A G D I Working Paper

WP/18/046

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Forthcoming: Journal of Travel & Tourism Marketing

Simplice A. Asongu
Development Finance Centre, Graduate School of Business,
University of Cape Town, Cape Town, South Africa
E-mails: asongusimplice@yahoo.com
asongus@afridev.org /

Joseph Nnanna
The Development Bank of Nigeria, The Clan Place,
Plot 1386A Tigris Crescent, Maitama, Abuja, Nigeria
E-mail: jnnanna@devbankng.com

Nicholas Biekpe
Development Finance Centre, Graduate School of Business,
University of Cape Town, Cape Town, South Africa
E-mail: nicholas.biekpe@gsb.uct.ac.za

Paul N. Acha-Anyi
School of Tourism and Hospitality;
College of Business and Economics,
University of Johannesburg.
E-mail: achasinstitute@gmail.com

Research Department

Contemporary Drivers of Global Tourism: Evidence from Terrorism and Peace Factors

Simplice A. Asongu, Joseph Nnanna, Nicholas Biekpe & Paul N. Acha-Anyi

January 2018

Abstract

This study examines the effect of terrorism and peace on tourist destination arrivals using a panel of 163 countries with data for the period 2010 to 2015. The empirical evidence is based on Generalised Method of Moments and Negative Binomial (NB) regressions. Our best estimators are from NB regressions from which the following main findings are established. First, political instability, violent demonstrations and number of homicides negatively affect tourist arrivals while the number of incarcerations positively influences the outcome variable. Second the effects from military expenditure, "armed service personnel" and "security officers and polices" are not positively significant. Managerial implications are discussed.

JEL Classification: D74; Z32; Z38
Keywords: Terrorism; Peace; Tourism; Generalised Method of Moments; Negative Binomial Regressions; Military expenditure; Armed service personnel; Security officers and polices; Drivers and Panel data.

1. Introduction

Two main tendencies in policy and academic circles motivate the positioning of this study on the impact of global terrorism and peace on tourist destination arrivals, notably: (i) the growing policy syndrome of terrorism in the service industries and (ii) gaps in the extant literature[1]. The two points are substantiated in chronological order.

First, the services industries are being confronted by issues of rising terrorism across the world (Sinai, 2016). According to the author, the business community is being seriously threatened by the rate and magnitude of terrorists' attacks on its operations, facilities and personnel. These attacks range in tactical execution as well as in lethality and complexity[2]. Moreover, certain categories of businesses are at greater risks to attacks than others, namely: energy (gas, oil, nuclear power plants and chemical facilities), transportation (maritime, ground and aviation), retail (shopping malls and department stores), financial institutions (such as banks and stock exchanges) and tourism (restaurant and hotels). As critically engaged in Section 2, the focus of this study is in the last category because of a missing gap in the literature.

The extant contemporary literature has largely focused on the following areas in response to the greater threat of terrorism in the services industries: the transformation of service systems through value creation with information and communication technology (ICT) mechanisms (Skalen, 2015); nexuses between kidnapping, security, insurgency and terrorism in the energy sector (Adusei, 2015), such as the effect of pipeline theft and sabotage (Yeeles & Akporiaye, 2016), terrorists attacks on the energy sector (Tichy & Eichler, 2018) and the impact of terrorism on risk mitigation and management in the oil and gas industry (Lambrechts & Blomquist, 2017); security threats in maritime transportation (Graham, 2015) and terrorism in public transportation (Manelici, 2017); linkages between homicides, exchange rate and retail activity (Fullerton Jr & Walke, 2014) and effects of terrorism on financial market development (Apergis & Apergis, 2016; Arif & Suleman, 2017; Goel et al., 2017).

[1] Fosu (2013) defines policy syndromes as situations that are detrimental to growth: 'administered redistribution', 'state breakdown', 'state controls', and 'suboptimal inter temporal resource allocation'. According to Asongu (2017), a policy syndrome is a gap in knowledge economy whereas Asongu and Nwachukwu (2017a) conceive and define a policy syndrome as economic growth that is not inclusive. In the statement, policy syndrome is referred to as incidences of terrorism.

[2] According to the author, an example of a deadly terrorist attack that was carefully planned is the chain of attacks on March 22, 2016 in Belgium, when two teams of terrorists operatives attacked simultaneously the Maelbeek Metro Station (killing 20 people) and the Zaventem Airport in Brussels (killing 11 people). Moreover, approximately 300 people were injured in both attacks.

