relative attributes of the country visited. The linear MNL model can be used with Least Squares (or counterparts) methods when the data employed show repeated observations on individual's choices (panel data), is large and aggregate (Ben-Akiva and Lerman, 1985; McFadden, 1973).

The linear MNL model has two important contributions to studies on the effect of politically motivated violence on the choices of international tourists. First, international tourists are included as consumers who choose a country among a set of alternative nations. This

[16] In these studies, the demand for New Zealand, Australia, Greece, Aruba and Uruguay was found to be income-elastic, indicating that these countries are "luxury" destinations for the source markets of tourists. The demand for tourism in Mexico and Colombia was found to be income inelastic, which shows these countries as "normal" destinations for tourism activities.

[17] The cutting edge of discrete choice models has been highlighted in the Nobel Prize lecture of 2000 (McFadden, 2001), and worked out in several books, including Ben-Akiva and Lerman (1985), and Train (2009).

assumption is consistent with discrete choice theory in that consumers face trade-offs between finite, exhaustive and mutually exclusive alternatives (see Train, 2009). For Papatheodorou (2006), discrete choice modelling is appropriate in tourism demand studies, as it takes into account that tourists can choose one place among multiple options, so they cannot be present in two or more places simultaneously.[18] A practical way to approach the choices of international tourists amongst alternatives is transforming the absolute frequency of visitor arrivals into a relative frequency measure. The relative frequency of visitor arrivals as a dependent variable of the probability of destination choice has not appeared in the literature before. Second, since the preferences of international tourists for a country imply an intrinsic comparison of attributes between country alternatives, studies will be able to add politically motivated violent incidents as a relative risk factor that influences the choices of international tourists.

2.3 Domestic Tourism Demand

There has been less investigation into the demand for domestic tourism, and its explanatory factors, than there has been into international tourism, in spite of domestic tourism's significant contribution to total tourism trips noted by the World Tourism Organisation (UNWTO, 2016b). According to the UNWTO (2016b), domestic tourism accounts for 72 percent of total tourism consumption using worldwide statistics; in Colombia, domestic tourism consumption makes up three quarters of total internal tourism spending (DANE, 2011). Domestic tourism demand has been examined from a number of diverse perspectives. The choice for tourism participation is one of these perspectives, which includes i) the one-stage decision of travelling (Boakye, Annim, and Dasmani, 2013; Cerda and Leguizamon, 2005) or consuming tourism products (Alegre and Pou, 2004), and ii) the two-stage decision of travelling and consuming tourism products (Alegre et al., 2013; Magableh and Kharabsheh, 2013). Other perspectives include the choice of the length of stay (Grigolon, Borgers, Kemperman, and Timmermans, 2014), and the value of expenditures in tourism characteristic products (Divisekera, 2010; Yang, Liu, and Qi, 2014).

One interesting perspective investigated in domestic tourism is the choices of domestic tourists amongst a set of provincial destinations (Nicolau and Mas, 2006). Domestic tourists'

[18] When two o more alternatives are not mutually exclusive (the choice of two or more destinations in the case of tourism), the alternative should be redefine, e.g., "only A", "only B", "A and B" (Train, 2009).

choices amongst alternative regions are explained by economic and social factors, including tourism prices (Athanasopoulos and Hyndman, 2008), transport cost (Fuleky, Zhao, and Bonham, 2014), tourists' income (Athanasopoulos and Hyndman, 2008; Yang et al., 2014), and the distance from tourists' place of origin (Marrocu and Paci, 2013), amongst other factors. These factors are similar to those that determine the choices of international tourists, except for the nominal exchange rate. From Lancaster's (1966) theory of consumer demand, the preferences of domestic tourists for a regional destination are also determined by the characteristics (attributes) of the province or administrative unit visited (Huybers, 2003). Studies have shown that climate (Bujosa and Rosselló, 2013), nature-base attractions, such as beaches (Marrocu and Paci, 2013), and world heritage sites (Patuelli, Mussoni, and Candela, 2013) are attributes that have been found to influence the preferences of domestic tourists. Man-made attractions for leisure and recreation are the focus in the next section, as there are several of these attractions within the provinces of a country that tend to influence the choices of domestic tourists.

2.3.1 The Effects of Man-made Attractions for Leisure and Recreation

Studies on the impact of man-made attractions involving leisure and recreation on the choices of domestic tourists have emerged in recent years. Man-made attractions involving leisure and recreation include venues, features, or activities which have the following characteristics: attractions that are originally built for leisure and recreation purposes, are manageable, and are offered with or without entry fees for locals and tourists (Swarbrooke, 2002). The consensus in the literature is that man-made attractions for leisure and recreation, such as restaurants, museums and aerial trams, positively influence the choices of domestic tourists (see Table 2.2 below).

Marrocu and Paci (2013) investigated the impact of restaurants on the demand for domestic tourism in the provinces of Italy in 2009. Gravity and spatial autoregressive (SAR) models were used to capture the geographic distance between provinces and the tourism flows spatial dependency, respectively. The results from both models showed that the number of restaurants with at least one Michelin star (a measure of quality restaurants) positively and significantly influence the trip to a domestic tourist destination. The SAR model of Marrocu and Paci took into account the fact that tourism flows not only depend on the attributes of the origin and destination provinces, but also on the characteristics of neighbouring provinces due to their proximity.

Table 2.2 The Choices of Tourists and Man-Made Attractions for Leisure

Study	Data Period	Dependent variable	Man-made attraction for leisure	Interaction Term	Methodo-logy	Analysed Country (region)	Effect
Domestic tourists							
Marrocu and Paci (2013)	2009	Origin-destination visitor arrivals	Museum	Origin-destination attributes	Gravity, SAR	Italy	Positive
Massidda and Etzo (2012)	2004-2007	Origin-destination visitor arrivals	Museum	No	Gravity (Panel GMM)	Italy	Positive
Marrocu and Paci (2013)	2009	Origin-destination visitor arrivals	Restaurants	Origin-destination attributes	Gravity, SAR	Italy	Positive
Hearne and Salinas (2002)	1999	LDV (RP)	Gondola lift	No	Conditional logit model	Costa Rica (Poás Volcano)	Positive
Total tourists and/or local visitors							
Prideaux and Kininmont (1999)	1999	LDV (RP)	Museums	-	DA	Australia	Positive
Sun and Uysal (1994)	1990	Tourism flows	Theme parks	-	DA	USA (Florida)	Positive
Milman (1991)	NR	LDV (RP)	Theme parks	-	DA	USA (Florida)	Positive Decreases
Erkip (2003)	NR	LDV (RP)	Shopping mall	-	DA	Turkey (Ankara)	Positive

Notes: NR: not reported; LDV (RP): limited dependent variable (revealed preferences); SAR: spatial autoregressive model; GMM: generalised method of moments; DA: descriptive analysis.

In the same study, Marrocu and Paci (2013) examined the influence of museums on the flow of domestic tourists in the provinces of Italy. The results from the gravity and spatial autoregressive (SAR) models showed that the number of museums partially explains the trips of domestic tourists, although the effect is low as compared to the effect of restaurants. Studying the same Italian market of domestic tourism in a time span of four years (2004-2007), Massidda and Etzo (2012) found that the promotion of cultural activities associated with museums significantly attracts domestic tourists, although the effect is lower than the impact of other cultural factors. The gravity model used by Massidda and Etzo was estimated with the system GMM.

Using interviews and questionnaires as the method of analysis, Prideaux and Kininmont (1999) found that visitors who travelled to Australian towns/cities most motivated by a museum visitation were over 50 years of age (58 percent), and the majority were domestic and/or local visitors (92.5 percent). For Prideaux and Kininmont, the museums studied (located in Bundaberg, Gympie, and Miles) were not attractive for young tourists. This issue can be tackled through promotional strategies according to Prideaux and Kinninmont, who found that 71 percent of the sample preferred roadside advertising as the most effective promotional strategy to encourage museum visits, as well as brochures in tourism attractions, motels and information centres.

Hearne and Salinas (2002) studied the preferences of domestic and foreign tourists visiting Poás Volcano in Costa Rica to undertake ecotourism activities. One of the attributes included in their choice experiment was the presence of aerial trams. Aerial trams (or gondola lifts) are an "aerial public transit technology propelled from above by cables" (Alshalalfah, Shalaby, Dale, and Othman, 2012, p. 253).[19] Using the conditional logit model, Hearne and Salinas found that the visual motivation associated with aerial trams when crossing a rainforest was a significant determinant to visit Poás Volcano for domestic tourists in Costa Rica.[20] The motivation for the use of aerial trams was higher for domestic than for foreign tourists.

For Swarbrooke (2002), man-made attractions for leisure and recreation is a category of visitor attractions that includes museums, restaurants, and gondola lifts, as well as theme parks and shopping malls, among other attractions. Future studies could examine the extent to which theme parks and shopping malls determine the choices of domestic tourists for a destination amongst regional alternatives. The role of theme parks and shopping malls on the preferences of tourists (without separation between domestic and international visitors) and local community has been examined in the literature. The findings of these studies are analysed below.

Theme parks are "commercially operated large-scale amusement parks incorporating attractions that offer specific themes" (Milman, 1991, p. 12). Sun and Uysal (1994)

[19] Aerial trams have been built for commuting and tourism purposes for decades (Neumann, 1999; Troyano, 2014).

[20] For the case of Bogotá (Colombia), Hamón (2008) noted that locals and tourists have used the aerial tram for several years to visit the summit of Monserrate; a place where they can pray, eat, buy handy crafts, and view the city of Bogotá.

highlighted the growth of tourism flows in Florida (USA) from the 1950s due to the opening of Walt Disney World with its three theme parks: The Magic Kingdom, EPCOT Centre, and the Disney-MGM Studio. It has been estimated that just 15 percent of visitors in Florida in 1990 came from overseas (Sun and Uysal, 1994); therefore, the vast majority are local and domestic tourists. Milman (1991) investigated the role of theme parks in Florida as a leisure activity for local communities (the studied year was not reported). 64 percent of residents visited Central Florida's theme parks (which adds up to the total number of international and domestic tourists who visited these parks), although their frequency of visitation was exponentially decreasing over time (Milman, 1991).

Shopping malls are regarded as visitor attractions that "offer services and facilities for entertainment, shopping, eating, drinking and other aspects of leisure" (Stevens, 2003, p. 285). Erkip (2003) studied the role of shopping malls in the Turkish society through interviews, and showed that shopping malls not only add value to the field of consumption, but also create global and local identity for leisure visitors of different ages and income levels. Leask (2008) and Swarbrooke (2002) noted that shopping malls are no longer seen as just a support service for visitors, but are tourist attractions in their own rights.

It could be argued that domestic tourists might visit several man-made attractions for leisure and recreation during their regional trip to a region. Trips of leisure domestic tourists last an average of 2.6 days (Garín-Muñoz, 2009), or more days depending on the season (Grigolon et al., 2014). Accordingly, future studies could cluster sets of man-made attractions for leisure and recreation in a common factor, and thereby examine the impact of this common factor on the choices of domestic tourists. Factor analysis is used to create latent variables (unobservable common factors) that capture the correlation between measured variables (Fabrigar, Wegener, MacCallum, and Strahan, 1999).

Based on the study by De Valck et al. (2014), differences in tastes between domestic tourists regarding man-made attractions for leisure and recreation deserve attention. De Valck et al. (2014) studied people's choices amongst restored natural sites as a function of site-specific attributes and socio-demographic characteristics, and found significant heterogeneity around the mean of some site attributes (including "habitat") that were explained by people's characteristics (including "being retired"). Domestic tourists' socio-demographic characteristics, including their city of residence, gender, age, marital status, and education

level could be examined in future research as potential sources of taste heterogeneity between domestic tourists.

Distance has been identified in several studies as a spatial factor that negatively influences the choice of destination for domestic tourists (Gálvez, Romero, and Devesa, 2014; Huybers, 2003; Marrocu and Paci, 2013; Monfort, Guargia, Romero, and Sedano, 2010; Priego, Rosselló, and Santana-Gallego, 2014). Nicolau and Mas (2006) and Nicolau (2010) found that tourists' motivations and inertial behaviour, respectively, have the power to moderate the effect of distance on domestic tourists' choices. An increase in the number of man-made attractions for leisure and recreation could serve as a strategy to counteract the effect of distance on domestic tourists' preferences for a province. The interaction term between man-made attractions for leisure and recreation and distance would be a significant next step.

2.4 Tourism and Poverty Alleviation

Tourists' choice of destination, whether international or domestic, creates demand for tourism products. This demand is met by tourism characteristic industries that have the potential to trigger impacts on social, economic and environmental factors (Brenda and Costa, 2013; Reece, 2010; Stabler et al., 2010; Vanhove, 2005). Besides the impact of tourism on economic growth (Dritsakis, 2004), the contribution of tourism to poverty reduction has been advocated by the UNWTO, for whom "tourism has increasingly been viewed as a promising area of economic activity that could become a structural part of poverty alleviation" (UNWTO, 2010a, p. 5). The contribution of tourism toward the achievement of all 17 Sustainable Development Goals (SDGs) at the end of 2030 (including poverty reduction) was noted by the UNWTO and the United Nations Development Programme (UNDP) (UNWTO and UNDP, 2017). There has been a growing scholarly attention to study sustainable tourism from the perspective of SDGs (see Alarcón and Cole, 2019; Winchenbach, Hanna, and Miller, 2019). Several studies have examined the economic contribution of tourism to poverty reduction (SDG 1) at the national, provincial, and local community levels (see Table 2.3). The economic growth of all sectoral activities, including tourism, can contribute to a reduction in poverty levels (Vanegas et al., 2015) through factors that are crucial for a better economic performance in the countries, including international trade, monetary and fiscal policies, enhanced financial markets, among several others (World Bank, 2000).

Table 2.3 Tourism and Poverty Alleviation at Different Geospatial Levels

Study	Data Period	Dependent variable	Regressors	Interaction Variable	Method	Analysed nations, provinces, or community	Tourism contributes to poverty reduction
National level							
Croes and Vanegas (2008)	1980-2004 (yearly)	Poverty	Tourism exports, GDP	No	VAR	Nicaragua	Yes
Vanegas (2014)	1980-2012 (yearly)	Extreme Poverty	Tourism exports	No	Panel data	Costa Rica, Salvador, Guatemala, Honduras, Nicaragua	Yes
Vanegas et al. (2015)	1980-2012 (yearly)	Extreme Poverty	Tourism exports	No	VEC	Costa Rica Nicaragua	Yes
Croes (2014a)	1980-2010 (yearly)	Extreme Poverty	Tourism exports	No	VEC	Nicaragua, Costa Rica	Diverse results
Croes (2012)	1990-2009 (yearly)	HDI	Tourism exports	No	VEC	Nicaragua, Costa Rica	Yes
Kim et al. (2016)	1995-2012 (yearly)	Extreme Poverty	Tourism exports	Tourism with GDP per capita	FE Panel data	69 developing countries	Diverse results
Blake, Arbache, Sinclair, and Teles (2008)	2002	Household Income	Tourism spending	No	CGE	Brazil	Yes
Blake (2008)	1992, 2001, 2003	Household Income	Tourism industries' output	No	CGE	Uganda, Tanzania, Kenya	Yes
Provincial							
Donaldson (2007)	NR	Household Income	GDP	No	DA	Yunnan and Guizhou (China)	Diverse results
Local community							
Truong, Hall, and Garry (2014)	2012	Limited Dependent Variable. Perception	-	-	DA	Vietnam Sapa, Lao Chai, Ta Van, Ta Phin (Vietnam)	Diverse results
Butler, Curran, and O'Gorman (2013)	NR	Limited Dependent Variable. Perception	-	-	DA	Glasgow Govan (Scotland)	Yes

Notes: NR: not reported; DA: descriptive analysis; VAR: vector autoregressive model; VEC: vector error correction model; FE: fixed effects; CGE: computable general equilibrium model; HDI: human development index; Poverty: poverty headcount ratio (the proportion of individuals who lives below the poverty line); Extreme poverty: extreme poverty headcount ratio (the proportion of individuals who lives below the extreme poverty line).

Studies on the tourism-poverty link at the national level have found that tourism activities produced poverty reduction effects. For instance, Croes and Vanegas (2008) found an inverse relationship between tourism exports and poverty in Nicaragua from 1980-2004 using a Vector Autoregressive (VAR) Model. Using panel data techniques, Vanegas (2014) found that tourism exports contributed to extreme poverty alleviation in Costa Rica, Salvador, Guatemala, Honduras, and Nicaragua.

Vanegas (2014) and Vanegas et al. (2015) found that tourism exports made a greater contribution to extreme poverty reduction in Costa Rica, Guatemala and Nicaragua than both agriculture and manufacturing exports. Exports of manufactured and agriculture products in El Salvador and Honduras, however, had a greater contribution to extreme poverty alleviation than tourism exports. Vanegas et al. (2015) noted that, due to lack of data, only the exports of tourism sector were included to test the tourism-poverty link, omitting the domestic consumption of tourism. According to the World Travel and Tourism Council (WTTC), domestic travel spending is 70.7 percent of total tourism spending across the world (WTTC, 2017a). Future studies with official data could examine the tourism-poverty link including the domestic component of tourism consumption to set a more accurate measure of the economic impact of the tourism sector.

Contrary to the above results, Croes (2014a) found no evidence that tourism exports contributed to poverty reduction in the long run in Costa Rica between 1980 and 2010 using a Vector Error Correction (VEC) model. Croes (2014b) recognised that the linkage between tourism growth and poverty alleviation is not straightforward, as the results between countries can be diverse. Kim et al. (2016) examined the tourism-poverty link in 69 developing countries and found that tourism receipts had no statistically significant effects on poverty alleviation for all countries. Only the least developing economies (with income per capita below international $3,400) exhibited a reduction in poverty due to increases in tourism receipts.

Scheyvens (2007) stressed the need for being cautious with poverty alleviation through tourism activities, since some statistics do not show signals of poverty reduction advances. “In 10 of the 13 countries which are home to 80% of the world’s people who live in extreme poverty, tourism has not been able to reduce poverty” (Plüss and Backes, 2002, as cited in Scheyvens (2007, p. 232). Scheyvens argues that the contribution of tourism to poverty

alleviation is more visible in countries where the neoliberal economic model has not been adopted. However, Schilcher (2007) argues that a transitional model in tourism, positioned in the middle of the spectrum between protectionism and neoliberalism, is the key strategy to reach equity among tourism stakeholders.

Some studies have provided evidence of the links between tourism and income distribution (Porto, 2004). Income distribution can be seen as a relative measure of poverty (Coudouel, Hentschel, and Wodon, 2002). Blake et al. (2008) studied the effects of tourism spending on household income distribution in Brazil in 2002 using a Computable General Equilibrium (CGE) model. CGE models assume that tourism spending initially affects relative prices (primarily the prices of tourism products), earnings (from employment, self-employment and capital) and government revenues, which then results in corresponding changes in households' income. Blake et al. (2008) found positive effects of tourism spending across all income groups, although low-income families received fewer benefits when compared with high-income families.

Using a CGE model for several East-African economies, Blake (2008) showed that the contribution of tourism-related industries to the income of poor rural households in Kenya and Tanzania was below the national average, whereas the contribution of non-service export industries to the income of poor rural households was above the national average. In Uganda, the contribution of hotels and restaurants to the income of poor households was not very different to the national average, nor to the contribution provided by non-service exports (Blake, 2008). The contribution of the transport industry to the income of the poor was much lower than the national average contribution, however, and the contribution of non-service exports, too. Blake (2008) urged greater debate upon the trade-off between tourism activities and other export-oriented industries.

Donaldson (2007) investigated the tourism-poverty link at the provincial level in China, finding contradictory results. The results showed that Yunnan's rural-based tourism industries had a large effect on economic growth, but little contribution to rural poverty reduction; in Guizhou, a province with a smaller-scale tourism industry focalised in poor areas, the contribution of tourism to poverty reduction was higher than its contribution to growth, mainly due to empowerment of the poor. The study of Donaldson was conducted through a descriptive method using provincial statistics. Due to lack of data on poverty, the ratio

between county's rural income and GDP was used as a proxy variable. Donaldson's study was limited to just two provinces, and did not include all possible provincial destinations. Further studies on the tourism-poverty link at the provincial levels should include whenever possible all the provinces within a country, as they make up a complete set of destination options to international and domestic tourists where tourism dollars are spent.

It is generally accepted in the literature that tourism promotes equitable income distribution among the poor and rich in all regions of a country (Mihalic, 2013; Porto, 2004). According to Mak (2004), tourism is capable of balancing opportunities and incomes between the regions of a country. Based on Baumol's (1986) study of economic convergence between developing and developed countries, Sala-i-Martin (1996) suggests studies to identify whether the differences in income levels between the regions of a country tend to decrease in the long run, and whether the poor regions can reduce poverty levels over time. Studies on the tourism-poverty link at the provincial levels could empirically examine whether the reduction in poverty due to increases in the value added by the tourism sector is greater for economically lagging provinces than for economically leading provinces.

Another subset of studies have investigated the tourism-poverty link at the local-community level. Using interviews, field notes, and direct observation, Truong et al. (2014) noted that locals from Sapa (Vietnam) perceived tourism activities as a promoter of poverty relief. However, in general, non-poor people and tour operators have been the winners. Truong et al. (2014) argued that tourism can only alleviate poverty when the local perspective about poverty is understood. To create net benefits for the poor from tourism activities, pro-poor tourism (PPT) programs have been coordinated since the 1990s (Scheyvens, 2007), although they have not been as effective as expected (Schilcher, 2007). Butler et al. (2013) studied a developed location in Glasgow Govan (Scotland) using interviews, observation and archives in order to assess PPT activities. Butler et al. (2013) argued that the PPT concept complicates the process of poverty reduction, and that developing countries should simply focus on applying good practice and common sense in order to gain maximum benefits from tourism.

The tourism sector is compounded by tourism characteristic industries, according to the World Tourism Organization (UNWTO, 2010a). Every province in a country is likely to have establishments whose economic activity (either primary or secondary) belongs to this sector. Accommodation for visitors; food and beverage serving activities; railway, road, water and air

passenger transport; travel agencies; and so forth, are in the list of tourism characteristic activities classified on the International Standard Industrial Classification (UNWTO, 2010a, p. 111). Since growth has been hypothesised as one of the long-term strategies for poverty reduction (World Bank, 2000), the performance of the tourism sector is automatically associated with that purpose. Several studies have examined the link between economic growth and tourism. Most have provided evidence that tourism receipts spur economic growth (Gökovali, 2010; Gökovali and Bahar, 2006; Ige and Odularu, 2008), or have identified a long-term linear interdependency between both variables (Jin, 2011; Ozturk and Acaravci, 2009; Qasenivalu, 2008; Sarmidi and Salleh, 2011). Only one study found no significant contribution of tourism to economic growth in Uruguay and Brazil (Brida, Pereyra, and Devesa, 2008).[21]

Some studies have examined the impact of primary, secondary and tertiary sectors on poverty reduction. The tertiary sector includes the industries that belong to the tourism sector as classified by the World Tourism Organisation (UNWTO, 2010a). The findings of these studies and their estimation methods can provide inputs for future research on the tourism-poverty link. Montalvo and Ravallion (2010) studied the provinces of China between 1983 and 2001 using panel data methods, and found that the primary sector was the greatest contributor to poverty reduction. For Montalvo and Ravallion (2010), the separation between rural and urban poverty is necessary to examine sectoral impacts on poverty reduction. Ravallion and Chen (2007) investigated the sectoral composition in China and its impact on poverty from 1980-2001. Using time series methods, their results showed that the primary sector had higher impact on poverty reduction than the secondary and tertiary sectors.

A set of studies, including Gounder and Xing (2012), have also examined social factors that determine poverty such as education and health. Using econometric methods for cross-sectional micro data, Gounder and Xing's (2012) main findings showed that more years of schooling completed by the household's head tend to increase total income in all households (from low to high-income levels), and that more education has positive effects in health prevention activities and in the acquisition of adequate housing facilities (water supply and flush toilet).

[21] Brida et al. (2008) did not provide reasons to explain why the tourism sector's contribution to total growth of GDP is almost null or even negative.

Alkire et al. (2015b) noted the importance of using the poverty headcount ratio (the monetary measure of poverty) as a continuous measure with limits between zero and one. Since the poverty headcount ratio is an empirical probability measure of being poor (using data at the macro level), future studies on the tourism-poverty link could use the binary logit model for aggregate data to eliminate the constrained intervals of this variable. Based on Berkson (1944, 1951), the binary logit of poverty (the log of the odds of being poor) linearizes the relationship between monetary poverty rate and the explanatory variables such as sectoral economic growth (including tourism).

For panel data studies on poverty, the method of Generalised Estimating Equations (GEEs) could be used to test the linear relationships between the odds of being poor and its regressors (including the value added of tourism sector). GEEs are able to capture time dependency (autocorrelation patters), cluster patterns, and heteroscedasticity between groups (Liang and Zeger, 1986; McCulloch, Searle, and Neuhaus, 2008). GEEs also provide flexibility as they allow independent factors (including dummy variables) and interaction terms to be included within the model equation, which is ideal for joint hypothesis testing (Balli & Sørensen, 2013). Econometric estimations using GEEs do not require the loss of the first time-period for each cross section as happens with first-difference estimation methods (Wooldridge, 2010). Based on Holtz-Eakin, Newey, and Rosen (1988), Vector Autoregressions (VAR) in panel data could also be employed to examine the Granger-causality between poverty and its sectoral predictors, including the value added of tourism. For the case of Costa Rica, Vanegas et al. (2015) found bi-directional Granger-causality between manufacturing growth and poverty reduction, and between agricultural development and poverty alleviation, and uni-directional Granger-causality from tourism development to poverty reduction.

2.5 Significance of the Study

This study will contribute to the literature on tourism demand and the impact of tourism on poverty. In the international tourism domain, a contribution of this study is the use of the linear MNL of Theil (1969) to understand international tourists' choices among country alternatives and their determinants. This work will test hypotheses from the literature that more politically motivated violent incidents negatively influence the choices of international tourists. Several works on the impact of terrorism (Drakos and Kutan, 2003; Neumayer, 2004; Sönmez and Graefe, 1998), or political instability (Sönmez and Graefe, 1998; Yap and Saha,

2013) on international tourism demand will be looked at. This study will also examine whether changes in international tourists' preferences for Colombia due to politically motivated violence vary between countries with different levels of per capita income, and between countries with different trade ratios with Colombia. This last examination extends the works that have used interaction terms to examine whether the effect of politically instability or politically motivated violence in a destination country on the demand for that destination depends on the presence of heritage sites (Yap and Saha, 2013) or on the destination country's land area (Neumayer, 2004), respectively. The findings will provide policy initiatives aimed at increasing international tourism demand.

In the area of domestic tourism, this study will identify the cluster of man-made attractions for leisure and recreation that influences the choices of domestic tourists. Hypothesis from the literature that man-made attractions for leisure and recreation positively influence the choices of domestic tourists amongst regional destinations will be tested. The work by Marrocu and Paci (2013) on the impact of museums and restaurants on domestic tourism demand will be extended with the study's findings. Tourism stakeholders will be able to recognise the kinds of tourists (as reflected by their demographic characteristics) that are more willing to travel to a region due to the presence of man-made attractions for leisure and recreation. The examination in this study of potential factors that explain taste differences between domestic tourists for diverse destination attributes will extend the literature on domestic tourism demand. This study will also extend the works that have examined whether the negative effect of distance on domestic tourists' choices can be offset by other factors, including domestic tourists' motivations (Nicolau and Mas, 2006). Tourism stakeholders in Colombia will be able to identify whether the negative effect of distance on domestic tourists' choices can be moderated by the presence of man-made attractions for leisure and recreation in the regional destination. The results will provide vital information for policy initiatives aimed at increasing the demand for domestic tourism in key Colombian regions through man-made attractions for leisure and recreation.

Increases in the demand for international and domestic tourism in Colombia can provide benefits to the poor in developing countries. The high number of people who live below the poverty line justifies the need to find effective strategies from tourism economic activities. This study will test hypotheses from the literature on whether the growth of tourism economic activities reduces poverty and extreme poverty in the short and long run. This work extends

the study by Donaldson (2007) on the tourism-poverty link at the provincial level, and the study by Vanegas et al. (2015) on the economic impact of tourism receipts on extreme poverty reduction, *ceteris paribus*. The literature on the tourism-poverty link will be expanded by examining whether the economically lagging provinces of a country gain greater benefits from tourism activities than the economically leading provinces based on the convergence theory of growth. The government of Colombia will be able to identify the extent to which tourism economic activities reduce poverty at the provincial level (as compared to other sectors of the economy), and whether there is Granger-causality between poverty and the tourism sector. The academic community will be provided with an alternative for modelling the tourism-poverty link using macro-level statistics. The recommended model is the binary logit model for aggregate data estimated through both the method of generalised estimating equations and vector autoregressions in panel data.

2.6 Conclusion

The literature has shown several factors that influence the demand for international and domestic tourism in a country. The incidents of politically motivated violence in a country adversely influence the choices of international tourists. No study has examined whether leisure tourists from countries with medium and high per capita income are more risk averse than those from countries with low per capita income. It is also unknown whether business tourists from countries with medium and high trade links with the destination are more risk averse than those from countries with low trade links. The literature also highlighted the positive influence of man-made attractions for leisure and recreation on the choices of domestic tourists. It is fundamental to assess whether there are differences in tastes between domestic tourists around man-made attractions for leisure and recreation, and identify the sources of this taste heterogeneity, should it exist. The moderating role of man-made attractions for leisure and recreation on the effect of distance on the choices of domestic tourists is another issue to be explored.

The consensus in the literature is that tourism contributes positively to poverty alleviation. The inclusion of all provinces as a complete set of options of where international and domestic tourists can travel within a country is vital to analyse the tourism-poverty link at the provincial level. A review of the literature found that certain methodologies are better suited to examine the tourism-poverty link. The binary logit model for aggregate data could be an

appropriate modelling alternative to evaluate the odds of being poverty and its economic determinants, including the tourism sector's outcome. The method of generalised estimating equations could be a novelty application in poverty studies where aggregate panel data is used. This method will be useful to predict poverty from its regressors, and to use interaction terms that account for the effect of tourism on poverty in economically lagging and leading provinces. In studies on the tourism-poverty link, Vector Autoregressive (VAR) models in panel data could also be employed to examined the Granger-causality relationships between poverty and economic sectors.

The following three chapters of this research examine the demand for international and domestic tourism in a country, and the contribution of the tourism sector to poverty alleviation. The purpose of Chapter 3 is to examine the determinants of international tourists' choices of a country, paying special attention to the impact of politically motivated violence.

Chapter 3

Determinants of International Tourists' Choices: The Effect of Politically Motivated Violence

3.1 Introduction

The demand for international tourism has significantly increased over time from 25 million inbound trips in 1950 to 1.2 billion in 2016 according to the United Nations World Tourism Organization (UNWTO) (UNWTO, 2017). There are factors that directly or indirectly determine the choices of international travellers.[22] Amongst the group of destination attributes, the presence of political instability (Yap and Saha, 2013), terrorism (Drakos and Kutan, 2003), and politically motivated violence (PMV) (Neumayer, 2004) have been investigated in the literature as the risk factors for international tourists.[23] The latter is the bridge between terrorism and political instability (Sönmez, 1998; Sönmez and Graefe, 1998). In particular, the risk factors for international tourists have not yet been studied from a relative perspective; that is, with an intrinsic comparison of risk between country alternatives. Using the discrete choice theory (see Train, 2009), the following research fills this gap by addressing the incidents of politically motivated violence experienced in Colombia as a relative factor that may influence the international tourists' choices.

The above risk factors for international tourists have been interacted with other determinants of international tourism demand, including the United Nations Educational, Scientific and Cultural Organization (UNESCO)'s listed heritage sites (Yap and Saha, 2013), country size (Neumayer, 2004), and terrorism as a proxy variable for political instability (Saha and Yap, 2014). The use of interaction terms is meaningful as the elasticity of a dependent variable with respect to a regressor may depend on the magnitude of another explanatory variable (Wooldridge, 2013). Since wealthier people tend to travel more (Schiff and Becken, 2011; Serra, Correia, and Rodrigues, 2014; Thompson, 2013), and higher international trade leads to further business trips (Kulendran and Wilson, 2000; Turner and Witt, 2001), the analysis contributes to the understanding on whether the effect of PMV incidents in a country on the

[22] These include tourists' characteristics, destination attributes, spatial pattern associated factors, budget and time constraints, and external events as classifications of tourism demand explanatory factors.
[23] Cultural barriers, strange food, a nation's political and religious dogma, health, and crime are other risk factors that affect international tourism demand as noted by Lepp and Gibson (2003).

choices of international tourists varies between countries (according to the countries' level of per capita income, and the countries' trade ratios with the destination).

The purpose of this chapter is to analyse the determinants of international tourists' choices of a country. In particular, the chapter evaluates the impact of PMV in a country on the preferences of international tourists for travelling there. The following related hypotheses are examined that include first, whether a greater number of PMV incidents in a country, relative to the number of PMV incidents recorded in other nations, adversely influences overseas tourists' preferences for travelling there, *ceteris paribus*. Second, whether the reduction in the likelihood of travelling to a country due to increases in the relative number of PMV incidents is greater for countries with greater levels of per capita income, and for countries with greater trade ratios with the country of destination. These hypotheses are tested for the case of Colombia between 1995 and 2013.

There have been PMV incidents in Colombia (perpetrated against combatant and non-combatant targets) that affect international tourists' preferences for the country, *ceteris paribus*.[24] These events have arisen amid the armed conflict between Colombia's military force, guerrilla insurgents, and paramilitary groups. On the other hand, most travellers who visit Colombia come from countries where above average real per capita income has grown, and the relative bilateral trade with Colombia has slightly increased. The adverse effects of PMV incidents on tourism has been recognised by the Ministry of Commerce, Industry and Tourism of Colombia (MCIT) and the National Planning Department of Colombia (DNP) in the tourism sectoral plan of 2014 (MCIT and DNP, 2014). This chapter is fundamental to understand the impact of PMV incidents in Colombia on the destination choices of international tourists. The findings provide some vital information for government initiatives aimed at increasing international tourism demand in the country and thereby enhancing economic growth, employment and regional development.

A novel linear multinomial logit (MNL) model for international tourism demand is estimated using discrete choice methods for aggregate data (see Ben-Akiva and Lerman, 1985; Theil, 1969; Train, 2009). The use of this model is an important contribution to international tourism

[24] The incidents perpetrated within this non-international armed conflict should remain under the category of PMV against combatants. Notwithstanding, the presence of civilians assassinations, the merge with drug trafficking activities by the rebels, the proliferation of landmines, and other human rights violations (see Nagle, 2015; Paredes Z., 2003; US Department of State, 2014), makes them also belong to the category of terrorism.

economic literature, since compared to traditional international tourism demand models (see Crouch, 1994b; Li et al., 2005; Stabler et al., 2010), this model captures international tourists' trade-offs between country alternatives (international tourists' preferences). This model indicates how the tourists' characteristics and destination attributes determine the preferences of international tourists. The attributes of a destination, including the risk of PMV incidents, are incorporated as relative measures. This is important to recognise that international tourists make their destination choice by comparing the attributes of destinations, including the risk levels of PMV. Overseas tourists are assumed to be also overtly cautions of the danger of PMV incidents against them in the country to visit. Therefore, the relative number of PMV incidents in that destination country reflects the international tourists' risk perception of PMV against them in the destination. This chapter extends the study by Bonilla and Moreno (2010) on the impact of terrorist actions (kidnapping) on the demand for international tourism in three ways. First, the period is extended from 2004-2007 to 1995-2013 to include years of high numbers of PMV incidents in Colombia. Second, this study includes further categories of politically motivated violence incidents besides kidnapping. Third, this study follows discrete choice theory and methods under the assumption that the tourists can choose an option among a set of alternatives (tourists' trade-offs are included). Data are drawn from diverse secondary sources.

The chapter is organised as follows: Section 3.2 presents the literature review on the effects of terrorism, political instability, and/or politically motivated violence on the demand for international tourism. The model specification in Section 3.3 for international tourists' choices is presented followed by a discussion for data and methodology applied in the analysis. In Section 3.4, the empirical results and the implications of the findings are considered. The conclusions are presented in Section 3.5

3.2 Literature Review

The determinants of the demand for international tourism have been examined using diverse theories and economic models (see Crouch, 1994b; Li et al., 2005; Lim, 2006). Following Lancaster's (1966) model of product characteristics, several studies have investigated tourist destination attributes that attract international visitors (Rosselló-Nadal, 2014; Rugg, 1973; Su and Lin, 2014). Lancaster's (1966) model is a new approach to consumer theory (as compared to the neoclassical theory of consumer choice and demand) that suggests that consumers'

utility is derived from the properties of the goods rather than the products themselves. Amongst the social characteristics of a country, terrorism (TE), political instability (PI), and politically motivated violence (PMV) have been investigated as the risk factors that influence the choices of international visitors.[25] These risk factors are country characteristics that tourists tend to examine at the time of making their trip choice (Lepp and Gibson, 2003). However, the distinctions between these risk factors are not easy to delineate.

Terrorism is defined as "politically motivated violence perpetrated against non-combatant targets by subnational groups or clandestine agents" (Title 22 USC 222656f(a) and 222656f(d), cited by the United States Department of State (2014)). This concept of terrorism has been treated as a component of political instability (Hall and O'Sullivan, 1996) or as a separate deterrent factor in the demand for international tourism (Ingram et al., 2013; Saha and Yap, 2014; Yap and Saha, 2013). The treatment of terrorism as a component of political instability is advocated by Neumayer (2004), Sönmez (1998), and Sönmez and Graefe (1998), for whom political instability and terrorism are bridged by political violence. The identification of terrorism as a factor separated from political instability is justified by Saha and Yap (2014) following Page, Song & Wu's (2012) study.

Political instability, on the other hand, has evolved from a general to a multi-dimensional concept. Gupta (1990) and Jong-A-Pin (2009) argue that the factors of political instability should be framed in four dimensions: politically motivated violence (PMV), mass political violence (MPV), instability within the political regime (IWPR), and instability of the political regime (IOPR). The dimensions of PMV include guerrilla warfare, revolutions, civil war, and internal conflicts (Jong-A-Pin, 2009). These dimensional categories of armed conflicts have been defined in the International Humanitarian Law by the International Committee of the Red Cross (ICRC) (ICRC, 2008). Notwithstanding the presence of civilian assassinations amid any armed conflict and other incidents against the International Humanitarian Law (condemned by the ICRC (ICRC, 2015)) makes difficult to separate PMV from "terrorism" as conceptualised above.[26]

[25] The impact of tourists' risk factors on international tourism has also been studied from historical (Lea, 1996) and sociological (Ingram, Tabari, and Watthanakhomprathip, 2013) perspectives.

[26] The concept of terrorism has not yet reached consensus among the international community (Aksenova, 2015), although for Ramsey, this is "largely unnecessary and irrelevant to the effective use of the term in the heterogeneous contexts within which it is employed" Ramsay (2015, p. 211). The lack of agreement is mainly explained by the frequent changes of the term over the last two centuries (Hoffman, 1998), and permanent conflicts of interest between state authorities and their opponents (Ruby, 2002).

Analysis on the impact of politically motivated violence in Colombia on the preferences of international tourists is fundamental in light of the significant number of PMV incidents in the last decades in the country. According to statistics from National Consortium for the Study of Terrorism and Responses to Terrorism (START) (2015), there were an average number of 160 PMV incidents per annum in Colombia between 1995 and 2013 classified as assassination, kidnapping, bombing, hijacking, armed assault, among other categories. The other dimensions of political instability defined by Jong-A-Pin (2009), including mass political violence (riots, demonstrations and strikes), are not included in this study due to lack of comparative worldwide statistics in the number of incidents.

The consensus in the literature on the impact of terrorism (Drakos and Kutan, 2003; Enders and Sandler, 1991; Enders et al., 1992; Neumayer, 2004; Sönmez and Graefe, 1998; Yap and Saha, 2013), and political instability (Sönmez and Graefe, 1998; Yap and Saha, 2013) is that these factors have a negative impact on international tourism demand. A notable exception is the study by Saha and Yap (2014) who found that terrorism increased the demand for international tourism in low-to-moderate political-risk countries. When comparing the impact of terrorism and political instability on international tourism demand, Yap and Saha (2013) found political instability to be more harmful. They note that international tourists tend to shift their choices toward other destinations where there is no risk of political instability or where the risk is low. However, it has been argued that novelty seekers tolerate a higher level of risk in the country to visit (Lepp and Gibson, 2003).

Bonilla and Moreno (2010) found that kidnapping is one of the factors that negatively influence the trip of international tourists to Colombia. Kidnapping as a terrorist tactic involves “seizing, detaining, or threatening to kill, injure or continue to detain someone” (Mahan and Griset, 2008, p. 140). Bonilla and Moreno (2010) showed that the number of visitor arrivals in Colombia decreased on average by 0.26 percent (from 2004-2007) for each one percent increase in the number of kidnappings.

Terrorism can be perpetrated against tourists (Pizam and Smith, 2000; Tarlow and Muehsam, 1996) or other targets that indirectly permeate the tourism sector (Teye, 1988; Wall, 1996). The negative impact of terrorism on international tourism demand has been found to differ between nations (Drakos and Kutan, 2003). A country’s loss of market share due to terrorism

can be gained by other countries within the same region or by nations that belong to other geographic areas (Drakos and Kutan, 2003). Visitors' negative reactions can emerge a few months (Enders and Sandler, 1991; Enders et al., 1992) or years (Mansfeld, 1999) after the incident, although these negative effects are more evident in the long-run than the short-run (Neumayer, 2004).

International tourists' risk factors have been examined elsewhere in the literature from an absolute perspective of risk; that is, without an intrinsic comparison of risk between tourists' destination alternatives. Incident counts on terrorism (Drakos and Kutan, 2003; Enders and Sandler, 1991; Enders et al., 1992; Neumayer, 2004), scores of political risk (Saha and Yap, 2014; Yap and Saha, 2013) and risk perception on a Likert-scale (Sönmez and Graefe, 1998) have been used as measures of risk for international tourists. According to discrete choice theory (Train, 2009), international tourists choose a country to visit amongst a set of alternatives by comparing the destinations' attributes; e.g. international tourists compare tourism prices between country alternatives (including the nominal exchange rate), as well as transport costs and other alternative-specific factors to make their trip choice. On this basis, the inclusion of risk factors for international tourists such as the incidents of PMV can be better understood from a relative perspective; that is, comparing the incidents of PMV between tourists´ country alternatives.

Risk perception is critical in the choice of a tourism destination (Maser and Weiermair, 1998). The acts of terrorism and/or political instability perpetrated against all targets (combatants and non-combatants) affect the risk perception of international tourists. The perception of risk is the individual or group judgement of the potential for negative consequence (Ostrom and Wilhelmsen, 2012). Sönmez and Graefe (1998) found that 57 percent of survey respondents from the US, Puerto Rico and the US Virgin Islands were reluctant to travel to international destinations that had experienced recent terrorist episodes. Moreover, they found that 88 percent of the people surveyed thought that politically unstable countries should be avoided. Interestingly, U.S. tourists were found to have changed their international trip plans in 1986 due to terrorist incidents in previous years, despite the fact that less than 0.00057 percent of U.S. tourists was victimised in those previous incidents (Edgell, 1990 as cited in Sönmez, Apostolopoulos, and Tarlow, 1999). Kozak, Crotts, and Law (2007) showed terrorism was a significant factor that influenced Hong Kong tourists' travel plans.

Tourists' negative perception of risk in a destination, in the presence of terrorism or political instability is influenced by the media companies (Hall and O'Sullivan, 1996; Kapuściński and Richards, 2016). In some cases, the media has exaggerated the real risk of travelling to international tourist destinations affected with terrorist actions (Pizam and Mansfeld, 2006). That is the case of film production companies, which tend to convey distorted information on the risk of politically motivated violence for tourists in certain destinations. For instance, the movie *Collateral Damage* released in 2002 gives the impression that Colombia is nothing but a land full of terrorists (Manzano, 2002).[27] The Islamic Human Rights Commission noted that The *Siege*, a movie of 1998, gives the wrong idea that the Muslims are violent and dangerous people (Ward, 2007). Advisory and consulting groups on risk management such as Eurasia Group have also transmitted incorrect information on the risk for tourists and tourism activities in Colombia, mainly due to statistical manipulation errors (Restrepo, 2018).

The lack of personal experience with terrorism or political instability becomes critical in the reliability posited by the tourists on secondary sources (Kapuściński and Richards, 2016). However, there are countries where rebels specifically target tourists, usually due to religious and cultural differences (Aziz, 1995). For instance, an armed Kurdish separatist organization in Turkey bombed tourist sites in 1993 and warned international travel agencies not to send tourists to Turkey; a fact that was covered by media companies and affected the image of Turkey as a safe international destination (Sönmez and Sirakaya, 2002).

The effect of terrorism, political instability, and/or politically motivated violence has been interacted in the literature with other factors that determine international tourism demand. Yap and Saha (2013) created an interactive variable between political instability and terrorism with UNESCO's listed heritage countries. Results showed that an increase in the score of political instability reduces the number of visitor arrivals in the presence of UNESCO's heritage sites. Saha and Yap (2014) tested whether the impact of political instability on international tourism demand differed among low, moderate and high levels of terrorism (political risk was taken as a proxy variable of terrorism). Results indicated a negative impact of political instability on international tourism demand at all levels of terrorism. Finally, Neumayer (2004) considered the interaction term between political violence and land area; however, no statistical evidence to support the simultaneous effect was found.

[27] The Colombian community carried out a protest against the movie *Collateral Damage* in the metropolitan area of New York. This is a movie that "does not show the reality of Colombia in the last 50 years, and only reinforce the idea for Americans that anyone who is Colombian is terrorist, drug trafficker or guerrilla" (Manzano, 2002).

Further explanatory variables for international tourism demand can interact with the relative number of PMV incidents, including tourists' income and international trade. On the one hand, travellers' income has been accepted as a significant determinant of international travel demand (Mat Som, Ooi, and Hooy, 2014). Several studies have found an income-elasticity of tourism demand higher than one, a finding that characterises the visited countries as luxury destinations (Altmark et al., 2013; Divisekera, 2003; Ledesma-Rodriguez, Navarro-Ibanez, and Perez-Rodriguez, 2001; Li, Song, and Witt, 2004; Schiff and Becken, 2011; Serra et al., 2014; Thompson, 2013). However, Divisekera (2003) found that some countries were normal destinations for tourists. On the other hand, it has been argued (Kulendran and Wilson, 2000; Turner and Witt, 2001) and empirically supported (Balli, Balli & Cabeci2013; Kulendran and Wilson, 2000) that greater international trade leads to more inbound business trips. As noted by Eilat and Einav (2004), bilateral trade is capable of capturing "stable unobserved links between pairs of countries" (p. 1325).

Based on the research findings discussed above, it is expected to see a greater loss of desire to visit a country that faces PMV incidents in the case of i) tourists from countries with greater levels of per capita income, and ii) tourists from countries with higher trade ratios with the destination. For the case of business tourists, Cook (1990) suggests that changing a trip plan to a country that faces adverse actions (actions covered by media) is less plausible. If business executives are the terrorists' target, the situation can make them to change their trip plan (Hartz, 1989). The following section outlines the chapter's methodology to examine these hypotheses.

3.3 Model, Data, and Methodology

In the previous section, key research hypotheses were identified from the tourism literature on the impact of politically motivated violence on the choices of international tourists, *ceteris paribus*. Several economic models on international tourism demand and its determinants have been used in the literature (Brida and Scuderi, 2013; Crouch, 1994b; Divisekera, 2013a; Li et al., 2005; Lim, 2006; Song and Li, 2008). The linear MNL model of Theil (1969) has not

been specified yet in studies on international tourism demand.[28] This model is employed to test the research hypotheses of this chapter. The strengths of the linear MNL model are described in the proceeding subsection, followed by data description and estimation method.

3.3.1 The Linear MNL Model

The linear MNL model of Theil (1969) is an extension of the binary choice model presented by Warner (1962) to the multinomial case. It is a linearization of the nonlinear relationship between the likelihood of choosing an alternative (a continuous variable with limits between zero and one) and the regressors (variables that can take any arbitrary real value) (Theil, 1969). The linear MNL model is appropriate for studies that use large datasets and repeated observations on individuals' choices (Ben-Akiva and Lerman, 1985; McFadden, 1973). It has been used in diverse areas, including marketing (Guadagni and John, 1983; Mahajan, Green, and Goldberg, 1982), agriculture (Bewley and Young, 1987), and social sciences studies (Hoffman & Duncan, 1988). The equation is:

$$d(log\, P_i) = \sum_{h=1}^{m}\left(\beta_{hi} - \sum_{j=1}^{N} P_j \cdot \beta_{hj}\right) \cdot d(log\, x_h) + \sum_{k=1}^{n} \gamma_k \cdot \left\{ d(log\, y_{ki}) - \sum_{j=1}^{N} P_j \cdot d\big(log\, y_{kj}\big) \right\} \quad (3.1)$$

$d(log\, P_i)$ is the change in the probability of choosing alternative i (among a set of options); $d(log\, x_h)$ is a variation in the $h\text{-}th$ decision maker's characteristic; and $d(log\, y_{ki}) - \sum_{j=1}^{N} P_j \cdot d\big(log\, y_{kj}\big)$ is a change in the $k\text{-}th$ attribute of the alternative chosen (i), relative to a change in the $k\text{-}th$ attribute of other alternatives that belong to the decision maker's choice set. This specification, noted Theil (1969), exhibits the similarities with other consumer demand models such as Theil (1965), in that the relative share of expenditures of the $i\text{-}th$ commodity is the response variable, and the regressors are the consumer demand determinants.[29]

[28] An attempt is the study of Eilat and Einav (2004), although differences between their model and the linear MNL model exist. The model specified in Eilat and Einav (2004) seems to be a binary logit model that includes the outside alternative (the choice not to travel) rather than a MNL model.

[29] This is also applicable to the Almost Ideal Demand System (AIDS) of Deaton and Muellbauer (1980). In the AIDS model, the budget shares of goods (w_i) are determined by the goods' relative prices (p_j) and real total expenditures (x/P). The AIDS equation is $w_i = \alpha_i + \sum_j \gamma_{ij} \log(p_j) + \beta_i \log(x/P)$, where x and P account for consumers' total expenditures and a price index, respectively.

The linear MNL model applied to international tourism demand posits that changes in tourists' preferences for country i (among a set of country alternatives) are explained by changes in tourists' characteristics, and changes in the country i's relative attributes. The latter captures the tourists' intrinsic comparison of economic and social attributes amongst alternatives in the decision. The country attributes are the characteristics that determine consumers' utility function from Lancaster's (1966) model of consumer demand. Tourists who visit Colombia (country c) come from different nations ($\mathcal{s}$), and their preferences for Colombia can vary through time (t). The international tourists can travel for personal or business/professional purposes (UNWTO, 2010a). Therefore, the factors that explain their choices in both cases are included.[30] The income of international tourists (Mat Som et al., 2014), the trade between tourists' country of origin and destination (Balli et al., 2013; Kulendran and Wilson, 2000), and international tourists´ perception of risk in the destination (Maser and Weiermair, 1998) are some of the factors that determine the demand for international tourism.

By including the above characteristics and rearranging Equation 3.1 for practicality (see Appendix 3A), a novel linear MNL model for international tourism demand is specified in levels using panel data (see Equation 3.2). This model takes into account the trade-off between country alternatives of international tourists. The use of panel data is advantageous as panel data includes the time dimension of analysed cross-sectional units, captures the complexity of humans' behaviour more accurately than cross section studies, and simplifies computational and statistical inference (Hsiao, 2007). The result of θ_1 in Equation 3.2 is used to examine whether more incidents of PMV in the destination country, relative to the weighted average number of PMV incidents in alternative destinations, adversely influence overseas tourists' preferences.

$$logP_{c\mathcal{s}t} = \alpha + \beta_1 logINCOME_{\mathcal{s}t} + \theta_1 logPVIOLENCE_{ct} + \theta_2 logTRADE_{ct} + \sum_{k=3}^{5} \theta_k \cdot log\mathcal{X}^{*}_{kct} + \mu_{\mathcal{s}} + e_{c\mathcal{s}t} \quad (3.2)$$

[30] An ideal scenario is to have international tourists' choices separated for each tourism purpose. This scenario cannot be followed due to data availability. Following McFadden and Train (2000, p. 448), international tourists' choices of a country is the result of utility maximization when the trip is for personal activities; it is the result of profit maximization when the trip is for business purposes.

Where: P_{cst} is the mean likelihood of travelling from country s to country c (Colombia) in time t. $INCOME_{st}$ accounts for the average overseas tourists' income, which is approached by their countries' per capita income. $PVIOLENCE_{ct}$ is the relative number of politically motivated violent incidents in country c. $TRADE_{ct}$ is the relative trade between tourists' country of origin and destination c. X_k^* depicts other factors that influence the destination choice of international tourists. These factors include the relative price of tourism in country c adjusted with the exchange rate ($PRICE_{ct}$), and the relative airfare between visitors' country of origin and destination ($TRANSPORT_{ct}$). The relative airfare between visitors' country of origin and destination is also modelled as a quadratic to identify the airfare's breakpoint ($TRANSPORT_{ct}^2$) following Louviere and Woodworth (1983). The list of variables is presented in Appendix 3B.

An intercept (α) and time-invariant factors (μ_s) are included in Equation 3.2 following Balli et al. (2013), Ledesma-Rodriguez et al. (2001), and Neumayer (2004). The idiosyncratic error term is taken as normally distributed (e_{cst}). All variables are in natural logarithm form (denoted by log). Based on Chiang and Wainwright (2005, p. 5), the predictors are taken as a datum to the tourists, although the potential endogeneity issues are overcome using panel cointegration methods, details of the methodology are in Section 3.3.3.

The relative number of politically motivated violent incidents in country c ($PVIOLENCE_{ct}$) is calculated as follows:

$$PVIOLENCE_{ct} = \frac{PMV_{ct}}{\prod_{t=1}^{T}\prod_{j=1}^{N} PMV_{jt}^{P_{jst}}} \quad (3.2a)$$

PMV_{ct} and PMV_{jt} are the absolute numbers of PMV incidents in country c and j, respectively. P_{jst} is the probability of travelling to country j from country s. The denominator in Equation 3.2a accounts for the weighted average number of PMV incidents in countries where tourists travel to (excluding country c). As global reports and communications on violent incidents are not normally separated into perpetrated targets, the inclusion of PMV incidents against all targets (tourists and non-tourists) is meaningful. Thus, $PVIOLENCE_{ct}$ can be considered a proxy measure of international tourists' risk perception of PMV in the destination.[31]

[31] There are other methods to estimate PMV risk (see Willis, Morral, Kelly, and Medby, 2006).

Returning to Equation 3.2, the relative trade between tourists' country of origin and destination c ($TRADE_{ct}$) is calculated as follows:

$$TRADE_{ct} = \frac{\left(\frac{x_{ct} + m_{ct}}{XT_{st} + MT_{st}}\right)}{1 - \left(\frac{x_{ct} + m_{ct}}{XT_{st} + MT_{st}}\right)} \quad (3.2b)$$

$x_{ct} + m_{ct}$ accounts for trade exchange between tourists' country of origin and country c (exports to destination plus imports from destination). $XT_{st} + MT_{st}$ makes up the total trade recorded in tourists' country of origin (total exports plus total imports in country s). $TRADE_{ct}$ thus accounts for the odds of doing international trade with country c against not doing trade with that country (or doing trade with alternative nations). This relative variable links the companies' opportunity cost of doing international trade with country c with business tourists' choices of that country. Since business tourists travel on behalf of their companies,[32] the higher the odds of doing international trade with country c, the greater the likelihood of travelling there as a business tourist.

The relative price of tourism in country c ($PRICE_{ct}$) is set as follows:

$$PRICE_{ct} = \frac{(pricetou_{ct} \cdot er_{cst})}{\prod_{t=1}^{T} \prod_{j=1}^{N} (pricetou_{jt} \cdot er_{jst})_{jt}^{P_{jst}}} \quad (3.2c)$$

$pricetou_c$ and $pricetou_j$ accounts for the absolute price of a bundle of tourism-related products in country c and j, respectively. er_{cs} and er_{js} are the nominal exchange rates between tourists' country of origin and destinations c and j, respectively. The denominator in Equation 3.2c accounts for the weighted average price of a bundle of tourism-related products (adjusted with the exchange rate) in countries where tourists from country s travel to (excluding country c).

The relative airfare between Colombia and the country of origin ($TRANSPORT_{ct}$) is calculated as follows:

[32] A trip for business purposes can be done for services provision (consultancy, repair, equipment installation, others), business negotiations and/or business opportunity searching (UNWTO, 2010a).

$$TRANSPORT_{ct} = \frac{transp_{ct}}{\prod_{t=1}^{T}\prod_{j=1}^{N} transp_{jt}^{P_{jst}}} \quad (3.2d)$$

$transp_c$ and $transp_j$ are the absolute airfares to travel to destinations c and j, respectively, from tourists' country of origin. The denominator in Equation 3.2d accounts for the weighted average airfare from tourists' country of origin to destinations j (excluding country c). To understand the level of impacts based on the relative number of PMV incidents in a country ($PVIOLENCE_{ct}$), interaction terms are incorporated with tourists' income ($INCOME_{st}$) and bilateral trade ratios ($TRADE_{ct}$). Based on Equation 3.2, the model is extended to include interactive variables as follows:

$$\begin{aligned} logP_{cst} = {} & \alpha + \beta_1 logINCOME_{st} + \theta_1 logPVIOLENCE_{ct} + \theta_2 logTRADE_{ct} \\ & + \phi_1(logINCOME_{st} \cdot logPVIOLENCE_{ct}) + \phi_2(logTRADE_{ct} \cdot logPVIOLENCE_{ct}) \\ & + \sum_{k=3}^{5} \theta_k \cdot log\mathcal{X}_{kct}^{*} + \mu_s + e_{cst} \end{aligned} \quad (3.3)$$

Both the interaction terms in Equation 3.3 involve continuous variables. Therefore, the effect of a greater number of relative PMV incidents in country c on the likelihood of travelling there is considered as being dependent on the levels of tourists' income and bilateral trade ratios. The per capita income of countries where tourists travel from can be used as a proxy variable of tourists' income. The results of ϕ_1 and ϕ_2 are used to analyse whether the impact of more relative PMV incidents in country c on international tourists' preferences varies among countries according to levels of per capita income, and the level of trade ratio between tourists' destination and their country of origin, respectively.

3.3.2 Data

Twenty-nine countries from where tourists travel to Colombia are included in the study for the period between 1995 and 2013 based on annual data. These countries are: Ecuador, Panama, Peru, Venezuela, Dominican Republic, Costa Rica, Guatemala, El Salvador, Mexico, Chile, Argentina, Brazil, Bolivia, Uruguay, the USA, Canada, Spain, Italy, France, Germany, Japan, Belgium, Austria, Netherlands, the UK, Sweden, Switzerland, Israel and Australia. These 29 countries are the most important tourism markets for Colombia as far as inbound visitor arrivals are concerned, which make up 93 percent of the total tourist arrivals.

The probability of visiting Colombia for tourism purposes ($P_{c\mathcal{s}}$) is examined through the relative frequency of visitor arrivals in Colombia (c) from tourists' country of origin $\mathcal{s}$ in year t. Based on discrete choice theory (see Train, 2009), the relative frequency of visitor arrivals is an empirical probability measure that satisfies all the characteristics of the tourists' choice set that must fulfil; that is, finitude, exhaustiveness and mutual exclusion. The relative frequency of visitor arrivals ($P_{c\mathcal{s}t}$) is calculated as follows:

$$P_{c\mathcal{s}t} = \frac{ar_{c\mathcal{s}t}}{OT_{\mathcal{s}t}} \qquad (3.3a)$$

$ar_{c\mathcal{s}t}$ is the number of visitor arrivals (inbound trips) in Colombia from tourists' country of origin in year t. The numerator is normalised by the total number of outbound trips from tourists' country of origin in that year ($OT_{\mathcal{s}t}$). The denominator is calculated using the "data supplied by each of the destination countries and, therefore, corresponds to arrivals in these countries (and not to departures data provided by the country of reference and compiled in the Compendium of Tourism Statistics)" (UNWTO, n.d).[33] Thus, the total number of outbound trips from tourists' country of origin ($OT_{\mathcal{s}t}$) equals the sum of arrivals from country $\mathcal{s}$ to alternative destinations g at year t (ar_{gt}), which is calculated as follows:

$$OT_{\mathcal{s}t} = \sum_{\mathcal{s}} \sum_{g=1}^{G=G_{\mathcal{s}}} ar_{gt} \qquad (3.3b)$$

The number of visitor arrivals is collected from the Yearbooks of Tourism Statistics published by the World Tourism Organization. For most of the countries, codes 1 or 2 are employed; that is, arrivals of non-resident tourists at national borders, by nationality or country of residence, respectively. For European countries, data under code 3 are the primary source; that is, arrivals of non-resident tourists in hotels and similar establishments, by nationality. Fifty-three (53) countries are included in this study as the set of alternative destinations for tourists. These destinations are chosen based on geographic closeness from tourists' country of origin and data availability. After some data treatment,[34] the overall tourist flow from

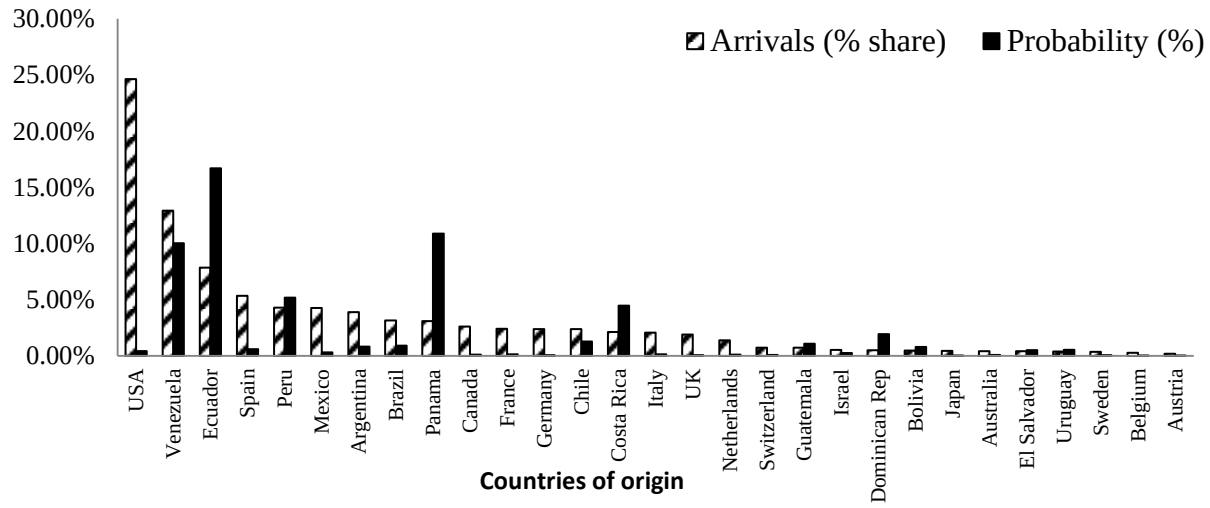
[33] Departure data were used in McKercher, Chan, and Lam (2008) in a cross-sectional data study.

[34] Forecasting techniques are used to estimate non-reported data on visitor arrivals in the 53-country sample. Arrivals for the remaining group of country alternatives (out of the 53-country sample) are calculated whenever

twenty-nine countries (23,643 tourists) is used to calculate the relative frequency of visitor arrivals. A final unbalanced panel data of 501 observations is used for this dependent variable. International tourists' trade-off between the finite alternatives is captured exhaustively in this panel data. Since each arrival corresponds to one inbound tourism trip, and the arrivals in each country are recorded separately (UNWTO, 2015), the country alternatives become mutually exclusive.

A number of interesting observations are worth highlighting when the likelihood of travelling to Colombia is compared to the number of visitors arriving there. First, a high number of visitor arrivals in Colombia do not necessarily reflect high preferences for travelling there (see Figure 3.1). It is seen for the United States, Spain, Mexico, Argentina, and Brazil, whose travellers' average probability of visiting Colombia is low (less than 0.90 percent each), although the number of visitors travelling there is within Colombia's top 10 countries of origin. The opposite situation can be seen for Panama and Costa Rica, whose average likelihoods of travelling to Colombia are high (10.90 and 4.48 percent, respectively) while their arrival numbers in the country are relatively low.

Figure 3.1 Average Percentage Share of Inbound Visitor Arrivals in Colombia and the Probability of Travelling to Colombia (1995-2013)

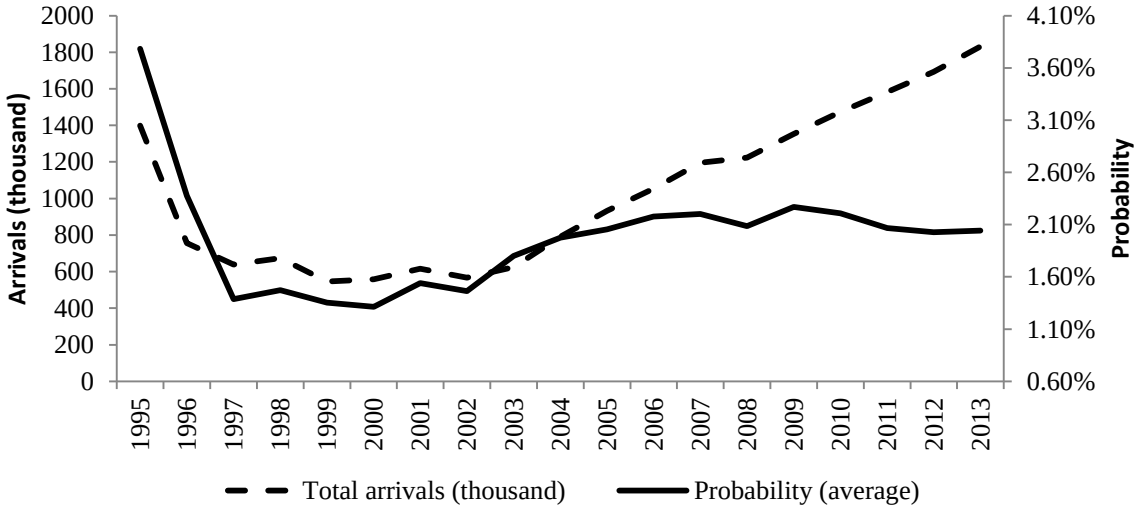


Source: Authors' own calculation based on the number of inbound visitor arrivals released by the World Tourism Organization. The number of arrivals for visiting friends and relatives is excluded.

the number of outbound trips (calculated in this study) is lower than the number of tourist departures (reported in the Compendium of Tourism Statistics). This calculation is carried out for twelve out of twenty-nine countries. The percentage gap between the numbers of outbound trips and tourist departures defines the percentage to increase the number of outbound trips in these twelve countries (the percentages are between 3 and 10 percent).

Secondly, the average probability of tourists travelling to Colombia and the number of visitor arrivals there have similar behaviour before 2003 but not afterwards (see Figure 3.2). A significant drop is seen in both the average probability of tourists travelling to Colombia and the number of visitor arrivals between 1995 and 1997 (-30.7 and -39.4 percent, respectively). Between 1998 and 2002, the values of arrivals fell on average by 2 percent per annum, and the average probability of travelling to Colombia increased on average by 1.5 percent per annum. From 2003 to 2013, the number of visitor arrivals in Colombia significantly increased on average by 11.4 percent per annum, although the average probability of travelling there only grew by 3.4 percent per annum. The percentage increase in the number of visitor arrivals is not necessarily reflected in the percentage increase of tourists' average preferences for the country of destination.[35]

Figure 3.2 Average Probability of Travelling to Colombia and the Number of Inbound Visitor Arrivals in Colombia (1995-2013)



Source: Authors' own calculation based on the number of inbound visitor arrivals released by the World Tourism Organization.

The average probability of tourists travelling to Latin American countries from the 29-country sample is further estimated using the relative frequency of visitor arrivals.[36] Ultimately, the countries of Latin America have important destination attributes associated with natural endowments (sun, sea, sand), cultural diversity (e.g. language, food), and historical heritage that can attract international tourists (Sarigöllü and Huang, 2005; Strizzi and Meis, 2001). Table 3.1 shows that the average probability of travelling to Brazil, Panama, Peru and

[35] For Divisekera (2013b), the number of inbound visitor arrivals is useful for forecasting and tourism infrastructure planning, and not for tourism demand estimates.

[36] Statistics on the number of inbound trips in Latin American countries (including Peru and Brazil) were taken from the Yearbooks of Tourism Statistics published by the World Tourism Organization.

Ecuador increased from 2.4, 1.0, 0.8 and 0.4 percent in 1995 to 3.1, 1.4, 3.0 and 0.9 percent in 2013, respectively. This group of countries gained tourism market share among Latin American countries from 1995-2013. Colombia and Mexico, as alternative destinations for tourism, lost the position they held in 1995 when the average probability of travelling there was 3.8 and 2.7 percent, respectively. The average probability of travelling to Bolivia, Chile Costa Rica and Venezuela has remained relatively stable since 1995.

The set of explanatory variables are collected as follows: gross domestic product (GDP) per capita of each tourist's country of origin is used as a proxy variable for international tourists' income ($INCOME_{st}$). This is a common practice in international tourism demand studies (Garin-Munoz and Amaral, 2000; Ledesma-Rodriguez et al., 2001; Rugg, 1973; Serra et al., 2014). The per capita data are in US dollars, constant prices of 2005, sourced from the World Bank.

Table 3.1 Average Probability of Travelling to Latin American Countries for Tourism (Percentage) (1995-2013)

	Years				
	1995	2000	2005	2010	2013
Brazil	2.4	4.9	4.1	3.3	3.1
Panama	1.0	1.2	0.8	1.2	1.4
Peru	0.8	1.2	2.3	2.6	3.0
Ecuador	0.4	0.7	1.0	0.8	0.9
Colombia	3.8	1.3	2.1	2.2	2.0
Mexico	2.7	2.0	2.0	2.4	2.4
Bolivia	0.6	0.5	0.5	0.7	0.6
Chile	3.4	2.6	3.3	3.6	3.5
Costa Rica	1.6	1.4	1.5	1.5	1.5
Venezuela	0.5	0.2	0.6	0.4	0.6

Source: Authors' own calculation based on the number of inbound visitor arrivals released by the World Tourism Organization.

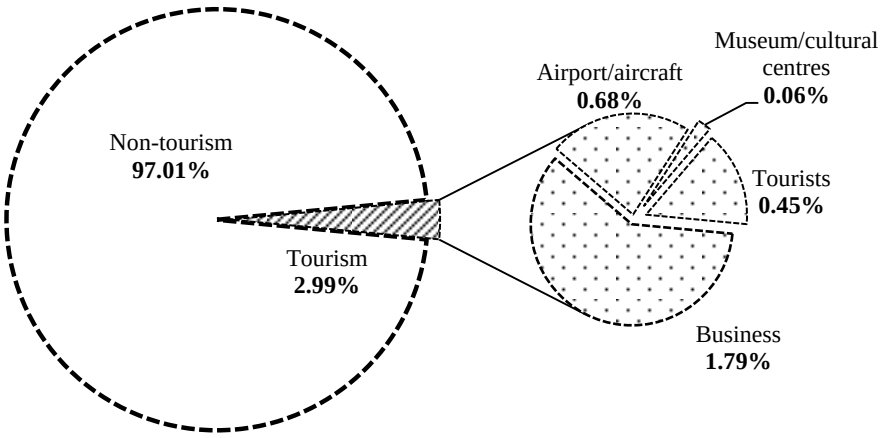
Statistics on the number of PMV incidents in Colombia and other countries (required to calculate $PVIOLENCE_{ct}$) are taken from the National Consortium for the Study of Terrorism and Responses to Terrorism (START) (2015).[37] Data are classified into assassination, hijacking, kidnapping, bombing, armed assault, and other categories. Incidents against combatant and non-combatant targets are included as the international tourists' risk perception

[37] Other data sources, such as "perceptions on the likelihood of political instability and/or politically-motivated violence, including terrorism" published by The World Bank (in the Worldwide Governance Indicators) were initially considered in this study, although the data were finally discarded as do not work for Equation 3.2a.

of PMV incident against them in Colombia. As some nations amongst the 53-country sample of this study did not face any PMV incidents in some years, but Equation 3.2a requires non-zero numbers, a transformation is carried out. The average number of PMV incidents between t and $t-1$ is calculated instead from 1970 to get asymptotic results.

According to statistics from START, the number of incidents perpetrated against tourists or tourism facilities between 1995 and 2013 accounts for 2.9 percent of total PMV incidents in Colombia (see Figure 3.3). The remaining number of incidents is mainly perpetrated against politicians, military, police officers, and local infrastructure. Overseas tourists who travel to Colombia are likely to make judgements that do not match to the actual risk of PMV being perpetrated against them. International tourists´ negative perception of PMV risk in Colombia is being fed by entropic information on the safety and security of international tourism destinations published in the Travel and Tourism Competitiveness Reports (TTCR) of 2015 and 2017 by the World Economic Forum (WEF). The TTCRs of 2015 and 2017 used, amongst other data sources, the statistics provided by START on the number of PMV incidents perpetrated in each country against all targets, and not against tourists and/or tourism infrastructure (WEF, 2015, 2017). The TTCR of 2017, which shows Colombia as the most dangerous country for travel and tourism activities out of 136 countries, is being presented in popular international newspapers, including the Independent (Schmalbruch, 2017a), Liverpoolecho (Koncienzcy and Hayward, 2017), and Stuff (Schmalbruch, 2017b).

Figure 3.3 Percentage Share of Politically Motivated Violence Perpetrated Against Tourists in Colombia (1995-2013)



Source: Authors' own calculation based on data from START (2015). Business includes: hotels, resorts, entertainment and cultural providers, stadiums and casinos. Airport/aircraft includes: airports, aircraft not at the airport, airline passengers. Tourists includes: tourists, travel agencies, bus/van/vehicle for tourism tours, and other tourism facilities.

$TRADE_{ct}$ is calculated using data on trade exchange between tourists' country of origin and Colombia ($x_{ct} + m_{ct}$) and total trade from tourists' country of origin ($XT_{st} + MT_{st}$). Data are collected from Colombia's Administrative Department of National Taxes (DIAN) and the World Bank. Statistics on the price of tourism in Colombia ($pricetou_{ct}$) and in alternative countries ($pricetou_{jt}$) are not available to calculate $PRICE_{ct}$. Therefore, the consumer price index of each country is used as a proxy variable of tourism price in each country. This is a common practice in international tourism demand studies (Lim, 2006). With the use of consumer price indices, the direction in the change of $PRICE_{ct}$ (Equation 3.2c) is the only interpretation we can make (to understand the effect of tourism price changes on international tourism demand). A greater depreciation of Colombian currency for tourists from the twenty-nine country sample (increase of er_{cst}), relative to the weighted average depreciation of other currencies in alternative countries where tourists could travel to (increase of er_{jst}), is likely to cause an increase in the mean likelihood of travelling to Colombia. The consumer price index of each country and the nominal exchange rate between tourists' country of origin and destinations are drawn from the World Bank.

Data on airfares to Colombia ($transp_{ct}$) and alternative countries ($transp_{jt}$) from tourists' country of origin are difficult to obtain. These variables are estimated by multiplying three components of air transport costs: i) the number of barrels of fuel that an aircraft uses to travel between two nodes ($boil$), ii) oil prices (oil), and iii) the nominal exchange rate between tourists' country of origin and destination (er). $boil$ is calculated multiplying the Euclidean distance (in kilometres) between tourists' country of origin and destination (from and to the most populated cities) and the fuel consumption of a long-haul aircraft.[38] The Euclidean distance is taken from the website www.timeanddate.com. Oil prices are sourced from Global Financial Data website (www.globalfinancialdata.com) in US dollars. The nominal exchange rates are taken from the World Bank (World Development Indicators).

Table 3.2 show that the average probability of travelling to Colombia from the 29-country sample within the period 1995-2013 was 2 percent (see column (i)). Tourists from Ecuador, Panama, Venezuela and Peru (the neighbouring countries of Colombia) had the highest

[38] Since a Boeing 747-8 (or an Airbus A380) burns roughly 2.8 litres per seat per 100 kilometres (or almost 12 litres per kilometre) (CNN, 2011), and 1 barrel is 159 litres, the distance in kilometres is multiplied by the ratio 12/159.

average probability of travelling to Colombia (10.7 percent),[39] followed by tourists from other nations of South and Central America, including Costa Rica, Dominican Republic, Guatemala, El Salvador, Mexico, Chile, Brazil, Argentina, Bolivia and Uruguay (1.27 percent). The average probability of travelling to Colombia from the USA and Canada was 0.26 percent; from European nations (including Spain, Italy, France, Netherlands, Switzerland, Germany, Sweden, the UK, Austria and Belgium) was 0.13 percent; and from Japan, Israel and Australia (Asia and Oceania) was 0.12 percent. The average probability of travelling to Colombia from the analysed groups of countries decreases as the distance to get to Colombia from tourists' nations of origin increases (see columns (i) and (ii)).

Table 3.2 Summary Statistics on International Tourism Demand Factors (Average 1995-2013)

	Probability of travelling to Colombia (%)	Distance to Colombia (km)	Income per capita (US dollar)	Relative politically motivated violence (ratio)	Relative trade (ratio)	Relative transport cost (ratio)
	P_{cst}	μ_s	$INCOME_{st}$	$PVIOLENCE_{ct}$	$TRADE_{ct}$	$TRANSPORT_{ct}$
	(i)	(ii)	(iii)	(iv)	(v)	(vi)
Total average	2.00	5,981	20,638	97	0.010	5.0
Neighbouring countries of Colombia	10.71	1,167	4,135	87	0.041	1.5
Other countries of South and Central America	1.27	3,045	4,626	216	0.010	3.0
Countries of North America	0.26	4,177	38,145	28	0.003	3.4
Countries of Europe	0.13	8,978	37,054	19	0.0009	9.4
Countries of Asia and Oceania	0.12	13,404	29,627	29	0.0012	2.8

Source: Authors' own calculation based on statistics from World Tourism Organization, START (2015), the World Bank's World Development Indicators, DIAN, Global Financial Data , and Time and Date AS.

Column (iii) shows that the average per capita income of the 29-country sample (within the period 1995-2013) was US$20,638. The neighbouring countries of Colombia had the lowest average per capita income (US$4,135), followed by other countries of South and Central

[39] Although Brazil shares a border with Colombia, the former is excluded from the list of Colombia's neighbouring countries. This is because the most populated cities of Brazil (Sao Paulo, Rio de Janeiro and Belo Horizonte) and Colombia (Bogotá, Medellín, and Cali) are very far one to each other (these cities are separated by the big size of the Amazon rainforest).

America (US$4,627). The average per capita income of North America's economies was the highest amongst the 29-country sample (US$38,145), followed by the average per capita income of European nations (US$37,054) and analysed countries of Asia and Oceania (US$29,627).

Statistics in column (iv) show that within the period 1995-2013, the average number of PMV incidents in Colombia was 97 times the (weighted) average number of PMV incidents recorded in the set of 53 country alternatives. For tourists from analysed countries of Europe, North America, and Asia-Oceania, the average number of PMV incidents in Colombia was 19 times, 28 times, and 29 times the (weighted) average number of PMV incidents recorded in country alternatives, respectively. For tourists from neighbouring countries of Colombia and other South and Central American nations, Colombia had in average 87 times and 216 times more PMV events than the set of alternative nations they travelled within the period 1995-2013. These statistics show that the risk perception of PMV incidents in Colombia was relatively low for tourists from European countries compared to the risk perception for tourists from the other groups of countries. This is mainly due to the high average number of terrorist incidents per year that occurred from 1995 to 2013 in France (45 incidents), the UK (47), and Spain (37) according to statistics from the National Consortium for the Study of Terrorism and Responses to Terrorism (START) (2015).[40] France, the UK and Spain were highly visited by tourists from other European nations from 1995-2013, based on data published by the UNWTO.

The odds of doing trade with Colombia from tourists' country of origin within the period 1995-2013 were an average of 0.01 (see column v). The odds of doing trade with Colombia for Ecuador, Panama, Venezuela and Peru were the highest among the 29-country sample (0.04), followed by other countries of South and Central America (0.01). This is expected due to the relatively shorter Euclidean distance between these countries and Colombia as compared to the Euclidean distance between Colombia and other countries in North America, Europe, and Asia-Oceania (as shown in column ii). For countries of North America, Europe and Asia-Oceania, the odds of doing trade with Colombia were 0.003, 0.0009, and 0.0012, respectively.

[40] These figures of terrorist incidents surpassed the average number of PMV incidents recorded in the period 1995-2013 in neighbouring countries of Colombia (Ecuador, 2.9; Panama, 2.8; Venezuela, 7.9; and Peru, 11.4), in other South and Central American economies (México, 15.1; Brazil, 8.0; and Argentina, 5.3), in North America (USA, 25.8; Canada, 3), and in Asia-Oceania (Japan, 5.4; Australia, 3.2).

Finally, column (vi) shows that the transport cost to Colombia from tourists' country of origin was in average 5 times the (weighted) average transport cost to alternative destinations within the period 1995-2013. The relative transport cost to Colombia from Colombia's neighbouring countries was 1.5 times the cost of travelling to alternative destinations. This is the lowest relative transport among the group of countries taken in this study. The transport cost to Colombia from other countries of South and Central America, from countries of North America, and from European nations was 3, 3.4, and 9.4 times the transport cost to alternative destinations, respectively. Interestingly, the transport cost to Colombia from Israel, Australia and Japan was in average 2.8 times the transport cost from these countries to alternative destinations.

3.3.3 Estimation Method

Since the available dataset for this study consists of repeated observations of individuals' choices, which is large and aggregate in nature, the linear MNL model for international tourism can be consistently estimated through least squares (or counterpart) methods (Ben-Akiva and Lerman, 1985; McFadden, 1973). The MNL model has the property of Independence from Irrelevant Alternatives (IIA) which states that "the ratio of choice probabilities for alternatives i and j is the same for every choice set C that includes both i and j" (McFadden, 2001). This axiom implicitly assumes that unobserved factors are uncorrelated (there is no dependency between unobserved attributes across alternatives), and that the variance for all alternatives is the same (Train, 2009). Based on Hoffman & Duncan (1988), the use of aggregate data to study international tourists' preferences for Colombia avoids the IIA axiom, as the IIA assumption "holds only for the ratio of probabilities for an individual and not for the aggregate proportion of individuals making a particular choice" (Hoffman & Duncan, 1988, p. 426 footnote).

The least squares estimation method for the linear MNL model applied in this chapter is based on statistical tests for panel data. Results from the Hausman (1978) test support the inclusion of fixed effect coefficients in the panel data regression. A static panel data model with a within-group transformation is initially estimated to capture fixed effects (see Appendix 3C). Heteroskedasticity and first-order autocorrelation were found using the White general test for heteroscedasticity and the Wooldridge test for autocorrelation in panel data. No signs of multicollinearity were encountered. The results from the Im, Pesaran, and Shin (2003) test for

unit roots in panel data cast doubt on whether the variables are cointegrated. Two cointegration tests in panel data are performed: the Pedroni (2004) and Kao (1999) tests. The results of 6 out of 11 test statistics in Pedroni's test reject the null hypothesis of no cointegration. Kao's test also rejects the null hypothesis of no cointegration (see Appendix 3D). These outcomes support the choice of the linear MNL model using the panel cointegration regressions.

The panel Fully-modified Ordinary Least Squares (FMOLS) method of Pedroni (2000) is employed to estimate Equation 3.2 and 3.3. Both the pooled (within-dimension) and grouped (between-dimension) estimators are employed. According to Pedroni (2000), the pooled and grouped FMOLS estimators differ in the computation of the cross product terms. The grouped FMOLS captures the fixed effects and the short-run slope coefficient of each regressor for each country (heterogeneity across countries). In the long-run, however, the coefficients are constrained to be identical across the cross-sectional dimension of the panel. The pooled FMOLS does the same, except that the short-run slope coefficient of each regressor reflects a common weighted average slope for all countries. The methods developed by Pedroni (2000) based on FMOLS principles are useful for estimating and testing hypotheses in dynamic panel data series that are cointegrated. Song et al. (2012) have recommended this estimation method in tourism demand studies that use dynamic panel data.

Pedroni's FMOLS method assumes that the cointegrated vector error follows a moving average process MA (1) with a contemporaneous error term that is independent and identically normally distributed. According to Canzoneri, Cumby, and Diba (1999) and Chien, Lee, and Cai (2014), the FMOLS method is capable of eliminating endogeneity and serial correlation in the errors. Serial correlation is avoided by placing the variables in first-difference, as noted by Pesaran and Smith (1995). A linear trend is also added in Equations 3.2 and 3.3 in addition to the deterministic constant. For the pooled FMOLS estimator, heterogeneous first-stage long-run coefficients are estimated, and the coefficient covariance computed follows the sandwich method of Mark and Sul (2003).

3.4 Results

The estimates of the linear MNL model noted in Equation 3.2 and 3.3 using the pooled and grouped FMOLS methods are reported in Table 3.3. Before discussing the results, it is important to recall that Equation 3.2 indicates the long run effect of changes in tourists' income and destination attributes on the preferences of international tourists for Colombia. Particular attention is paid to the politically motivated violence ($PVIOLENCE_{ct}$) to examine whether a greater number of relative PMV incidents in Colombia adversely influences overseas tourists' preferences for travelling there. Equation 3.3 contributes to assessing whether the reduction in the likelihood of travelling to Colombia due to an increase in the number of relative PMV incidents is greater for i) tourists from countries with greater per capita income, and ii) tourists from countries with higher trade ratios with Colombia. The results in Table 3.3 show an average increase in the likelihood of visiting Colombia of 0.19 percent for each one percent increase in the income of tourists ($INCOME_{st}$) (see column (i)).