Noticeably, from the above literature, the tourism industry has not received the scholarly attention it deserves. The purpose of this study is to fill this gap by assessing the effect of global terrorism and peace on tourist destination arrivals. Moreover, while the literature on the determinants of tourism has been substantially documented, we know very little about contemporary empirical insights based on global updated data (Sönmez *et al*., 1999; Pizam & Fleischer, 2002; Kingsbury & Brunn, 2004; Sönmez & Graefe, 1998; Saha & Yap, 2014; Alvarez & Campo, 2014; Mehmood *et al*., 2016; Richter & Waugh, 1986; Enders et al., 1992; Llorca-Vivero, 2008; Pratt & Liu, 2016; Liu & Pratt, 2017). This study departs from this mainstream literature by focusing on 163 countries and 13 determinants after controlling for drivers with a high degree of substitution. In as much as the positioning of the study bridges a gap in the scholarly literature, findings can inform policy makers and tourists on factors that determine tourism location decisions around the world: determinants that are important for national tourism industries, corporate strategies and tourists' understanding of peer responses to drivers of peace and terrorism.

The theoretical underpinning of the study is the Wound Culture Theory (WCT) which is strongly associated with the terrorism and peace determinants used in the paper. In accordance with Gibson (2006), the Wound Culture Theory (WCT) which was first proposed by Mark Seltzer (1998) can be summarized in the following (p. 19):

"Serial killing has its place in a public culture in which addictive violence has become not merely a collective spectacle but one of the crucial sites where private desire and public fantasy cross. The convening of the public around scenes of violence–the rushing to the scene of the accident, the milling around the point of impact–has come to make up a wound culture; the public fascination with torn and open bodies and torn and open persons, a collective gathering around shock, trauma, and the wound".

According to the WCT, individuals in society are affected by factors of peace and terrorism. Terror and violence are articulated in the WCT with the desire of certain elements of society to shatter the human body. Such a desire to shatter the human body can be understood from both literal (via mutilation) and figurative (via criticism) viewpoints. The perception of wound culture in a location fundamentally influences tourists' decisions on whether to visit a specific location or not. The WCT summarizes the relevance of wound perception in a location as follows: "*One discovers again and again the excitations in the opening of private and bodily and psychic interiors; the exhibition and witnessing, the endlessly reproducible display, of wounded bodies and wounded minds in public. In wound culture, the very notion of sociality is bound to the excitations of the torn and open body, the*

torn and exposed individual, as public spectacle" (Seltzer, p. 137). Seltzer (p. 21) further emphasized that the wound theory has considerable ramifications in citizenry attitude formation: "*The spectacular public representation of violated bodies, across a range of official, academic, and media accounts, in fiction and in film, has come to function as a way of imagining and situating our notions of public, social, and collective identity*." Tourists take such citizenry "attitude formation" into account when making decisions on their tourist destinations. This is also because the discussed wound culture is very likely to drive terrorism and peace factors the ultimately affect tourists arrivals. These factors include those used in this study, namely: homicide, perception of criminality, access to weapons, violent demonstrations, intensity of internal conflict, security officers and police, incarcerations, violent crime, political terror, political instability, armed service personnel, average levels of terrorism and military expenditure.

The fact that the above factors are determinants of tourism implies that the tourism demand function is a complementary theoretical underpinning to the investigated terrorism and peace factors. As recently documented by Liu and Pratt (2017): "*The rationale of the impact of terrorism on tourism demand is straightforward. From the perspective of demand side, places high degree of substitutability between destinations, the impact of a terrorist attack on tourists' behaviour is also high (Arana & Leon, 2008; Becker & Rubinstein, 2004). Peace and safety would seem to be a necessary prerequisite to attract tourists to a destination*" (pp. 405-406). Hence, the theoretical motivations supporting terrorism and peace factors are consistent with the justifications provided by Liu and Pratt (2017), which is the most recent study in the literature closest to this paper. However, this paper departs from Liu and Pratt (2017) in terms of scope, data, variables and methodology. (i) On the scope, this study has a broader scope because it focuses on 163 countries instead of 95 destinations. (ii) The data used in this study is more contemporary (i.e. 2010 to 2015 versus 1995 to 2012). (iii) While Liu and Pratt (2017) focus on a few terrorism and peace factors because of constraints in the adopted estimation approach, 13 determinants are adopted in this study. (iv) Lui and Pratt (2017) employ the autoregressive distributed lag approach partly because of constraints in the adopted periodicity whereas the empirical evidence of this research is based on Generalised Method of Moments and Negative Binomial (NB) regressions.

Building on the above, the objective of this study is to examine the effect of terrorism and peace on tourist destination arrivals using a panel of 163 countries with data for the period 2010 to 2015. The remainder of the study is organized as follows. The data and

methodology are presented in Section 2. The empirical results are disclosed in Section 3 while Section 4 concludes with implications and future research directions.