Since the income-elasticity of international tourism demand is between 0 and 1, Colombia can be considered a "normal destination" for tourism. The estimated coefficient is comparable to that found in Bonilla and Moreno (2010) for Colombia. The demand for tourism in countries such as Mexico is also income-inelastic (Guzmán-Soria et al., 2011), whereas in Uruguay (Altmark et al., 2013), Australia (Divisekera and Kulendran, 2006), New Zealand (Schiff and Becken, 2011) and Greece (Thompson, 2013), the income elasticity of tourism demand is higher than one; a result that places this set of countries as "luxury" destinations. The estimated results of Equation 3.2 using the grouped FMOLS (column (ii)) diverge from those of the pooled FMOLS. The income elasticity of tourism demand for Colombia is highly significantly negative (-0.75), a result that is not consistent with the standard theory of consumer choice and empirical work. The literature has usually shown that the countries' income elasticity of international tourism demand is between zero and one, or above one (Crouch, 1994a; Lim, 2006).

Table 3.3 Determinants of International Tourists' Preferences for Colombia

Dependent variable: international tourists' likelihood of travelling to Colombia ($P_{\underline{i}st}$)

Independent variables:	Baseline Eq. (3.2)		Interaction effects of $PVIOLENCE_{\underline{i}t}$ Eq. (3.3)			
	Pooled FMOLS	Grouped FMOLS	Pooled FMOLS		Grouped FMOLS	
			Int. *PINC*	Int. *PTRA*	Int. *GINC*	Int. *GTRA*
	(i)	(ii)	(iii)	(iv)	(v)	(vi)
$INCOME_{st}$	0.1893**	-0.757***	0.199***	0.215***	-3.62***	-1.03***
	(0.075)	(0.258)	(0.072)	(0.065)	(1.332)	(0.356)
$PVIOLENCE_{\underline{i}t}$	-0.092***	-0.095***	-0.0679	-0.119***	-6.403	0.5644
	(0.011)	(0.019)	(0.061)	(0.019)	(4.810)	(0.655)
$TRADE_{\underline{i}t}$	0.1517***	0.062*	0.148***	0.172***	0.004	-0.3314
	(0.012)	(0.036)	(0.010)	(0.016)	(0.045)	(0.355)
$PRICE_{\underline{i}t}$	0.2059***	0.119**	0.191***	0.201***	0.126**	0.152***
	(0.020)	(0.050)	(0.017)	(0.018)	(0.057)	(0.058)
$TRANSPORT_{\underline{i}t}$	0.7482***	22.106	0.749***	0.768***	40.06**	25.435
	(0.035)	(15.072)	(0.033)	(0.029)	(18.636)	(18.143)
$TRANSPORT^2_{\underline{i}t}$	-0.319***	1.323	-0.317***	-0.334***	-1.704	1.673
	(0.025)	(4.632)	(0.023)	(0.020)	(5.490)	(5.353)
$INCOME_{st} \cdot PVIOLENCE_{\underline{i}t}$			-0.0021		0.649	
			(0.006)		(0.457)	
$TRADE_{\underline{i}t} \cdot PVIOLENCE_{\underline{i}t}$				-0.0062*		0.1256
				(0.003)		(0.105)
Observations[1]	455	455	455	455	455	455
Adjusted R-square	0.9926		0.9926	0.9926		
S.E of regression	0.1553	213.93	0.1554	0.1554	253.86	0.1554
Long run variance	0.010	0.004	0.007	0.007	0.005	0.007
Wald test (p-value)[2]			0.020	0.000	0.000	0.1623

***, **, and * indicate whether the coefficient is significant at the 1%, 5%, and 10%, respectively. The results are marginal effects

[1] The number of observations of 455 is derived as follows: 551 observations (29 countries times 19 years) minus 29 observations for the year 1995 (due to first-difference) minus 67 missing observations from 1996 to 2013. Transport cost is squared based on Louviere and Woodworth (1983).

[2] Wald test for joint hypotheses:

The effect of $PVIOLENCE_{\underline{i}t}$ on $P_{\underline{i}st}$ does not dependent on $INCOME_{st}$ ($\beta_1 = 0, \phi_1 = 0$)

The effect of $PVIOLENCE_{\underline{i}t}$ on $P_{\underline{i}st}$ does not dependent on $TRADE_{\underline{i}t}$($\theta_2 = 0, \phi_2 = 0$)

One of the most important factors in explaining the choices of international tourists is their risk perception of politically motivated violence in Colombia ($PVIOLENCE_{ct}$). Results show that a one percent increase in the relative number of PMV incidents in Colombia is associated with a decrease in the likelihood of travelling there of 0.09 percent in the long run (see Table 3.2 column (i) and (ii)).[41] Bonilla and Moreno (2010) found that the number of kidnappings in Colombia from 2004-2007 reduced the number of visitor arrivals by 0.26 percent. Kidnapping is one of various tactics used by politically motivated violent groups in Colombia, which influences the choices of international tourists. This result is consistent with Drakos and

[41] The first-differenced GMM estimator of Arellano and Bond (1991) was also applied for comparative purposes. The long-run effect of PMV on the probability of travelling to Colombia was found to be -0.06 percent, and the short-run effect was found to be -0.02 percent.

Kutan (2003) and Enders et al. (1992) who note that the number of terrorist incidents in Greece, Israel, Turkey, Italy and Austria is associated with a loss in the countries' market share of tourism, which was gained by other countries located in the same or other economic areas. As such, this is seen in Table 3.1 where the likelihood of travelling to Colombia was higher than the likelihood of travelling to Perú in 1995 (3.8 and 0.8 percent, respectively); however, in 2013 the likelihoods of travelling to Colombia and Perú were 2 and 3.0 percent, respectively.

Findings also show that a one percent increase in the relative trade between tourists' country of origin and Colombia ($TRADE_{ct}$) is associated with a 0.15 and 0.06 percent rise in the likelihood of travelling there (see columns (i) and (ii)). These results are statistically significant at the 1 and 10 percent levels, and confirm the importance of international trade for Colombia in increasing the demand for international tourism. The finding is consistent with Bonilla and Moreno (2010), although the trade-elasticity of international tourism demand found in Bonilla and Moreno was 0.32 percent. The estimated coefficient of 0.15 for Colombia is similar to that found in Balli et al. (2013) for the case of Turkey.

A one percent change in the relative prices of Colombia adjusted with the exchange rate ($PRICE_{ct}$) is associated with a 0.20 and 0.12 percent change in the likelihood of travelling there (see columns (i) and (ii)). Both estimates are statistically significant at the 1 and 5 percent levels, respectively. Between 1995 and 2001, the average increase of prices in the set of 53 alternative countries for tourism taken in this study were greater than the average increase of prices in Colombia (based on statistics from the World Development Indicators published by the World Bank): 15 and 5.3 percent per annum, respectively. This is explained by the depreciation rate in Colombia, which was surpassed by the weighted average depreciation rate in the set of 53 alternative countries. Consequently, there was a decline in the average likelihood of travelling to Colombia from 1995-2001. The reverse was noted between 2002 and 2013.[42] This result is consistent with studies that have found country substitutability due to a loss of international price competitiveness (Divisekera, 2003; Divisekera and Kulendran, 2006; Tukamushaba, Lin, and Bwire, 2013).

[42] Since 2004, the Colombian peso has been undervalued on average by 40% against the American dollar according to the Big Mac Index (see The Economist, 2016). The Colombian peso is among the ten least valuable currencies in the world, according to The Telegraph (2016).

The coefficients of air transport cost ($TRANSPORT_{ct}$) and its quadratic form are statistically significant at the 1 percent level in the estimation of Equation 3.2 using the pooled FMOLS method (column (i)). The results show a turning point in the likelihood of travelling to Colombia when the air transport cost reaches 1.17 (in log scale).[43] This finding suggests that when the air transport cost to Colombia exceeds 3.2 times the cost of flying to other country alternatives, the representative international tourist is likely to change their preferences for Colombia toward other destinations. The airline companies in Colombia that operate international flights can increase the preferences of tourists for Colombia by keeping their relative transport costs below the estimated breakpoint.

The interaction term results of the estimation of Equation 3.3 using the pooled FMOLS method in column (iii) show that as tourists' income increases (their countries' per capita income), there is a reduction in the likelihood of travelling to Colombia due to more PMV incidents, which deepens by 0.002 percent. Moreover, as the relative trade between tourists' country of origin and Colombia rises the reduction in the likelihood of travelling to Colombia due to more PMV incidents deepens by 0.006 percent (column (iv)). The joint F-test (Wald test) applied to both interaction terms is significant at the 5 and 1 percent levels, respectively.[44] Using the grouped FMOLS method, the results are jointly significant for the interaction term between tourists' income and relative PMV (column (v)), although the findings are contradictory. The results show that the reduction in the likelihood of travelling to Colombia due to more relative PMV incidents is more profound for tourists with higher income. Although this could be the case of novelty seekers who tend to tolerate a higher level of risk in the country of destination (Lepp and Gibson, 2003), the result is not reflective for the population mean.

Based on the overall outcomes up to this point, the results of the pooled FMOLS method to estimate Equations 3.2 and 3.3 are more realistic. The grouped FMOLS estimator, although recommended by Pesaran and Smith (1995) and Pedroni (2000), tends to yield biased estimates in this study due to the short time dimension employed (19 years for twenty-one

[43] $TRANSPORT_{\underline{it}} = 0.7482/(2 * 0.3191) = 1.1723$.

[44] Based on Wooldridge (2013), the estimated coefficient of an interaction variable may be statistically significant even though each coefficient of the variables involved in the interaction term may not be. Therefore, we follow Wooldridge (2013) to carry out a joint F test and check for a joint distribution between the interactive variables. Due to high collinearity between regressors (that tend to occur in models with interaction variables), two coefficients could be no statistically significant individually. Therefore, the solution is to test the joint hypothesis (Gujarati, 2003).

countries and 13 years for the remaining eight countries). While Baltagi and Kao (2000) and Pesaran and Smith (1995) note that the grouped FMOLS estimator works well when the time dimension is large enough relative to the number of cross sections, when the time dimension is small, the grouped FMOLS coefficients tend to be biased (Baltagi and Kao, 2000).

The effect of further PMV incidents in Colombia on the choices of international tourists presented in column (iii) can be analysed at different tourists' income levels - based on their countries' per capita income. The World Bank's country classification by income level of 2004 is followed for that purpose (Fantom and Serajuddin, 2016; World Bank, n.d.).[45] In this study, there are no countries with less than an average per capita income of US$825 per year (from 1995 to 2013) among the 29-country sample. Therefore, the study excludes the category of Low-Income Countries. For practical purposes, Lower-Middle Income Countries (countries whose income per capita was between US$826 and US$3,255 in 2004), and Upper-Middle Income Countries (countries with an income per capita between US$3,256 and US$10,065 in 2004) are grouped in one category called Middle-Income Countries. Colombia's neighbours (Peru, Ecuador, Panama, y Venezuela) and other Central and South American economies (Guatemala, El Salvador, Costa Rica, Dominican Republic, Bolivia, Mexico, Brazil, Argentina, Chile, and Uruguay) belong to the category Middle-Income Countries. The category High-Income Countries includes countries whose income per capita was greater than US$10,065 in 2004; that is, countries from Europe (Spain, Italy, France, Germany, Belgium, Austria, UK, Sweden, Netherlands, Switzerland), Asia-Oceania (Israel, Japan, Australia), and North America (USA, Canada).

Table 3.4 shows the partial effect of an increase in the relative number of PMV incidents in Colombia on the average likelihood of travelling there from Middle-Income Countries, and High-Income Countries. The results show that the reduction in the likelihood of travelling to Colombia due to more relative PMV incidents is greater for tourists from High-Income Countries compared to tourists from Middle-Income Countries. While the reduction in the likelihood of travelling to Colombia due to more relative PMV incidents for tourists from Middle-Income Countries was between 0.082 and 0.086 percent, the reduction for tourists from High-Income Countries was between 0.088 and 0.091 percent. This result is consistent

[45] Since the year 2004 is at the middle of years included in this study (between 1995 and 2013), this year is included as the base year for the classification of countries by income level.

with the income-elasticity of tourism demand found previously, which showed Colombia as a "normal destination".

Table 3.4 The Effect of Politically Motivated Violence at Different Per Capita Income

Country classification	Tourists' country and region of origin	Average Income per capita (1995-2013)		Partial effect
		USD	in *log*	$\Delta logP_{cst}/\Delta logPVIOLENCE_{ct} = -0.0679 - 0.0021\ log\overline{INCOME}_{st}$
Middle Income Countries	<u>Neighbours of Colombia</u> Peru, Ecuador, Panama, Venezuela			
	<u>Central and South America</u> Guatemala, El Salvador, Costa Rica, Dominican Republic, Bolivia, Mexico, Brazil, Argentina, Chile, Uruguay.	\$1,074 (Min) \$4,486 (Ave) \$7,754 (Max)	6.97 8.40 8.95	-0.082 -0.085 -0.086
High Income Countries	<u>Europe</u> Spain, Italy, France, Germany, Belgium, Austria, UK, Sweden, Netherlands, Switzerland			
	<u>Asia-Oceania</u> Israel, Japan, Australia	\$22,884 (Min) \$37,688 (Ave) \$54,267 (Max)	10.03 10.53 10.90	-0.088 -0.090 -0.091
	<u>North America</u> USA, Canada			

Tourists from High-Income Countries tend to be more sensitive to further PMV incidents in Colombia as compared to tourists from Middle-Income Countries. However, tourists from High-Income Countries (especially from Europe) should be less sensitive to PMV incidents in Colombia as compared to tourists from Middle-Income Countries, if the scenario was consistent with the results shown in Table 3.2. The relative risk perception of travelling to Colombia due to politically motivated violence incidents was found in Table 3.2 to be lower for tourists from Europe, North America and Asia-Oceania as compared to tourists from the neighbouring countries of Colombia and other Central and South American nations.

The reason why tourists from Middle-Income Countries are less sensitive to PMV incidents in Colombia as compared to tourists from High-Income Countries (in spite that the relative risk perception of travelling to Colombia is higher for the former group of tourists than for the latter group) can be explained by the geographic and cultural closeness between countries.

The geographic closeness between Colombia and other countries of South and Central America tends to reduce the transport cost between these countries; thereby, the effect of more relative PMV in Colombia on international tourists' choices is likely moderated by this characteristic. The cultural closeness between Colombia and the set of South and Central American nations is likely to make tourists from the latter group of countries understand more profoundly the real risk of PMV in Colombia, as compared to the understanding of PMV risk in Colombia that the tourists from the analysed European countries, Asia-Oceania, and North America tend to pose.

The effect of PMV incidents in Colombia on the choices of international tourists presented in column (iii) can also be analysed at different international trade ratios (see Table 3.5). In this study, countries whose average trade ratio with Colombia was less than 1 percent between 1995 and 2013 are categorised as Low-Trade Countries with Colombia.[46] This category includes the analysed countries of Asia-Oceania, Europe, North America, and some Central and South American economies (Argentina, El Salvador, Uruguay, Mexico, Brazil). Countries whose average trade ratio with Colombia was between 1 and 10 percent are categorised as Middle-Trade Countries with Colombia. Chile, Guatemala, Costa Rica, Dominican Republic, Panama, Bolivia Peru, Venezuela, and Ecuador belong to this last category. There are not countries with trade ratios with Colombia greater than 10 percent. Therefore, the category of High-Trade Countries with Colombia is not included.

Table 3.5 shows that the reduction in the likelihood of travelling to Colombia (as a business tourist)[47] due to further relative PMV incidents is greater for tourists from Middle-Trade Countries with Colombia than for tourists from Low-Trade Countries with Colombia. For tourists from Middle-Trade Countries with Colombia, the reduction in the likelihood of travelling to Colombia due to more relative PMV incidents ranged between 0.091 and 0.103 percent. For tourists from Low-Trade Countries with Colombia, the reduction in the likelihood of travelling to Colombia due to more relative PMV incidents was between 0.06 and 0.08 percent.

[46] Based on trade statistics between each country and Colombia, the authors set this categorization for practical purposes. This 1 percent means that out of US$100 that the tourists' country of origin exchanged with the world through trade activities (exports plus imports), US$1 was exchanged with Colombia.

[47] As noted in subsection 3.3.1 (Equation 3.2b), an increase in the odds of doing trade with Colombia (against doing trade with other nations) rises the likelihood of travelling to Colombia as a business tourists.

Table 3.5 The Effect of Politically Motivated Violence at Different Trade Ratios

Country categories	Tourists' country and region of origin	Average trade ratio between tourists' country of origin and Colombia (1995-2013)		Partial effect
		(%)	in *log*	$\Delta logP_{cst}/\Delta logPVIOLENCE_{ct} = -0.119 - 0.0062\ log\overline{TRADE}_{ct}$
Low-Trade Countries with Colombia	Asia-Oceania Australia, Japan, Israel Europe Austria, Sweden, UK, France, Germany, Belgium, Italy, Spain Netherlands, Switzerland, North America Canada, USA Central and South America Argentina, El Salvador, Uruguay, Mexico, Brazil	0.02 (Min) 0.22 (Ave) 0.66 (Max)	-8.63 -6.11 -5.01	-0.066 -0.081 -0.088
Middle-Trade Countries with Colombia	Central and South America Chile, Guatemala, Costa Rica, Dominican Republic, Panama, Bolivia Neighbours of Colombia Peru, Venezuela, Ecuador	1.01 (Min) 2.80 (Ave) 7.27 (Max)	-4.59 -3.57 -2.62	-0.091 -0.096 -0.103

Based on the overall results, the national government of Colombia should work to reduce the number of politically motivated violent incidents in the country. A reduction in the number of incidents is likely to enhance the preferences of international tourists for Colombia and, therefore, increase the value of tourism receipts. An increase of 7 percent in the average relative number of PMV incidents in Colombia was forecasted in this study for 2014 using an exponential trendline.[48] With such increase, a loss of 259,294 inbound tourists for the same year was predicted.[49] Based on statistics from Migración Colombia and DANE, Colombia

[48] The one-step ahead forecast of the average relative number of PMV incidents in Colombia for 2014 (year 20) is: $\widehat{logPVIOLENCE}_{c,20} = 2.4623e^{0.044 \cdot 20} = 6.00$ (the $R^2 = 0.92$). The percentage change in the relative number of PMV incidents predicted for the year 2014 is: $\widehat{logPVIOLENCE}_{c,20} - logPVIOLENCE_{c,19} = 6.00 - 5.93 = 0.07$ or 7 percent.

[49] Results from the estimation of Equation 3.2 showed that $\partial logP_{cst}/\partial logPVIOLENCE_{ct} = -0.09$. Based on the result in footnote 48, $\partial logP_{cst} = -0.09 \cdot 7 = -0.63$. Therefore, the mean probability of travelling to Colombia decreases from 2.04 percent in 2013 to 2.02 percent in 2014. The loss of inbound tourists is then calculated using Equation 3.3a (the number of Outbound trips from Colombia's main sources of tourists between

received 2.05 million inbound tourists and a total of US$3,825 million in tourism receipts in 2014. The estimated monetary loss of tourism receipts in Colombia in 2014 due to politically motivated violence was calculated at US$483 million. This monetary loss is equivalent to 9 percent of Colombia's total service exports; a value of almost 18 percent of Colombia's total exports of Coffee, and a figure that is 63 percent of total aid flows that Colombia receives from the members of the Development Assistance Committee (DAC).

3.5 Conclusions

This chapter empirically examines the determinants of international tourists' preferences for Colombia between 1995 and 2013. A linear multinomial logit model is estimated through panel cointegration methods to test two main hypotheses regarding the effect of politically motivated violence. Consistent with the first hypothesis, increases in the relative number of politically motivated violent incidents in Colombia do adversely influence the preferences of international tourists for travelling there in the long run. As the number of politically motivated violent incidents against tourists and tourism infrastructure in Colombia is historically low, this finding shows that the risk perception of politically motivated violence of international tourists is high, which negatively affect the tourism sector. The results also showed that tourists from High-Income Countries are more averse to politically motivated violence risk in Colombia as compared to tourists from Middle-Income Countries. Moreover, tourists from countries with higher trade links with Colombia (mainly the neighbouring countries of Colombia and other Central and South American economies) are more sensitive to politically motivated violent incidents in Colombia as compared to tourists from countries with lower bilateral trade ratios with Colombia.

The findings indicate the policy initiatives to increase international tourists' preferences for Colombia. The key focus for the government is an active plan to reduce the number of politically motivated violent incidents, and international tourists' risk perception of politically motivated violence to increase the preferences for the country as an international destination. The results also imply revising strategies toward the promotion of tourism activities in Colombia based on the tourists' country of origin (High-Income Country or Middle-Income Country for the case of leisure tourists, and Middle-Trade Country or Low-Trade Country

2013 and 2014 is assumed to increase at the same rate of tourist departures published in the World Bank' statistics).

with Colombia for the case of business tourists). The strategies for each segment would depend on whether the number of politically motivated violent incidents decreases or not. These initiatives are crucial to stimulate Colombia's economic growth of the tourism sector.

The next chapter of this research focuses on the other component of internal tourism demand: domestic tourism. The demand for domestic tourism is the most significant travel form across the world, including Colombia. The purpose of the next chapter is to examine the role of destination attributes on domestic tourists' preferences in Colombia, paying special attention to man-made attractions for leisure and recreation.

Appendix 3A

Appendix 3A explains the procedure to get to Equation 3.2 from Theil's (1969) multinomial extension of the linear logit model.

Theil's (1969) model was defined as follows:

$$d(log\ P_i) = \sum_{h=1}^{m}\left(\beta_{hi} - \sum_{j=1}^{N} P_j \cdot \beta_{hj}\right) \cdot d(log\ x_h) + \sum_{k=1}^{n} \gamma_k \cdot \left\{ d(log\ y_{ki}) - \sum_{j=1}^{N} P_j \cdot d\left(log\ y_{kj}\right)\right\} \quad \text{(B1)}$$

Leaving equation (B1) in levels, and fixing $h = 1$ and $k = 1, \dots 5$, we get:

$$log\ P_i = \alpha + \left(\beta_{1i} - \sum_{j=1}^{N} P_j \cdot \beta_{1j}\right) \cdot log\ x_1 + \sum_{k=1}^{5} \gamma_k \cdot \left\{ log\ y_{ki} - \sum_{j=1}^{N} P_j \cdot log\ y_{kj}\right\} \quad \text{(B2)}$$

For simplicity, $\beta_{1i} - \sum_{j=1}^{N} P_j \cdot \beta_{1j} = \beta_1$; $y = \mathcal{X}$; and $\gamma = \theta$

$$\sum_{k=1}^{5} \theta_k \cdot \left\{ log\ \mathcal{X}_{ki} - \sum_{j=1}^{N} P_j \cdot log\ \mathcal{X}_{kj}\right\} = \theta_1\left[log\left(\frac{\mathcal{X}_{1i}}{\prod_{j=1}^{N} \mathcal{X}_{1j}^{P_j}}\right)\right] + \cdots + \theta_5\left[log\left(\frac{\mathcal{X}_{5i}}{\prod_{j=1}^{N} \mathcal{X}_{5j}^{P_j}}\right)\right]$$

The right-hand side of the above expression is re-written as: $\theta_k\left[log\left(\frac{\mathcal{X}_{ki}}{\prod_{j=1}^{N} \mathcal{X}_{kj}^{P_j}}\right)\right] = \theta_k(log\ \mathcal{X}_{ki}^{*})$

Thus, by simplifying Equation B2 we arrive to Equation B3 for Colombia (c)

$$logP_c = \alpha + \beta_1 \cdot logx_1 + \theta_1 \cdot log\mathcal{X}_{1c}^{*} + \theta_2 \cdot log\mathcal{X}_{2c}^{*} + \sum_{k=3}^{n=5} \theta_k \cdot log\mathcal{X}_{kc}^{*} + u_c \quad \text{(B3)}$$

$x_1 = INCOME$; $\mathcal{X}_{1c}^{*} = PVIOLENCE$; $\mathcal{X}_{2c}^{*} = TRADE$; log stands for natural logarithm

By placing Equation B3 in a panel data context (including $\mathcal{s}$ as tourist's country of origin and t as time), we arrive to Equation B4 (or Equation 3.2 in the document):

$$logP_{c\mathcal{s}t} = \alpha + \beta_1 logINCOME_{\mathcal{s}t} + \theta_1 logPVIOLENCE_{ct} + \theta_2 logTRADE_{ct} + \sum_{k=3}^{n=5} \theta_k \cdot log\mathcal{X}_{kct}^{*} + u_{c\mathcal{s}t} \quad \text{(B4)}$$

$u_{c\mathcal{s}t} = \mu_{\mathcal{s}} + e_{c\mathcal{s}t}$. $\mu_{\mathcal{s}}$ accounts for time-invariant country-specific factors, and $e_{c\mathcal{s}t}$ is the idiosyncratic error term. Applying Euler to Equation B3, we arrive to the model B5:

$$P_c = \emptyset \cdot {x_1}^{\beta_1} \cdot \prod_{k=1}^{5} {\mathcal{X}_{kc}^{*}}^{\theta_k} \cdot e^{u_c} \quad \text{(B5)}$$

Appendix 3B

Appendix Table 3B shows the list of variables and data sources.

Appendix Table 3B. List of Variables and data sources

Variable	Description	Data sources
P_{cst}	Empirical probability of visiting Colombia (country c) from country s	World Tourism Organization
$INCOME_{st}$	Real gross domestic product (GDP) *per capita* in tourist's country of origin s	World Bank
$PVIOLENCE_{ct}$	Relative number of PMV incidents in Colombia (Tourists' risk perception of PMV in Colombia)	National Consortium for the Study of Terrorism and Responses to Terrorism (START)
$TRADE_{ct}$	Relative bilateral trade between tourists' country of origin and Colombia	Colombia's Administrative Department of National Taxes (DIAN)
$PRICE_{ct}$	Relative prices in Colombia adjusted with exchange rate	World Bank
$TRANSPORT_{ct}$	Relative airfare between tourists' country of origin and Colombia	Global Financial Data, World Bank, and Timeanddate
$TRANSPORT_{ct}^2$	Squared relative airfare between tourists' country of origin and Colombia	Global Financial Data, World Bank, and Timeanddate.com

The time dimension is identified with the abbreviation t

Appendix 3C

Appendix Table 3C shows the presence of time-invariant country-specific factors ($\mu_{\underline{sit}}$) in the choice for Colombia. It is estimated through the panel GLS method.

Appendix Table 3C Fixed Effects (Euclidean Distance and Language)

No of cross-section	Country of Origin	Fixed-effect Coefficient (in log)	Distance to Colombia (km)	Distance to Colombia (Average km)	Language(s) in country of origin
1	Ecuador	3.8998	996		
2	Venezuela	3.2982	1025	930	Spanish
3	Panama	3.1273	770		
4	Peru	2.7551	1250	1,563	Spanish
5	Costa Rica	2.6306	1875		
6	Dominican Rep.	2.2426	1599		
7	Bolivia	1.6335	2428		
8	Guatemala	1.6069	2114		
9	Brazil	1.5026	4314		
10	Chile	1.1404	4229	3,747	Spanish
11	El Salvador	0.7916	1941		
12	Mexico	0.5548	3173		
13	Uruguay	0.5074	4757		
14	Argentina	0.4907	4645		
15	Spain	0.0199	8021		
16	USA	-1.0778	3996		English/Spanish
17	Israel	-1.1239	11547		Hebrew/Arabic/English
18	Italy	-1.7119	9118		Italian
19	France	-1.7557	8629		French
20	Australia	-1.8043	14336		English
21	Canada	-1.8333	4354		English/French
22	Netherlands	-2.1572	8853		Dutch
23	Germany	-2.5955	9430	9,717	German/English
24	Switzerland	-2.6194	9079		German/French/Italian
25	Sweden	-2.7913	9688		Swedish
26	Austria	-2.7962	9662		German
27	UK	-2.8043	8499		English
28	Belgium	-3.1683	8799		Dutch/French/German
29	Japan	-3.5498	14328		Japanese

The correlation between the fixed effects and the Euclidean distance between tourists' country of origin and destination is high. Distance is a spatial pattern that determines international tourist's choices as also noted by McKercher et al. (2008). Similarly, there is a correlation between the fixed effects and language (primarily with Spanish speaking countries).

Appendix 3D

The null hypothesis of no cointegration between variables is tested using the panel cointegration testing of Pedroni (2004) and Kao (1999). Using Pedroni's (2004) test (Appendix Table 3.1D), the null hypothesis of no cointegration is rejected in 6 of 11 statistics in both cases: individual intercept, and individual intercept and trend. Using Kao's (1999) (Appendix Table 3.2D), the null hypothesis of no cointegration is also rejected.

Appendix Table 3.1D Panel Cointegration Testing (Pedroni, 2004)

	Individual intercept		**Individual intercept and trend**	
	Statistic	Weighted Stat.	Statistic	Weighted Stat.
	Within-dimension		Within-dimension	
Panel v-Statistic	-2.09 (0.98)	-2.74 (0.99)	-3.16 (0.99)	-3.44 (0.99)
Panel rho-Statistic	3.53 (0.99)	4.45 (1.00)	5.08 (1.00)	6.14 (1.00)
Panel PP-Statistic	-6.71 (0.00)	-6.59 (0.00)	-7.42 (0.00)	-9.32 (0.00)
Panel ADF-Statist	-5.49 (0.00)	-5.63 (0.00)	-4.82 (0.02)	-6.89 (0.00)
	Between-dimension		Between-dimension	
Group rho-Statistic	6.76 (1.00)		8.27 (1.00)	
Group PP-Statistic	-10.95 (0.00)		-11.79 (0.00)	
Group ADF-Statist	-6.17 (0.00)		-6.12 (0.00)	

Ho: no cointegration; Deterministic intercept and trend; max lag of 2 (selected on Akaike Info Criterion)

Appendix Table 3.2D Panel Cointegration Testing (Kao, 1999)

	t-Statistic	Prob.
ADF	-3.8543	0.0001
Residual variance	0.03596	
HAC variance	0.03205	

Augmented Dickey-Fuller Test Equation

Variable	Coefficient	Std. Error	t-Statistic	Prob.
RESID(-1)	-0.40888	0.043405	-9.42000	0.000
D(RESID(-1))	-0.03041	0.038321	-0.79354	0.4279

R-squared	0.22730	Mean dependent variable	0.014070
Adjusted R-squared	0.22544	S.D. dependent variable	0.176003
S.E. of regression	0.15489	Akaike info criterion	-0.88732
Sum squared residual	9.98124	Schwarz criterion	-0.86801
Log likelihood	187.4513	Hannan-Quinn criter.	-0.87969
Durbin-Watson stat	1.46138		

Ho: no cointegration; Deterministic intercept; max lag of 2 (selected on Akaike Info Criterion)

Chapter 4

Determinants of Domestic Tourists' Choices: The Role of Man-Made Attractions for Leisure and Recreation

4.1 Introduction

Domestic tourism is also regarded as a significant form of travel in various countries according to the United Nations World Tourism Organization (UNWTO), that recorded between 5 and 6 billion domestic trips in 2015 (UNWTO, 2016b). Domestic tourism has been investigated from diverse perspectives, including the examination of residents' choices among the regional destinations, among others.[50] Research examining domestic tourism among the regional destinations has been focused on leisure and recreational activities (Bujosa and Rosselló, 2013; Huybers, 2003; Marrocu and Paci, 2013; Nicolau and Mas, 2006), on vacation and other interrelated tourism purposes (Athanasopoulos and Hyndman, 2008), or on tourism activities in an aggregate form (Fuleky et al., 2014; Monfort et al., 2010; Priego et al., 2014). This study examines the role of regional destination attributes for leisure and recreation as the man-made attractions clustered in domestic tourists' mind at the time of choosing a regional destination in Colombia. To cluster man-made attractions for leisure, this study estimates for the first time in the tourism demand literature a latent variable of several man-made attractions for leisure and recreation that influence domestic tourists' choices. This study further evaluates the taste heterogeneity of domestic tourists around the mean coefficient of man-made attractions for leisure and recreation, which is vital for policy initiatives to enhance domestic tourism.

Domestic tourists' choices of a regional destination for leisure and recreation depend on a variety of factors, including the regions' attributes (Bujosa and Rosselló, 2013; Nicolau and Mas, 2006). Huybers (2003) linked the empirical findings to Lancaster's (1966, 1971) model of characteristics, which suggests that the properties of the goods (destinations in this case) are the object of utility.[51] In contrast to the neoclassical theory of consumer demand, in which

[50] Other perspectives include: i) the choice for tourism participation, which involves a one-stage decision of travelling (Boakye et al., 2013; Cerda and Leguizamon, 2005) or consuming tourism products (Alegre and Pou, 2004), and a two-stage decision of travelling and consuming tourism products (Alegre et al., 2013; Magableh and Kharabsheh, 2013); ii) the choice of the length of stay (Grigolon et al., 2014), and iii) the value of expenditures in tourism products (Cerda and Leguizamon, 2005; Divisekera, 2010; Yang et al., 2014).

[51] The relationship between domestic tourists' preferences and the region chosen is objective based on Lancaster's (1966, 1971) model. This is, the characteristics of a regional destination are the same for all domestic tourists and are given in the same quantities.

consumers' utility is assumed to depend on the demand for goods, the Lancaster's (1966, 1971) approach to consumer demand assumes that consumers' utility is a function of the goods' attributes. The man-made visitor attractions for leisure and recreation, museums, and restaurants activities have been analysed as independent attributes that attract domestic tourists (Marrocu and Paci, 2013). Domestic tourist's trips for leisure and recreation activities have been found to last (on average) 1.6 days in the Chinese city of Yixing (Yang, Wong, and Zhang, 2011), or more than four days in the Netherlands depending on the season (Grigolon et al., 2014). It is possible, therefore, that several man-made attractions for leisure and recreation can be enjoyed by domestic tourists in their regional visitation for an average duration of trip. This study includes further attractions that have not been included in the domestic tourism demand literature, such as theme parks and shopping malls, following Swarbrooke (2002)'s list of man-made attractions for leisure and recreation. In addition, theme parks, aerial trams and shopping malls are other venues included in Swarbrooke (2002)'s list of man-made attractions for leisure and recreation.

Based on Train (1998), domestic tourists with the same observed characteristics are likely to have different tastes for each destination attribute which explains the choices they make. Domestic tourists' taste variation has been recognised by Nicolau and Mas (2006) around physical, cultural and interpersonal motivations. The size of the city where domestic tourists travel from is seen as one of the key sources of taste variation examined in this chapter. Domestic tourists from cities with more than fifty thousand inhabitants have been found to travel more as compared to tourists from municipalities with less than fifty thousand inhabitants (Alegre et al., 2013). It is unknown whether domestic tourists from large cities tend to travel more than domestic tourists from smaller cities due to the number of man-made attractions for leisure and recreation in the destination. This is a research gap in the tourism demand literature that will be filled in this chapter through the inclusion of an interaction variable between man-made attractions for leisure and domestic tourists' city of residence.

The distance between residents' city of origin and their tourist destination is another key determinant studied for domestic tourism (Huybers, 2003; Marrocu and Paci, 2013; Monfort et al., 2010; Nelson, 2013; Priego et al., 2014). Empirical results by Nicolau and Mas (2006) have confirmed the distance decay theory in the demand for domestic tourism, although taste heterogeneity for the domestic tourists around this factor has been found. The interaction terms between distance and residents' motivations and between distance and inertial

behaviour have been analysed (Nicolau, 2010; Nicolau and Mas, 2006). Nicolau and Mas (2006) showed that physical, cultural and interpersonal motivations tend to moderate the effect of distance on domestic tourists' choices. Nicolau (2010) found that the effect of distance on domestic tourists' choices can be lessened if the destination chosen has been visited in the past. The interaction effect of distance and the number of man-made attractions for leisure and recreation (per square kilometre) on domestic tourists' mean preferences has not been examined. The use of this interaction variable (between man-made attractions for leisure and distance) contributes to this research gap in order to identify whether the construction of venues and sites for leisure activities can moderate the negative effect of distance on domestic tourists' trip choices. Based on Nelson (2013), it is likely that domestic tourists travel further away as the number of man-made attractions for leisure and recreation in the destination increases.

The contributions in this study on the role of destination attributes on domestic tourists' preferences show the impact of man-made visitor attractions for leisure and recreation on domestic tourists' preferences for various provinces and cities. First, the analysis indicates whether domestic tourists' choices of a province are more likely if the average number of man-made attractions for leisure and recreation (per square kilometre) rises. Second, the contribution on taste heterogeneity shows the differences in tastes between domestic tourists around the mean coefficient of man-made attractions for leisure and recreation per square kilometre, whereby the size of city where the domestic tourists travel from influences the decision to visit a province with specific man-made attractions for leisure and recreation. Thus, the demographic characteristics of the domestic tourists by specific city categories indicate the level of influence based on their choices. Third, the finding on an increase in the average number of man-made attractions for leisure and recreation (per square kilometre) in a province can potentially offset the effect of distance on domestic tourists' choices for that province. These contributions provide various policy implications in the case of Colombia.

According to Colombia's Administrative Department of Statistics (DANE), the number of domestic tourism trips in Colombia was 18 times the number of recorded international tourism trips to the country in 2013 (DANE, 2015). Statistics published by DANE in the National Survey of Domestic Tourism Spending (EGIT) and other data sources reveal a positive correlation between domestic tourists' mean preferences for a provincial destination in Colombia and the average number of man-made attractions for leisure and recreation in the

province visited. There is high taste heterogeneity between domestic tourists in Colombia around man-made attractions for leisure and recreation, however. On the other hand, data from the EGIT and other data sources show a negative correlation between domestic tourists' mean preferences for a provincial destination and the mean distance to get to that province from tourists' city of residence.

The Ministry of Commerce, Industry and Tourism of Colombia (MCIT) and the National Planning Department of Colombia (DNP) highlighted the importance of promoting domestic tourism in the sectoral plan of tourism released in 2014 (MCIT and DNP, 2014). The promotion of new tourist destinations (keeping the cultural identity of the regions visited) is key to motivate Colombians to travel more within Colombia (MCIT and DNP, 2014). An important contribution of this study rests on policy implication in domestic tourism (evidence-based policy decisions).

To model the relationship between destination attributes and domestic tourists' preferences among a set of provincial destinations, and domestic tourists' taste heterogeneity around the destination attributes, the mixed logit model is employed (see Train, 2009). Data on domestic tourists' preferences and destination attributes are sourced from the EGIT and other sources, respectively. Factor analysis is utilised to construct a latent variable for a set of man-made attractions for leisure and recreation, and the outcome of this latent variable is used to examine the effects of man-made attractions for leisure and recreation on the choices of domestic tourists. The chapter is organised as follows: Section 4.2 presents the literature review on the role of man-made attractions for leisure and recreation on domestic tourists' preferences. Section 4.3 shows a descriptive analysis on domestic tourist travel between various provinces of Colombia. Section 4.4 presents the model of domestic tourists' choices followed by a discussion of data and the methodology applied to estimate the models. In Section 4.5, the empirical results are discussed and implications of the findings are highlighted. The conclusions are presented in Section 4.6.

4.2 Literature Review

There are destination attributes that influence the choices of domestic tourists, including visitor attractions.[52] In the literature, museums (Marrocu and Paci, 2013), restaurants (Marrocu and Paci, 2013), and aerial trams (also known as gondola lifts) (Hearne and Salinas, 2002) have been identified as independent man-made venues that attract domestic tourists. As domestic tourists' length of stay has been found to range between 1.6 days (Yang et al., 2011); 2.6 days (Garín-Muñoz, 2009); between 3 to 4.5 days (Mckercher, 1998), or more depending on the season (Grigolon et al., 2014), it is highly likely that these and other man-made attractions for leisure and recreation will be visited by domestic tourists during their regional visitation. On this basis, the man-made visitor attractions for leisure and recreation are likely to be clustered in domestic tourists' minds at the time of choosing a province.

Theme parks and shopping malls are attractions within Swarbrooke's (2002) list of man-made venues for leisure and recreation that tend to be visited by domestic tourists.[53] Theme parks offer combined experiences of learning, nature contact (animals, plants), thrill (roller coasters, water rides), and leisure (general entertainment, restaurants, and shops) that captivate visitors (McClung, 2000). When there are several theme parks within a region, cluster patterns of visitation tend to occur (Fodness and Milner, 2000). Sun and Uysal (1994) noted that after the openness of Walt Disney World and its three theme parks (the Magic Kingdom, EPCOT Centre, and the Disney-MGM Studio), growth of total tourism flows in Florida (United States) was evident.

Shopping malls represent a recent concept of man-made visitor attractions, as they "…offer services and facilities for entertainment, shopping, eating, drinking and other aspects of leisure" (Stevens, 2003, p. 285). As noted by Leask (2008) and Swarbrooke (2002), shopping malls are not seen solely as a support service for visitors' leisure and recreation. All visitors, including domestic tourists, are influenced by the idea of having several activities to do in one venue, such as shopping, socialising, eating, and entertainment, among other activities (Grube-Cavers and Carvajal-Sánchez, 2014). Thereby, the visits to shopping malls can satisfice the taste of each visitor within a group of family members and/or friends. Shopping

[52] An attraction is a feature, venue or activity in a place that provides appropriate facilities and services for visitors (locals and tourists), it is manageable, and it is offered with or without entry fees (Swarbrooke, 2002).
[53] This list is useful to identify what venues, sites or activities are man-made attractions originally built for visitors' leisure and recreation.

malls have become an alternative to public space for the enjoyment of people (Grube-Cavers and Carvajal-Sánchez, 2014).

Some man-made attractions for leisure and recreation are owned by the public sector, while others are owned by the private or voluntary sectors (Swarbrooke, 2001). For instance, most museums are owned by government institutions with the priority of conservation and are mainly built for the local community (Swarbrooke, 2002). Conversely, theme parks, shopping malls, gondola lifts and several other man-made attractions for leisure and recreation tend to be owned by commercial organisations whose priority rests on profits and are built for locals and other markets (Swarbrooke, 2002). The understanding of ownership arrangements is fundamental for the development of new venues and sites that attract visitors, as each sector has its own motivations (Swarbrooke, 2002).

For some of the domestic tourists, man-made visitor attractions for leisure and recreation can be the main reason for a trip; while for others, they can just be a complement to the journey's main purpose (Swarbrooke, 2002). Ultimately, domestic tourists' choices of a regional destination are also determined by climate (Bujosa and Rosselló, 2013) as well as other visitor attractions in the destination. This includes nature-based attractions such as beaches (Bujosa and Rosselló, 2013; De-la-Mata and Llano-Verduras, 2012; Marrocu and Paci, 2013), and other man-made attractions built for reasons other than leisure and recreation, including heritage sites (Patuelli et al., 2013; Priego et al., 2014). According to discrete choice theory (Train, 1998), the differences in tastes between domestic tourists for each regional attribute are likely. This taste heterogeneity between individuals can be explained by individuals' characteristics according to Hensher and Greene (2003).

Studies in other areas of economic interest have examined the sources of taste heterogeneity between consumers using individuals' demographic characteristics. In a study on the benefits of clearing forest plantations to restore nature for recreational activities, De Valck et al. (2014) included an interaction term between individuals' characteristics and site-specific attributes to examine the choices among nature restoration scenarios. This interaction term was included to control for taste heterogeneity among individuals around each site attribute. Revelt and Train (1998) included the individuals' income and education levels in a study on households' choices of efficiency level for refrigerators to observe whether the taste heterogeneity found around the price of refrigerators (one of the characteristics that influence

households' choices among efficiency levels of refrigerators) was explained by these consumer characteristics. In the studies of De Valck et al. (2014) and Revelt and Train (1998), the inclusion of demographic characteristics as the potential sources of taste heterogeneity around alternatives' attributes was noted to be important for policy decision-making and improvement in the model fit.

Domestic tourists' city of origin can be one of the characteristics noted by Hensher and Greene (2003) that influences domestic tourists' trip to a destination to visit man-made attractions for leisure and recreation. As found by Alegre et al. (2013), residents from comparatively large municipalities (with more than fifty thousand people) tend to travel more for tourism purposes than residents from smaller municipalities (with less than fifty thousand people). Notwithstanding, residents from smaller cities could be more motivated than residents from large cities to travel to regions where the number of man-made attractions for leisure and recreation is comparatively large. Large cities generally offer several entertainment options for residents, including museums, theatres, quality restaurants, shopping malls, among other man-made attractions (Jason, 2015) as compared to smaller cities. The size of domestic tourists' cities of origin can be categorised following the Organization for Economic Cooperation and Development (OECD)'s classification of urban areas (OECD, 2014), the United Cities and Local Governments (UCLG)'s classification of cities (UCLG, n.d), or their own country-specific categories as done in Alegre et al. (2013) study.

Doubts have been noted on whether all domestic tourists from smaller cities are equally motivated to visit the regions with more man-made attractions for leisure and recreation. Based on Hensher and Greene (2003), differences in tastes between domestic tourists from different city categories can exist due to the individual characteristics of these tourists. Marital status is an individual's demographic characteristic that can potentially play a significant role in this issue. In studies on domestic tourism participation, the likelihood of travelling for holidays has been found to be higher in married domestic tourists than those divorced or separated (Eugenio-Martin and Campos-Soria, 2010b). However, when one of the trip motivations is the number of man-made attractions for leisure and recreation in the province to visit, it is likely that married domestic tourists from smaller cities are less concerned of this attraction category than other tourists within the marital status category. Bojanic (1992) found that married residents from the United States of America were less concerned of doing

activities of adventure, excitement and nightlife than single residents (in a bachelor stage) during their international trip.[54] The spirit of variety-seeking presented by Nicolau (2010) regarding man-made attractions for leisure and recreation is likely more pronounced in single and divorced domestic tourists than married domestic tourists. This is because single and divorced residents tend not to be worried about children in their travel plans (Bojanic, 1992).

Another important determinant of demand for a regional destination in the literature is the distance between domestic tourists' region of origin and their destination. The average domestic tourist tends to prefer nearby regions for tourism activities (Gálvez et al., 2014; Huybers, 2003; Marrocu and Paci, 2013; Monfort et al., 2010; Priego et al., 2014). The inflexion point (the distance at which their preferences for travelling far away changes) depends on the degree of complementarity between regions (Nelson, 2013). Nicolau and Mas (2006) found no consensus about the impact of distance on tourists' choices, although their review of the literature was primarily based on natural parks as a visitor attraction. Nicolau (2008) found that longer distance between domestic tourist's city of origin and destination do not necessarily reflect less satisfaction among all tourists sampled (significant heterogeneity between domestic tourists was found).

The relationship between domestic tourists' preferences for a region and the distance travelled from the home region to the destination region has followed the distance decay theory; that is, "the demand for any good or service should decline exponentially as distance increases" (McKercher et al., 2008, p. 208).[55] The association between the trip and distance travelled can reflect several spatial conditions in decision-making, of which the time constraint is one. Morley (1992) and Hsu et al. (2013) show tourists' utility as a direct function of trip length constrained by vacation time, *ceteris paribus*. Limited available time for holidays is likely to compel people to choose regional destinations where the allocated time for travel is minimal. As noted by Balestrino (2011) and Stabler et al. (2010), and according to the classical model of consumption, paid-work and leisure time presented by Becker (1965), people are encouraged to optimise their time between work and leisure activities.[56]

[54] Ryan and Glendon (1998) found that tourists from the UK categorised as "mental relaxers" (those whose primary motivation in a trip is relaxation) were more likely to be married tourists than single, while "friendly discoverers" and "noisy socializers" (categories that include tourists whose motivations in a trip are socialisation, learning, exploring and discovering) were significantly more likely to be single than married tourists.
[55] This theory has also been studied in international tourism demand (McKercher et al., 2008; Mckercher and Lew, 2003).
[56] More technical details on this model can be obtained in Nicholson and Snyder (2012).

Distance itself can also reflect budget constraints associated with displacement costs between residents' city of origin and destination. In some studies, distance has served as a proxy variable for transport cost (Bujosa and Rosselló, 2013; Priego et al., 2014). Diverse transport modes may exist for travel between two nodes. Transport modes can be classified as air, water, and land transport (UNWTO, 2010a). Although all of these transport modes could potentially be used in a domestic tourism trip, land transport has been observed as the most appealing for tourists, with cars being the most frequent (Rothengatter, 2010; cited by Aguiló, Palmer, and Rosselló, 2012). By choosing a car as the transport mode, tourists can begin their trip at any time, use that car at the destination, and have competitive travel costs compared with the cost of travelling by other transport modes (Moyano, Coronado, and Garmendia, 2016).

Finally, the spatial pattern of distance can mirror tourists' regionalist behaviour from a social distance perspective (Thyne and Zins, 2003). Based on Gray's (2004) concept of regionalism, residents tend to prefer nearby tourist destinations due to social reasons, including cultural compatibility with the region, devotion and pride in their own geographic regions, and the desire for fostering their communities. Residents' reasons for promoting their regional communities are close to the reasons given by Nyaupane and Timothy (2010) in international tourism demand, in which alliance between two or more neighbouring countries are promoted in order to increase trade and production between them.

Few studies have examined the potential interaction term of distance with other explanatory factors that affect domestic tourists' choices. The studies of Nicolau and Mas (2006) and Nicolau (2010) demonstrated that domestic tourists' motivations (subjective utility) and inertial behaviour, respectively, moderate the effects of distance on visitors' choices.[57] If man-made attractions for leisure and recreation influence domestic tourists' choices, but the distance effect counteracts this, a positive compensation effect is anticipated in the interaction effect. The reason is that the residents of a city are willing to travel to distance destinations for tourism activities, as they seek to visit each of the attractions (Nelson, 2013, p. 226).

[57] The study of Nicolau and Mas (2006) was based on dichotomous answers (yes/no) on whether certain characteristics motivate the individual's trip. For some of these motivations such as temperature, it is difficult to ascertain how many degrees Celsius/Fahrenheit lessen the effects of distance on domestic tourists' choices. This issue can be overtaken collecting temperature data from secondary sources.

Overall, this literature, linked to the analysis of the research questions, recognises the significant role of man-made attractions for leisure and recreation on the choices of domestic tourists. The literature has highlighted the likely existence of taste heterogeneity between domestic tourists around this visitor attraction category, hence the use of domestic tourists' demographic characteristics are vital for countries to understand their taste, regional attractions, and the importance of domestic tourists' motivations for travelling to distant destinations. The following sections present an overview of domestic tourist travel in Colombia and the origin-destination matrix that sets the scene for enhancing the empirical investigation of the role of man-made attractions for leisure and recreation.

4.3 Domestic Tourist Travel Between Provinces

According to the most current data on domestic tourism published by DANE, tourism for holidays, leisure and recreation is the single most important activity for domestic tourists in Colombia, accounting for 44.5 percent of total domestic tourism trips (DANE, 2013). The origin-destination matrix of domestic tourism trips for holidays, leisure and recreation in Table 4.1 shows several important detail features.

First, most domestic tourists from the 13 main cities of Colombia travel to nearby destinations. The green and dark brown coloured cells show that domestic tourists' likelihood of travelling within their own or contiguous provinces, respectively, is the highest as compared to the likelihood of travelling to non-contiguous provinces. Domestic tourists from Medellin, Cali, Cúcuta and Pasto have the largest probability of travelling within their own provinces; the concentration index of trips (as measured by the Herfindahl-Hirschman Index) from these cities is the highest (over 45 percent). These details show the important role of spatial and cultural distance for domestic tourists in Colombia.

Second, the provinces that received the largest number of domestic tourists are in the Andean (58 percent), Caribbean (23 percent) and Pacific (16 percent) regions. Within the Andean region (purple colour), the Paisa region (compounded by the provinces of Antioquia, Risaralda, Caldas, and Quindío) is the most visited region by domestic tourists. The Santandereano region is the next most visited region, which includes the provinces of Norte de Santander and Santander.

Table 4.1 Origin-Destination Matrix of Domestic Tourism Trips in Colombia

Domestic tourists' likelihood of travelling to a province of destination (in %)

Domestic tourists' city of residence		Cundinamarca (3)	Antioquia (1)	Valle del Cauca	Atlántico	Bolívar	Norte de Santander (2)	Tolima (4)	Santander (2)	Meta	Risaralda (1)	Caldas (1)	Nariño	Córdoba	Sucre	Magdalena	Bogotá (5)	Quindío (1)	San Andrés	Boyacá (3)	Cauca	Huila (4)	Cesar	La Guajira	Chocó	Putumayo	Casanare	Arauca	Amazonas	Concentration index (HHI) %	Trips from city residence (%)	Income per-capita (COP$) (million)
Mega	Bogotá	40	2	1	1	3	0	19	6	6	1	1		1	1	5	-	1	1	7		2								21	15.2	20.8
Metropolitan	Medellín	0	72	1	1	2		0	1		1	0		1	7	3	3	2	4	1	0		0	0	1	0				52	11.7	16.0
	Cali		4	65	0	3		0	0		0	0	1			2	2	7	4		9	1								45	8.6	12.3
	Barranquilla		4		12	23	1		4					1	5	39	2						9	1						23	6.5	14.1
	Cartagena		10		23	28				4	4			5	10	7	4		1					5						17	2.7	18.2
Intermediary	Cúcuta		2		2	1	65		14						0	4	6	0	3	1								0		45	7.3	9.7
	Ibagué	5	3	6	1	1		37	5	1	2	4			0	4	11	5	2	4		7	1							18	7.9	10.5
	Bucaramanga		2	1	4	3	8	0	52			0			0	14	5	1	2	4				1				0		31	7.2	21.9
	Villavicencio	6	4		3	15		6		24		2				3	23		7	1							4			15	3.2	15.2
	Pereira	2	13	20		7		2			17	9				1	2	14	6	1		1	3		2					13	4.9	11.7
	Manizales	1	8	8	0	3		3		1	12	45	0		1	1	4	8	3		1								0	24	12.0	11.2
	Pasto		2	11	0	0		1				1	71				5	1	1		3					2				53	7.2	9.3
	Montería	1	13	1	9	15								22	27	6	3	4						1						17	5.5	8.2
	Trips to province (% share)	6.87	12.72	9.17	2.79	5.71	5.51	6.71	6.44	2.03	2.76	6.64	5.25	1.63	3.25	6.41	4.32	3.55	2.42	1.86	1.06	1.03	0.86	0.37	0.23	0.17	0.13	0.07	0.03			

- Domestic tourists' likelihood of travelling to cities within their own province (green)
- Domestic tourists' likelihood of travelling to cities within provinces that are contiguous to their own province (orange)
- Domestic tourists' likelihood of travelling to cities within provinces that are not contiguous to their own province (yellow)

HHI = $\sum_s \sum_i^{28} P_i^2$ Mega: Megalopolis

Provinces of destination (sorted by the natural regions of Colombia)
- Amazon
- Caribbean (+San Andrés)
- Orinoquía
- Pacific
- Andean (1: Paisa, 2: Santandereano, 3: Cundiboyacense, 4: Opita, 5: Cachaco)

The Cundiboyacense region, which comprises the provinces of Cundinamarca and Boyacá, is the third most visited region.[58] Within the Caribbean region (blue colour), the provinces that received the largest numbers of domestic tourists are Magdalena (6.4 percent), Bolivar (5.7 percent) and Sucre (3.2 percent). The provinces that received the largest numbers of domestic tourists within the Pacific region (grey colour) are Valle del Cauca (9.1 percent) and Nariño (5.2 percent). The Amazon and Orinoquía regions receive a combined 2.4 percent of total domestic visitors.

Most domestic tourists travel from Bogotá (15.2 percent), followed by the metropolitan cities of Medellin (11.7 percent) and Cali (8.6 percent), and from the intermediary city of Manizales (12 percent). Based on the statistics from DANE, the income per capita of Bogotá, Medellin, Cali and Manizales in 2013 was COP$20.8 million (US$10,956), COP$16.0 million (US$8,455), COP$12.3 million (US$6,463), and COP$11.2 million (US$5,884), respectively. The average income per capita in the remaining group of cities in 2013 was COP$13.2 million (US$6,964).

4.4 Model, Data and Methodology

To examine the role of destination attributes on domestic tourists' choices, and the key related research hypotheses identified previously, the mixed logit model for micro-level data is employed in this chapter. This model has also been utilised in other domestic tourism demand studies, including Nicolau (2010), and Nicolau and Mas (2006).[59] The strengths of the random utility model are described in the next subsection, followed by data description and estimation methodology.

4.4.1 The Mixed Logit Model

The mixed logit model is a generalisation of Mc Fadden's (1973) conditional logit model, in which an individuals' expected utility is a function of the attributes of alternatives rather than

[58] These are some cultural groups within the Andean region of Colombia that show heterogeneity in terms of history, geographic isolation and access.
[59] The mixed logit model is also known as the random parameter logit, mixed multinomial logit, Kernel logit, hybrid logit, and error components logit (Hensher and Greene, 2003).

individuals' characteristics.[60] The mixed logit model for individual-level data has the capability of capturing individuals' taste heterogeneity around the attributes of each alternative included in the model (Train, 1998). McFadden's (1973) model is consistent with Lancaster's (1966, 1971) model of consumer behaviour (McFadden, 1980), as well as the mixed logit model; that is, consumers' utility is assumed to be a function of the goods' attributes (or characteristics) rather than a function of the goods themselves in both the conditional and the mixed logit models.[61] Following Train (1998, 2009), the random utility model applied in this chapter is as follows.

The utility that a domestic tourist n could obtain from visiting province i for holidays, leisure, and recreation tourism activities is $U_{ni} = v_{ni} + \varepsilon_{ni}$, where v_{ni} accounts for the observed proportion of domestic tourists' utility (observed utility) and ε_{ni} is the error term that is identically and independently Gumbel distributed. Domestic tourists' observed utility is $v_{ni} = \beta_n' \mathcal{X}_{ni}$, where $\mathcal{X}_{ni}$ is a vector of attributes in province i observed by each domestic tourist n, and β_n is a vector of coefficients to estimate. As opposed to the conditional logit model, each coefficient β_n captures the taste variation between domestic tourists. Thus, $\beta_n = b' \mathcal{X}_{ni} + \eta_n' \mathcal{X}_{ni}$; where b is domestic tourists' mean taste, and η_n is the unobserved individual deviation of taste from the mean. The choice probability model is as follows:

$$P_{ni} = \int \left(\frac{e^{v_{ni}}}{\sum_j e^{v_{nj}}} \right) \cdot f(\beta_n | b, \eta_n) \, d\beta_n \qquad (4.1)$$

Where: P_{ni} accounts for the probability that a domestic tourist n travels to province i (against the alternatives j). This probability equals the integrals of standard conditional logit probabilities evaluated at parameters β_n, which are weighted by the density of β_n. The parameter β_n is a function of the mean taste (b) and standard deviation from the mean population (η_n); these are the unknown parameters of the distribution.

The mixed logit model offers some important features directly relevant to the current research. Since $\eta_n' \mathcal{X}_{ni} + \varepsilon_{ni}$ are correlated over alternatives, the assumption of independence

[60] Consistent with Lancaster's (1966, 1971) model, the conditional and the mixed logit models assume that the attributes of each alternative are the same for all individuals, and are given in the same quantity (the utility function is objective).
[61] The mixed logit model for micro data studies was introduced by Train (1987) and Ben-Akiva et al. (1993) (see Train, 2009).

from irrelevant alternatives (IIA) - usually observed in the multinomial logit and nested logit models- no longer holds (Train, 1998). Thus, an increase in the probability of choosing one province should not be followed by a decrease in the choice of another province by the same proportion, as the odds between choosing each of two provinces may also depend on the attributes of other province(s). As the IIA property no longer holds, any pattern of substitution between alternatives (provinces) can be exhibited (Train, 2009), and the correlation between provincial attributes can be included.

There are several provincial attributes for leisure and recreation activities that can influence domestic tourists' observed utility (v_{ni}). The distance between the province of destination and the domestic tourists' city of origin (*DISTANCE*), and temperature (*TEMPERA*) are two of these attributes. Following Swarbrooke's (2002) typology of visitor attractions, nature-based attractions such as beaches (*BEACH*), man-made attractions originally built for reasons other than leisure and recreation such as war memorials (*MEMORIAL*), and man-made attractions for leisure and recreation are other destination attributes that attract domestic tourists.[62] The latter category includes theme parks, gondola lifts, museums, restaurants, and shopping malls.

Each of the man-made visitor attractions for leisure and recreation mentioned above can enter the model as a separate attribute that influences domestic tourists' choices in its own unique way. However, the conjecture that man-made attractions for leisure and recreation are clustered in domestic tourists' minds at the time of the decision need to be embraced. Alternatively, a latent variable that enable these attraction to vary jointly can be constructed. Following Fabrigar et al. (1999), factor analysis is used to create the latent variable that captures the correlation among man-made attractions for leisure and recreation in the destinations (hereafter referred to as *MANVO*). Thus factor analysis also takes into consideration in reducing the dimensionality of the data (Costello and Osborne, 2005).[63] Following Fabrigar et al. (1999), the number of man-made attractions for leisure and recreation to include in the latent variable will be check in Section 4.4.2, as well as the sufficiency of sample size for the latent variable estimation, and the level of commonality between the man-made attractions for leisure and recreation chosen for the latent variable.

[62] It would be desirable to include the price of a tourism composite product in the regional destination; however, the lack of data prevents its inclusion in this model.
[63] Factor Analysis has been used in tourism demand studies for data collected from a survey (Lise and Tol, 2002); not on data drawn from secondary sources, such as destination attributes.

The provincial attributes that influence domestic tourists' choices can be added to domestic tourists' observed utility function in Equation 4.1 as follows:

$$v_{ni} = \alpha + \beta_{1n} DISTANCE_{ni} + \beta_{2n} TEMPERA_{ni} + \beta_{3n} TEMPERA_{ni}^2 + \beta_{4n} BEACH_{ni} + \beta_{5n} MEMORIAL_{ni} + \beta_{6n} MANVO_{ni} \quad (4.2)$$

Where: $DISTANCE_{ni}$ is the distance in kilometres (km) to travel to province i from tourist n's city of residence. $TEMPERA_{ni}$ is average temperature in province i observed by resident n. Following Bujosa and Rosselló (2013), the average temperature is also squared to identify the turning point, $TEMPERA_{ni}^2$. As temperature cannot be administered, it is treated as a destination attribute and separate from visitor attractions (Swarbrooke, 2002). $BEACH_{ni}$ is the average number of beaches in province i (per square kilometre) observed by resident n. $MEMORIAL_{ni}$ is the average number of war memorials alluding to the independence war from Spain in province i (per square kilometre) observed by resident n. $MANVO_{ni}$ is the latent variable for the average number of man-made for leisure and recreation in province i (per square kilometre) observed by resident n. By expressing each visitor attraction in per square-kilometre units, the concentration of each attraction in the province visited is captured. The more concentrated an attraction is, the more specialized the province is in the provision of that attraction.

The estimated coefficients of Equation 4.2 (from β_{1n} to β_{6n}) will be used to analyse whether the choice of a provincial destination is more likely due to the presence of each destination attribute in that province. Particular attention will be paid to the estimated coefficient β_{6n} to examine whether domestic tourists' choices of a province are more likely if the average number of man-made attractions for leisure and recreation ($MANVO_{ni}$) per square kilometre is greater (this is the first hypothesis of this chapter).

The standard deviation from the mean of each estimated coefficient in Equation 4.2 will be employed to evaluate whether there are differences in tastes between domestic tourists around the mean coefficient of each destination attribute that need to be analysed. The standard deviation of β_{6n} is key to examine whether differences in tastes between domestic tourists around the mean coefficient of $MANVO_{ni}$ per square kilometre exist. If the standard deviation of β_{6n} is statistically significant, the sources of taste heterogeneity between domestic tourists

around this visitor attraction category can be identified. Hensher and Greene (2003, p. 172) point out that: "Adding in a set of covariates that interact with the mean of the estimate of a random parameter for any distribution that does not require some non-linear transformation is equivalent to interacting a covariate with the random parameter attribute and adding it in as a fixed parameter" (Hensher and Greene, 2003, p. 172). The interactive estimated equation takes the following form:

$$v_{ni} = \alpha + \beta_{1n} DISTANCE_{ni} + \beta_{2n} TEMPERA_{ni} + \beta_{3n} TEMPERA_{ni}^2 + \beta_{4n} BEACH_{ni} + \beta_{5n} MEMORIAL_{ni} + \beta_{6n} MANVO_{ni} + \sum_{l=1}^{10} \phi_l \, (MANVO_{ni} \cdot X_{ln}) \quad (4.3)$$

Accordingly, an interaction term between the mean coefficient of $MANVO_{ni}$ from Equation 4.2 and observed domestic tourists' characteristics (X_{ln}) are included in Equation 4.3. This interaction term identifies the characteristics of domestic tourists that significantly explain the differences in domestic tourists' choices of a province to visit man-made attractions for leisure and recreation. Interaction terms between individuals' characteristics and alternative attributes have been included in studies on recreational sites (De Valck et al., 2014) and households' choices of appliances (Revelt and Train, 1998) to control for taste heterogeneity between consumers.

Gender, lifecycle stages, marital status, education level, and tourists' city of residence (categorised by city size) are the individual characteristics used to control for taste variation between domestic tourists. Tourists' family size would be an important individual characteristic to include in studies on domestic tourists' choices if there were data availability; unfortunately, this is not the case in the current chapter. A control group in each category is taken into account. The estimated coefficients within the category of domestic tourists' city of residence (ϕ_9 and ϕ_{10}) are used to examine whether the size of domestic tourists' city of origin is one of the sources of taste variation that has an impact on the decision to visit a province with man-made attractions for leisure and recreation (the second hypothesis of this chapter). It has been argued that domestic tourists from comparatively large cities are more likely to travel to a destination for leisure activities than domestic tourists from comparatively small cities (Alegre et al., 2013). However, as noted in Section 4.2, domestic tourists from smaller cities could be potentially more willing to travel to a regional destination due to the

number of man-made attractions for leisure and recreation as compared to domestic tourists from very large cities.

If the above results confirm that domestic tourists from different city categories (based on population size) have diverse tastes when choosing a regional destination with man-made attractions for leisure and recreation, then further sources of taste heterogeneity between domestic tourists are captured in part in Equation 4.4. This is important to examine as, based on Hensher and Greene (2003), taste heterogeneity between domestic tourists from different city categories are likely to exist around the number of man-made attractions for leisure and recreation. The estimated coefficients $\gamma_{l,m}$ are analysed for that purpose. The categories that cluster domestic tourists' characteristics used in Equation 4.3 (X_{ln}) are employed again in Equation 4.4, and a control group in each category is taken into account.

$$v_{ni} = \alpha + \beta_{1n}DISTANCE_{ni} + \beta_{2n}TEMPERA_{ni} + \beta_{3n}TEMPERA_{ni}^2 + \beta_{4n}BEACH_{ni} + \beta_{5n}MEMORIAL_{ni} + \beta_{6n}MANVO_{ni} + \sum_{l=9}^{10} \phi_l \, (MANVO_{ni} \cdot X_{ln}) + \sum_{l=9}^{10} \sum_{m=1}^{8} \gamma_{l,m} \, (MANVO_{ni} \cdot X_{ln} \cdot X_{mn}) \quad (4.4)$$

One of the characteristics of domestic tourists that could potentially explain the differences in domestic tourists' preferences for a provincial destination due to the number of man-made attractions for leisure and recreation is the marital status. Based on Bojanic (1992) and Ryan and Glendon (1998), single and divorced domestic tourists are likely more motivated than married domestic tourists to travel to a destination that has a large number of man-made attractions for leisure and recreation.

Finally, to determine whether further man-made visitor attractions for leisure and recreation (per square kilometre) in a province of destination has an offsetting impact on distance travelled (third hypothesis of this chapter), an interaction term between $MANVO_{ni}$ and $DISTANCE_{ni}$ is added (see Equation 4.5). The result of β_7 is examined for that purpose.

$$v_{ni} = \alpha + \beta_{1n}DISTANCE_{ni} + \beta_{2n}TEMPERA_{ni} + \beta_{3n}TEMPERA_{ni}^2 + \beta_{4n}BEACH_{ni} + \beta_{5n}MEMORIAL_{ni} + \beta_{6n}MANVO_{ni} + \beta_7 \, (MANVO_{ni} \cdot DISTANCE_{ni}) \quad (4.5)$$

4.4.2 Data

Tourists' choices of provinces within Colombia for holidays, leisure and recreation (HLR) activities were collected from the EGIT survey. The survey was conducted by DANE using a probabilistic, multistage, and stratified sampling method in the main 13 cities of Colombia. The survey was undertaken between April 2012 and March 2013 (and was officially released in 2013). Data for 3,011 individuals comprise the final sample.[64] Based on calculation using statistics from the EGIT survey, domestic tourists' average length of stay in the destination for HLR activities is 3.21 nights, and their main transport mode to the destination is land transport (92 percent of domestic tourists travelled by car or bus).

In studies on domestic tourists' choices, provincial destinations or administrative units are usually included as domestic tourists' set of alternatives (Bujosa and Rosselló, 2013; Fuleky et al., 2014; Marrocu and Paci, 2013; Nicolau and Mas, 2006; Priego et al., 2014). This practice is necessary because of the potentially vast number of cities within a country; which becomes difficult to include as a complete set of options of domestic tourists and make econometric inference as a result. In this study, a total of 28 provinces (out of a possible 33 administrative units) are included as domestic tourists' set of alternatives.

As the EGIT survey shows both the tourists' province (i) and city (c) of destination, each destination attribute X in city c observed by resident n is weighted by the probability of travelling to that city within province i from tourists' city of origin s (P_{sc}). This operation helps in estimating the unknown parameters noted in Equations 4.2 to 4.5 more accurately, which are incorporated in Equation 4.6.[65] A total of 368 cities visited by Colombians for HLR tourism activities are included in Equation 4.6, where P_{sc} lies between 0 and 1, X_{ni} is interpreted as the (weighted) average number of attribute X in province i observed by resident n.

[64] In total, 76,620 Colombian residents were surveyed in the EGIT survey. The remaining number of 73,609 people surveyed includes those who did not travel within the time of the EGIT survey, who were less than ten years old, who travelled abroad, and who made a trip within Colombia for tourism purposes other than holidays, leisure and recreation.

[65] This operation is useful to capture the relative importance of attribute X within region i for a tourist from city s eliminating the effect of distance on domestic tourists' choices for city c. This is because the likelihood of travelling to a city within province i is correlated with the spatial distance.

The weighted average distance is estimated as follows:

$$X_{ni} = \sum_{s} \sum_{c=1}^{C} X_{nc} \cdot P_{sc}, \forall\, c \in i \tag{4.6}$$

Based on Equation 4.6, the attribute $DISTANCE_{ni}$ shows the (weighted) average distance between tourists' city of origin and province of destination. This practice differs from other studies, in which the capital city of the province visited is taken as the reference point for the distance from domestic tourists' city of origin (Nicolau, 2010, 2011; Nicolau and Mas, 2006). The attribute $TEMPERA_{ni}$ shows the (weighted) average temperature in the province of destination. The temperature variable is also squared to identify the turning point following the study by Bujosa and Rosselló (2013). The attributes $BEACH_{ni}$, $MEMORIAL_{ni}$, and $MANVO_{ni}$ show the (weighted) average number of available beaches (per square kilometre), the (weighted) average number of memorials alluding to the independence war from Spain (per square kilometre), and the (weighted) average number of man-made attractions for leisure and recreation (per square kilometre) in the province of destination.

$DISTANCE_{ni}$ is calculated employing data from the website http://co.lasdistancias.com; this is a distance calculator provided by distancescalculator.com that has been employed in regional studies (Alfonso, 2017; Ramírez-Jaramillo, Parra-Peña, Isidro, González, and Corredor, 2014; Santolaria, Cuartero, and Gracia, 2015). The Euclidean distance from domestic tourists' city of origin to the destination has been used as a proxy for distance by Marrocu and Paci (2013), Nicolau (2010), and Nicolau and Mas (2006). $TEMPERA_{ni}$ is calculated using statistics from Colombia's Institute of Hydrology, Meteorology and Environmental Studies (IDEAM), and cities' official websites. $BEACH_{ni}$ and $MEMORIAL_{ni}$ are collected using statistics from Colombia's official travel website www.colombia.travel.

The average number of theme parks, gondola lifts, museums, restaurants, and shopping malls (per square kilometre) in each of the provinces of Colombia is used to calculate the latent variable $MANVO_{ni}$. Data are drawn from the Colombian Yellow pages' website paginasamarillas.com (published by Publicar).[66] These categories of man-made attractions for

[66] There is no consolidated official statistics on the number of theme parks, gondola lifts, museums, restaurants, and shopping malls in each city of Colombia. Using Yellow pages' website paginasamarillas.com, the number of

leisure and recreation are chosen amongst a set of options after some correlation trials between regional attributes were carried out. The results of the final pairwise correlation show a high correlation between these five provincial attractions (the pairwise correlation exceeds 65 percent), but not between these five attractions and other destination attributes (see Table 4.2). This initial finding is fundamental before adopting factor analysis, as the aim of the technique is to identify latent variables that capture the correlation between measured variables (Fabrigar et al., 1999).

Table 4.2 Pairwise Correlation Between Provincial Attributes

	DISTANCE	*TEMPERA*	*BEACH*	*RESTAURANT*	*MALL*	*PARK*	*GONDOLA*	*MUSEUM*	*MEMORIAL*
DISTANCE	1.000								
TEMPERA	0.188	1.000							
BEACH	0.221	0.313	1.000						
RESTAURANT	0.033	0.073	0.229	**1.000**					
MALL	-0.129	-0.066	-0.015	**0.759**	**1.000**				
PARK	-0.142	-0.091	-0.050	**0.664**	**0.880**	**1.000**			
GONDOLA	-0.134	-0.161	-0.123	**0.456**	**0.724**	**0.817**	**1.000**		
MUSEUM	-0.042	-0.057	0.171	**0.859**	**0.794**	**0.771**	**0.672**	**1.000**	
MEMORIAL	0.048	-0.222	0.138	-0.039	-0.039	-0.088	-0.071	0.013	1.000

In the factor analysis, a number of factors needed for inclusion in a latent variable is undertaken, as well as the number of observations per factor. The number of categories of man-made attractions for leisure and recreation included in this chapter to calculate the latent variable $MANVO_{ni}$ is dependent upon the recommended range per common factor; that is, between three and five (Fabrigar et al., 1999). Based on Fabrigar et al. (1999), the number of observations used for each attraction (364 in total) is sufficient to obtain consistent estimates for the latent variable.

The positive correlation found between theme parks, gondola lifts, museums, restaurants, and shopping malls (per square kilometre) shows how these man-made attractions tend to grow jointly in the provinces of Colombia. The presence of a common factor for the group of man-made attractions is confirmed through the principal factor analysis. Table 4.3 shows that the total variance accounted by Factor1 (the latent variable $MANVO_{ni}$) is greater than 1 (the Eigenvalue is 3.78), and the difference between Factor1's Eigenvalue and Factor2's

companies that offer services of each man-made attraction for leisure and recreation included in this study can be identified by city.

Eigenvalue of 3.38 is high. Based on Hakstian and Rogers (1982), the substantial drop in the magnitude of the eigenvalue between Factor1 and Factor2 demonstrates the adequacy of including one common factor (Factor1) in this study.[67] Factor1 explains 93.2 percent of the total variance of the group of man-made attractions for leisure included in this study.

Table 4.3 Factors for the Latent Variable of Man-Made Attractions for Leisure

Factor	Eigenvalue	Difference	Proportion	Cumulative
Factor1	3.786	3.3816	0.9323	0.9323
Factor2	0.404	0.3650	0.0997	1.0320
Factor3	0.039	0.1066	0.0098	1.0418
Factor4	-0.066	0.0362	-0.0164	1.0254
Factor5	-0.103	.	-0.0254	1.0000

Method: principal factor
Likelihood Ratio test: independent vs. saturated: chi squared (10) = 4.5e+05 $Prob > Chi\ squared = 0.0$

The factor loadings that show the correlation between each man-made attraction for leisure and recreation (per square kilometre) and the latent variable $MANVO_{ni}$ are close to or higher than 80 percent in most cases (see Table 4.4). The variance that is unique to the attraction and not shared with other attractions (the uniqueness) is less than 20 percent in three of the attractions and between 30 to 40 percent in the other two attractions. Based on the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy (Kaiser, 1974), the use of the latent variable $MANVO_{ni}$ is almost meritorious, as the overall proportion of variance among man-made attractions for leisure and recreation explains 78.23 percent of the variance of $MANVO_{ni}$.[68] This is the evaluation given by Kaiser (1974) if the measure of sampling adequacy is 0.80.

[67] Based on Tryfos (1998), the five man-made attractions for leisure and recreation included in this study could be linearly related to m unobservable common factor of man-made attractions for leisure and recreation (from Factor1 to Factor5). This is: $Y_i = \beta_{i0} + \beta_{i1}F_1 + \cdots + \beta_{im}F_m + e_i$, where Y_i accounts for each man-made attractions for leisure and recreation ($i = 1,2,\ldots,5$), F_m is the number of m unobservable common factors (m is substantially less than i), β_{im} are the factor loadings, and β_{i0} are the intercept terms. The results from the eigenvalues of Table 4.3 confirm that only one unobservable common factor (Factor1) control the variation among these man-made attractions for leisure and recreation.

[68] The larger the factor loadings are, the greater the evidence that the measured variables accounts for the latent variable (Mueller, 1996).

Table 4.4 Factor Loadings and Sampling Adequacy

Variable	Factor1 ($MANVO_{ni}$)	Uniqueness	KMO
$MALL_{ni}$	0.9184	0.1565	0.8451
$PARK_{ni}$	0.9155	0.1619	0.8189
$MUSEUM_{ni}$	0.9043	0.1823	0.779
$RESTAURANT_{ni}$	0.8192	0.3289	0.699
$GONDOLA_{ni}$	0.7849	0.3839	0.7604
Overall			0.7823

Shopping malls have become an important part of the commercial sector in the cities of Colombia, because shopping malls provide an alternative public space for the joy of people (Grube-Cavers and Carvajal-Sánchez, 2014). As noted by Grube-Cavers and Carvajal-Sánchez (2014) for the case of Centro Mayor in Bogotá, people go there not only for shopping (47 percent), but also for leisure activities (23 percent), for socialising (9 percent), for eating (31 percent), and/or for other reasons (18 percent). Theme parks have also played a significant role in the promotion of tourism in Colombia since the 1960s (Rivera Rodríguez et al., 2011). Domestic tourists have around 400 options of theme parks to visit nationwide (El Universal, 2011). For instance, domestic tourists can visit Mundo Aventura, Maloka and Salitre Mágico in Bogotá; Parque Nacional de Chicamocha in Santander; Parque Nacional del Café in Quindío; Los Ocarros in Meta; amongst other theme parks located in alternative provinces.

The Colombian domestic tourists also have several options of museums to visit in each province, according to Colombia's Ministry of Culture (MINCULTURA) (MINCULTURA, 2017). Tourists can visit Museo de Antioquia and Museo Botero in Antioquia; Museo del Oro and Museo 20 de Julio in Bogotá; Casa el Virrey in Valle del Cauca; Museo Antonio Nariño in Boyacá; Museo Rafael Nuñez in Bolivar; Museo de la Gran Convención in Santander, amongst other museums located nationwide (MINCULTURA, 2017). The cities of Colombia also offer a gamut of restaurants with diverse food that show history behind the cities (García and Pardo, 2015). Therefore, the trip of domestic tourists is also motivated by the joy of food, which mirrors the culture and traditions of the region visited. Gondola lifts represent another option for domestic tourists in Colombia. For instance, tourists who visit Monserrate (an iconic mountain in Bogotá) use the aerial tram to observe the city of Bogotá, to thereafter eat

regional food, buy handcrafts, and visit the Lord of Monserrate in the summit of the mountain (Hamón, 2008).

Domestic tourists' characteristics are included in this study as the covariates that interact with the latent variable $MANVO_{ni}$. These characteristics are classified based on data collected from the EGIT survey. Domestic tourists' gender male and female is one of the demographic characteristics examined in this study. Domestic tourists are also classified into the following lifecycle stages: young tourists (between 10 and 30 years of age), adult tourists (between the ages of 31 and 59), and senior tourists (more than 60 years of age). Marital status is another characteristic analysed, and is separated into married tourists (including living common law), single tourists, divorced tourists (including separated tourists), and widowed tourists. The last education level reached by domestic tourists is divided into university graduated, school graduated, and school with no graduation (including no school).

Following the UCLG's classification of cities (UCLG, n.d), domestic tourists' cities of origin are classified as intermediary cities (cities with between 0.05 and 1 million inhabitants) and metropolitan cities (cities with more than 1 million inhabitants). The former group includes the cities of Cúcuta, Ibagué, Bucaramanga, Villavicencio, Pereira, Manizales, Pasto and Montería. The latter group includes the cities of Medellín, Cali, Barranquilla and Cartagena. Bogotá is classified in this study as a megalopolis and not as a metropolitan city. This is due to the significant size of Bogotá in 2013 (7.7 million people, according to statistics from DANE), which is three times the population size of Medellín in the same year, the second largest city of Colombia. As noted by Lang and Knox, "…a key element of the new metropolis is its vast scale, which facilitates the emergence of a trans-metropolitan urban structure –the megapolitan region" (Lang and Knox, 2009, p. 789). There is no classification of small cities in this study, as the thirteen-city sample covered in the EGIT survey does not include small cities.

Table 4.5 shows the sensitivity of domestic tourists' preferences to the temperature of the city of destination. Almost 83.4 percent of the tourists who travel from the cities with an average temperature between 12 and 16 degrees Celsius (the case of Bogotá and Pasto) prefer provinces with cities of warmer temperatures. The percentage preferring a warmer climate reduces to 34.6 percent for tourists who travel from cities with a 19-to-23 degrees Celsius temperature range. That includes tourists from Medellín, Manizales, Pereira, and

Bucaramanga. Also, 78.9 percent of tourists, who travel from cities with a temperature between 25 and 28 degrees Celsius prefer to visit regions with cities with similar temperatures. This last group of tourists are from Barranquilla, Cartagena, Montería, Villavicencio, Cúcuta, Ibagué, and Cali.

Table 4.5 Domestic Tourists' Preferences for Colder, Similar, and Warmer Cities

City of Origin	Temperature in city of destination			Average Temperature in city of origin (degrees Celsius)
	Warmer	Similar	Colder	
Bogotá, Pasto	83.43%	15.92%	0.65%	12-16
Medellín, Manizales, Pereira, Bucaramanga	34.65%	51.82%	13.53%	18-23
Barranquilla, Cartagena, Montería, Villavicencio, Cúcuta, Ibagué, Cali	0.69%	78.90%	20.38%	25-28

To define whether a city of destination is Colder, Similar or Warmer than domestic tourist's city of origin, 4 degrees Celsius were added to or subtracted from the temperature recorded in domestic tourists' city of origin. This value was obtained from the standard deviation of the temperature recorded in domestic tourists' city of destination.

Table 4.6 shows the statistics on the characteristics of domestic tourists in Colombia. Most domestic tourists who travel for holidays, leisure and recreation activities are female (55 percent). The majority are young tourists - who are between 10 and 30 years of age (48 percent) and adults - who are between 31 and 59 years of age (41 percent). Almost 10 percent of domestic tourists are over 60 years of age. In terms of marital status, 46 percent of domestic tourists are single, 27 percent are divorced, 21 percent are married, and almost 4 percent are widowed. Regarding the education level, 53 percent of domestic tourists have completed university studies, 22 percent have completed secondary school, and the remaining 25 percent have not completed secondary school, or do not have years of schooling. Also, 55 and 29 percent of domestic tourists are from intermediary and metropolitan cities, respectively.

Table 4.6 Summary Statistics on the Characteristics of Domestic Tourists

Characteristics	Obs.	Percentage[1]	Characteristics	Obs.	Percentage[1]
Male	1355	45.00%	Married	659	21.88%
Female	1656	55.00%	Single	1394	46.30%
Young	1452	48.22%	Divorced	841	27.93%
Adults	1259	41.81%	Widowed	117	3.90%
Seniors	300	9.96%	Intermediary city	1664	55.26%
School-graduated	647	21.58%	Metropolitan city	888	29.49%
University-graduated	1603	53.23%	Bogotá	459	15.24%
No School/School	761	25.27			

[1] Percentage share of domestic tourists with this characteristic

A summary of statistics on destination attributes is presented in Table 4.7. Appendix 4A shows the definition of each variable. The statistics show that the average distance between domestic tourists' the city of origin and destination is 167 kilometres. The average temperature of the cities visited is 24 degrees Celsius. There is an average of 0.6 theme parks, 2.29 shopping malls, 0.5 museums, 21 restaurants, and 0.01 gondola lifts in the cities visited. The average number of man-made attractions for leisure and recreation in the cities visited by domestic tourists is 24.6, which is equivalent to 0.07 attractions per square kilometre. There are small destination cities without man-made attractions for leisure and recreation, while Bogotá has more than two thousand man-made attractions for leisure and recreation. There is an average number of 0.12 beaches available for leisure and recreation in the cities visited, and 0.008 war memorials alluding to the independence war from Spain.

Table 4.7 Summary Statistics on Destination Attributes

Attributes	Mean	Std. Dev.	Minimum	Maximum
DISTANCE (km)	167	167	6.4	1,204
TEMPERA	24.18	4.75	11.6	33
PARK	0.656	4.06	0	57
MALL	2.29	17.49	0	129
MUSEUM	0.50	3.11	0	42
RESTAURANT	21.13	140.08	0	1,900
GONDOLA	0.016	0.164	0	2
MANVO	24.6	163.11	0	2,289
MANVO/km^2	0.07	0.46	0	6.02
BEACH	0.125	0.83	0	12
MEMORIAL	0.008	0.116	0	2

Note: the mean value of each attribute shows the average value calculated for 368 cities visited by domestic tourists.

4.4.3 Estimation Method

Monte Carlo simulation methods are a common practice to estimate mixed logit models. This is because the integral of logit probabilities over a density of parameters β_n does not have a closed form integration (Train, 2009). Therefore, the log-likelihood function for the unknown parameters of the distribution (that is: $\theta_{ML}(b, \eta_n) = \sum_{i=1}^{N} \ln P_{ni}$) cannot be maximized. The maximum simulated likelihood estimator for the unknown parameters ($\tilde{\theta}_{MSL}$) is applied:

$$\tilde{\theta}_{MSL} = \arg max \sum_{i=1}^{N} \ln \left[(1/R) \cdot \sum_{r=1,..R} L_{ni}(\beta_n) \right] \quad (4.7)$$

R is the number of draws of β_n. Although more draws are expected to yield better estimates (Newey and McFadden, 1994), the number of Halton sequences of draws to secure stable parameters may vary (Hensher and Greene, 2003). Hensher and Reyes (2000) have shown that a small number of draws (between 25 and 100) can provide indistinguishable estimates of parameters. Train (2000) showed that 100 draws is more efficient (lower estimation variance in the parameters is observed) than 1000 draws. All parameters estimated through the mixed logit model are initially treated as random, and the significance level of the standard deviation of each coefficient is taken as the statistical test for domestic tourists' taste heterogeneity.[69] This statistical test is useful for testing random coefficients, although it is time-consuming for a large number of explanatory variables (Hensher and Greene, 2003). Milton, Shankar, and Mannering (2008), and Moore, Schneider IV, Savolainen, and Farzaneh (2011) have used this statistical test in social studies. The common factor of man-made attractions for leisure and recreation helps in reducing the time used for parameter estimations. As domestic tourists tend to search for diverse attributes in the destination, correlation between random coefficients is allowed.