2. Perceived risk and tourism

In this section, we expand the highlighted literature in the introduction on the association between perceived risk and tourism. This literature is discussed in four main strands, notably: (i) the broad consensus on the negative relationship between terrorism and tourism; (ii) the sparse evidence on the positive nexus between terrorism and tourism; (iii) dynamics of short and long term effects on the investigated relationship and (iii) the role of military interventions and civil wars in the linkages being assessed. The strands are expanded in chronological order.

In the first strand, externalities of terror are linked with a perception of risk that potentially discourages the arrivals of tourists to a given destination. Accordingly, the literature on determinants of tourism is supportive of the view that safety in a tourist destination is fundamental in the travelling decisions by tourists (Sönmez *et al*., 1999; Pizam & Fleischer, 2002; Kingsbury & Brunn, 2004). In essence, the choice by a tourist of a safety destination depends on considerations that are directly linked to peace and security factors (i.e. civil unrests, crime, political instability, terrorism and regional conflicts) which influence a destination's image, comfort, security and desirability (Ryan, 1993; Pizam & Mansfeld, 2006; Tarlow, 2006; Seabra *et al*., 2013). The detrimental consequences of the underlying security concerns affect the perception of risks about a tourist destination (Lepp *et al*., 2011). Moreover, these risk perceptions are not country-specific because even when a particular country is directly affected by features of terrorism and political instability, the perception of risk in the country can be contingent on the nature and scale of perceived risk in neighbouring countries (Lepp & Gibson, 2003). This perspective on cross-country factors is supported by a multitude of studies, notably: the ramifications of the Gulf war on the decision by tourists to visit Tanzania and Kenya (Honey, 1999) and the effect of the Syrian war on tourist companies of Jordan (Liu *et al*., 2016) and Turkey (Yaya, 2009). As articulated by Mansfeld and Pizam (2006), insecurity and peace factors have become global considerations for tourist communities and the tourist industry.

Terrorism has been established to be a critical source of tourism concerns. The bulk of literature is sympathetic to the perspective that, terrorism creates fear and anxiety in potential tourists and therefore influences their perception of risk in a given destination (Drakos & Kutan, 2003; Kapuściński & Richards, 2016). Accordingly, terrorism is defined and

conceived as policies designed to use the threat of violence and diabolic forces to put fear in the general society with the ultimate purposes of meeting religious, social and political ends. With respect to Hoffman (2006), the terrorism plots are designed to inflict considerable psychological consequences on the targets as well as beyond the targets. Therefore, when a violent act is carried out with the ultimate aim of creating psychological chaos in a given tourist destination, the risk perception of the destination increases while visits to the same destination reduce (Shin, 2005). Some of the documented mechanisms of terrorism include: sabotage, murder and hijacking. This is consistent with the position of Pizam (1999) that the demand for tourism is a negative function of criminal and violent activities. Llorca- Vivero (2008) has shown that both domestic and international dimensions of terrorism significantly affect tourist arrivals. The empirical evidence is based on activities of terrorism in 134 tourist destinations against arrivals from G-7 countries. Goldman and Neubauer-Shani (2017) also find a significant relationship between incidents of terror and tourist arrivals. Taylor (2006) and Neumayer and Plumper (2016) have provided cross-country tendencies by establishing that terror incidences in Islam-dominated and Middle Eastern countries have spillover regional consequences. In a nutshell, the literature on the subject is broadly consistent with the position that attacks from terrorists have a negative incidence on tourism demand, notably: Northern Ireland (Buckley & Klemm, 1993), Spain (Enders & Sandler, 1991), the United States (Lepp & Gibson, 2003), Nepal (Bhattarai *et al*., 2005), Bosnia and Herzegovina (Causevic & Lynch, 2013), China (Gartner & Shen, 1992), Israel, Turkey and Greece (Drakos & Kutan, 2003) and Pakistan (Raza & Jawaid, 2013)

The second strand focuses on the sparsely documented evidence on the positive association between terrorism and tourism. Within this strand, we find studies that have either established insignificant or positive causalities flowing from terrorism to tourism. Saha and Yap (2014) have shown that in a nation that is characterised by low and moderate political risk, attacks from terrorists are positively related with tourist arrivals. Pizam and Mansfeld (2006) show that growing emphasis on hot spots of tourism in risky countries mitigates the long term risk perception of tourists.

Third, on the long and short term dynamics, when assessing how tourists are vulnerable and resilient to incidences of terrorism, it has been established that its effect varies across destinations and is also contingent on a multitude of factors such as levels of political stability and income. Accordingly, the incidents of terrorism have short run negative impacts on the arrival of tourists (Coshall, 2003; Liu & Pratt, 2017) and persistent conflicts have considerable and far-reaching consequences (Sönmez & Graefe, 1998; Saha & Yap, 2014).