The expected negative coefficient of distance is taken as log-normally distributed following studies on recreation demand (see Hynes, Hanley, and Scarpa, 2008; Train, 1998). A preliminary analysis of statistics used in this chapter shows that the mean likelihood of travelling to a province decreases exponentially as the mean distance to get there from

[69] There is another method to determine whether the use of a mixing distribution is needed. This is the Lagrange multiplier test proposed by McFadden and Train (2000) for the null hypothesis of no random effects around the mean of each coefficient, against the alternative hypothesis on the presence of random effects.

domestic tourists' city of origin increases. This is consistent with the distance decay theory in that "the demand for any good or service should decline exponentially as distance increases" (McKercher et al., 2008, p. 208). For the interaction term between man-made attractions for leisure and recreation ($MANVO_{ni}$) and distance ($DISTANCE_{ni}$), we follow Nicolau and Mas (2006) and take the coefficient of distance as normally distributed. The remaining set of coefficients will follow a normal distribution.

4.5 Results

The estimates of the mixed logit model that includes the domestic tourists' observed utility of Equations 4.2 to 4.5 are reported in Table 4.8. Analyses of these estimations are presented in two analytical parts. The first part of analysis shows the results of Equation 4.2 (column (i)), which helps to analyse the mean effect of each attribute on domestic tourists' choices, and the unobserved individual deviation of taste (standard deviation) from the mean. Of interest is the mean coefficient of $MANVO_{ni}$ (the latent variable of man-made attractions for leisure and recreation) and its standard deviation. The coefficient of $MANVO_{ni}$ is used to examine whether domestic tourists' likelihood of choosing a province increases if the average number of man-made attractions for leisure and recreation (per square kilometre) rises. The standard deviation of $MANVO_{ni}$ is employed to evaluate whether there are statistically significant differences in tastes between domestic tourists around the mean coefficient of man-made attractions for leisure and recreation. The second part of analysis shows the results of Equations 4.3 and 4.4 (columns (ii) and (iii)), which helps to identify possible sources of taste heterogeneity between domestic tourists around the mean coefficient of $MANVO_{ni}$. This second part also shows the results of Equation 4.5 (column (iv)) in order to analyse the hypothesised moderating role of man-made attractions for leisure and recreation on the effect of distance on domestic tourists' choices.

Based on the mean coefficient of distance ($DISTANCE_{ni}$) (column (i)), there is statistical evidence to suggest that the average domestic tourist in Colombia prefers closer destinations to those that are further away. This result confirms the negative effect of distance on domestic tourists' choices in Colombia, a result found by Nicolau and Mas (2006), Nicolau (2010), and Monfort et al. (2010) for domestic tourism in the case of Spain; by Huybers (2003) for domestic tourism in Australia; and Marrocu and Paci (2013) for domestic tourism in Italy. This outcome cannot be generalised for all domestic tourists, however, as their individual

standard deviation from the mean of distance is statistically significant. Some Colombian domestic tourists tend to prefer closer destinations to those that are further away, and vice versa. As noted by Baxter (1979) in recreational demand, longer distances are sometimes preferred by people as the trip to a distance destination can give satisfaction by itself.

Table 4.8 Domestic Tourists' Destination Choices in Colombia

Dependent variable: domestic tourists' likelihood of travelling to province i (P_{ni})

			Interaction terms of $MANVO_{ni}$					
	Baseline Eq. (4.2)		Covariates Eq. (4.3)		Covariates Eq. (4.4)		$DISTANCE$ Eq. (4.5)	
Independent variables:	Coef.	Std. error	Coef.	Std. error	Coef.	Std. error	Coef.	Std. error
	(i)		(ii)		(iii)		(iv)	
Mean								
$DISTANCE_{ni}$	-4.403***	0.045	-4.445***	0.046	-4.430***	0.046	-0.013***	0.000
$TEMPERA_{ni}$	0.615***	0.125	0.508***	0.144	0.436***	0.113	0.443***	0.110
$TEMPERA_{ni}^2$	-0.012***	0.002	-0.010***	0.003	-0.009***	0.002	-0.009***	0.002
$BEACH_{ni}$	0.224***	0.022	0.225***	0.022	0.223***	0.022	0.171***	0.019
$MEMORIAL_{ni}$	0.171	0.359	0.071	0.349	-0.139	0.396	0.175	0.320
$MANVO_{ni}$	0.193***	0.038	-0.086	0.120	0.023	0.074	-0.206	0.182
Standard Deviation								
$DISTANCE_{ni}$	1.456***	0.061	1.748***	0.072	1.441***	0.061	0.009***	0.000
$TEMPERA_{ni}$	0.806***	0.100	0.894***	0.133	0.900***	0.121	0.873***	0.110
$TEMPERA_{ni}^2$	0.014***	0.002	0.015***	0.002	0.015***	0.002	0.016***	0.002
$BEACH_{ni}$	0.101***	0.034	0.103***	0.031	0.08***	0.042	0.184***	0.027
$MEMORIAL_{ni}$	2.496***	0.513	2.334***	0.462	2.780***	0.524	1.787***	0.423
$MANVO_{ni}$	0.227***	0.042	0.151***	0.038	0.216***	0.045	0.137***	0.049
$Male$			-0.0024	0.037				
$Young$			0.0535	0.090				
$Adults$			0.0534	0.082				
$Married$			-0.0165	0.112				
$Single$			0.0357	0.115				
$Divorced$			0.0139	0.108				
$School-graduated$			0.0755	0.055				
$University-graduated$			0.0408	0.047				
$Metropolitan$			0.264***	0.072				
$Intermediary$			0.183***	0.066				
$Metropolitan \cdot Male$					0.044	0.067		
$Metropolitan \cdot Adults$					0.063	0.072		
$Metropolitan \cdot Married$					-0.195**	0.092		
$Metropolitan \cdot School-graduated$					0.024	0.068		
$Intermediary \cdot Male$					-0.011	0.047		
$Intermediary \cdot Adults$					0.005	0.049		
$Intermediary \cdot Married$					0.055	0.058		
$Intermediary \cdot School-graduated$					-0.003	0.048		
$Metropolitan$					0.226**	0.093		
$Intermediary$					0.168**	0.075		
$MANVO_{ni} \cdot DISTANCE_{ni}$							0.095***	0.0364
$MSL(\tilde{\theta})$	-6002		-6005		-6003		-6040	

The number of Halton draws used for the simulation ranges between 25 and 100.
***, **, and * indicate whether the coefficient is significant at the 1%, 5%, and 10%, respectively.
The coefficient of $DISTANCE_{ni}$ is log-normally distributed in Equation 4.2 to 4.4; it is normally distributed in Equation 4.5.

Following McFadden and Train (2000), the likelihood ratio test (LR test) is applied to know the adequacy of using the mixed Logit model as compared to the standard conditional Logit model (not reported here). At the 1 percent level of significance, the null hypothesis that the standard conditional Logit model is nested in the mixed Logit model is rejected (see Appendix 4B). Therefore, the inclusion of random parameters in the Logit model substantially improves the model fit as compared to the standard (fixed-coefficient) Logit model.

The mean coefficient of the temperature variable ($TEMPERA_{ni}$) in column (i) is positive and statistically significant, which suggests that the average Colombian tourist prefers warmer temperatures to cooler ones. A statistically significant turning point is found at 23.7 degrees Celsius,[70] which indicates that for provinces with an average temperature above this, tourists are less willing to travel there. This result is consistent with the findings of Bujosa and Rosselló (2013) for domestic tourism for Spain. In light of the results in column (i), the temperature of the destination is an important attributes for Colombians when choosing a regional destination (its mean coefficient is the highest among all destination attributes' mean coefficients). Differences in tastes between domestic tourists in Colombia around the mean coefficient of temperature were found, however (the standard deviation of the coefficient of $TEMPERA_{ni}$ in column (i) is statistically significant). This indicates that warm temperature in the tourist destination is important for a group of residents in those cities, while for another group, it is not the case.

Domestic tourists' likelihood of choosing a province increases if the number of beaches per square kilometre there ($BEACH_{ni}$) is greater than the number of beaches per square kilometre in other provinces (column (i)). The number of beaches (per square kilometre) in the province of destination available for leisure activities is an important nature-based visitor attraction for the average domestic tourist in Colombia. However, taste heterogeneity between domestic tourists around this destination attribute is also present (the standard deviation of $BEACH_{ni}$ in column (i) is statistically significant at the 1 percent level). The positive relationship between domestic tourists' preferences for a province and the number of beaches in that destination has been found in Bujosa and Rosselló (2013) and De-la-Mata and Llano-Verduras (2012) for the Spanish case, and Marrocu and Paci (2013) for Italy. However, De-la-Mata and Llano-

[70] $TEMPERA_i = 0.61562/(2 * 0.01298) = 23.71$ degrees Celsius.

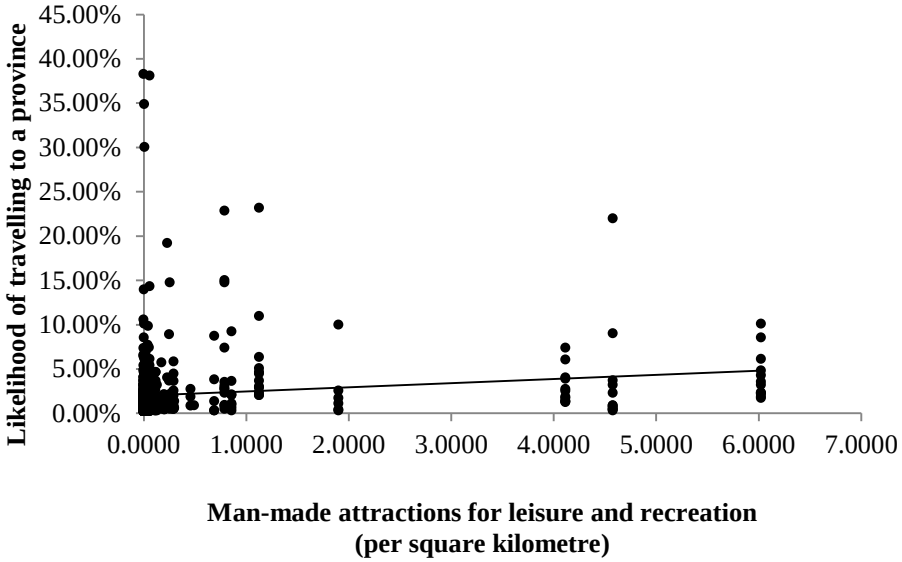
Verduras (2012) found changes in domestic tourists' preferences for non-coastal destinations in Spain after a 7-year period.

The mean coefficient of war memorials ($MEMORIAL_{ni}$) is positive, although is not statistically significant at the 1 percent level (column (i)). The standard deviation of the coefficient of the same attribute is, however, significant and large. The conjoint result between the mean and standard deviation of the coefficient of $MEMORIAL_{ni}$ implies that the average number of memorials commemorating the independence war from Spain in the destination provinces influence the choices of domestic tourists. Some residents opt for provinces with war memorials while other residents do not. The mean is not significantly different from zero because domestic tourists' taste differences regarding war memorials tend to balance out in the population. As found by Priego et al. (2014) and Patuelli et al. (2013) for the Spanish and Italian case, respectively, domestic tourists' trip to a province was influenced by the presence of World Heritage Sites (WHS). However, the presence of WHS in the region of origin of domestic tourists tend to discourage their trip to other provincial destinations in Italy (Patuelli et al., 2013).

The mean coefficient of man-made attractions for leisure and recreation (per square kilometre) ($MANVO_{ni}$) is statistically significant at the 1 percent level (column (i)). The estimated coefficient suggests that the average domestic tourist in Colombia prefers provinces with more man-made attractions for leisure and recreation (per square kilometre). This result is consistent with the studies that have examined the impact of man-made tourist attractions for the case of Italy (Marrocu and Paci, 2013), in which the number of quality museums (measured by the number of visits to each museum) and restaurants (restaurants with at least one Michelin star) were important factors for attracting domestic tourists. Our result is also consistent with Hearne and Salinas (2002) who showed that the aerial tram service to visit Poás Volcano in Costa Rica attracts domestic tourists. Based on the factor loadings obtained for the latent variable $MANVO_{ni}$ shown in Table 4.4, shopping malls ($MALL_{ni}$) are the most important man-made attraction for leisure and recreation (per square kilometre) for domestic tourists in Colombia, followed by theme parks ($PARK_{ni}$), museums ($MUSEUM_{ni}$), restaurants ($RESTAURANT_{ni}$), and gondola lifts ($GONDOLA_i$). Factor loadings are standardized regression coefficients (see Doll, Xia, and Torkzadeh, 1994); therefore, they can be used to identify the preferences of domestic tourists within the common factor $MANVO_{ni}$.

Taking into consideration the taste heterogeneity in Table 4.8, column (i), the representative domestic tourist in Colombia was found to prefer provinces with more man-made visitor attractions for leisure and recreation (per square kilometre), although the outcome cannot be generalised for all domestic tourists. The standard deviation of the coefficient of $MANVO_i$ is statistically significant at the 1 percent level (column (i)). Therefore, the differences in tastes between domestic tourists around the average number of man-made attractions for leisure and recreation (per square kilometre) exist. Figure 4.1 shows high dispersion around the mean likelihood of choosing a province in Colombia when the average number of man-made attractions for leisure and recreation (per square kilometre) increases.

Figure 4.1 Domestic Tourists' Taste Heterogeneity Around the Mean Coefficient of Man-Made Attractions for Leisure and Recreation per Square Kilometre



The second part of our estimated results analyses the potential sources of taste heterogeneity between domestic tourists around the average number of man-made attractions for leisure and recreation (per square kilometre) (columns (ii) and (iii)). Column (ii) shows insufficient statistical evidence to suggest that the mean effect of man-made attractions for leisure and recreation (per square kilometre) in a province on the choices of domestic tourists differs between male and female tourists (the coefficient of *Male* of -0.002 is not statistically significant at the 10 percent level). Similarly, there is insufficient evidence to infer that domestic tourists' choices of a provincial destination due to the number of man-made attractions for leisure and recreation differs between young and adult visitors as compared to senior tourists (the coefficients of *Young* and *Adults* of 0.053 each are not statistically

significant at the 10 percent level). Also, there is not enough statistical evidence to suggest that the choice of a province due to the number of man-made attractions for leisure and recreation varies between married, single and divorced tourists as compared to widowed tourists (the coefficients of *Married*, *Single*, and *Divorced* of -0.016, 0.035 and 0.013, respectively, are not statistically significant at the 10 percent level). The choices of trip made by school-graduated and university-graduated tourists (motivated by the number of man-made attractions for leisure and recreation in the destination) are not statistically different from the choices made by tourists with no school and non-completed secondary school. The coefficients for *School-graduated* and *University-graduated* of 0.075 and 0.040, respectively, were not statistically significant at the 10 percent level. These results on the possible sources of taste variation do not mean there is no taste heterogeneity between domestic tourists in Colombia around the number of man-made attractions for leisure and recreation; the results imply the failure to reveal it.

The coefficients for *Metropolitan* and *Intermediary* in column (ii) of 0.264 and 0.183, respectively, are statistically significant at the 1 percent level. Therefore, there is high level of evidence to infer that the mean effect of man-made attractions for leisure and recreation (per square kilometre) on the likelihood of travelling to a province differs between domestic tourists from metropolitan and intermediary cities compared to tourists from a megalopolis such as Bogotá. Domestic tourists from metropolitan and intermediary cities are more motivated than tourists from Bogotá to visit provinces where more man-made attractions for leisure and recreation (per square kilometre) exist. That is expected, as very large cities like Bogotá have sufficient man-made attractions for leisure and recreation compared to smaller cities. Based on information from the Yellow pages of Colombia, the number of man-made attractions for leisure and recreation in Bogota is 1.74 and 11.2 times the average number recorded in metropolitan and intermediary cities, respectively.

The above estimated results can be linked to descriptive analyses on domestic tourists' choices of a destination due to the number of man-made attractions for leisure and recreation by city of origin (see Table 4.9 below). On average, 53.5 percent of domestic tourists prefer cities whose number of man-made attractions for leisure and recreation (per square kilometre) is above the average number of man-made attractions for leisure and recreation (per square kilometre) of the region visited. Significant exceptions are domestic tourists from Manizales, Pasto, Pereira, and Cali. The average likelihoods estimated for domestic tourists from

intermediary and metropolitan cities (52.5 and 56 percent, respectively) are higher than the likelihood estimated for domestic tourists from Bogotá (51.9 percent). Of domestic tourists from metropolitan and intermediary cities, the representative metropolitan tourists are the most motivated to visit provinces with more man-made attractions for leisure and recreation (per square kilometre). Ultimately, 56 percent of domestic tourists from metropolitan cities prefer cities where the number of man-made attractions (per square kilometre) is above the average number of man-made attractions (per square kilometre) of the regional destination.

Table 4.9 Domestic Tourists' Preferences for Cities with More Man-Made Attractions for Leisure and Recreation

	Preferences for man-made attractions for leisure and recreation in the city of destination (%)	
City category	Above provincial average[1]	Below provincial average[2]
Intermediary		
Manizales	44.7	55.3
Montería	59.3	40.7
Villavicencio	72.6	27.4
Pasto	29.5	70.5
Cúcuta	72.4	27.6
Pereira	37.6	62.4
Bucaramanga	49.8	50.2
Ibagué	54.2	45.8
Average Intermediary	52.5	47.5
Metropolitan		
Medellín	61.5	38.5
Barranquilla	73.6	26.4
Cartagena	53.7	46.3
Cali	35.3	64.7
Average Metropolitan	56.0	44.0
Megalopolis		
Bogotá	51.9	48.1
Total average	53.5	46.5

1. $MANVO_c > \overline{MANVO_i}$
2. $MANVO_c < \overline{MANVO_i}$
$\overline{MANVO_i}$ is the average number of man-made attractions for leisure and recreation in the provincial destination

Further sources of taste heterogeneity between domestic tourists from metropolitan and intermediary cities are explored in column (iii) (Table 4.8). The estimated result for *Metropolitan·Married* coefficient is negative (-0.195) and significant at the 5 percent level,

suggesting that married domestic tourists from metropolitan cities are less concerned about the number of man-made attractions for leisure and recreation (per square kilometre) in the destination compared to single, divorced and widowed domestic tourists from the same city category (the control group). This result implies that single, divorce and widowed people from metropolitan cities are more MANVO-driven in their regional visitation compared to married people from the same city category. Based on Nicolau (2010), the desire of seeking variety in man-made attractions for leisure and recreation tends to be higher for the former group of domestic tourists than for the latter.

Other estimated results in column (iii) show insufficient statistical evidence of further sources of taste heterogeneity between domestic tourists from metropolitan and intermediary cities around the mean coefficient of man-made attractions for leisure and recreation. The estimated coefficient of *Metropolitan·Male* of 0.044 shows no statistical differences between the trip choices made by male domestic tourists from metropolitan cities compared to the trip choices made by female domestic tourists from the same city category. Also, the estimated coefficient of *Metropolitan·Adults* of 0.063 shows no statistical differences between the choices made by adult tourists from metropolitan cities compared to the choices made by young and senior tourists from the same city classification. Similarly, there is insufficient evidence to infer that the choices made by school-graduated tourists from metropolitan cities differ from the choices made by tourists from the same city category with university degree, with no school, and with non-completed secondary school (the estimated coefficients of *Metropolitan·School-graduated* of 0.024 is not statistically significant at the 10 percent level).

The estimated coefficient of *Intermediary·Male* of -0.011 in column (iii) shows no statistical differences between the trip choices made by male domestic tourists from intermediary cities compared to the trip choices made by female domestic tourists from the same city classification. Similarly, the estimated coefficient of *Intermediary·Adults* of 0.005 shows no statistical differences between the choices made by adults from intermediary cities compared to the choices made by young and senior residents from the same city category. Also, the estimated coefficient of *Intermediary·Married* of 0.055 shows no statistical differences between the choices made by married tourists from intermediary cities compared to the choices made by single, divorced and widowed tourists from the same city group. Finally, there is insufficient evidence to infer that the choices made by school-graduated tourists from intermediary cities differ from the choices made by tourists from the same city category with

university degree, with no school, and with non-completed secondary school (the estimated coefficients of *Intermediary·School-graduated* of -0.003 is not statistically significant at the 10 percent level).

Finally, the coefficient for $MANVO_{ni} \cdot DISTANCE_{ni}$ in column (iv) of 0.095 is statistically significant at the 1 percent level. Therefore, there is enough evidence to infer that an increase in the average number of man-made visitor attractions for leisure and recreation (per square kilometre) in a province lessens the mean effect of distance on domestic tourists' preferences.[71] This outcome supports the hypothesis of man-made attractions for leisure and recreation having a moderating role on distance for domestic tourists' choices of a destination province in Colombia. This result implies that the construction of attractions and facilities for leisure and recreation can be an important strategy to attract more domestic tourists to distant cities (usually poor regions in Colombia), and therefore, increase tourism consumption, employment, and economic growth in those distant destinations. This is an important step toward the reduction in monetary poverty levels from sectoral economic growth strategies. Also, the result complements those studies that have identified motivations that moderate the role of distance on the choices of domestic tourists, including the climate and tranquillity, the desire of broadening culture and discovering new places, and the desire of visiting friends and relatives (Nicolau and Mas, 2006).

Table 4.10 below extends this analysis to the city level, and shows domestic tourists' likelihood of travelling to a city whose number of man-made attractions for leisure and recreation (per square kilometre) is above or below the average number of man-made attractions for leisure and recreation (per square kilometre) of the province visited. In Table 4.10, the visited city can be located in domestic tourists' own province; or in a province that is contiguous or non-contiguous to domestic tourists' own province. Within domestic tourists' own provinces, the average domestic tourist prefers cities whose number of man-made attractions for leisure and recreation (per square kilometre) is below the average number of man-made attractions for leisure and recreation (per square kilometre) of the province.

[71] The estimated coefficient should be turned into marginal effects, as the magnitude of the coefficient is not directly interpretable. There is a way to calculate the marginal effects for the mixed logit model through simulations; however, "the drawback of this approach is that it does not give you standard errors. In principle you could use the bootstrap but since mixed logit models typically take long to estimate, this is usually not practical" (Risa, 2007, 2012).

Table 4.10 Domestic Tourists' Preferences for Cities with More Man-Made Attractions for Leisure and Recreation by Provincial Categories

	Man-made attractions for leisure and recreation in the city of destination					
City category	Own province		Contiguous province		Non-contiguous province	
	Above Average[1]	Below Average[2]	Above average[1]	Below Average[2]	Above average[1]	Below Average[2]
Intermediary						
Manizales	3.3%	41.7%	17.8%	5.6%	23.6%	8.1%
Montería	3.0%	19.2%	39.5%	15.0%	16.8%	6.6%
Villavicencio	10.5%	13.7%	27.4%	2.1%	34.7%	11.6%
Pasto	6.0%	65.4%	1.8%	2.8%	21.7%	2.3%
Cúcuta	47.1%	18.1%	10.4%	5.0%	14.9%	4.5%
Pereira	1.3%	15.4%	18.8%	41.6%	17.4%	5.4%
Bucaramanga	25.8%	26.3%	9.7%	7.4%	14.3%	16.6%
Ibagué	15.1%	22.3%	17.2%	10.5%	21.8%	13.0%
Average Intermediary	14.0%	27.8%	17.8%	11.2%	20.7%	8.5%
Metropolitan						
Medellín	42.5%	29.1%	3.4%	1.4%	15.7%	8.0%
Barranquilla	3.0%	8.6%	60.9%	1.5%	9.6%	16.2%
Cartagena	8.5%	19.5%	31.7%	18.3%	13.4%	8.5%
Cali	11.2%	53.9%	9.3%	7.0%	14.7%	3.9%
Average Metropolitan	16.3%	27.8%	26.3%	7.1%	13.4%	9.2%
Megalopolis						
Bogotá	11.8%	27.9%	21.8%	11.1%	18.3%	9.2%
Total average	14.0%	27.8%	22.0%	9.8%	17.4%	8.9%

1. $MANVO_c > \overline{MANVO_i}$
2. $MANVO_c < \overline{MANVO_i}$

The results in Table 4.10 show that the average domestic tourist is not generally MANVO-driven when he/she travels within his/her own province (the exception is the tourist from Medellín and Cúcuta). When the average domestic tourist travels to a province that is contiguous to his/her own province (an action that increases distance), their preferences are for cities where the number of man-made attractions for leisure and recreation (per square kilometre) is above the regional average (the likelihood is 22 percent). This pattern remains when the average domestic tourist travels to a province that is non-contiguous to his/her own province, although the domestic tourists' preferences for such cities are lower than their preferences for cities located in contiguous provinces (the likelihood is 17.4 percent).

4.6 Conclusion

This chapter analyses the role played by the attributes of the provinces in Colombia in attracting domestic tourists. A mix logit model is estimated to test several hypotheses regarding the effect of man-made attractions for leisure and recreation on domestic tourists' preferences. The findings of this study pose challenges to the Colombian government and other tourism stakeholders to increase the preferences of domestic tourists for provincial destinations through man-made attractions for leisure and recreation.

Findings indicate that domestic tourists prefer provinces with a greater number of man-made attractions for leisure and recreation (per square kilometre). The results show that domestic tourists from metropolitan and intermediary cities are more motivated than tourists from Bogotá to visit provinces where more man-made attractions for leisure and recreation (per square kilometre) exist. It was also found that married domestic tourists from metropolitan cities are less motivated to travel to a province due to the number of man-made attractions for leisure and recreation as compared to single, divorced and widowed tourists. Consistent with our last hypothesis (the moderating role of man-made attractions for leisure and recreation on distance for tourists' choices of a provincial destination), the evidence shows that increases in the average number of man-made attractions for leisure and recreation (per square kilometre) in a province can moderate the effect of distance on domestic tourists' mean preferences for that province.

The findings highlight the importance of working on policy initiatives toward the construction and/or enhancement of man-made attractions for leisure and recreation in the regions of Colombia to attract domestic tourists. Domestic tourists' preferences within man-made attractions for leisure and recreation go for shopping malls and theme parks, followed by museums, restaurants, and gondola lifts. The results on taste heterogeneity between domestic tourists suggest that the construction and/or enhancement of man-made attractions for leisure and recreation should be primarily done in tourism destinations that attract people from metropolitan and intermediary cities. The initiatives to attract domestic tourists from metropolitan cities through man-made attractions for leisure and recreation should be more focused on single, divorced and widowed domestic tourists than married domestic tourists. The construction and/or enhancement of man-made attractions for leisure and recreation can serve as strategy to encourage domestic tourists' trips to distant destinations; destinations that

are usually economically lagging areas. The strategies can target domestic tourists from intermediary cities, including Villavicencio, Manizales, Ibagué and Pasto, as their travel frequency to distance destinations is the highest amongst domestic tourists.

The government of Colombia at the national and provincial levels could embrace the findings of this chapter to work on policy initiatives for enhancing domestic tourism demand. The next chapter examines whether the economic growth of the tourism sector reduces poverty in the provinces of Colombia, *ceteris paribus* other sectors of the economic system.

Appendix 4A

Appendix Table 4A shows the definition of variables used as the destination attributes

Appendix Table 4A. Variable definitions

Variable	Description
$DISTANCE_{ni}$	The average distance (in kilometres) between the province of destination i and the city of origin of domestic tourist n
$TEMPERATURE_{ni}$	Average temperature (in degrees Celsius) in province i observed by domestic tourist n
$PARK_{ni}$	Average number of theme parks (count data) in province i (per square kilometre) observed by domestic tourist n
$MALL_{ni}$	Average number of shopping malls (count data) in province i (per square kilometre) observed by each domestic tourist n
$MUSEUM_{ni}$	Average number of museums (count data) in province i (per square kilometre) observed by each domestic tourist n
$RESTAURANT_{ni}$	Average number of restaurants (count data) in province i (per square kilometre) observed by domestic tourist n
$GONDOLA_{ni}$	Average number of gondola lifts (count data) in province i (per square kilometre) observed by domestic tourist n
$MANVO_{ni}$	Average number of man-made attractions for leisure and recreation (count data) in province i (per square kilometre) observed by domestic tourist n
$BEACH_{ni}$	Average number of available beaches (count data) in the province of destination i (per square kilometre) observed by domestic tourist n
$MEMORIAL_{ni}$	Average number of war memorials alluding to Colombia's independence war from Spain (count data) in province i (per square kilometre) observed by domestic tourist n

Appendix 4B

Appendix Table 4B shows the results of the Likelihood Ratio (LR) test on the null hypothesis that the standard conditional logit model is nested in the mixed logit model. The null hypothesis is rejected at the 1 percent level of significance. This result shows that the random parameter logit model provides more efficient results than the conditional logit model. For a direct comparison between the estimated results of mixed and conditional logit models in this chapter, the correlation between explanatory variables was not allowed in the former model.

Appendix Table 4B. Likelihood Ratio (LR) test

```
Likelihood-ratio test                                 LR chi2(6)  =    203.71
(Assumption: CL1 nested in MMNL2)                     Prob > chi2 =    0.0000

Akaike's information criterion and Bayesian information criterion
```

Model	Obs	ll(null)	ll(model)	df	AIC	BIC
CL1	83849	-10016.58	-6184.515	6	12381.03	12437.05
MMNL2	83849	-6802.592	-6082.658	12	12189.32	12301.36

CL1: Conditional Logit model
MMNL2: Mixed MNL model

Chapter 5
Tourism and Its Contribution to Poverty Alleviation

5.1 Introduction

Tourism has become an essential economic activity in many developed and developing countries. Studies have examined the economic and other impacts of tourism sector on economic growth (Dritsakis, 2004), employment (Mihalic, 2013), carbon emissions (Dwyer, Forsyth, Spurr, and Hoque, 2010), and poverty (Croes, 2014a), amongst other economic, social and environmental factors.[72] The economic impact of tourism on poverty reduction has been highlighted by the World Tourism Organization (UNWTO) that states that "…tourism has increasingly been viewed as a promising area of economic activity that could become a structural part of poverty alleviation…" (UNWTO, 2010a, p. 5). According to the World Bank's latest global report on poverty (World Bank, 2016b), in spite of the progress made in reducing poverty since 1990, in 2013 there were still 767 million people living in poverty (on less than US$1.90 a day); that is, 10.7 percent of the world's population. The tourism sector has the potential to provide opportunities for poor people to improve their standard of living. This chapter examines the impact of the tourism sector on poverty reduction at the regional levels in the case of Colombia.

According to the World Bank (2000), poverty is "pronounced deprivation in well-being" from a monetary and non-monetary perspective. From the monetary perspective of poverty, the poor are individuals who live below the poverty line – the minimal standard of living that can be attained with income or consumption (World Bank, 1990, 2005). The non-monetary dimension of poverty is a broaden approach to well-being that focuses on the capability of individuals to function in society, as proposed by Sen (1985). The monetary dimension of poverty is associated with the unidimensional identification of the poor through a single-dimensional resource variable, such as income or expenditure (Alkire and Foster, 2011; Gounder and Xing, 2012). This does not mean that the unidimensional approach to poverty only considers one dimension; rather, it implies the mapping of multiple dimensions of poverty assessment through a single dimension with the use of a common unit of account (Alkire et al., 2015a). The proportion of people identified as monetary poor within a

[72] More details on the economic, social, and environmental impacts of tourism can be found in Brenda and Costa (2013), Reece (2010), Stabler et al. (2010), and Vanhove (2005).

population is based on the incidence of poverty (or poverty headcount ratio) from an aggregate perspective (Alkire and Foster, 2011).

Several country-specific empirical studies have investigated the level of impact of the primary, secondary and tertiary sectors' output on monetary poverty, including China (Montalvo and Ravallion, 2010; Ravallion and Chen, 2007), India (Ravallion and Datt, 1996), and Colombia (Barrientos, Ramírez, and Orozco, 2015), among other countries. This empirical studies are justified by the established relationship between poverty incidence and income (Gross Domestic Product (GDP) per capita) (World Bank, 2000), and between GDP and the value added by all sectors of the economy (Sloman and Norris, 2005). The implicit negative relationship between the sectoral value added and monetary poverty rates (Montalvo and Ravallion, 2010; Ravallion and Chen, 2007) can be explained from economic growth theories. From the theories of economic growth, increases in capital stock (physical and human capital) and technological progress can explain the growth of an economy (Sala-i-Martin, 2000), including the better performance of its economic sectors. According to the World Bank (2000), economic growth is also associated with several factors, including education, population growth, life expectancy, foreign aid, geographic characteristics, political stability, and economic policies, among other factors. Economic policies linked to international trade, disciplined fiscal and monetary policy, and developed financial markets are fundamental for the long-run growth (World Bank, 2000), which is ultimately reflected in the performance of the economic sectors, including tourism.

Vanegas et al. (2015) included the tourism sector's output (alongside the output of the primary, secondary and tertiary sectors) to examine its contribution to monetary poverty reduction. Vanegas et al. (2015) noted that the output of each economic sector took into account only sectoral exports such as agricultural, manufacturing, and tourism exports, so the value added by each economic sector for domestic consumption was not included. The inclusion of the tourism sector's value added for domestic consumption is vital, in light of the high percentage share of domestic tourism consumption on total tourism spending as reported by the World Travel and Tourism Council (WTTC, 2017a), Huybers (2003) and Marrocu and Paci (2013). Thus, the value added figures for each economic sector, supplied for both international and domestic markets, are included as explanatory variables in the analysis of this chapter.

The relationship between tourism and poverty has been examined at different geospatial levels. The scope of poverty research at the provincial level has relied on the inclusion of a few provinces within a country (Donaldson, 2007). When analysing poverty at the provincial level, it is important to examine whether there is uneven progress on poverty reduction between them over time (Ravallion and Chen, 2007), and set policy initiatives accordingly. This chapter includes a dataset that includes most provinces in Colombia as the inbound and domestic tourists' set of regional alternatives from a consumer choice perspective (see Train, 2009). If there is evidence to support the notion that the tourism sector contributes to poverty alleviation, an analysis on whether the reduction differs between economically lagging and economically leading provinces can be performed. Mak (2004) argues that the economic activities of the tourism sector can help to balance incomes in different regions of a country. This analysis can inform important policy initiatives aimed at reducing poverty from tourism activities in economically lagging provinces.

The purpose of this chapter is to analyse the contribution of each economic sector to monetary poverty and extreme poverty reduction at the provincial level, with particular emphasis on the tourism sector. The chapter seeks to examine the following related hypotheses. First, whether an increase in the value added by the tourism sector positively contributes to poverty and extreme poverty reduction at the provincial level, *ceteris paribus*. The contribution of the tourism sector towards poverty alleviation will be compared with the contributions of other economic sectors to identify the relative magnitude of the tourism sectors' contribution to poverty reduction. Second, whether the hypothesised reduction in monetary poverty and extreme poverty due to an increase in the tourism sector's value added is greater in economically lagging provinces than in economically leading provinces. Third, whether there is Granger-causality relationships between poverty reduction and growth in the tourism sector's value added. These hypotheses are tested using data for 24 provinces in Colombia between 2002 and 2016.

In Colombia's sectoral plans of tourism released in 2008 and most recently in 2014 by the Ministry of Commerce, Industry and Tourism (MCIT) and the National Planning Department (DNP), the tourism sector has been identified as a potentially important activity that the country could use to combat poverty (MCIT, 2008; MCIT and DNP, 2014). The current chapter is an important step toward understanding this relationship from an empirical perspective. Results from this analysis will provide valuable information for both policy-

makers and tourism planners in Colombia, including new insights on poverty reduction policies associated with sectoral growth, as well as on the plans for tourism development at the provincial and national levels. The relationship between poverty measures (poverty and extreme poverty incidences) and the value added by tourism and other sectors of the economic system is modelled using a binary logit model for grouped data. The list of tourism characteristic industries published by the UNWTO is used to formulate the list of industries that belong to the tourism sector (see UNWTO, 2010a). Methods of generalised estimating equations (GEEs) and panel Vector Autoregressions (VAR) are utilised for the econometric analysis in this chapter.

The rest of this chapter is organised as follows. Section 5.2 presents the literature review on the sectoral contribution to poverty and extreme poverty alleviation, with emphasis on the tourism sector. Section 5.3 carries out a descriptive analysis on monetary poverty and extreme poverty in Colombia from 2002-2016. In Section 5.4, the model used to predict monetary poverty from a sectoral value-added perspective is detailed, including the data utilised and the method of analysis. The empirical results are analysed in Section 5.5, and the conclusions presented in Section 5.6.

5.2 Literature Review

Poverty has many diverse dimensions of economic and social factors that impact the likelihood of a person or the household being poor or living in poverty (World Bank, 2000). Several empirical studies have analysed the relationship between monetary poverty and the output of the primary, secondary, and tertiary sectors. In China, the growth of the primary sector (mainly agriculture) was found to be the main contributor to monetary poverty reduction at the national level (Ravallion and Chen, 2007) and provincial levels (Montalvo and Ravallion, 2010) from 1980 and 1983, respectively, to 2001. However, results from Montalvo and Ravallion (2010) found statistically significant impacts only when the rural measure of poverty was used as the dependent variable, and not when the aggregate measure of poverty (urban plus rural) was employed. In India, Ravallion and Datt (1996) found that the growth of the primary and tertiary sectors contributed to poverty reduction (in both rural and urban areas between 1951-1991), and that of these two sectors, the latter made the greatest contribution to poverty alleviation.

Ferreira, Leite, and Ravallion (2010) found that the growth of service industries contributed more to poverty reduction in the Brazilian states than agriculture and manufacturing industries between the mid-1980s and the mid-2000s. Ferreira et al. (2010) noted that the low progress in poverty alleviation within the same period arose in part due to low economic growth, as well as high inequality in the country. Gallo (2006) found that Venezuela's manufacturing and construction industries (two industries that had a low percentage share in the country's total GDP) had a significantly positive contribution to poverty alleviation between 1975-2003. Barrientos et al. (2015) found that the secondary and tertiary sectors greatly contributed to poverty alleviation in Colombia's provinces between 2002-2012, and that the primary sector did not contribute to reductions in poverty incidence during the same period.

The choice of an international or domestic tourism destination is followed by the consumption of tourism characteristic goods and services, produced by tourism industries (UNWTO, 2010a). Accommodation for visitors; food and beverage serving activities; railway, road, water and air passenger transport; and travel agencies among other industries, are in the list of tourism characteristic industries that belong to the tourism sector as characterised by the UNWTO (UNWTO, 2010a, p. 111). As economic growth is regarded as one of the long-term strategies for poverty reduction (World Bank, 2000), the growth of the tourism sector is readily associated with poverty reduction. Poverty reduction is one of the Millennium Development Goals pursued by the UNWTO through tourism activities (UNWTO, 2010b), which is also extended to Sustainable Development Goals-SDGs (UNWTO, 2016a). The UNWTO and the United Nations Development Programme-UNDP (UNWTO and UNDP, 2017) have committed to addressing the achievement of all 17 SDGs through tourism activities, including the strategies for the reduction of poverty (see Section 5.4 that extends this issue). There is a need for further empirical studies focusing on the tourism-poverty link via economic growth. As noted by Croes (2014b), "…the tourism literature is making disturbingly slow progress on this topic in light of the 1.2 billion persons living in extreme poverty" (Croes, 2014b, p. 299).

Vanegas et al. (2015) found the tourism sector to be the most important contributor to extreme poverty reduction compared with the agricultural and manufacturing sectors in Costa Rica and

Nicaragua.[73] The data used for analysis in the Vanegas et al. (2015) study included the international component of each sector; that is, the value of exports, while the domestic output of each sector was not considered due to data availability (Vanegas et al., 2015). For the tourism sector, the inclusion of the domestic component of value added is important in light of the significant percentage share of domestic tourism consumption on total tourism spending. According to the WTTC (2017a), domestic travel spending around the world accounted for 70.7 percent of direct travel and tourism GDP in 2012 compared with 29.3 percent for visitor exports. In Australia, domestic tourism expenditure is five times that of international tourism (Huybers, 2003).

The contribution of tourism to poverty alleviation has been studied using poverty data at different geospatial levels, including national (Croes and Vanegas, 2008; Kim et al., 2016; Vanegas, 2014; Vanegas et al., 2015), provincial (Donaldson, 2007), and local community (Butler et al., 2013; Ferguson, 2011; Truong et al., 2014). Donaldson (2007) examined the extent to which tourism lowered poverty at provincial levels in China, and found contradictory results. Tourism had a higher impact on economic growth than poverty reduction in the Yunnan province, while the opposite was found to be the case in the Guizhou province (Donaldson, 2007). Donaldson's work is valuable in understanding the tourism-poverty link at the provincial level, as there are potential differences in tourism's impacts on poverty reduction between provinces. The research scope utilised by Donaldson can be enhanced if the whole set of provinces in a country is included. The underlying logic is that inbound and domestic tourists can visit any province of a country where they consume tourism products (accommodation, travel, transport, food and beverage, etc.). The provinces of a country accordingly belong to inbound and domestic tourists' choice sets of alternatives from a consumer choice perspective (see Train, 2009).

The convergence hypothesis in economic growth can provide theoretical inputs to analyse regional convergence of GDP per capita in the long run due to growth of the tourism sector. The earlier studies on the convergence hypothesis have been important to explain economic growth in output per capita among the industrialised economies between 1870 and 1979, showing empirical evidence in favour of convergence rates between countries (Barro, 1991;

[73] The definition of extreme poverty (indigence poverty) that Vanegas et al. (2015) follow is "the share of the country's population whose income or consumption is below the poverty line, that is, the percentage of population that cannot afford to buy a defined basic basket of goods" (Vanegas et al., 2015, p. 160 (note b)).

Baumol, 1986; Mankiw, Romer, and Weil, 1992). Baumol's (1986) finding of growth convergence demonstrated that economic growth of leading economies tends to slow down in the long run, inevitably; and that developing nations tend to converge to developed living standards once they improve their technology (De Long, 1988).Sala-i-Martin (1996, p. 1) stressed the importance of knowing "…whether, within a country, interregional differences in income levels tend to disappear …and whether the regions that are relatively poor now are the same as the ones that were relatively poor one hundred years ago". Galvis and Meisel (2012) noted for the case of Colombia that, for lagging provinces such as Chocó, the regional convergence in poverty levels towards the level of poverty recorded in leading regions such as Bogotá could take as much as two hundred years.

Based on the convergence hypothesis, it is important to identify whether a reduction in poverty and extreme poverty in the provinces of a country due to increases in the value added of the tourism sector is likely to be greater in economically lagging provinces than in economically leading provinces. Lagging regions of a country are regions that have high level of poverty and marginalization (see World Bank, 2009). According to Mak (2004), "tourism development can help to balance opportunities and incomes in different regions of a destination or country" (p.129). Mak's observation suggests that the poorest provinces of a country (named by the World Bank (2009) as lagging regions) may experience a higher level of reduction in poverty from tourism activities compared to the least poor provinces of a country (recognised as leading provinces by the World Bank (2009)). This distinction is vital for regional tourism planning from the perspective of maximising the social benefits of tourism (see UNWTO, 1994).

From the neoclassical theory of economic growth, the economic convergence between poor and rich regions is explained by the capital stock of each economy, suggesting that regions with low levels of physical capital tend to have a greater marginal product of capital (MPK) than the MPK of the regions with higher levels of physical capital (Barro, 1991; Sala-i-Martin, 2000). Thus, economic convergence between lagging and leading provinces due to growth in the tourism sector is likely to occur when new investments in the lagging provinces' tourism sector increase the tourism sector's value added more rapidly than those tourism-oriented investments in the leading provinces.

Studies by Blake et al. (2008) for Brazil, and Blake (2008) for Kenya, Tanzania and Uganda showed that the effects of tourism spending on household income were generally positive, although they were found to be higher for high-income families than those with lower-incomes. For Blake et al. (2008), tourism helps to distribute income among households in Brazil, and the evidence showed that tourism consumption is mainly concentrated in high-income households, but the remuneration that people receive through the tourism industry is mainly concentrated in low-income households (low-income families receive almost half of total remuneration from tourism activities).

The need for caution with conclusions that support the poverty alleviation role of tourism has been stressed by Plüss and Backes (2002) and Scheyvens (2007). For Plüss and Backes (2002), tourism has not been able to alleviate poverty as "80 percent of the people living in extreme poverty live in just thirteen countries in the world and ten of these have an important tourism sector which has shown above-average growth in the past years" (p. 7). In the case of poverty at the provincial level, it is crucial to understand whether an increase in the value added of the tourism sector contributes to poverty and extreme poverty reduction, and how much the tourism sector contributes to poverty and extreme poverty reduction as compared to that of other economic sectors. If so, it is vital to know whether economically lagging provinces experience a higher level of poverty and extreme poverty reduction than economically leading provinces as a result of increases in the tourism sector's value added. This chapter follows the World Bank's (2009) defined characteristics of lagging and leading areas of a country. Lagging areas have high poverty rates, low productivity and income (low GDP per capita), high unemployment, among other characteristics (World Bank, 2009).[74] Leading areas show high economic density (high production per capita and production per area of land), and/or high population per square kilometre (World Bank, 2009). Comparatively, "lagging areas tend to have a higher proportion of poor residents, and the leading areas tend to contain a higher share of the country's poor people, because of the dense population in leading areas" (see World Bank, 2009).

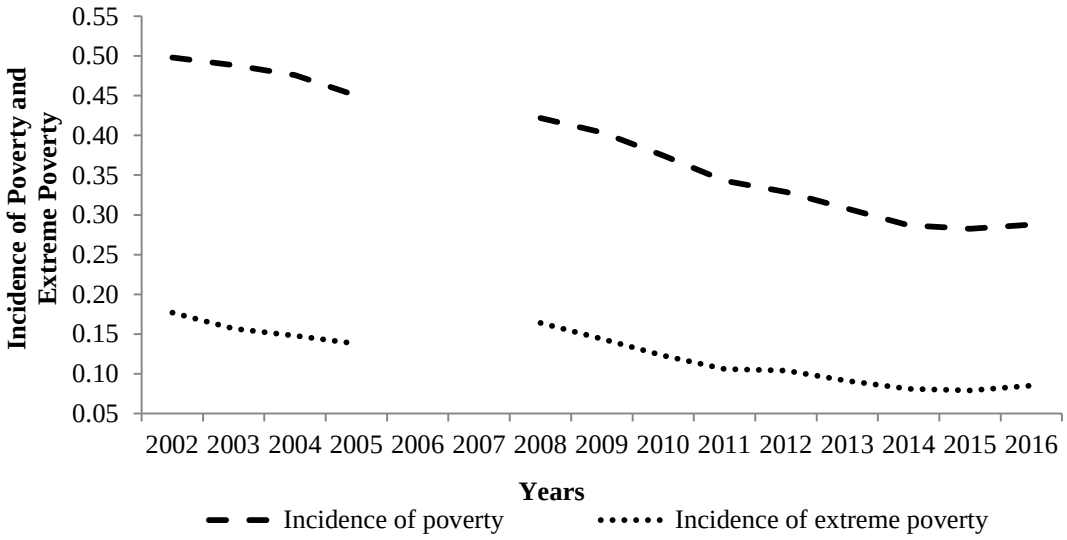
[74] The World Bank (2009) noted other characteristics that lagging areas of a country may share, including a long distance to economically dense areas (which implies poor access to the markets of goods, capital, labour, ideas, and information), and marked differences between ethnic minorities.

Based on studies by Kweka, Morrissey, and Blake (2003) and Vanegas (2015), there is long-term relationships between the tourism sector and other sectors of the economy. Kweka et al. (2003) found that the multiplier effect of tourism on agriculture, manufacturing, and other services in Tanzania accounted for 17, 18 and 9 percent of total multiplier effects, respectively. For Kweka et al. (2003), this is not a surprise, as tourism industries demand agricultural goods, as well as products supplied by manufacturing industries (including the industries of processed food and beverage) and services to carry out their social objective. Moreover, Kweka et al. (2003) found that "tourism also has the highest forward linkages (provision of services to other sectors), and these are quite evenly dispersed" (p.344). Vanegas (2015) found two-way Granger causality between manufacturing and tourism exports for the case of Costa Rica, a result that indicates that tourism development is associated with investment in tourism infrastructure, agriculture and industry. The following two sections provide an analysis on poverty in Colombia, and highlight the model, data, and methodology used to test the hypotheses in this chapter.

5.3 Poverty in Colombia

According to the National Administrative Department of Statistics (DANE), since 2002 Colombia has reported a substantial decrease in the number of individuals who live below the poverty and extreme poverty lines relative to the total population (DANE, 2017). DANE's statistics show that the average national incidence of poverty and extreme poverty decreased by 4.3 and 7.7 percent per year, respectively, from 2002 to 2016 (see Figure 5.1). The national incidence of poverty decreased by 21 percentage points during this period (from 49.8 percent in 2002 to 28.8 percent in 2016), and the national incidence of extreme poverty halved over the same period (from 17.7 percent in 2002 to 8.5 percent in 2016) (DANE, 2017). The Mission to Link Employment, Poverty and Inequality Surveys (MESEP) coordinated by DANE and DNP in 2009 did not calculate the monetary poverty measures in 2006 and 2007 due to comparability issues between these series (MESEP, 2012).

Figure 5.1 Incidence of Poverty and Extreme Poverty in Colombia (2002-2016)



Source: DANE (2018c)
Note: the years 2006 and 2007 were not calculated by MESEP due to comparability issues between surveys of employment, poverty and inequality (see MESEP, 2012).

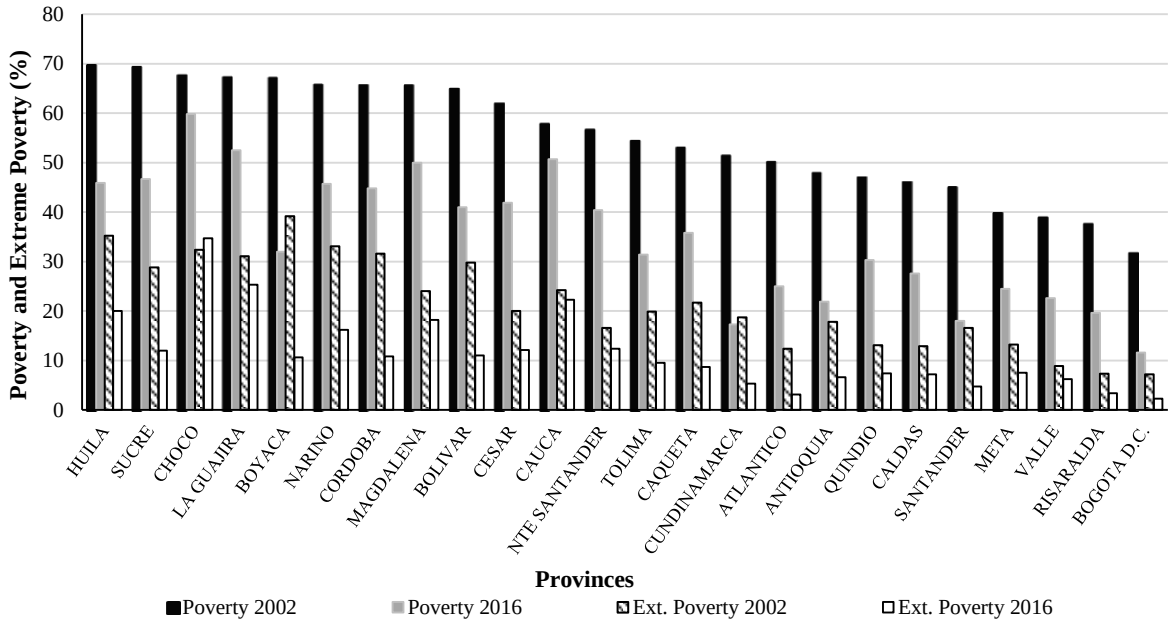
According to Mejía (2018), the Colombian government has successfully accomplished its goal of reducing monetary poverty; a fact that is explained in Mauricio Santamaria's (ex-director of DNP) (as cited in Semana, 2012) view by multiple factors, including the reduction in unemployment rates, the increase in the poorest people's income, and more focused social policies. While the income of the poorest 20 percent grew in average by 5.5 percent per year from 2010-2016, the income of the richest 20 percent grew in average by only 1 percent per year in the same period (Mejía, 2018).

Based on statistics from DANE and the World Bank (World Development Indicators), the reduction in the national incidence of poverty and extreme poverty in Colombia is highly correlated with the increase in the national average per capita income, which grew from COP$7.1 million in 2002 (or US$4,825) to COP$11.1 million (or US$7,526) in 2016.[75] Barrientos et al. (2015) found that the pattern of growth between 2002-2012 positively explained poverty reduction at the provincial levels, and that economic growth in secondary and tertiary sectors was the greatest contributor to poverty alleviation in Colombia. Within the tertiary sector, tourism-associated activities are likely to positively contribute to poverty and extreme poverty reduction; an issue that is analysed in the following section.

[75] The national per capita income given in Colombian pesos (COP$) is in constant prices of 2005. The national per capita income given in United States (US$) dollars is in constant prices of 2010.

Analysis on the incidence of poverty and extreme poverty by provinces in Figure 5.2 show a decrease in both poverty measures in all the provinces of Colombia (within the sample of 24 provinces) from 2002 to 2016. The exception was the extreme poverty incidence in the province of Choco, which grew from 32.4 percent in 2002 to 34.7 percent in 2016. According to Bonet (2007), the relative economic and social deterioration of the Choco province is explained by multiple factors, including weak institutions that emerged from the colonial legacy, the province's extreme climate and geographic conditions, low human resource endowment, specialization in mining, and economic separation from the rest of the economy.

Figure 5.2 Incidence of Poverty and Extreme Poverty in Colombia's Provinces (2002 and 2016)



Source: DANE (2018c)

Choco, Cauca, La Guajira, and Magdalena are all economically lagging provinces that require prioritised government attention, as their relative poverty and extreme poverty levels at the end of 2016 were still high. As noted by Barrientos et al. (2015), poverty in the provinces of Colombia can be explained by non-economic factors, including high illiteracy rates, a high number of children per family (a fact that prevents women from being involved in the labour market), and a reduced likelihood of owning a dwelling as compared to non-poor. Poverty can also be explained by economic factors, including few subsidies for poor communities to carry out investments in profitable business (especially in rural areas), lack of technical assistance and follow-ups in productive projects carried out by these communities, lack of transport

infrastructure, and a weak coordination between public policies to reduce poverty (Perry, 2010). These common characteristics of the poor must be addressed by the government of Colombia to reduce poverty (Barrientos et al., 2015; Perry, 2010).

Of the provinces that recorded high levels of poverty and extreme poverty incidence in 2002 (over 60 and 20 percent, respectively), Boyacá and Bolivar have been highly successful in reducing their monetary poverty levels during this period. Boyacá reduced poverty and extreme poverty from 67.1 percent and 39.2 percent, respectively, in 2002 to 32 percent and 10.6 percent, respectively, in 2016. Bolivar's poverty and extreme poverty incidences dropped from 64.9 percent and 29.8 percent, respectively, in 2002 to 41 percent and 11 percent, respectively, in 2016. The significant growth of value added per capita of these provinces, which averaged 4.2 percent per year from 2002-2016 according to statistics from DANE, is likely to have been one of the factors that helped alleviate monetary poverty and extreme poverty in these regions.

Between the provinces that recorded the next highest poverty and extreme poverty incidences in 2002 (between 40 and 60 percent of poverty, and between 15 percent and 20 percent of extreme poverty), Antioquia, Cundinamarca, and Atlántico had noticeable results in poverty and extreme poverty alleviation. Antioquia´s poverty and extreme poverty incidence reduced by almost 25 percentage points for the former (from 47.9 percent to 21.9 percent), and 10 percentage points for the latter (from 17.8 percent to 6.6 percent). Cundinamarca reduced poverty from 51.4 percent in 2002 to 17.3 percent in 2016, and reduced extreme poverty from 18.7 percent in 2002 to 5.3 percent in 2016. The province of Atlántico, one of the most popular tourist destinations in Colombia, reduced poverty from 50.1 percent in 2002 to 25 percent in 2016, and extreme poverty from 12.4 percent in 2002 to 3.1 percent in 2016. The government of Colombia launched in 2018 the strategies to achieve the 17 SDGs by 2030, including SDG 1 on "No Poverty" (DNP, 2018). The following section analyses the strategies proposed by the government to reduce poverty, and the role that the tourism sector plays for its achievement.

5.4 Tourism and the Sustainable Development Goal 1: No Poverty

The United Nations Conference on Sustainable Development (Rio+20) of 2012 recognised countries' achievements in the 8 Millennium Development Goals (MDGs) declared in 2000 (United Nations, 2015). The UN also recognised the importance of moving toward a more ambitious agenda to improve well-being across the globe. In September 2015, 193 countries signed the agenda of 17 SDGs to meet the goals by 2030, which adopts a transformed vision of development, and proposes significant challenges for institutions and policies for its implementation (UN, 2015). This UN (2015) document on the 17 SDGs clarifies the targets and objectives which these 193 countries aim to improve the sustainable development.

In Colombia, the strategies to achieve all SDGs by 2030 were launched in March 2018 in "CONPES 3918" (DNP, 2018), and integrated in the National Plan of Development (NPD) 2014-2018 (see DNP, 2015). These strategies for SDGs took into consideration achievements, failures, and challenges derived from the Millennium Development Goals (MDGs) set by the government in 2005 and 2011 (see DNP, 2005b; DNP, 2011). Overall, the percentage of advances in the achievement of all MDGs in 2015 was significant, reaching an average of 86.6 percent (DNP, 2018). Thirty-three indicators stablished by the government reached more than 92 percent of the goal. These include reductions in unemployment rates, decline in the percentage of people undernourished, increase in the coverage rate of primary and secondary school, increase in women's occupation rate, growth in vaccination coverage, increase in the use of contraceptive methods, reduction in malaria, increase in land reforestation, amongst other indicators (DNP, 2018). Eight indicators achieved above 80 percent of the goal, which include a reduction in the prevalence of malnutrition, decline in illiteracy rate, decrease in maternal death rate, and increase in access to clean water in rural areas (DNP, 2018). Indicators that reached less than 80 percent of the goal remain a priority for the government, including reduction in informal employment rates, decrease in labour income gap, decline in fertility rates for women between 15 and 19 years of age, decline in HIV prevalence and mortality rates, and dengue fatality rates, among other indicators (DNP, 2018). The poverty and extreme poverty rates declined from 49.8 percent and 17.7 percent in 2002 to 27.8 percent and 7.9 percent, respectively, in 2015, representing a 100 percent achievement of the goal set by the government (DNP, 2018). By 2030, the goal is to reduce the monetary and multidimensional poverty rates to 18.7 percent and 8.4 percent, respectively, at the national level (DNP, 2018). The extreme poverty rate is expected to be reduced to 1.7 percent by 2030 (DNP, 2018).

As noted by the UNWTO and the UNDP, "Tourism has a great potential to accelerate progress across the Sustainable Development Goals (SDGs)" (UNWTO and UNDP, 2017, p. 8), including SDG 1 on "No Poverty". The Voluntary National Reviews (VNRs) of progress of the 2030 agenda for SDGs,[76] as cited by UNWTO and UNDP (2017), suggest that the tourism sector is seen as a contributor to issues associated with "prosperity", "planet", and "people". Within "people", the most cited opportunities associated with tourism activities are "employment creation" and "poverty eradication". The current government of Colombia has placed priority on the development of tourism, suggesting the intention of seeing this sector as the new oil of Colombia (Portafolio, 2018 October); that is, a sector that is capable of generating as much revenues for the country as the oil sector does.

Based on Vanegas et al. (2015), one of the fundamental ways of tackling poverty in Colombia from tourism activities is through increases in the value added by tourism industries. A rise in the value added by tourism increases factorial income, which is an important strategy to reduce monetary and multidimensional poverty rates by 2030 in Colombia (DNP, 2015).[77] There is also a strong relationship between the growth of the tourism sector's value added and employment generation at a global level (MCIT, 2012). Statistics from DANE and Colombia's Superintendency of Corporations show that the tourism sector's value added contributed an average of 3.9 percent per year to GDP between 2002 and 2016. Domestic tourism consumption contributed to 77 percent and 68 percent of total tourism expenditures between 2000 and 2005 (DANE, 2011) and between 2010 and 2012 (MCIT, 2012), respectively, and the remaining percentage was contributed by inbound tourism. By developing new tourism products that complement the regional attributes that influences the travel choices of tourists, the industries associated with tourism have the potential to increase their contribution to the national value added. It is also important to develop new tourism markets, especially in countries that have signed free trade agreements with Colombia in the last years, including Chile and Mexico (the Pacific Alliance), South Korea, and Canada (MCIT, 2019d).

[76] The VNRs are carried out by member states (at the national and subnational levels), which serve for reviews by the high-level political forum (United Nations, 2019).

[77] To achieve the SDG 1 on "No Poverty" by 2030, the government of Colombia has also included in "CONPES 3918" the following sub-goals: i) An increase in the percentage of population with access to the country's welfare system (health and pension). ii) Growth in the number of formalised rural micro and medium acres - as stablished in the final accord to put end to the armed conflict in Colombia signed in 2016. iii) A reduction in the number of deaths caused in natural disasters (DNP, 2018).

Based on the strategies launched by the MCIT for promoting tourism in Colombia (MCIT, 2012), the poorest provinces of Colombia have comparative advantages associated with climate and natural features that might serve to generate income from tourism activities. Several natural sites, man-made attractions and cultural activities in Colombia have been recognised by the United Nations Educational, Scientific and Cultural Organisation (UNESCO) (see UNESCO, 2017). The Caribbean and Pacific regions have the potential to attract further international tourists from countries located in subtropics, temperate and frigid zones (including people from Chile, South Korea and Canada) due to their weather, beaches, historic legacy, and cultural diversity. Provinces in the Andean region have agritourism and ecotourism activities, as well as protected landscapes, that could serve to attract further international tourists as worldwide environmental consciousness increases (MCIT, 2012). Provinces located in the Amazon and Orinoco regions could expand their tourism portfolio to include indigenous tourism (ethno-tourism) following countries such as New Zealand, Canada, Australia and the United States, which have "the world's most advanced policy and support mechanisms for the development of indigenous peoples' cultural tourism projects" (Bolnick, 2003).

With the marketing campaign launched in January 2018 by Procolombia called "Colombia Land of Sabrosura", it is expected to attract more international tourists through the Colombian music as cultural attribute (Procolombia, 2017 December). The fundamental reason for launching this campaign is that most foreigners perceive Colombia as a country where people express themselves and live through music (Procolombia, 2017 December). There is a well stablished perception that people from several provinces of Colombia, including Choco, Magdalena and Bolivar, have the ability to dance complex rhythms such as Currulao, Cumbia, and Merecumbé, that could attract international tourists. Music is a synonym of happiness for most Colombians; happiness that can be shared with international tourists that visit the country's diverse regions.

It is necessary to use several strategies simultaneously to increase factorial income in Colombia through tourism activities and contribute to SDG 1 on "No Poverty".[78] One of these

[78] Income generation via tourism activities can contribute to a reduction in the proportion of people categorised as middle-income class in Colombia, which increased from 2002 to 2012 significantly by 12.1 percent (DNP, 2015). However, while the percentage of people categorised as middle-income class in Mexico, Chile and Uruguay between 2002 and 2012 was 25, 35 and 40 percent, respectively; in Colombia, this percentage was 12

strategies is the implementation of plans for the creation and strengthening of micro, small and medium-sized enterprises (MSMEs) engaged in tourism activities. As noted by the International Labour Office (ILO), MSMEs that are not in the main tourism hubs have the chance to develop new tourism products through tourism strategies for MSMEs (ILO, 2013),. The "Tourism Tech Adventures: Scaling Up" is one of the initiatives designed by the UNWTO and directed by the MCIT that promotes the creation of innovation-based tourism companies (MCIT, 2019c). It is very important to develop more strategies of this kind to connect entrepreneurs and investors around tourist business plans; especially in regions where there is potential for tourism activities, including adventure, culture, nature, sun and sea, and other activities as detailed by Procolombia (see Procolombia, 2019). According to statistics from MCIT, the tourist industries that are attracting more business and investment in recent years in Colombia are operators of natural parks, land transport agencies, promoters of special tourist areas, and theme parks (MCIT, 2019a).

Caracol, a private media company in Colombia, have recently launched a contest to promote the development of ecotourism programs nationwide among tourism stakeholders (Caracol, 2019). This initiative, which rewards three winners the equivalent to US$50.000 each (convertibles in TV advertising), demonstrates the role that private companies can play in promoting the developing of tourism projects as part of their commitment with the SDGs, including companies' protection to the environment and actions to mitigate climate change as in the case of Caracol (Nodoká, 2019).

Financial support from the government to encourage the creation and/or enhancement of tourism companies is another fundamental strategy for the sector's development, as there is a strong relationship between public spending on tourism and growth in the tourism sector's value added (MCIT, 2012). The National Service of Learning (SENA) (see SENA, 2019) could supply new training programs in business plans for entrepreneurs oriented toward tourism activities. Based on ILO (2013), the promotion of local ownership in MSMEs of tourism is a key initiative to reduce poverty via improved access to credits and loans (with low interest rates), and training in business operations (corporate finance, marketing, logistics, etc.). Support in research, development and innovation activities by universities and research centres is also important to encourage MSMEs sustainable growth in the long run (Borrell-

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percent in the same period; a fact that suggests that middle-income class in Colombia is still lag behind several Latin American nations (World Bank, 2014).

Damian, Morais, and Smith, 2014), including the development of new tourism products and markets (Dinero, 2016 March). In the future, MSMEs in tourism will be able to survive against competition if they use adequate marketing strategies, become innovative and cooperative, and increase productivity (Keller, 2004). According to the Organisation for Economic Cooperation and Development (OECD), as cited in Dinero (2016 March), new players in the tourism sector will have to supply satisfactory transport options, bilingual or multilingual guides, and apps for mobiles with complete information about the trip to guarantee an adequate experience for the tourists.

Policy initiatives aimed at improving regional connectivity are also important to reduce poverty via tourism activities. More and better roads that connect metropolitan and intermediary cities, and intermediary and small cities with tourist potential, is a key element in reducing travel times between cities, as distance factor significantly influences tourists' travel choice within a country (Nicolau and Mas, 2006). Infrastructure to connect rural and urban areas is crucial to guarantee the commercial success of MSMEs that focus on ecotourism, agritourism, and other tourism forms that arise in rural landscapes. As noted by MCIT (2012), countries with better road infrastructure (paved roads) tend to increase their tourism market size as compared to countries whose paved roads are insufficient. Greater competition between low-cost airlines in Colombia is also essential for the promotion of tourism trips, especially toward tourist areas with little ground connectivity (MCIT, 2012). Also another priority for the government would be developing safety and protection measures in the event of natural disasters, which interrupt tourist travel. Landslides on inter-province roads in Colombia have caused significant problems to the normal flow of commerce and travellers, affecting significantly the tourism sector (see El Tiempo, 2019 June). Efforts are also needed to enhance ICT networks for connectivity goals in the tourism sector, as connectivity is becoming essential for modern-day travellers. Many new payers, including Trip Advisor, Flyer Talk, Kayak, among other websites are growing in popularity amongst potential tourists in Colombia (MCIT, 2012).

There are limitations identified by the government that negatively affect the development of tourism sector (see DNP, 2015). The lack of international standards for the provision of tourism services is one of these limitations, which is being addressed through sectoral technical acts by the Professional Council of Tourism Guides-CPG (CPG, 2019). These acts are designed to improve services in ecotourism, guided museum tourism, high- mountain

tourism, cruises, among other tourism services (see CPG, 2019). The lack of tourism facilities is another limitation for the development of the tourism sector (DNP, 2015), which is starting to be addressed through investment in more than 150 tourism infrastructure projects throughout the country at a cost of more than COP$500,305 million (about US$166 million) (MCIT, 2019b). Based on the Travel and Tourism Competitiveness Report of 2017, Colombia needs to work on ground, port and tourism service infrastructure to gain competitiveness, as these factors scored poorly relative to the scores of other South American countries, including Uruguay, Ecuador and Chile (World Economic Forum, 2017).

Based on suggestions from the Latin American Network of Teaching Geography's meeting in June 2018, as cited in El Nuevo Siglo (2018 June), it is important to rethink the teaching of geography from a practical perspective in order to connect with the economic and social realities of the country. A redirection of geography teaching would allow Colombians, through their pre-school, primary and secondary curriculums, to recognize the country's geographic wealth that can be sustainably utilised economically and socially over the long term. The program "Schools Friends of Tourism", led by the MCIT, is an important initiative to promote sustainable tourism projects based on regional potentialities among primary, secondary and technical schools within those regions (Lacouture, 2018 October).

The contribution of tourism to poverty reduction is possible if, and only if, the sector adopts decent job contracts, with equal employment opportunities for men and women, as well as through the enhancement of social protection for workers within the tourism sector (ILO, 2013). The growth of tourism sector can also help to reduce labour market disparities between regions, observed through unemployment rates across provinces as well as between urban and rural areas (DNP, 2015). Based on ILO's (2014b) report, policies oriented toward income generation through tourism exports, corporate investments (in hotels, restaurants, and other tourism services), and investments in public infrastructure (roads, airports and ICTs) can have positive impacts on sustainable development, when these actions are accompanied by the creation of quality jobs and decent work in tourism activities.

A study by the World Travel and Tourism Council (WTTC) indicates that the tourism sector in Colombia contributes an average of 2.5 percent per annum toward direct employment, and about 10 percent of total employment (WTTC, 2017b). The tourism industries that contributed the most to employment generation in 2015 were transport (37.2 percent of total

tourism employment), restaurants (34.6 percent), leisure/recreation (20.6 percent), and accommodation (6.2 percent) (DANE). Informality rates and labour inequality within the tourism sector need to be addressed through diverse private and public initiatives. Of total employment generated by tourism industries, informal employment accounted for an average of 53 percent per annum between 2007 and 2013 (Leguizamon, 2016),[79] exceeding the national informality rate of 50.5 percent in 2007 (DANE, 2014 February) and 48.3 percent in 2017 (DANE, 2018b).

For Gustavo Toro, president of the Hotel and Tourism Association of Colombia (COTELCO), the country must work on firm actions in order to address labour informality, as this problem is significantly affecting the tourism sector (Dinero, 2018 July). Some digital platforms (e.g. AirBnB) promoting informal accommodation services may need to be halted if the government wants to tackle informality rates (La Republica, 2018 October). The MCIT established a "formalisation group" in 2017, which is in charge of identifying informal tourism operations and help to guide them toward formalisation, offering them financial and technical support (Portafolio, 2017 February). A significant reduction in labour informality rates is critical, as "high rates of informality hamper sustainable progress in poverty reduction" (ILO, 2014a, p. 24). By reducing informality rates in tourism-related industries, the government will contribute to the attainment of SDG 8 on "Decent Work and Economic Growth", and SDG 1 being "No Poverty" as noted by the UNWTO and UNDP (2017).[80]

According to Leguizamon (2016), 63 percent of the employed population in tourism related industries are male; an inequality that can be overcome through more job opportunities for women in the sector. The Colombian restaurant chain Crepes & Waffles provides a good example, as 90 percent of their employees are women, who have faced adverse situations and are breadwinners (Guevara, 2018 May). Interestingly, Crepes & Waffles is one of the top 5 restaurants with the greatest sales and economic returns in Colombia (Agudelo, 2018 July). The social responsibility adopted by Crepes & Waffles demonstrates that inclusive business models are possible, has gained wide acceptance by the public, and provides an alternative

[79] Following DANE (2009), informal workers in Colombia are categorised as follows: i) employees that work for establishments that employ up to five workers, including owners and/or partnerships; ii) family workers without remuneration; iii) workers without remuneration in another household's enterprise or business; iv) domestic workers (housekeepers); v) day labourers; and vi) self-employed workers who work for an establishment or enterprise with up to five workers, excluding professional freelance workers.

[80] Diverse strategies are being designed in the recent reform of Tourism Act (to be released in 2019) as one of the fundamental initiatives aimed at reducing the rate of informal work in the tourism sector (Reportur, 2019 January).

model of economic development complemented by social equity (Cultura Global RSE, 2019). Initiatives aimed at tourism development through job equality will contribute to both the attainment of SDGs 10: Reduced Inequalities and SDG 5: Gender Equality.

Youth unemployment is a critical issue in developing countries, where the young population's unemployment rate is more than three times the unemployment rate for adults (ILO, 2014b). Total unemployment rate for young workers in Colombia aged between 14 and 28 was 16.1 percent in 2017, being more critical for young women whose rate in the same year reached 19.2 percent, as compared to the rate of 11.5 percent for young men (DANE, 2018 February). Companies producing dancing and music shows, as well as other cultural activities, can significantly contribute to the reduction of youth unemployment, as these industries need workers with physical strengths and skills for the tourists' experience. As noted by Novoa (2015), both cultural and tourism industries can grow simultaneously, creating greater job opportunities for the youth involved in culture-oriented tourism activities. Adventure and eco-tourism companies offering nature-sites walks, cave expeditions, under-water explorations, along with other nature-based experiences are also well placed to reduce youth unemployment due to the nature of their business. Following McDonald's social responsibility model (see El Espectador, 2018 August), more employment and training programs for young people can be created within the industry of restaurants and mobile food services.[81] As tourism grows, so too will the number of job opportunities grow for young people as tour guides, especially for those students seeking tourism careers or graduate tourism professionals.

The achievement of SDG 1 "No Poverty" in Colombia through tourism activities will also depend on the accomplishment of other SDGs initiatives (UNWTO and UNDP, 2017). For example, actions that focus on the reduction in climate change factors (see SDG 13) can also benefit, socially and economically, vulnerable communities that promote their climate and nature-based attributes as a means of attracting tourists in the long-run. Immediate actions to reduce the negative effect of climate change on tourism areas should be focused on the no formation of wood debris and waste in rivers and beaches (due to landslides and human behaviour), as occur in the Atlantic region (see Semana, 2019 June). Floods due to heavy rainfalls in Colombia, an issue that affected more than 54,000 poor people in Colombia

[81] The "Youth Opportunity" plan, developed within McDonald's commitment to the Global Quality Employment Initiative for Youth (an initiative led by the International Labor Organization), will benefit two million young people in the world, from now until the year 2025 (El Espectador, 2018 August).

(Semana, 2018 August), needs to be address through the reallocation of people who live in risk areas, reforestation programs, and a controlled expansion of agricultural areas (Botero as cited in Semana, 2018 August). In some countries, climate change has had negative impacts on agriculture-based industries and tourism, resulting in a decrease in the country's GDP (UNWTO and UNDP, 2017).

Violence, crime and terrorism (expressed in SDG 16) need to be enhanced in Colombia from government actions, as these threats are known to deter tourists travelling to several countries (UNWTO and UNDP, 2017). The peace agreement signed in 2016 with the largest guerrilla group in Colombia is a valuable government action to reduce politically motivated violence and terrorism in Colombia (Gobierno de la República de Colombia and FARC-EP, 2016). Through the national policy launched in 2018 with strategies to achieve all SDGs by 2030 - "CONPES 3918", the government will be able to address issues described in SDGs 11, 12 and 14 on ´Sustainable Cities and Communities´, ´Responsible Consumption and Production´, and ´Life Below Water´, which have significant challenges for the tourism sector. These challenges include the decrease in carbon footprint, reduction in waste on beaches, and reduction in the overconsumption of food (UNWTO and UNDP, 2017).

Overall, the tourism sector could significantly contribute to poverty reduction in Colombia by 2030 (via growth in the tourism sector's value added), providing decent jobs with equal opportunities for men and woman, for adults and young, and for communities spread amongst the diverse geographic regions of the country. In the following section, the methodology to analyse the contribution that the tourism sector makes to the reduction of poverty and extreme poverty in Colombia is described, as well as tourism contribution to economic convergence between economically lagging and economically leading provinces.

5.5 Model, Data and Methodology

For the purposes of examining the contribution of each economic sector to poverty and extreme poverty reduction at the provincial level, and in particular, the key tourism and poverty reduction hypotheses identified in Section 5.2, the binary logit model for grouped data is employed (see Gujarati, 2003). This model is used to account for the binary condition of being poor or not being poor. The characteristics of the logit model for grouped data have been applied in this chapter, details are presented in the following sub-sections.

5.5.1 Binary Logit Model

The binary logit model is a linear transformation of the logistic function, in which the logit of a probabilistic event y (the log of the odds between y and $1 - y$) is predicted from a set of linear explanatory variables X (Berkson, 1944, 1951).[82] In this study, the logit models of poverty and extreme poverty (the log of the odds of being poor and extremely poor, respectively) are estimated as a linear function of the value added by all economic sectors in a country's provinces.[83] The use of binary logit models follows suggestions by Theil (1969), who noted that dependent continuous variables of probabilities that are constrained between zero and one (such as the poverty incidence) that needs to be transformed into the odds ratios. Alkire et al. (2015b) also suggest that it should not be ignored as the incidence of poverty is a continuous measure with limits between zero and one that need to be modelled accordingly.

Equations 5.1 and 5.2 below show the specification for the binary logit models of poverty (H_{it}) and extreme poverty (HE_{it}), respectively to examine whether the value added by each economic sector contributes to poverty and extreme poverty reduction, respectively, at the provincial level. The estimated coefficient for the tourism sector ($TOURISM_{it}$) is used to test whether an increase in the value added of tourism sector contributes significantly towards poverty and extreme poverty reduction at the provincial level. The expected negative relationship between poverty rates and the economic sectors' value added follows the works by Montalvo and Ravallion (2010), and Ravallion and Chen (2007). The theoretical justification for the relationship between sectoral value added and poverty stems from the link between poverty rates reduction and economic growth, ceteris paribus (World Bank, 2000), and between economic growth and the value added of each economic sector (Sloman and Norris, 2005). Based on economic growth theories, growth in the sectoral value added can be achieved through more human and physical capital, as well as technological progress (Sala-i-Martin, 2000). The sectors' growth of value added increases factorial income, which is observed through higher salaries (labor), higher rents (land owners), higher profits (capitalists), and higher tax revenues (government as a redistributor) (Lora and Prada, 2016); a fact that ultimately contributes to monetary poverty reduction as established by the World Bank (2000).

[82] The logistic curve is $y = \frac{1}{1+e^{-(\alpha+\beta X)}}$. Its linear transformation is: $\log\left(\frac{y}{1-y}\right) = \alpha + \beta X$

[83] The odds of being poor are equal to the ratio between the likelihood of being poor (the poverty incidence) against the likelihood of not being poor. The odds of being extremely poor are equal to the ratio between the likelihood of being extreme poor (the extreme poverty incidence) and the likelihood of not being extremely poor.

$$\text{logit}(H_{it}) \equiv \log\left(\frac{H_{it}}{1-H_{it}}\right) = \alpha + \beta_1 \log AGRI_{it} + \beta_2 \log MANU_{it} + \beta_3 \log SERV_{it} + \beta_4 \log TOURISM_{it} + \beta_5 INFLATION_{it} + \beta_6 TREND_i + u_{it} \quad (5.1)$$

$$\text{logit}(HE_{it}) \equiv \log\left(\frac{HE_{it}}{1-HE_{it}}\right) = \alpha + \gamma_1 \log AGRI_{it} + \gamma_2 \log MANU_{it} + \gamma_3 \log SERV_{it} + \gamma_4 \log TOURISM_{it} + \gamma_5 INFLATION_{it} + \gamma_6 TREND_i + u_{it} \quad (5.2)$$

Where: H_{it} and HE_{it} are the percentages of provincial population living in the households whose income is below the poverty line and extreme poverty line, respectively, in province i at time period t. Therefore, $1 - H_{it}$ and $1 - HE_{it}$ are the probability of not being poor and extreme poor, respectively. *AGRI* and *MANU* are the value-added by the agriculture and manufacturing sectors, respectively. *SERV* is the value-added by the service sector, excluding tourism. *TOURISM* is the value-added by the tourism sector. All value-added data are measured in real per capita terms. Inflation ($INFLATION$) is included in Equations 5.1 and 5.2 as a factor that could influence the level of poverty and extreme poverty in each region following the work of Montalvo and Ravallion (2010). Poverty and extreme poverty trends ($TREND$) are also included in Equations 5.1 and 5.2 as a control variable following Montalvo and Ravallion (2010). The α is the intercept in each equation, and u_{it} is the error term. The error term is decomposed into separate cross-section effects (μ_i) and the idiosyncratic error term (e_{it}). All variables are in natural logarithm form (denoted by log).

Equation 5.1 and 5.2 compares the level of poverty reduction based on tourism sector's contribution compared to the other major sectors of the economy. This comparison will enable us to identify the relative importance of the tourism sector in Colombia regarding its contribution to poverty and extreme poverty reduction at the provincial level. Based on the studies by Ravallion and Datt (2002) and Montalvo and Ravallion (2010), a positive relationship between poverty and the rate of inflation is expected in Equations 5.1 and 5.2. The sub-sectors included in the agriculture, manufacture and service sectors that follow Ravallion and Datt (1996) and Barrientos et al. (2015) are detailed in Appendix 5A. The agriculture sector (*AGRI*) includes agriculture, hunting and forestry; fishing; mining and quarrying. The manufacturing sector (*MANU*) includes manufacturing; electricity, gas and

water supply, and construction. The service sector, excluding tourism (*SERV*), includes wholesale and retail trade; repair of motor; transport, storage and communication (excluding industries classified as tourism related); financial intermediation; real state, renting and business activities (excluding industries classified as tourism related); public administration and defence; compulsory social security; community, social and personal services; activities of private households; extraterritorial organisations and bodies. Details of the tourism sector (*TOURISM*) are shown in the Appendix Table 5B, and follow the list of tourism characteristic industries from the UNWTO (2010a).

The value-added by the tourism sector (*TOURISM*) can be interacted with dummy variables that account for economically lagging provinces in Equations 5.3 (ϕ_k) and 5.4 (θ_k) to examine whether the reduction of poverty and extreme poverty, respectively, due to increases in the value-added by tourism sector is greater in the economically lagging provinces. The number of groups (*k*) to be included depends on the common characteristics found between the provinces. The presence of high levels of poverty and marginalization of the poor are criteria commonly used in developing countries to identify lagging areas (World Bank, 2009). Based on the World Bank (2009), the Colombian provinces in this analysis are divided into "most lagging provinces" (provinces with a poverty rate in 2002 higher than 0.6), "moderately lagging provinces" (the poverty rate in 2002 was between 0.4 and 0.6), and "least lagging provinces" (provinces where the poverty rate in 2002 was less than 0.4) (see more details in Sub-section 5.4.2). The group of "least lagging provinces" is the control group.

$$\begin{aligned}\text{logit}(H_{it}) \equiv \log\left(\frac{H_{it}}{1-H_{it}}\right) = \alpha &+ \beta_1 \log AGRI_{it} + \beta_2 \log MANU_{it} + \beta_3 \log SERV_{it} \\ &+ \beta_4 \log TOURISM_{it} + \beta_5 INFLATION_{it} + \beta_6 TREND_i \\ &+ \sum_{k=1}^{m} \delta_k PROV_k + \sum_{k=1}^{m} \phi_k PROV_k \cdot \log TOURISM_{it} + u_{it} \quad (5.3)\end{aligned}$$

$$\begin{aligned}\text{logit}(HE_{it}) \equiv \log\left(\frac{HE_{it}}{1-HE_{it}}\right) = \alpha &+ \gamma_1 \log AGRI_{it} + \gamma_2 \log MANU_{it} + \gamma_3 \log SERV_{it} \\ &+ \gamma_4 \log TOURISM_{it}\, \gamma_5 INFLATION_{it} + \gamma_6 TREND_i \\ &+ \sum_{k=1}^{m} \varphi_k PROV_k + \sum_{k=1}^{m} \theta_k PROV_k \cdot \log TOURISM_{it} + u_{it} \quad (5.4)\end{aligned}$$

5.5.2 Data

The analysis in this chapter utilises annual data for provinces in Colombia for the period 2002 to 2016, and includes twenty-four provinces (out of a possible thirty-three). Data on the incidence of poverty (H_{it}) and the incidence of extreme poverty (HE_{it}) in the provinces of Colombia are drawn from DANE in aggregate form (they are not disaggregated by urban and rural areas). As noted earlier, MESEP did not calculate the monetary poverty measures for the 2006 and 2007 years. Therefore, these two years are not included in the econometric estimations of this chapter. The twenty-four provinces included in this study are the largest by population in Colombia accounting for over 97 percent of the country's total population.

A new methodology to construct poverty and extreme poverty lines in Colombia was published in 2012 by MESEP. This methodology addressed the comparability issues between the series of employment, poverty, and inequality that were caused by methodological changes in the transition from the Continuous Household Survey to the Great Integrated Household Survey (MESEP, 2012). The new annual poverty and extreme poverty line measures are available from 2002 (excluding 2006 and 2007), and include the latest statistics on consumption habits in Colombia, advanced methods for estimating poverty lines, and a more precise measure of aggregate income (MESEP, 2012).[84]

DANE (2017) defined the incidences of poverty and extreme poverty as the percentage of population whose income per capita in the household is below the poverty and extreme poverty lines, respectively, in relation to the total population of a geographic area. The poverty line in Colombia is the minimum monthly per capita cost of a bundle of goods necessary to have an adequate living in a particular geographic area (DANE, 2017). The extreme poverty line is the minimum monthly per capita cost necessary to only buy a bundle of food goods, which allow people to attain a minimum survival level in a geographic area (DANE, 2017). In 2002, the national poverty and extreme poverty lines were set at COP$120,392 and COP$51,316- respectively (MESEP, 2012); the equivalent to USD$42 and USD$18, respectively. In 2016, the national poverty and extreme poverty lines were COP$241,673 and COP$114,692- respectively (DANE, 2017); the equivalent to USD$81 and USD$38, respectively.

[84] DANE also publishes the multidimensional poverty index (MPI) from 2010 by domains (national, rural, and urban) and aggregate regions (Caribbean, Pacific, East, Central, Bogotá, Valle del Cauca and Antioquia). DANE does not publish the MPI disaggregated by provinces.

Table 5.1 shows the groups of economically lagging provinces in Colombia for the estimation of Equations 5.3 and 5.4. Group 1 includes provinces that had a poverty headcount ratio of 0.6 or higher ($H_i \geq 0.6$) in 2002, and the lowest population density and GDP per capita amongst the groups of provinces. As noted in Section 5.2, these characteristics are commonly observed in the lagging areas of a country according to the World Bank (2009). The provinces that belong to Group 1 are referred to as "most lagging provinces". Based on DANE's classification of natural regions, most provinces in Group 1 belong to the Caribbean and Pacific regions of Colombia (coastal areas).

Table 5.1 Groups of Provinces by Level of Poverty in 2002

Groups of Provinces	Poverty rate (H_i)	Number of provinces	Population density (People/km^2)	GDP per capita (COP$)	Natural regions of Colombia			
					Caribbean/ Pacific (Coastal)	Andean	Amazon	Orinoco
1. Most lagging provinces	$H_i \geq 0.6$	10	46.60	4.239.686	8	2	0	0
2.Moderately lagging provinces	$H_i \geq 0.4$ $H_i < 0.6$	10	142.39	5.498.577	1	8	1	0
3. Least lagging provinces	$H_i < 0.4$	4	1,128.10	7.881.273	0	3	0	1

Source: Authors' own calculation based on poverty data published by DANE (2018c).
Group 1 (most lagging provinces): Chocó, Nariño, La Guajira, Córdoba, Magdalena, Bolívar, Cesar, Sucre, Huila, Boyacá.
Group 2 (moderately lagging provinces): Norte de Santander, Santander, Antioquía, Quindío, Caldas, Tolima, Cundinamarca, Caquetá, Cauca, and Atlántico.
Group 3 (least lagging provinces): Valle del Cauca, Risaralda, Meta, Bogotá (control group)

Group 2 includes provinces whose poverty headcount ratio was between 0.4 and 0.6 in 2002 ($0.6 \geq H_i \geq 0.4$); therefore, the provinces that belong to this group are referred to as "moderately lagging provinces". Most provinces in Group 2 belong to the Andean region. Based on the World Bank (2009), a group of economically leading provinces in Colombia is included as Group 3 (the control group), whose poverty headcount ratio in 2002 was lower than 0.4 ($H_i < 0.4$) and the population density and GDP per capita was the highest among the groups of provinces. The provinces of Group 3 are referred to as "least lagging provinces". Three out of four provinces in Group 3 belong to the Andean region. If growth in the tourism sector has helped alleviate poverty more rapidly in economically lagging provinces than in economically leading provinces since 2002, then the most lagging and moderately lagging provinces of Colombia should have recorded a greater poverty reduction than the least lagging provinces since 2002.

Table 5.2 shows the incidence of poverty and extreme poverty for the period 2002-2016 by groups of economically lagging and economically leading provinces. Boyacá, Bolivar and Cesar provinces are within the group of "most lagging provinces" that showed a significant decrease in the average poverty and extreme poverty measures since 2002. The average decrease in the incidence of poverty and extreme poverty in these three provinces ranged between 4.4 percent and 6.2 percent per year for the former, and between 9.2 percent and 11.6 percent per year for the latter, respectively. The significant growth of value added per capita of these three most lagging regions, which averaged 4.2 percent per year between 2002-2016 according to statistics from DANE (2018a), is likely a factor that contributed to their monetary poverty and extreme poverty reduction.

Amongst the provinces that belong to the group 2 "moderately lagging provinces", Cundinamarca, Atlántico, Antioquia and Santander had the largest decline in poverty and extreme poverty incidence for the period 2002-2016. The average decrease in the incidence of poverty of these four provinces ranged between 5.2 percent and 6.1 percent per annum, and their average decrease in the incidence of extreme poverty ranged between 6.3 percent and 12.4 percent per annum. Bogotá and Risaralda had the largest average decline in poverty incidence within the "least lagging provinces" of 5.9 percent and 5.3 percent per annum, respectively, as well as the largest average decline in extreme poverty of 6.4 percent and 5.7 percent per annum, respectively.

Data on the value added by agriculture ($AGRI$) and manufacturing ($MANU$) sectors in the provinces of Colombia are also drawn from DANE. All industries that belong to the tourism sector are removed from the tertiary sector using the list of tourism characteristic industries from the UNWTO (UNWTO, 2010a). The value-added by the service sector excluding the tourism sector ($SERV$) and by the tourism sector ($TOURISM$) are calculated using data from DANE (2018a) and Colombia's Superintendency of Corporations (2018). The International Standard Industrial Classification (ISIC) used by the UNWTO (UNWTO, 2010a) and DANE (DANE, 2005) are employed for matching the tourism characteristic industries (see Appendix 5B). These figures are converted to 2005 constant prices and are expressed as real value added by each sector in the provinces of Colombia in per capita units. Population data are also taken from DANE. Statistics to calculate the annual inflation rate by province ($INFLATION$) are drawn from DANE.

Table 5.2 Poverty and Extreme Poverty Incidence in Colombia's Provinces (2002-2016)

Provinces	Incidence of Poverty (%)				Incidence of Extreme Poverty (%)			
	2002	2009	2016	Average change per year (2002-2016)	2002	2009	2016	Average change per year (2002-2016)
Most lagging provinces ($H_i \geq 0.6$)								
Huila	69.6	57.5	45.9	-3.9	35.2	29.2	20.0	-6.6
Sucre	69.2	66.2	46.7	-3.6	28.8	29.0	12.0	-8.3
Choco	67.6	68.3	59.8	-0.8	32.4	40.5	34.7	1.0
La Guajira	67.2	66.7	52.5	-3.8	31.1	35.4	25.3	-6.5
Boyacá	67.1	48.0	32.0	-6.2	39.2	20.0	10.6	-11.0
Nariño	65.7	55.1	45.7	-2.6	33.1	21.2	16.2	-3.4
Cordoba	65.6	61.8	44.8	-3.0	31.6	25.0	10.8	-6.8
Magdalena	65.5	58.3	50.0	-3.2	24.0	24.1	18.2	-6.8
Bolivar	64.9	57.1	41.0	-4.9	29.8	22.3	11.0	-11.6
Cesar	61.9	58.6	41.9	-4.4	20.0	23.7	12.1	-9.2
Moderately lagging provinces ($0.6 > H_i \geq 0.4$)								
Cauca	57.8	66.1	50.7	-2.6	24.2	39.0	22.3	-4.3
Norte de Santander	56.6	47.5	40.4	-1.5	16.6	14.0	12.4	-0.9
Tolima	54.3	48.4	31.4	-3.9	19.9	17.9	9.5	-6.6
Caquetá	53.0	51.6	35.8	-2.2	21.7	16.3	8.7	-5.2
Cundinamarca	51.4	26.2	17.3	-5.9	18.7	8.2	5.3	-6.3
Atlántico	50.1	47.9	25.0	-5.9	12.4	12.2	3.1	-12.4
Antioquia	47.9	35.1	21.9	-6.1	17.8	12.8	6.6	-9.1
Quindío	47.1	49.9	30.3	-2.9	13.1	17.2	7.4	-5.8
Caldas	46.1	41.7	27.6	-4.3	12.9	12.2	7.2	-5.8
Santander	45.0	27.2	18.0	-5.2	16.6	8.0	4.7	-7.3
Least lagging provinces ($H_i < 0.4$)								
Meta	39.8	36.0	24.5	-2.4	13.2	10.7	7.5	-3.1
Valle	38.9	33.3	22.6	-3.8	8.9	9.7	6.2	-4.3
Risaralda	37.6	32.3	19.6	-5.3	7.3	7.6	3.4	-5.7
Bogotá	31.8	18.3	11.6	-5.9	7.2	3.2	2.3	-6.4
Average national	49.8	40.4	28.8	-4.3	17.7	14.4	8.5	-7.7

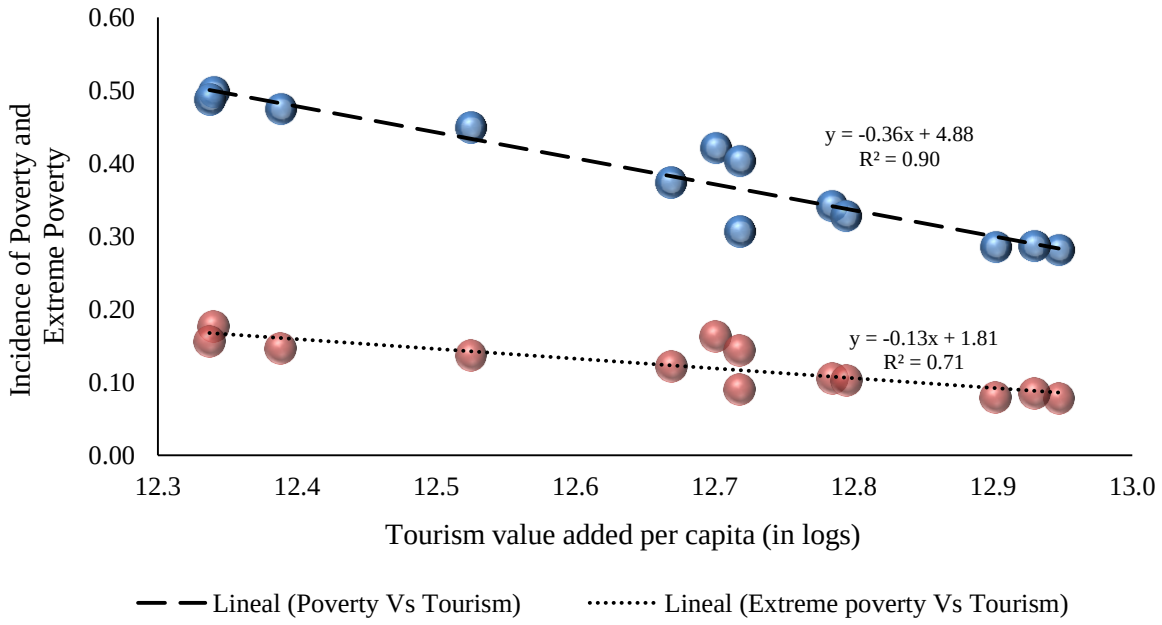
Source: Authors' own estimation based on poverty data published by DANE (2018c).

Compared with the industrial codes included by DANE in Colombia's tourism satellite accounts (DANE, 2011), we exclude some of the industries that are not included by the UNWTO. The codes removed from Colombia's tourism satellite accounts are 6021 (regular urban transport for passengers), and 6039 (other types of transport for passengers). The final data for $TOURISM$ calculated from DANE and Colombia's Superintendency of Corporations show that the provinces' value added of tourism accounts for an average of 10 percent of

provinces' total value-added in the tertiary sector, and 5.1 percent of provinces' total value-added in all other sectors. The highest percentage share of tourism value-added (as a proportion of all sectors' value-added) is seen in Nariño (8.31 percent), followed by Magdalena (8.12 percent), Sucre and La Guajira (7.2 percent each), and Quindío (6.4 percent). As domestic tourism consumption in Colombia accounted for 77.7 percent of total tourism consumption in the country between 2000 and 2005 (DANE, 2011), the value added by the tourism sector at the provincial level is likely to be predominantly derived from domestic tourism spending.

Preliminary analysis on the tourism-poverty linkage shows a high negative correlation between the average per capita value added by the tourism sector in the provinces of Colombia and the incidence of poverty and extreme poverty in the same regions of 90 percent and 71 percent, respectively (see Figure 5.3). This suggests that the tourism sector's economic activities tend to contribute favourably to the reduction of poverty and extreme poverty in Colombia. The following subsection describes the method by which the contribution of the tourism sector to poverty and extreme poverty reduction in the provinces of Colombia is examined.

Figure 5.3 Correlation between Incidence of Poverty and Extreme Poverty and Tourism Value Added Per Capita in Colombia (2002-2016)



The summary statistics (Table 5.3) show that the average poverty and extreme poverty in Colombia between 2002 and 2016 were 44.7 and 16.1 percent, respectively. The service sector's value added had the highest average percentage share of total sectors' value added (50.1 percent), followed by manufacturing (22.3 percent), agriculture (22 percent) and tourism (5.4 percent). The average poverty and extreme poverty rates in the most lagging and moderately lagging provinces were 55.5 percent and 22.6 percent respectively in the former, and 40.8 percent and 13.3 percent respectively in the latter. The average poverty and extreme poverty rates in the least lagging provinces were half and one-third of the most lagging provinces' poverty and extreme poverty rates, respectively. The service sector's value added per capita had the major positive contribution to total sectors' value added per capita of all provinces. The highest average percentage share of agricultural activities and tourism services on total value added per capita were observed in the most lagging provinces with 30.3 percent and 6.3 percent, respectively. The highest average percentage share of manufacturing and services activities (excluding tourism) on total sectors' value added per capita were in the moderately lagging provinces and the least lagging provinces with 26.8 percent and 55.2 percent, respectively.

Table 5.3 Summary Statistics (Average 2002-2016)

			Percentage share of each sector on total value added per capita			
	Poverty (%)	*Extreme Poverty (%)*	*AGRI*	*MANU*	*SERV*	*TOURISM*
Provincial average	44.7	16.1	22.0	22.3	50.1	5.4
Most Lagging	55.5	22.6	30.3	17.9	45.4	6.3
Moderately Lagging	40.8	13.3	15.0	26.8	52.8	5.2
Least lagging	27.8	6.9	18.7	21.9	55.2	4.0
Std. Dev.	14.7	9.8	16.2	9.0	12.0	3.1
Median	45.1	13.3	17.0	20.9	50.9	4.8
Minimum	10.1	1.6	0.2	6.8	10.5	1.3
Maximum	74.7	45.9	69.6	43.2	78.5	29.5
Observations	312	312	360	360	360	360

Source: Authors' own estimation based on data published by DANE (2018a) and Colombia's Superintendency of Corporations (2018)

5.5.3 Estimation Methods

To examine the economic impact of tourism on poverty (Croes and Vanegas, 2008), extreme poverty (Vanegas, 2014; Vanegas et al., 2015), and the sectoral contribution to poverty reduction (Montalvo and Ravallion, 2010; Ravallion and Chen, 2007; Ravallion and Datt, 1996), the log-linear model poverty and/or extreme poverty headcount ratios were used as the dependent variable.[85] The estimation methods for the binary logit models of poverty and extreme poverty applied in this chapter includes statistical tests for panel data. The results of the Hausman (1978) test support the inclusion of random cross-sectional effects in the regressions with poverty headcount ratio and extreme poverty headcount ratio. The first-order autocorrelation and heteroskedasticity are found in the binary logit of poverty and extreme poverty using the Wooldridge test for autocorrelation in panel data, and the Breusch-Pagan/Cook-Weisberg test for heteroscedasticity, respectively. No signs of multicollinearity were encountered. The presence of unit roots is rejected in *AGRI, MANU, TOURISM* and *INFLATION* using the Im, Pesaran, and Shin (IPS) (2003) test for unit roots in panel data, and the long run cointegration between variables is rejected using Pedroni's (2004) test of cointegration between variables (for results of diagnostic tests, see Appendix 5C).

The method of generalised estimating equations (GEEs) is employed in this chapter to estimate the binary logit Equations (5.1) to (5.4) and analyse the first two hypotheses of this chapter.[86] These hypotheses are whether an increase in tourism sector's value added contributes to poverty and extreme poverty reduction at the provincial level, and whether economically lagging provinces have a greater reduction in poverty and extreme poverty than economically leading provinces due to an increase in the value added of tourism sector. An autoregressive covariance of order 1 is chosen as the correlation structure in the GEEs method.[87] GEEs are an extension of generalised linear models (GLMs) for panel data with time dependence and/or cluster patterns, in which the response variable can be continuous or discrete (Liang and Zeger, 1986). GEEs belong to the family of marginal models (population-

[85] The limits between zero and one that the poverty headcount ratio holds as a continuous variable are taken into account for the econometric estimations as suggested by Alkire et al. (2015b).

[86] The use of generalised linear models or counterpart methods such as the GEEs has been recommended in poverty studies that employ the poverty headcount ratio as the dependent variable (Alkire et al., 2015b). The method of GEEs has rarely been applied in economics (Breitung et al., 2010).

[87] Among the covariance specifications available in GEEs, the covariance of Independence and the autoregressive covariance of order 1 (AR(1)) showed the best scores in the quasi-likelihood under independence model criterion (QIC) proposed by Pan (2001). The AR(1) covariance specification was chosen for the logit models of poverty and extreme poverty based on the first-order autocorrelation found in the Wooldridge test for autocorrelation in panel data.

mean effects), in that the marginal rather than the conditional distribution of the dependent variable is modelled given previous observations (McCulloch et al., 2008). Compared to other panel data methods such as the first-differenced GMM estimator of Arellano and Bond (1991), GEEs allows for the inclusion of independent factors (dummy variables in this case) and interaction terms within the model equation, which is vital for testing joint hypotheses (Balli & Sørensen, 2013). Econometric estimations with GEEs can show superior finite sample properties than first-difference estimation methods as the former method does not require that each cross sectional unit losses the first time period (Wooldridge, 2010).

The population means of $\text{logit}(H_{it})$ and $\text{logit}(HE_{it})$ in Equation (5.1) to Equation (5.4) are assumed to be normally distributed. This is because $\text{logit}(H_{it})$ and $\text{logit}(HE_{it})$ are continuous variables that range from -∞ to ∞. An identity function is used to link the response variables $\text{logit}(H_{it})$ and $\text{logit}(HE_{it})$ with their predictors. The random cross-sectional effect found previously in the logit model with extreme poverty does not alter the estimated coefficients with the GEEs method when an identity function is used.[88] Therefore, the GEEs method is used to estimate models with random effects (as the logit model of extreme poverty in this chapter requires). The quasi-likelihood estimation method is used for parameter estimation, which differs from the maximum likelihood estimation method applied in GLMs (Hardin and Hilbe, 2012; Myers, Montgomery, Vining, and Robinson, 2012). Since there is no closed-form solution in quasi-likelihood equations, the iterative quasi-score function is employed for parameter estimation.

Based on Holtz-Eakin et al. (1988), the vector autoregression (VAR) method for panel data is also employed in this chapter to estimate the Granger causality dynamic relationship between poverty measures (the odds of poverty and extreme poverty) and the economic sectors' value added at the provincial levels. The inflation rate as a control variable is excluded from this estimation. The panel VAR equations are estimated using GMM estimators following Abrigo and Love (2015).[89] Based on Vanegas et al. (2015), the Granger (1969) causality test will be used to determine whether there is Granger causality between poverty measures and economic sectors for all provinces in Colombia, and by most lagging, moderately lagging and least

[88] To capture heterogeneity between subjects in linear models (random effects), mixed linear models are commonly used (Zeger, Liang, and Albert, 1988). When GEEs are specified with an identity link function (as done in this chapter for the logit of extreme poverty), the coefficients estimated yield the same results as mixed linear models do (Zeger et al., 1988).

[89] The GMM estimator yields consistent estimates, especially when the *T* dimension is fixed and the *N* cross-sectional dimension is large (Abrigo and Love, 2015). This is a characteristic of the data used in this chapter.

lagging provinces. The stability test for panel VAR estimates is also employed. Andrews and Lu's (2001) test on the consistent model and moment selection criteria (MMSC) for dynamic panel GMM estimations shows that a first-order panel VAR specification is most efficient than the second and third-order panel VAR specifications.[90] Therefore, a first-differenced GMM estimator is applied for the panel VAR estimations. This is consistent with the first-order autocorrelation found previously in this section 5.4.3 with the Wooldridge test for autocorrelation in panel data.

5.6 Results

The results of the estimation of the binary logit models for poverty and extreme poverty are presented in two parts in this section. The first part (sub-section 5.5.1) shows estimated results of Equations (5.1) to (5.4) using the GEEs method with a covariance structure AR(1). The estimated results of Equation (5.1) and (5.2) are shown in Table 5.4, Part A, and help to analyse the contribution of each economic sector to poverty and extreme poverty alleviation, respectively, at the provincial level.[91] In particular, the results of the tourism sector ($TOURISM_{it}$) are used to examine whether an increase in the value added of the tourism sector contributes to poverty and extreme poverty reduction in the provinces of Colombia. The estimated results of Equations (5.3) and (5.4) are presented in Table 5.4, Part B, and are used to evaluate whether most lagging provinces and moderately lagging provinces experience greater poverty and extreme poverty reduction than the least lagging provinces from an increase in the value added of the tourism sector. In the sub-section 5.5.2 we examine whether the value added of each of the economic sectors Granger-causes poverty and extreme poverty. Sub-section 5.5.2 is derived from the estimation of Equations 5.1 and 5.2 using a panel VAR system with the first-differenced GMM estimator (the detailed results are reported in Appendix 5D). As a complement to the short-run analysis of the GEE method, the panel VAR estimates provide the information on the long-term relationship (Granger causality) between poverty and tourism.

[90] The MBIC (MMSC-Bayesian information criterion), MAIC (MMSC-Akaike information criterion), and MQIC (MMSC-Hannan and Quinn information criterion) are criterion worked by Andrews and Lu (2001) to choose the lag length in a panel VAR specification. When the panel VAR specification is of order 1, the results of these three criterions were the smallest as compared to the results obtained for panel VAR specifications of order 2 and 3.

[91] Estimation of the binary logit model of Equation 5.1 was also carried out using the first-differenced generalised method of moment (GMM) estimator of Arellano and Bond (1991) (not reported here). The short run results were similar to those obtained with GEEs using a covariance structure AR(1).

5.6.1 Monetary Poverty and Economic Sectors

The results from Table 5.4, Part A, show that the sectoral economic activities in the provinces of Colombia positively contribute to the decrease in the odds of being poor and extremely poor, respectively (see columns (i) and (ii)). The agriculture sector ($AGRI_{it}$) has a positive estimated coefficient, but is not statistically significant in reducing monetary poverty and extreme poverty. This result is consistent with the study by Barrientos et al. (2015) within the period 2012-2012, in which there was no statistical evidence to suggest that the output of the primary sector contributed to poverty reduction in the provinces of Colombia. As noted by the World Bank (2007), economic growth in agricultural activities has contributed to poverty reduction in countries such as China and India; however, in another group of countries including Bolivia and Brazil, it has not.

There are two perspectives on the evidence of no positive impact of the agricultural sector to poverty alleviation in Colombia. From a theoretical perspective, this is likely to be caused by the farmers' low income and educational qualifications as suggested by Barrientos et al. (2015). From a technical perspective, this can be explained by the aggregate nature of poverty measures, which implicitly provides a higher weight to urban than rural poverty (the percentage of population living in rural areas in Colombia decreased from 27.3 percent in 2002 to 23.3 percent in 2014 according to data from the World Bank (World Bank, 2018)).[92]

The separation of poverty measures for rural and urban areas to capture the contribution of the primary sector to poverty reduction was recommended by Montalvo and Ravallion (2010) for China's provinces. Montalvo and Ravallion found that "the primary sector was the real driving force in China's remarkable success against absolute poverty, rather than the secondary (manufacturing) or tertiary (services) sectors" (Montalvo and Ravallion, 2010, p. 13). Ivanic and Martin (2018) found that productivity gains in the agricultural sector of developing countries are highly effective for poverty reduction, even more effective than productivity increases in secondary and tertiary sectors.

[92] According to the World Bank statistics (World Bank, 2018), the percentage of population living in rural areas in 2016 was an average of 45.7 percent. Some countries were above this average, including Trinidad y Tobago (92 percent), India (67 percent) and Vietnam (66 percent); another group was around this average, including Indonesia (46 percent) and China (43 percent); and another set of countries was below this average, including Ecuador (36 percent), Germany (24 percent) and United States (18 percent).

Table 5.4 Poverty Reduction and Sectoral Economic Growth

Dependent variables: odds of poverty and extreme poverty

	Part A. Baseline equations		Part B. Dummy variables for lagging provinces and interaction terms			
	Eq. (5.1)	Eq. (5.2)	Eq. (5.3)		Eq. (5.4)	
Independent variables:	Poverty	Extreme poverty	Poverty		Extreme poverty	
	(i)	(ii)	(iii)	(iv)	(v)	(vi)
$Intercept$	9.395***	8.408***	5.359***	4.228**	8.15***	7.757***
	(2.026)	(3.349)	(1.643)	(1.885)	(2.215)	(2.690)
$AGRI_{it}$	0.046	0.140	0.009	0.0135	0.058	0.058
	(0.071)	(0.087)	(0.039)	(0.041)	(0.038)	(0.039)
$MANU_{it}$	-0.263***	-0.271**	-0.196***	-0.203***	-0.1857**	-0.1608
	(0.091)	(0.131)	(0.077)	(0.079)	(0.1032)	(0.1053)
$SERV_{it}$	-0.3429***	-0.455**	-0.163	-0.124	-0.4664***	-0.5157***
	(0.1306)	(0.202)	(0.117)	(0.128)	(0.1613)	(0.1723)
$TOURISM_{it}$	-0.096***	-0.118***	-0.060*	-0.015	-0.1383***	-0.075
	(0.034)	(0.048)	(0.032)	(0.044)	(0.042)	(0.080)
$INFLATION_{it}$	0.2134	0.777**			0.7504**	0.7031*
	(0.2287)	(0.382)			(0.389)	(0.4054)
$TREND_i$	-0.0303***	-0.014	-0.041***	-0.041***		
	(0.0073)	(0.012)	(0.007)	(0.007)		
$PROV_{most}$			0.911***	1.220**	0.7726***	2.441**
			(0.092)	(0.577)	(0.171)	(1.079)
$PROV_{modera}$			0.451***	1.599**	0.378**	1.040
			(0.110)	(0.714)	(0.1776)	(1.229)
$PROV_{most} \cdot TOURISM_{it}$				-0.0219		-0.1331*
				(0.045)		(0.076)
$PROV_{modera} \cdot TOURISM_{it}$				-0.089		-0.053
				(0.056)		(0.090)
Observations	312	312	312	312	312	312
Scale parameter	0.128	0.226	0.093	0.084	0.192	0.1896
QIC[1]	121.174	127.140	78.886	104.447	105.769	106.120
QICC[2]	54.001	84.755	43.231	46.320	76.049	79.176
Wald test (p-value)[3]				0.04		0.00

Notes: ***, **, and * indicate whether the coefficient is significant at the 1%, 5%, and 10%, respectively.
Values in parenthesis are the standard errors. The results are marginal effects
[1]QIC: quasi likelihood under independence model criterion
[2]QICC: corrected quasi likelihood under independence model criterion
[3]Wald test for joint hypotheses: Equation 5.3: $\beta_4 = 0, \phi_1 = 0, \phi_2 = 0$ and Equation 5.4: $\gamma_4 = 0, \theta_1 = 0, \theta_2 = 0$

The results in Table 5.4, Part A, show that the odds of being poor and extremely poor in the provinces of Colombia tend to decrease by 0.26 percent and 0.27 percent for each one percent increase in value added of the manufacturing sector ($MANU_{it}$). This is a decrease in the odds

of being poor and extremely poor of 0.23 percent using exponentiated coefficients.[93] The results are statistically significant at the 1 and 5 percent levels, respectively. Manufacturing and construction activities are likely to be the most important contributors to poverty and extreme poverty alleviation in Colombia within the manufacturing sector, as the average value added by these industrial activities within the period of analysis accounted for 85 percent of the value added by the secondary sector, according to statistics from DANE (DANE, 2018a). For Barrientos et al. (2015), the construction sector was an engine for the Colombian economy between 2002-2012, as construction increased its share of regional production (share values not reported in Barrientos' study). In East Asia countries, the manufacturing sector has been the driving force for poverty reduction as a result of public policies that have focused on exploiting comparative advantages in labour-intensive industries (Hasan and Quibria, 2004). Our finding differs from the study by Ravallion and Datt (1996) for the case of India, who found that the secondary sector had adverse impacts on national, urban and rural poverty rates, although the impacts were not significantly different from zero at the 5 percent level.

The findings (Table 5.4, Part A) also show that the service sector (excluding tourism) ($SERV_{it}$) was the greatest contributor to poverty and extreme poverty reduction in the provinces of Colombia (see column (i) and (ii)). A one percent increase in the service sector (excluding tourism) resulted in a decrease in the odds of being poor and extremely poor in the provinces of Colombia of 0.34 and 0.45 percent, respectively. Thus, the odds of being poor and extremely poor decrease by 0.29 and 0.36 percent, respectively, using exponentiated coefficients.[94] These results are statistically significant at the 1 and 5 percent levels. Wholesale and retail trade; financial intermediation; real estate and renting (excluding those for tourism); and public administration, defence, and social security are the economic activities within the services sector that tend to greatly contribute to monetary poverty alleviation in the provinces of Colombia. The average value added by these industries collectively accounted for 67 percent of the value added by the service sector (excluding tourism) within 2002-2016, according to statistics from DANE (DANE, 2018a). Barrientos et

[93] The equation for the odds of poverty is: $\exp\{\log[H_{it}/(1-H_{it})]\} = exp\{-0.263\}$, which is $[H_{it}/(1-H_{it})] = 0.768$. The latter is the odds of being poor, and $(0.774-1) = -0.23$ is the decrease in the odds of being poor in Colombia. The equation for the odds of extreme poverty follows the same procedure.

[94] $exp\{-0.3429\} = 0.709$ and $exp\{-0.455\} = 0.634$. The former is the odds of being poor and the latter is the odds of being extremely poor. Therefore, $(0.7097-1) = -0.29$ is the decrease in the odds of being poor, and $(0.634-1) = -0.36$ is the decrease in the odds of being extremely poor.

al. (2015) highlighted the positive contribution of all services sector's economic activities to poverty reduction in the provinces of Colombia.

The results for the service sector (excluding tourism) are consistent with the study by Ravallion and Chen (2007) for the Chinese case, who found that the growth of the tertiary sector (services and trade) significantly contributed to poverty reduction, although not in the same magnitude that the primary sector did. The results are also in line with the study by Ghani and O'Connell (2014) who showed that, service growth in Low-Income Countries, greatly contributed to poverty reduction in the long run (even more than primary industries, and had an effect similar in magnitude to the contribution of manufacturing industries). Conversely, Montalvo and Ravallion (2010) found no statistical evidence that the economic activities of the tertiary sector helped to alleviate poverty at the provincial levels in China in the same period. In Pakistan, Fatima, Azeem, Abbas, and Adil (2014) note that community services, and transportation, storage and communication services had the greatest contribution to poverty alleviation in the short run from 1951 to 2010; while economic growth of finance and insurance services worsened poverty.

The findings in Part A of Table 5.4 also provide statistical evidence to suggest that an increase in the tourism sector ($TOURISM_{it}$) contributes to poverty and extreme poverty reduction in the provinces of Colombia (see columns (i) and (ii)). The estimated results show a 0.096 and 0.118 percent decrease in the odds of being poor and extremely poor, respectively, for each one percent increase in the tourism sector (the odds decrease by 0.092 and 0.111 percent, respectively, using exponentiated coefficients).[95] This results support the view of promoting tourism for addressing SDG 1 in Colombia that DANE and the government can apply appropriate policies of enhancing tourism activities to reduce poverty.[96] To reach the government goal of reducing poverty and extreme poverty from 28 percent and 7.7 percent in 2017 to 18.7 percent and 1.7 percent, respectively, in 2030 (DNP, 2018), the poverty measures should decrease by 3 percent and 10 percent per annum, respectively.[97] These

[95] From the results of the first-differenced GMM estimator (not reported here), a one percent increase in the value added by the tourism sector causes a decrease in the odds of being poor of 0.135 and 0.28 percent in the short and long run, respectively (using exponentiated coefficients).

[96] Based on statistics from DANE (2018a) and Colombia's Superintendency of Corporations (2018), accommodation for visitors, restaurants, and cultural activities are the most important economic activities of the tourism sector, as they comprised 88 percent of its value added within the study period.

[97] The average rate of decline in the incidence of poverty and extreme poverty of 3 and 10 percent per annum seems to be achievable, as their actual average rates of decrease from 2002 have been close to these numbers; that is, 4.1 percent and 8 percent, respectively.

negative variation rates in poverty measures can be achieved if the value added (per capita) of agriculture, manufacture, service, and tourism sectors grow at the average rate they have kept from 2002: 1.8, 3.3, 2.9, and 4.2 percent per annum, respectively.[98] An expected annual inflation rate of 5 percent or less is also necessary to achieve the proposed poverty and extreme poverty rates of 18.7 and 1.7 percent, respectively, by 2030.

Based on ILO (2013), the contribution of tourism to poverty reduction can be larger in future years if strategies toward decent work and employment opportunities are promoted in the sector through policy initiatives. Contrary to our results, Donaldson (2007) found that in the province of Yunnan in China, the rural-based tourism sector made a large contribution to economic growth, although did little to reduce rural poverty rates. Our results are consistent with studies that have found a reduction in poverty in Nicaragua (Croes and Vanegas, 2008), and extreme poverty in Costa Rica, El Salvador, Guatemala, Honduras, and Nicaragua (Vanegas, 2014; Vanegas et al., 2015) from tourism exports sector (the tourism activities supplied for international tourists).

Results for inflation in Table 5.4, Part A, are only statistically significant (at the 5 percent level) for the odds of extreme poverty, and show that an increase in the inflation rate ($INFLATION_{it}$) in Colombia's provinces leads to an increase in the odds of being extremely poor of 0.77 percent. This is an increase in the odds of being extremely poor of 1.1 percent using exponentiated coefficients.[99] There is no statistical evidence to suggest that the inflation rates in the regions of Colombia contribute to an increase in the odds of being poor. This result differs from the study by Montalvo and Ravallion (2010), who found statistical evidence on the direct relationship between poverty growth and inflation. Notwithstanding, the inflation factor had to be removed in Montalvo and Ravallion's (2010) study to avoid the loss of efficiency in other estimated parameters. Contrary to the results found for the rate of inflation in this chapter, the results for time trends ($TTREND_i$) in Table 5.4, Part A, are only statistically significant for the incidence of poverty, and suggest that the odds of being poor decrease in average by 0.03 percent per annum. Poverty time trends by province were found to be significant in the case of China (Montalvo and Ravallion, 2010).

[98] This is deducted by plugging the average sectoral growth rates into the estimated equation: $\Delta \text{logit H}_{it} = 0.04 \cdot \Delta AGRI_{it} - 0.26 \cdot \Delta MANU_{it} - 0.34 \cdot \Delta SERV_{it} - 0.09 \cdot \Delta TOURISM_{it} + 0.21 \cdot \Delta INFLATION_{it}$.

[99] The equation for the odds of extreme poverty is: $\exp\{\log[HE_{it}/(1-HE_{it})]\} = exp\{0.777\}$, which is $[HE_{it}/(1-HE_{it})] = 2.17$ (the odds of being extremely poor). The increase in the odds of being extremely poor in Colombia due to inflation is $(2.17 - 1) = 1.1$.

The estimated results of Equations 5.3 and 5.4 show important impacts on poverty and extreme poverty reduction by economically lagging provinces (see Part B of Table 5.4, columns (iii) to (vi)). Following Montalvo and Ravallion (2010), the control variable $INFLATION_{it}$ is excluded from the estimation in Equations 5.3, since its estimated coefficient in Equations 5.1 was not statistically significant at the conventional levels. The results of dummy variables that account for economically lagging provinces in Colombia (column (iii)) show that the odds of being poor in the "most lagging provinces" ($PROV_{most}$) and "moderately lagging provinces" ($PROV_{modera}$) is 148 percent and 57 percent greater than the odds of being poor in the "least lagging provinces" (the control group), respectively.[100] These results are statistically significant at the 1 percent level and show a large poverty gap between the most lagging provinces and the least lagging provinces, as well as between moderately lagging provinces and the least lagging provinces. Galvis and Meisel (2012) showed that the economic convergence between lagging provinces in Colombia such as Chocó and leading (least lagging) regions such as Bogotá (observable through the poverty gap reduction) could take as long as two hundred years. Based on the results of this chapter, it could take up to 60 years for the "most lagging provinces" to converge to the "least lagging provinces" if the average reduction in the odds of being poor kept the rate of 7.9 percent per annum in the former group, and 5.8 percent per annum in the latter group. These are the average rates of decrease in the odds of being poor in the two groups between 2002 and 2016. Since the speed of decline in the odds of poverty of "moderately lagging provinces" is less than the speed in "most lagging provinces" (6.1 percent as compared to 7.9 percent), the latter group of provinces would tend to converge to the former group of provinces in 31 years if these rates of decrease remain constant.

Column (iv) shows the result of the interaction effect between the most lagging provinces of Colombia and the tourism sector ($PROV_{most} \cdot TOURISM_{it}$) on the odds of being poor. This result shows whether there is poverty gap reduction between the most lagging and the least lagging provinces, as well as between moderately lagging and the least lagging provinces (economic convergence) due to growth in the tourism sector. The findings indicate that the decrease in the odds of being poor in the most lagging provinces was 0.02 percent greater than

[100] The equation is: $\exp\{\log[H_{it}/(1-H_{it})]\} = exp\{\delta_k\}$. For Group 1, $\delta_{k=1} = 0.911$, then $[H_{it}/(1-H_{it})] = 2.48$ (the odds of being poor is 148 percent greater in the provinces of Group 1 than in the provinces of Group 3). For Group 2, $\delta_{k=2} = 0.451$, then $[H_{it}/(1-H_{it})] = 1.57$ (the odds of being poor is 57 percent greater in the provinces of Group 2 than in the provinces of Group 3).

the decrease in the odds of being poor in the least lagging provinces from increases in tourism activities. However, this estimated coefficient is not statistically significant at any significance level.[101] Column (iv) also shows the findings of the interaction effect between moderately lagging provinces and the tourism sector ($PROV_{modera} \cdot TOURISM_{it}$) on the odds of being poor. The results show that the decrease in the odds of being poor in moderately lagging provinces was 0.089 percent greater than the decrease in the odds of being poor in the least lagging provinces due to growth in the tourism sector. This estimated coefficient is not statistically significant even at the 10 percent significance level.[102]

A joint-F test (Wald test) is applied to the coefficient of dummy variables and interaction terms in column (iv). This is to test whether the effect of growth in the tourism sector on the odds of being poor does not vary between the most and moderately lagging provinces against the least lagging provinces. This null hypothesis is rejected at the 5 percent significance level, and shows statistical evidence to suggest that the effect of tourism activities on the odds of being poor varies between most and moderately lagging provinces and the least lagging provinces ($Ho: \beta_4 = 0, \phi_{k=1} = 0, \phi_{k=2} = 0$).[103] Therefore, there is evidence of economic convergence (poverty gap reduction) between economically lagging and economically leading provinces in Colombia caused by growth in tourism economic activities.

The overall estimated coefficients of dummy variables and interaction terms in column (iv) show that a one percent increase in the growth of the tourism sector led to a 0.037 percent decrease in the likelihood of being poor in the most lagging provinces.[104] In the group of moderately lagging provinces, the likelihood of being poor decreased by 0.104 percent for each one percent increase in tourism sector. Therefore, the reductions in the likelihood of being poor from tourism activities in the most lagging provinces and moderately lagging

[101] This coefficient was obtained from the regression of Equation 5.3. Thus, $\partial \text{logit}(H_{it}) / \partial (PROV_k \cdot \log TOURISM_{it}) = \phi_k$. Therefore, $\phi_1 = -0.0219$.

[102] These coefficients were obtained from the regression of Equation 5.3. Thus, $\partial \text{logit}(H_{it}) / \partial (PROV_k \cdot \log TOURISM_{it}) = \phi_k$. Therefore, $\phi_2 = -0.089$.

[103] For Wooldridge (2013), some interaction variable models could show that the estimated coefficients are not statistically significant separately, even though these coefficients are jointly significant. Therefore his recommendation is to take care not to look separately the estimated coefficients, and look at the p-value of the joint F test to know whether the null hypothesis of the joint distribution is rejected (Wooldridge, 2013, p. 200). For Gujarati (2003), two estimated coefficients are likely not to be statistically significant individually due to high collinearity between explanatory variables (as occurs in interaction variable models). Therefore, for Gujarati (2003) the solution lies in testing joint hypothesis as the form: $\beta_2 = \beta_3 = 0$.

[104] From Equation 5.3, $logit(H_{it}) \equiv log(H_{it}/1 - H_{it}) = \alpha + \beta_4 logTOURISM_{it} + \delta_1 PROV_1 + \delta_2 PROV_2 + \phi_1 PROV_1 \cdot logTOURISM_{it} + \phi_2 PROV_2 \cdot logTOURISM_{it}$. When $PROV_1 = 1$ and $PROV_2 = 0$, $logit(H_{it}) = (4.22 + 1.22) + (-.015 - .0219) \cdot logTOURISM_{it}$. Therefore, $\partial logit(H_{it}) / \partial logTOURISM_{it} = -0.037$.

provinces is 2.4 times and 6.9 times the reduction in the likelihood of being poor in the least lagging provinces (the average reduction in the odds of poverty in the least lagging provinces was of 0.015 percent). This result is consistent with Galvis and Meisel's (2012) view that the solution to have a more equilibrated country lies in stimulating of economic growth in the lagging areas of Colombia, and shows that an increase in the economic activities of tourism helps to reduce the monetary poverty gap between lagging and leading provinces.

Column (v) (Table 5.4) shows that the odds of being extremely poor in the most lagging provinces ($PROV_{most}$) and moderately lagging provinces ($PROV_{modera}$) is 116 and 45 percent greater than the odds of being extremely poor in the least lagging provinces, respectively.[105] These results, that are significant at the 1 and 5 percent levels respectively, show that the extreme poverty gap between economically lagging and leading provinces is very large, although not as large as the gap observed between lagging and leading provinces in poverty levels. The variable $TREND_i$ is excluded from the estimation in Equations 5.4, as its estimated coefficient in Equations 5.2 was not statistically significant at the conventional significance levels.

The result of the interaction effect between the dummy variable that accounts for the most lagging provinces and the tourism sector ($PROV_{most} \cdot TOURISM_{it}$) on the odds of being extremely poor is shown in column (vi). This interaction variable identifies whether an increase in tourism activities helps to reduce extreme poverty gaps between the most and the least lagging provinces. The finding shows that the decrease in the likelihood of being extremely poor in the most lagging provinces due to growth in the tourism sector was 0.13 percent greater than the decrease in the likelihood of being extremely poor in the least lagging provinces.[106] This estimated coefficient is statistically significant at the 10 percent level.

The results in column (vi) also show the interaction effect between the dummy variable for moderately lagging provinces and the tourism sector ($PROV_{modera} \cdot TOURISM_{it}$) on the odds of being extremely poor. The results indicate that the decrease in the odds of extreme poverty in moderately lagging provinces due to more tourism economic activities was 0.05 percent

[105] The equation is: $\exp\{\log[HE_{it}/(1-HE_{it})]\} = exp\{\delta_k\}$. For Group 1, $\delta_{k=1} = 0.772$, then $[HE_{it}/(1-HE_{it})] = 2.16$ (the odds of being extremely poor is 116 percent greater in the provinces of Group 1 than in the provinces of Group 3). For Group 2, $\delta_{k=2} = 0.378$, then $[HE_{it}/(1-HE_{it})] = 1.45$ (the odds of being poor is 45 percent greater in the provinces of Group 2 than in the provinces of Group 3).

[106] This coefficient was obtained from the regression of Equation 5.4. Thus, $\partial \text{logit}(HE_{it})/\partial(PROV_k \cdot \log TOURISM_{it}) = \theta_k$. Therefore, $\theta_1 = -0.13$.

greater than the decrease in the odds of extreme poverty in the least lagging provinces.[107] This estimated coefficient is not statistically significant at the conventional significance levels. Using the Joint-F test, the null hypothesis that the effect of growth in the tourism sector on the likelihood of being extremely poor does not differ between the most lagging and the least lagging provinces, and between moderately lagging and least lagging provinces, is rejected at the 1 percent significance level. Thus, there is enough evidence that economically lagging and economically leading provinces in Colombia are reducing the extreme poverty gap between them due to growth in the tourism sector (the growth of tourism activities leads to economic convergence between lagging and leading regions).

The conjoint results of the interaction model for extreme poverty show that, a one-percent increase in the value added of the tourism sector leads to a 0.21 percent decrease in extreme poverty in the most lagging provinces,[108] and a 0.13 percent decrease in moderately lagging provinces. The average reduction in the odds of being extremely poor in the least lagging provinces of Colombia from tourism activities was 0.07 percent per annum based on Table 5.4, column (vi). Thus, a reduction in the odds of being extremely poor in most lagging and moderately lagging provinces resulting from growth in tourism activities is almost three and two times the reduction in the odds of being extremely poor in the least lagging provinces, respectively.

The results presented in columns (iv) and (vi) confirm Mak's view that "tourism development can help to balance opportunities and incomes in different regions of a destination or country" (Mak, 2004, p. 129). These results imply that policy initiatives aimed at decreasing monetary poverty and extreme poverty in Colombia should consider policies in the tourism sector as effective strategies to reduce the monetary poverty gap between economically lagging and economically leading (least lagging) provinces. Based on the findings, it can be said that domestic tourism (as per the findings in Chapter 4) greatly contributes to poverty reduction. This is based on domestic tourism consumption and expenditures that account for three-

[107] This coefficient was calculated from the regression of Equation 5.4. Thus, $\partial \text{logit}(HE_{it})/\partial(PROV_k \cdot \log TOURISM_{it}) = \theta_k$. Therefore, $\theta_2 = -0.05$.

[108] From Equation 5.4, $logit(HE_{it}) \equiv log(HE_{it}/1 - HE_{it}) = \alpha + \beta_4 logTOURISM_{it} + \delta_1 PROV_1 + \delta_2 PROV_2 + \phi_1 PROV_1 \cdot logTOURISM_{it} + \phi_2 PROV_2 \cdot logTOURISM_{it}$. When $PROV_1 = 1$ and $PROV_2 = 0$, $\text{logit}(HE_{it}) = (7.75 + 2.44) + (-.075 - .133) \cdot logTOURISM_{it}$. Therefore, $\partial logit(H_{it})/\partial logTOURISM_{it} = -0.21$.

quarters of internal tourism expenditures (DANE, 2011).[109] In 2013, Colombian residents made 40.3 million trips within the country, which is 18 times the number of trips that international tourists made to Colombia (DANE, 2015).

5.6.2 Causality Linkages Between Poverty and Economic Sectors

This sub-section first examines the Granger causality between poverty and economic sectors in two parts as shown in Table 5.5. Part A reports the results for the causality relationships between poverty reduction (H) and sectoral economic activities (i.e., agriculture, manufacturing, service sectors and the tourism sector). The part B results are based on the causality between extreme poverty (HE) and the sectors' economic activities. In both parts, the control variables inflation rate ($INFLATION_{it}$) and time trend ($TREND_i$) are not included for the estimations. The causality between poverty reduction and economic sectors is extended in Table 5.6 based on the regions indicated by most lagging, moderately lagging and least lagging provinces. These categories of the provinces by the regions indicate the impact of economic sectors-poverty reduction nexus.

The results of the Granger causality test in Part A (Table 5.5) show a uni-directional (one-way direction) effect between the odds of being poor and the agriculture sector ($AGRI \rightarrow H$) that is not significant at the 1 and 5 percent significance levels. In other words, the results indicate that the agricultural sector's value added does not significantly reduce poverty. It could be argued that increases in the real per capita income reduce monetary poverty and lead to growth in the agricultural sector´s value added ($H \rightarrow AGRI$). The Granger-causality results show one-way causality between the manufacturing sector and poverty reduction ($MANU \rightarrow H$) and between the services sector and poverty reduction ($SERV \rightarrow H$). This is an indication that increases in the economic activities of manufacturing sector (including construction) and services sector (including wholesale and retail trade; financial intermediation, among other service sectors) lead to poverty reduction.

A key finding from the Granger-causality test in Part A shows a two-way dynamic causation between the tourism sector and poverty reduction at the 1 percent significance level ($H \leftrightarrow TOURISM$). This important finding of bi-directionality suggests that a causality effect exists

[109] Internal tourism expenditure is the sum of domestic tourism expenditure and inbound tourism expenditure within an economy (UNWTO, 2010a).

in both directions between tourism development and poverty reduction. This result of tourism-poverty relationships suggest that increases in workers' real income increases the value added of tourism activities that reduces poverty.

Table 5.5 Granger-Causality Results for Poverty Reduction and Economic Sectors

	Part A Poverty (*H*)				Part B Extreme poverty (*HE*)		
Null hypothesis	Chi^2	Prob. values	Ho	Null hypothesis	Chi^2	Prob. values	Ho
AGRI does not Granger-cause *H*	0.30	0.583	Not rejected	*AGRI* does not Granger-cause *HE*	2.42	0.119	Not rejected
H does not Granger-cause *AGRI*	7.13***	0.008	Rejected	*HE* does not Granger-cause *AGRI*	5.30**	0.021	Rejected
MANU does not Granger-cause *H*	9.22***	0.002	Rejected	*MANU* does not Granger-cause *HE*	17.4***	0.000	Rejected
H does not Granger-cause *MANU*	0.40	0.523	Not rejected	*HE* does not Granger-cause *MANU*	0.00	0.951	Not rejected
SERV does not Granger-cause *H*	39.3***	0.000	Rejected	*SERV* does not Granger-cause *HE*	1.31	0.251	Not rejected
H does not Granger-cause *SERV*	0.18	0.663	Not rejected	*HE* does not Granger-cause *SERV*	0.00	0.946	Not rejected
TOURISM does not Granger-cause *H*	6.97***	0.008	Rejected	*TOURISM* does not Granger-cause *HE*	0.26	0.606	Not rejected
H does not Granger cause *TOURISM*	4.89**	0.028	Rejected	*HE* does not Granger cause *TOURISM*	3.20*	0.073	Weakly rejected

Notes: ***, **, and * indicate whether the coefficient is significant at the 1%, 5%, and 10%, respectively.
Ho denotes null hypothesis

The Granger-causality results in Part B (Table 5.5) also show a uni-directional Granger-causality between agricultural development and extreme poverty reduction ($HE \rightarrow AGRI$), and between growth in the manufacturing sector and extreme poverty alleviation ($MANU \rightarrow HE$). Therefore, reduction in extreme poverty helps to increase agricultural production, and growth in the manufacturing sector causes a reduction in the likelihood of being extreme poor. The causality effect between extreme poverty and tourism shows a one-way causality impact ($HE \rightarrow TOURISM$). This finding suggests that a reduction in extreme poverty results in an increase in the income levels of people working in the tourism sector and the likelihood of not falling into extreme poverty.

The next step (Table 5.6) presents the causality relationships between economic sectors and poverty measures by regions categorised by the groups of economically lagging provinces (that is: most lagging, moderately lagging, and least lagging). The findings in column (i) for

the most lagging provinces show a bi-directional causality between growth in all economic sectors and poverty reduction at the one per cent significance level ($AGRI \leftrightarrow H; MANU \leftrightarrow H; SERV \leftrightarrow H$ and $TOURISM \leftrightarrow H$). This result implies that, in these provinces, growth in all the economic sectors leads to poverty reduction, which in turn causes increases in the value added of all economic sectors in the long run, including tourism activities. Column (ii) shows a uni-directional causality between the manufacturing sector's growth and extreme poverty reduction ($MANU \rightarrow HE$), which is an indication that extreme poverty reduction is associated with growth in capital goods in the most lagging provinces. There is also a uni-directional causality between growth in tourism activities and extreme poverty reduction ($TOURISM \rightarrow HE$), which shows the importance of increasing tourism activities in these provinces to reduce extreme poverty in the long run.

Table 5.6 Granger-Causality Results for Poverty and Economic Sector by Lagging Provinces

	Most lagging provinces		Moderately lagging provinces		Least lagging provinces	
	Poverty (*H*)	Extreme Poverty (*HE*)	Poverty (*H*)	Extreme Poverty (*HE*)	Poverty (*H*)	Extreme Poverty (*HE*)
	(i)	(ii)	(iii)	(iv)	(v)	(vi)
Null hypothesis	Chi^2 (Prob.).	Chi^2 (Prob.)	Chi^2 (Prob.)	Chi^2 (Prob.)	Chi^2 (Prob.)	Chi^2 (Prob.)
AGRI does not Granger-cause *H* / *HE*	6.99*** (0.008)	1.835 (0.17)	2.17 (0.141)	2.46 (0.117)	0.29 (0.59)	0.082 (0.775)
H / *HE* does not Granger-cause *AGRI*	43.48*** (0.00)	1.34 (0.247)	3.45* (0.063)	5.65** (0.017)	0.35 (0.55)	0.26 (0.60)
MANU does not Granger-cause *H* / *HE*	36.77*** (0.00)	8.35*** (0.004)	4.10** (0.043)	0.537 (0.464)	2.83 (0.10)	1.14 (0.28)
H / *HE* does not Granger-cause *MANU*	17.54*** (0.00)	0.164 (0.68)	3.39** (0.05)	3.024* (0.082)	0.93 (0.33)	0.45 (0.49)
SERV does not Granger-cause *H* / *HE*	55.78*** (0.00)	0.018 (0.893)	7.69*** (0.006)	7.30*** (0.007)	0.20 (0.65)	0.44 (0.50)
H / *HE* does not Granger-cause *SERV*	7.55*** (0.00)	2.054 (0.152)	0.19 (0.66)	0.227 (0.634)	0.012 (0.91)	0.052 (0.81)
TOURISM does not Granger-cause *H* / *HE*	42.30*** (0.006)	5.21** (0.022)	2.019 (0.155)	0.58 (0.44)	0.28 (0.59)	0.50 (0.479)
H / *HE* does not Granger-cause *TOURISM*	6.73*** (0.009)	0.836 (0.36)	7.00*** (0.008)	1.062 (0.30)	1.27 (0.26)	0.36 (0.54)

Notes: ***, **, and * indicate if the coefficient is significant at the 1%, 5%, and 10%, respectively.
Values in parenthesis are the standard errors
Instruments for panel VAR estimation: lags from 1 to 3 periods in the dependent and independent variables.

Columns (iii) and (iv) shows the results for moderately lagging provinces. There is a uni-directional causality between poverty and extreme poverty reduction and growth in the agricultural ($H \rightarrow AGRI$ and $HE \rightarrow AGRI$) and tourism ($H \rightarrow TOURISM$) sectors in moderately lagging provinces. These causality results imply that, in the moderately lagging provinces, reducing monetary poverty rates increases the production of agricultural products and tourism services in the long run. It is also shown that the service sector's economic growth results in a reduction in extreme poverty ($SERV \rightarrow HE$). The bi-directional causality found between manufacturing sector's growth and poverty reduction ($MANU \leftrightarrow H$) shows that increases in manufacturing activities lead to poverty reduction (through increases in the income level of people), which in turn creates conditions for the poor of these regions to buy more manufactured products.

Other results in column (v) and (vi) show no statistical evidence to infer Granger-causality relationships between the sectors' economic growth (agriculture, manufacturing, service and tourism) and the reduction in poverty and extreme poverty for the least lagging provinces. The low number of observations in this classification group of provinces affects the stability conditions of panel VAR estimates and the Granger-causality, which are reflected in the results.

The findings obtained in this chapter have important implications for policy makers and tourism stakeholders. Tourism contributes to reductions in both poverty and extreme poverty in Colombia's provinces, and to the reduction of the poverty gap between economically lagging and the country's leading provinces. The tourism sector's economic growth mainly causes poverty alleviation in the most lagging provinces in the long run, and the reduction in poverty and extreme poverty levels in the most lagging and moderately lagging provinces helps to increase tourism activities.

5.7 Conclusions

This chapter empirically analyses the economic impact of tourism on monetary poverty and extreme poverty measures at the provincial level in Colombia between 2002 and 2016. A binary logit model using aggregate data is estimated applying the method of generalised estimating equations to test whether growth in the tourism sector contributes to poverty

reduction. In the sectoral plans of tourism in Colombia of 2008 and 2014, the tourism sector is regarded as a key instrument for poverty alleviation. Results from this analysis show tourism as a key sector to reduce poverty and extreme poverty in the provinces of Colombia, and for the achievement of SDG 1 on "No Poverty" by 2030. The contribution of the tourism sector to poverty and extreme poverty alleviation is around 40 percent of the contribution the manufacturing sector has made to poverty and extreme poverty reduction, and the service sector (excluding tourism) is the largest contributor to both poverty and extreme poverty reduction. The results also suggest that growth in the tourism sector's economic activity contributes to a decline in poverty levels, primarily in the most lagging provinces; and that the reduction in poverty and extreme poverty in the most lagging and moderately lagging provinces leads to growth in the tourism sector's output in the long run.

The empirical result is important for the government to allocate resources to the tourism sector to reduce poverty and extreme poverty in the economically most lagging and moderately lagging provinces in the short and long run. Increasing the resources, infrastructure development and investment in the economically lagging provinces is important to support tourism activities. Future policy initiatives at the national and provincial levels in Colombia highlight the significant benefits that the most lagging provinces (mainly coastal areas) and moderately lagging provinces (mainly located in the Andean region) are receiving from tourism activities from the supply of nature-based attributes and man-made attractions. Potential policy initiatives could include increasing international and domestic tourism demand through the reduction of risk factors for tourists, and growth in man-made attractions for leisure and recreation, especially in the economically lagging provinces. Tourism can significantly contribute to SDG 1 on "No Poverty" through the creation of MSMEs in innovative tourism activities, the enhancement of existing tourism companies (through training programs), the formalisation of tourism businesses, and the creation of decent jobs with equal opportunities for female and young people, especially in economically lagging provinces.

The next chapter provides the overall conclusions on the results obtained in this thesis. It also shows several policy initiatives the government of Colombia could implement to promote tourism activities at the provincial level and thereby stimulate monetary poverty reduction.

Appendix 5A

Appendix Table 5A shows the group of industries that belong to each economic sector. It is split into Section and Division according to the International Standard Industrial Classification (ISIC Rev 3.1). The industries that belong to the tourism sector (TOURISM) within the service sector (SERVICES) are shown at 4 digits (Class). The percentage of the number of Classes that belong to the tourism sector (out of the total number observed in the respective Section) is also shown.

Appendix Table 5A Colombia's Economic Sectors by Each Category

	Sector	Division	Classification (TOURISM)	% of Class
AGRICULTURE				
Agriculture, hunting and forestry	A	01 – 02		
Fishing	B	05		
Mining and quarrying	C	10 – 14		
MANUFACTURE				
Manufacturing	D	15 – 37		
Electricity, gas and water supply	E	40 – 41		
Construction	F	45		
SERVICES				
(*SERVICES and TOURISM*)				
Wholesale and retail trade; repair of motor vehicles, motorcycles and personal and household goods	G	50 – 52		0%
Hotels and restaurants	H	55	5511, 5512, 5513, 5519, 5521, 5522, 5523, 5524, 5525, 5529, 5530	100%
Transport, storage and communication	I	60 – 64	6010, 6022, 6023, 6031, 6032, 6111, 6112, 6120, 6211, 6213, 6340	31%
Financial intermediation	J	65 – 67		0%
Real estate, renting and business activities	K	70 – 74	7111	3%
Public administration and defence; compulsory social security	L	75		0%
Education	M	80		0%
Health and social work	N	85		0%
Other community, social and personal service activities	O	90 – 93	9212, 9214, 9219, 9232, 9233, 9241, 9242, 9249	35%
Activities of private households as employers and undifferentiated production activities of private households	P	95 – 97		0%
Extraterritorial organisations and bodies	Q	99		0%

Appendix 5B

Appendix Table 5B shows the tourism characteristic industries included in this study.

Appendix Table 5B Tourism Characteristic Industries in Colombia

	UNWTO (ISIC Rev.4)		DANE (ISIC Rev 3.1 AC)	
Description	Section	Class	Section	Class
Accommodation for visitors				
Short term accommodation activities	I	5510	H	5511, 5512
Camping grounds, recreational vehicle parks and trailer parks	I	5520	H	5513
Other accommodation	I	5590	H	5519
Real estate activities on a fee or contract basis	L	6820		NI
Food and beverage service activities				
Restaurants and mobile food service activities	I	5610	H	5521, 5522, 5523, 5524
Other food service activities	I	5629	H	5525, 5529
Beverage serving activities	I	5630	H	5530
Railway passenger transport				
Passenger rail transport, interurban	H	4911	I	6010
Road passenger transport				
Other passenger land transport	H	4922	I	6022, 6023, 6031, 6032
Water passenger transport				
Sea and coastal passenger water transport	H	5011	I	6111 6112
Inland passenger water transport	H	5021	I	6120
Air passenger transport				
Passenger air transport	H	5110	I	6211 6213
Transport equipment rental				
Renting and leasing of motor vehicles	N	7710	K	7111
Travel agencies and other reservation activities				
Travel agency activities	N	7911	I	6340
Tour operator activities	N	7912	I	6340
Other reservation service and related activities	N	7990	I	6340
Cultural activities				
Creative, arts and entertainment activities	R	9000	O	9212, 9214
Museums activities and operation of historical sites and buildings	R	9102	O	9232
Botanical and zoological gardens and nature reserves activities	R	9103	O	9233
Sports and recreational activities				
Renting and leasing of recreational and sports goods	N	7721		NI
Gambling and betting activities	R	9200	O	9242
Operation of sports facilities	R	9311	O	9241
Other sports activities	R	9319	O	9241
Activities of amusement parks and theme parks	R	9321	O	9219
Other amusement and recreation activities n.e.c.	R	9329	O	9249

Note: The International Standard Industrial Classification (ISIC) used by the UNWTO (ISIC Rev. 4) is matched to the ISIC used by DANE and Colombia' Superintendency of Corporations until 2013 (ISIC Rev. 3.1 AC). For the years 2014 and 2015 ISIC Rev. 4 is followed
NI: not included

Appendix 5C

Appendix Table 5.1C shows the Im, Pesaran, and Shin (2003) test for unit roots in panel data. Three out of five variables included in this study are integrated of order 1, I(1). Appendix Tables 5.2C and 5.3C show the panel cointegration testing of Pedroni (2004). The null hypothesis of no cointegration in the Logit of poverty (Logit (H)) is not rejected in four statistics in both cases (individual intercept, and individual intercept and trend). The null hypothesis of no cointegration in the Logit of extreme poverty (Logit (HE)) is also rejected in four statistics using individual intercept and trend. Results show that the Logit of poverty and extreme poverty are not cointegrated with the economic sectors' value added in the long run.

Appendix Table 5.1C Panel Data Unit Root Test

	(level)		**(1st difference)**		**I(p)**
	Individual intercept	Individual intercept and trend	Individual intercept	Individual intercept and trend	
logit H	3.0117 (.998)	0.293 (.6155)	-7.776 (.000)	-1.523 (.060)	I(1)
logit HE	-0.2619 (.396)	-0.4486 (.326)	-6.3842 (.000)	-1.798 (.036)	I(1)
logPRIMARY	-2.6915 (.003)	-3.9279 (.000)	-11.652 (.000)	-8.138 (.000)	I(0)
logSECONDARY	1.235 (.8917)	-1.6066 (.054)	-10.973 (.000)	-7.5959 (.000)	I(1)
logTERTIARYNT	1.955 (.9748)	-3.9211 (.000)	-13.0779 (.000)	-10.5462 (.000)	I(0)
logTOURISM	-3.450 (.000)	-6.795 (.000)	-16.002 (.000)	-12.500 (.000)	I(0)
INFLATION	-4.20 (.000)	-1.580 (.057)	-9.787 (.000)	-6.789 (.000)	I(0)

p-value in brackets; lag length: 1 using AIC (automatic selection of lag length). I(p) shows the order of integration
This is the Im, Pesaran, and Shin (2003) test

Appendix Table 5.2C Panel Cointegration Testing for Logit of Poverty (H)

	Individual intercept		**Individual intercept and trend**	
	Statistic	Weighted Stat.	Statistic	Weighted Stat.
	Within-dimension		Within-dimension	
Panel v-Statistic	-4.66 (1.00)	-4.76 (1.00)	-6.42 (1.00)	-6.53 (1.00)
Panel rho-Statistic	3.03 (0.99)	3.11 (0.99)	4.89 (1.00)	4.99 (1.00)
Panel PP-Statistic	-7.19 (0.00)	-6.62 (0.00)	-9.72 (0.00)	-8.84 (0.00)
Panel ADF-Statist	-2.25 (0.01)	-1.91 (0.02)	-2.62 (0.00)	-2.11 (0.01)
	Between-dimension		Between-dimension	
Group rho-Statistic	5.14 (1.00)		6.74 (1.00)	
Group PP-Statistic	-7.39 (0.00)		-11.00 (0.00)	
Group ADF-Statist	-1.47 (0.06)		-1.28 (0.09)	

Ho: no cointegration; lag length: 1 using AIC (automatic selection of lag length). This is the test of Pedroni (2004)

Appendix Table 5.3C Panel Cointegration Testing for Logit of Extreme Poverty (HE)

	Individual intercept		**Individual intercept and trend**	
	Statistic	Weighted Stat.	Statistic	Weighted Stat.
	Within-dimension		Within-dimension	
Panel v-Statistic	-3.28 (0.99)	-3.90 (1.00)	-4.55 (1.00)	-5.49 (1.00)
Panel rho-Statistic	4.24 (1.00)	4.34 (1.00)	5.02 (1.00)	5.55 (1.00)
Panel PP-Statistic	1.06 (0.85)	1.12 (0.87)	0.65 (0.74)	2.02 (0.97)
Panel ADF-Statist	0.40 (0.65)	0.78 (0.78)	0.02 (0.51)	1.49 (0.93)
	Between-dimension		Between-dimension	
Group rho-Statistic	6.13 (1.00)		6.92 (1.00)	
Group PP-Statistic	0.31 (0.62)		-1.86 (0.03)	
Group ADF-Statist	-1.17 (0.12)		-1.90 (0.02)	

Ho: no cointegration; lag length: 1 using AIC (automatic selection of lag length). This is the test of Pedroni (2004)

Appendix 5D

Appendix Table 5D shows results of the estimation of Equations 5.1 and 5.2 using a panel VAR system with the first-differenced GMM estimator.

Appendix Table 5D. Panel VAR Estimations and Granger Causality Test

Eq. (5.1): odds of poverty $\left(\frac{H_{it}}{1-H_{it}}\right)$			Eq. (5.2): odds of extreme poverty $\left(\frac{HE_{it}}{1-HE_{it}}\right)$		
variables: Dependent / Independent	Panel VAR (Coefficient)	Granger test (Chi^2)	variables: Dependent / Independent	Panel VAR (Coefficient)	Granger test (Chi^2)
$\left(\frac{H_{it}}{1-H_{it}}\right)$			$\left(\frac{HE_{it}}{1-HE_{it}}\right)$		
$AGRI_{it-1}$	0.085	0.301	$AGRI_{it-1}$	0.5191	2.426
	(0.156)	(0.583)		(0.333)	(0.119)
$MANU_{it-1}$	-0.771***	9.224***	$MANU_{it-1}$	-1.735***	17.47***
	(0.253)	(0.002)		(0.415)	(0.000)
$SERV_{it-1}$	-1.420***	39.390***	$SERV_{it-1}$	-0.4805	1.316
	(0.226)	(0.000)		(0.418)	(0.251)
$TOURISM_{it-1}$	-0.130***	6.973***	$TOURISM_{it-1}$	0.045	0.266
	(0.049)	(0.008)		(0.087)	(0.606)
$AGRI_{it}$			$AGRI_{it}$		
$\left(\frac{H_{it-1}}{1-H_{it-1}}\right)$	-0.112***	7.135***	$\left(\frac{HE_{it-1}}{1-HE_{it-1}}\right)$	-0.059**	5.306**
	(0.041)	(0.008)		(0.025)	(0.021)
$MANU_{it-1}$	-0.225**	5.118**	$MANU_{it-1}$	-0.335***	11.103***
	(0.099)	(0.024)		(0.100)	(0.001)
$SERV_{it-1}$	0.295***	7.608***	$SERV_{it-1}$	0.547***	19.073***
	(0.1072)	(0.006)		(0.1254)	(0.000)
$TOURISM_{it-1}$	-0.028	1.459	$TOURISM_{it-1}$	0.010	0.151
	(0.023)	(0.227)		(0.027)	(0.698)
$MANU_{it}$			$MANU_{it}$		
$\left(\frac{H_{it-1}}{1-H_{it-1}}\right)$	0.0227	0.409	$\left(\frac{HE_{it-1}}{1-HE_{it-1}}\right)$	0.011	0.004
	(0.035)	(0.523)		(0.019)	(0.951)
$AGRI_{it-1}$	-0.007	0.019	$AGRI_{it-1}$	-0.041	0.575
	(0.056)	(0.889)		(0.054)	(0.448)
$SERV_{it-1}$	0.5080***	20.29***	$SERV_{it-1}$	0.4145***	19.490***
	(0.1128)	(0.000)		(0.093)	(0.000)
$TOURISM_{it-1}$	0.064***	6.764***	$logTOURISM_{it-1}$	0.056***	7.559***
	(0.024)	(0.009)		(0.020)	(0.006)
$SERV_{it}$			$SERV_{it}$		
$\left(\frac{H_{it-1}}{1-H_{it-1}}\right)$	0.035	0.189	$\left(\frac{HE_{it-1}}{1-HE_{it-1}}\right)$	-0.026	0.005
	(0.081)	(0.663)		(0.038)	(0.946)
$AGRI_{it-1}$	-0.1424	1.310	$AGRI_{it-1}$	-0.2631**	6.588***
	(0.1244)	(0.252)		(0.1025)	(0.010)
$MANU_{it-1}$	-0.7004***	7.359***	$MANU_{it-1}$	-0.6748***	11.741***
	(0.2581)	(0.007)		(0.1969)	(0.001)
$TOURISM_{it-1}$	0.1951***	15.506***	$TOURISM_{it-1}$	0.2181***	22.340***
	(0.049)	(0.000)		(0.046)	(0.000)
$TOURISM_{it}$			$TOURISM_{it}$		
$\left(\frac{H_{it-1}}{1-H_{it-1}}\right)$	-0.405**	4.894**	$\left(\frac{HE_{it-1}}{1-HE_{it-1}}\right)$	-0.1620*	3.203*
	(0.1842)	(0.028)		(0.090)	(0.073)
$AGRI_{it-1}$	0.8250***	11.459***	$AGRI_{it-1}$	1.081***	21.661***
	(0.2437)	(0.001)		(0.2323)	(0.000)
$MANU_{it-1}$	1.001***	6.940***	$MANU_{it-1}$	1.002***	10.722***
	(0.3802)	(0.008)		(0.306)	(0.001)
$SERV_{it-1}$	-0.3690	0.582	$SERV_{it-1}$	-0.1313	0.089
	(0.4836)	(0.446)		(0.4415)	(0.766)

Notes: ***, **, and * indicate if the coefficient is significant at the 1%, 5%, and 10%, respectively. The standard errors are in in parenthesis
Instruments for panel VAR estimation: lags from 1 to 3 periods in the dependent and independent variables.
Based on the properties of the panel VAR systems of order one (VAR(1)) (see Lütkepohl (2005)), the results of the panel VAR estimations and the consequent Granger-causality results satisfy the stability conditions (all the eigenvalues of the coefficient matrix obtained from the estimation of Equations (5.1) and (5.2) fall inside the unit circle). This is, all moduli of the companion matrix are strictly less than one (Abrigo and Love, 2015), whereby the panel VAR is invertible and has an infinite order vector moving average representation.

Chapter 6
Conclusion and Policy Implications

6.1 Introduction

International and domestic tourism has become an essential economic activity in Colombia. Tourism has become important to enhance economic growth and contribute towards monetary poverty reduction. This study focuses on the effect of politically motivated violence (PMV) on international tourists' preferences. This research also examines demand for domestic tourism with focus on the role of man-made attractions for leisure and recreational choices. An important evaluation, which has not been undertaken in the case of Colombia, is whether the growth in tourism activities contributes to monetary poverty and extreme poverty reduction at the provincial level. Several tourism-related policy initiatives are presented in the following sections of this chapter to encourage further growth of the country as an international tourist destination, to increase domestic tourists' preferences for provinces that have tourist potential, and to utilise the level of sectoral impact (agriculture, manufacturing, services, and tourism) on poverty reduction in economically lagging provinces. The following sections present the brief conclusions of each chapter and contributions of the research in Section 6.2, the policy implications in Section 6.3, and Section 6.4 considers areas for future research.

6.2 Conclusions by Chapter

This study examined the factors that influence international and domestic tourism demand in Colombia and the contribution of tourism to poverty and extreme poverty reduction in the country. The empirical results in this study identified some key areas of tourism significance at the national level and its role in poverty reduction for the case of Colombia.

6.2.1 Conclusions of Chapter 3

To attract overseas tourists, governments and other tourism stakeholders place particular importance on the factors that most influence the choices of international travellers, including risk-associated variables. The impact of politically motivated violence (PMV) on overseas tourists' preferences to visit Colombia and its interaction effects with international tourists' income and relative bilateral trade are estimated. A linear multinomial logit model is

estimated using panel cointegration methods. Twenty-nine countries are included, a group that comprises the major countries of origin for international travellers to Colombia during the period 1995-2013. Fifty-three countries are also included in the analysis as tourists' set of alternative destinations.

The key findings confirm an adverse effect from politically motivated violence (PMV) incidents on international tourists' preferences for travelling to Colombia in the short and long run. Tourists from High-Income Countries are more sensitive to politically motivated violence in Colombia than tourism from Middle-Income Countries. Business tourists from countries with Middle-Trade ratios with Colombia are more sensitive to politically motivated violence compared to business tourists from countries with Low-Trade ratios with Colombia. Results obtained from additional explanatory factors demonstrate that overseas tourists are willing to pay for air transport cost to Colombia up to 3.2 times the cost of flying elsewhere. Overseas tourists' preferences for Colombia increase if Colombia's relative prices adjusted with the exchange rate increase (due to currency depreciation). The spatial/cultural distance between tourists' country of origin and Colombia is a significant time-invariant factor that negatively determines international tourists' choices.

This study contributes to the field of tourism economics with particular relevance in the Colombian context. The study introduces the relative frequency of inbound visitor arrivals as an empirical probability measure of travelling to a country for tourism. This measure identifies international tourists' preferences between country alternatives using macro-level statistics.

1. This study employs the linear multinomial logit model to predict international tourists' preferences as a function of their characteristics and the destination countries' relative attributes, including politically motivated violence and its interactive effects with international tourists' income and bilateral trade on overseas tourists' choices.

2. The results show that the effects of politically motivated violence on international tourists' choices vary according to tourists' income levels and trade ratios with the destination.

6.2.2 Conclusions of Chapter 4

Domestic tourism is the most significant form of revenue across the world in terms of tourist flows and tourism spending, and it provides three-quarters of internal tourism expenditures in Colombia. The impact of man-made visitor attractions for leisure and recreation on domestic tourists' choices is analysed for a cross-section of 28 provinces in Colombia. Domestic tourists' taste heterogeneity around the mean coefficient of man-made attractions for leisure and recreation is also examined, as well as the moderating role of man-made attractions for leisure and recreation on the effect of distance on domestic tourists' choices. A mixed logit based model on cross sectional data is utilised including the maximum simulated likelihood method. Thirteen of the most populated cities that domestic tourists travel from are included in the data set. The attributes that attract domestic tourists are collected for 368 cities of various destinations and grouped into provincial alternatives. Factor analysis is utilised to identify the latent variable of man-made attractions for leisure and recreation.

The results show that domestic tourists' preferences for a province increase if the number of man-made attractions for leisure and recreation rises. Domestic tourists from metropolitan and intermediary cities are more willing to visit provinces with a greater number of man-made attractions as compared to domestic tourists from Bogotá. Within the group of domestic tourists from metropolitan cities, married people are less concerned about the number of man-made attractions in the destination compared to single, divorced and widowed tourists. The results also show that further man-made attractions for leisure and recreation in the destination can lessen the effect of distance on domestic tourists' preferences. Other findings from the analysis show that the mean likelihood of choosing a province increases if: (i) the distance travelled decreases, (ii) domestic tourism increases based on the average number of beaches in that province, and (iii) the average temperature in that province rises up to 23.7 degrees Celsius. The average temperature in the cities of Colombia is 24.1 degrees Celsius. Temperature is found to be the most important destination attribute for domestic tourists in Colombia. Domestic tourists' mean choices of a province are not influenced by war memorials, although heterogeneity between them exists.

The analysis of the influence of destination attributes on domestic tourists' choices also contributes to the literature as follows:

1. This study utilises a latent variable of man-made attractions for leisure and recreation in a tourist destination using factor analysis methodology. Museums and restaurants, theme parks, aerial trams and shopping malls are included in the latent variable of man-made attractions. The clustering of man-made attractions in this study is important to model from the domestic tourism demand perspective as domestic tourists are likely to visit several of these attractions during their regional visitations.

2. This study includes the interaction effects of man-made attractions and domestic tourists' characteristics on these tourists' choices to identify the sources of taste heterogeneity between domestic tourists around man-made attractions for leisure and recreation.

6.2.3 Conclusions of Chapter 5

The World Tourism Organisation has recognised tourism as an economic activity that contributes to poverty reduction. The analysis of this chapter evaluates whether an increase in the value added by the tourism sector contributes to poverty and extreme poverty reduction. Differences are observed in the contribution of the tourism sector to poverty reduction between the most lagging and the least lagging provinces, and between moderately lagging and the least lagging provinces. The study also analyses the Granger-causality relationships between poverty and province economic sectors. Using aggregate data by economic sectors and provinces, a binary logit model is estimated using the methods of generalised equations and panel vector autoregressive methods. Twenty-four provinces of Colombia are included within the period 2002-2016.

The empirical findings of this chapter show that an increase in the value added of tourism contributes significantly to the reduction of both poverty and extreme poverty in the provinces of Colombia. The impacts of growth in the tourism sector are greater for the most-lagging and moderately-lagging groups of provinces than for least-lagging provinces. A bi-directional Granger-causality between the growth of the tourism sector and poverty reduction is found, and also a uni-directional causality effect running from extreme poverty reduction to growth of the tourism sector. The manufacturing and service sectors' growth have positive impacts on poverty reduction. There is insufficient statistical evidence to infer that the agriculture sector's economic activities contribute to the reduction of poverty and extreme poverty at the provincial level.

The examination of the impact of the tourism sector on the reduction of poverty makes two major contributions to the literature as follows:

1. This study includes a set of provinces within a country to examine the tourism-poverty linkages that contribute to poverty reduction through the consumption of tourism products.

2. The chapter examines how the tourism sector's impact on the reduction of poverty and extreme poverty differs between the most lagging and least lagging provinces, and between the moderately lagging and the least lagging provinces. The analysis employs vector autoregressive (VAR) methods using panel data to study the tourism-poverty links and uses generalised estimating equations for poverty reduction measurements.

6.3 Policy Implications

Several policy implications arise from the findings of this study. The actions that the Colombian Government can undertake to encourage growth in international and domestic tourism are noted in the following sub-sections, with and end goal to promote the reduction of poverty and extreme poverty.

6.3.1 Actions to Increase Demand for International Tourism

The Colombian Government (hereafter the Government) could target the growth of international tourists' preferences using extensive marketing actions to attract international tourists. The identification of preferences of international tourists is useful to set marketing strategies that take into account tourists' potential trade-offs between country alternatives.

The sectoral plan of tourism in Colombia has set short and long run objectives based on the supply factors of tourism. The Travel and Tourism Competitiveness Reports (TTCR) published by the World Economic Forum (WEF) are one of the main data sources used to build tourism plans in Colombia. The TTCR reports show the factors that attract investments in the tourism sector in each country, including business environment, infrastructure, among other factors. The Government should include sectoral plans to influence international tourists' preferences from the demand side of tourism. Factors that influence international tourism demand include tourists' income, tourists' risk perception of politically motivated

violence, relative prices, relative air transport cost, and cultural ties between Colombia and the tourists' country of origin.

Colombia has several attributes as a tourist destination that can attract larger numbers of international tourists as compared to present overseas tourist arrivals. Nature-based attractions such as the Tayrona Natural Park, man-made attractions such as the Gold Museum, and warm climates in most cities in Colombia are some of these attributes that attract international tourists from High-Income countries and Middle-Income countries. The identification and marketing of unique attributes by the Government should go in parallel with a reduction in international tourists' risk perception of politically motivated violence, highlighting the actual risk versus perceived risk.

As politically motivated violence is found to adversely influence overseas tourists' preferences to travel to the country, it is important to further enhance diplomatic efforts toward reducing politically motivated violence. This will have the effect of reducing the international tourists' risk perceptions in the short and long run. The peace accord signed by the Government in 2016 with the strongest guerrilla group in Colombia will likely favourably affect international tourists' preferences for Colombia as a destination of choice in the long run. Future peace agreements with other subversive groups will be a further promising action for this purpose. The real (as opposed to the perceived) risk of politically motivated violence perpetrated against tourists might also be included as part of tourism marketing campaigns that lower tourists' negative risk perception ratings. Marketing strategies that target leisure tourists from High-Income and Medium-Income Countries is critical.

6.3.2 Actions to Enhance Demand for Domestic Tourism

The Government at the national and provincial levels should emphasise provincial-specific attributes in the sectoral plans for tourism. To promote the enhancement of existing man-made venues for leisure, and the construction of new venues in each region, the Government should implement policies aimed at increasing the number of man-made attractions and infrastructures for leisure and recreation (shopping malls, theme parks, museums, restaurants and gondola lifts) where appropriate. The promotion of these man-made venues for leisure and recreation would have positive impacts on both domestic and international tourism demand. Public policy on man-made attractions for leisure and recreation, including the

enhancement and construction of these venues are the point of focus in provinces with metropolitan and intermediary cities.

The construction of new man-made venues for leisure and recreation (to be enjoyed by locals and tourists alike) can be pursued through a combination of private and public investments, and a mix of the two. Private investors can be encouraged to build theme parks, shopping malls, restaurants, private museums, and/or other man-made venues for leisure and recreation through tax breaks and or subsidies. The provincial authorities can build public museums and/or other man-made attractions such as galleries and gardens, as these venues serve to attract visitors to the regions (who could buy other tourism-related products such as accommodation, restaurant food, recreation activities, among other products) due to free or low entry costs. The construction of man-made attractions in each province (from private and public initiatives) should be coordinated between provincial authorities and the national government to reduce the risk of oversupply and unnecessary competition between man-made attractions for leisure and recreation in each region.

The Government and other tourism stakeholders could target the cities in each province that are located far away from the main cities (cities that are usually poor), and whose infrastructure for carrying out tourism activities is, at least, basic (water supply, electricity, and sanitation; food providers; medical centre; actual or potential nature-based or man-made attractions). For these cities, further support for enhancing and/or building new man-made attractions can be pursued through public policy to attract more tourists to various provinces. The Government should also focus on connectivity strategies –specifically the construction and/or maintenance of roads (92 percent of domestic tourists for leisure purposes travel by car or bus), new air routes to connect the main cities of Colombia, and the low-cost airline VivaColombia. These strategies can be focused primarily on attracting tourists from metropolitan and intermediary cities, as people from these cities are becoming wealthier, and therefore are more likely to see air travel as a viable alternative to land transport. Connectivity strategies can ultimately reduce the effect of distance on domestic tourists' preferences for a provincial destination.

6.3.3 Actions to Promote Poverty Reduction Through Tourism

For tourism-poverty linkages, the findings of Chapter 5 suggest that the Government should view tourism as an effective tool for monetary poverty and extreme poverty reduction. The reduction of poverty and extreme poverty through increases in the tourism sector's value added (through growth in accommodation, restaurant, and cultural services) are of critical importance in the provinces. Initiatives to promote the construction and enhancement of venues that offer these services should be considered as a feasible strategy for the reduction of poverty and extreme poverty. One such example is the coffee region in Colombia; a region that is likely experiencing reductions in poverty and extreme poverty rates since 2002 due to growth in the tourism sector from coffee-associated cultural activities, including nature-based and man-made attractions, accommodation services of all types, gastronomy supply, among other activities. Tourism growth in the coffee region has been accompanied by increases in road and air transport infrastructure.

Government initiatives for promoting domestic and international tourism trips can be enhanced through the provision of modern information and communication technologies (ICT) and facilities to expand inbound and domestic tourism consumption. An increase in inbound and domestic visitor arrivals and tourism consumption in Colombia will ultimately contribute to poverty and extreme poverty reduction (Sustainable Development Goal-SDG 1), if the activities of tourism are joined by strategies to reduce labour informality rates in the sector, reducing labour market gaps between male and female workers, and increasing job opportunities for the youth. The goal of reducing poverty and extreme poverty via tourism growth is more likely to be achieved if other interlinked SDGs are accomplished. These include SDGs on Sustainable Cities and Communities (SDG 11), Responsible Production and Consumption (SDG 12), Climate Actions (SDG 13), Life Below Water (SDG 14), and Peace and Justice (SDG 16). For poverty reduction, policies oriented toward MSMEs, infrastructure development, services, land development gender equality, training, education, youth inclusion, among other issues are important for addressing poverty reduction by 2030.

The monetary poverty gaps between the most lagging and least lagging provinces, and between the moderately lagging and least lagging provinces, require initiatives to increase the value added of tourism that promote the natural geographic characteristic of each location. Promotional strategies for the most lagging provinces (those located on the Caribbean and Pacific coasts) should focused on tropical attractions of goods and services. These provinces

have attributes such as warm temperatures and beaches that attract domestic and international tourists. Moderately lagging provinces (those located in the Andean region) need to promote landscape-specific attributes that are popular with tourists, along with warm temperatures. The enhancement and/or construction of man-made attractions in cities with high monetary poverty levels in the economically lagging provinces will likely generate a greater reduction in poverty through tourism services in cities with high poverty and extreme poverty rates that offer climate and nature-based attributes.

6.4 Areas for Future Research

Future studies on international tourism demand in Colombia could include the analysis of international tourists' choices between the country's provinces. This form of tourism could focus on holidays, leisure and recreational activities. Further studies could examine the factors that influence domestic tourists' trips for visiting friends and relatives. Internal migration patterns in the country are likely to be reflected in domestic tourists' preferences when visiting friends and relatives. Lastly, future studies on tourism in Colombia could examine the interdependence between tourism characteristic industries and other industries of the economic system at the national level using the input-output model. The vertical linkages of each tourism characteristic industry with other industries backward and forward can be modelled to develop scenarios to examine the impact of changes in domestic and/or international tourism consumption on the output of the tourism sector and the whole economy.

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