According to Sönmez (1998), long term travels can be considerably limited by political crisis/turmoil. For example, tourist arrivals to Palestine and Israel are being negatively affected by the long standing crisis affecting both (Alvarez & Campo, 2014; Mehmood *et al*., 2016). Also, the entrenched conflict between North Korea and South Korea has also substantially influenced both the number of tourist arrivals and the long term destination image of the countries (Rittichainuwat & Rattanaphinanchai, 2015).

In the fourth strand, Fletcher and Morakabati (2008) have concluded that military coups have a negative impact on tourism development in Fiji and Kenya. A significant correlation between tourist arrivals and civil wars is also established by Mansfeld and Pizam (2006). The ongoing civil war in Syria has completely destroyed the country's tourism industry (Mehmood *et al*., 2016). The 1974 Turkish invasion of Cyprus substantially reduced tourist arrivals to the latter country (Sharpley, 2003; Farmaki *et al*., 2015).

In spite of the substantially documented evidence on linkages between factors of peace and terrorism on tourism, the positioning of this study complements the extant literature in the light of the discourse in the introduction.

3. Data and methodology

3.1 Data

This study examines a panel of 163 countries with data for the period 2010 to 2015 from a plethora of sources, namely: Qualitative assessments by Economic Intelligence Unit (EIU) analysts' estimates; the Uppsala Conflict Data Program (UCDP) Battle-Related Deaths Dataset; the Institute for Economics and Peace (IEP); World Development Indicators of the World Bank; the United Nations Office on Drugs and Crime (UNODC) Surveys on Crime Trends; the Operations of Criminal Justice Systems (CTS); the International Institute for Strategic Studies (IISS) and the United Nations Committee on Contributions. The geographical and temporal scopes of the study are contingent on data availability constraints from the above sources. This justification for more contemporary evidence is consistent with recent literature that has used the same dataset (Asongu, 2018; Asongu & Acha-Anyi, 2018). It is important to note that, as articulated in the introduction, this study departs from Lui and Pratt (2017) in terms of four major distinguishing features. Among these features is the adopted periodicity which is in line with the adopted estimation strategies.

The main dependent variable is the number of tourist arrivals which is log-transformed to be consistent with empirical strategies under consideration. For instance, since count data does not follow a normal distribution, log-transformation is used for models that are based on

normal distributions so that the transformed data is used on count data models. Thirteen determinants are used in the analysis, notably: perceptions of criminality, security officers and polices, homicides, incarcerations, access to weapons, intensity of internal conflicts, violent demonstrations, violent crime, political instability, political terror, military expenditure, armed services personnel and the Global Terrorism Index. These determinants have been substantially documented in the tourism literature (Sönmez *et al.*, 1999; Pizam & Fleischer, 2002; Kingsbury & Brunn, 2004; Sönmez & Graefe, 1998; Saha & Yap, 2014; Alvarez & Campo, 2014; Mehmood *et al.*, 2016). Hence, the selected variables are both associated with wound culture and the tourism demand function. Accordingly, the Global Peace Index (GPI) consists of 23 variables whereas the Global Terrorism Index (GTI) is made-up of 4 variables. Hence, after assessing the 29 variables (including indices) for high degrees of substitution, we retain the GTI and 12 constituents of the GPI.

Table 1 presents the definition and sources of variables, while Table 2 discloses the summary statistics and sampled countries. The correlation matrix is provided in Table 3. From Table 2 it is noticeable that the mean of variables are similar. Moreover, given the corresponding variations, we can be confident that reasonable estimated linkages will emerge. The purpose of the correlation matrix is to identify issues of multicollinearity which could bias the signs of estimated coefficients. Correlation coefficients with a high degree of substitution are highlighted in bold. Hence, the regressions are tailored to control for variables with the high degree of substitution that are entered into the same specification.

Table 1: Definitions of variables

Variables	Definition of variables and sources
Tourism	Logarithm of the number of tourists arrivals, WDI
Global Terrorism Index (GTI)	Logarithm (1+base) Global Terrorism Index overall score
Intensity of internal conflict	Intensity of organised internal conflict Qualitative assessment by EIU analysts
Perceptions of Criminality	Level of perceived criminality in society Qualitative assessment by EIU analysts
Displaced people	Number of refugees and internally displaced people as a percentage of the population Office of the High Commissioner for Refugees (UNHCR) Mid-Year Trends; Internal Displacement Monitoring Centre (IDMC)
Political instability	Political instability Qualitative assessment by EIU analysts
Political Terror	Political Terror Scale Qualitative assessment of Amnesty International and US State Department yearly reports
Homicides	Number of homicides per 100,000 people United Nations Office on Drugs and Crime (UNODC) Surveys on Crime Trends and the Operations of Criminal Justice Systems (CTS); EIU estimates
Violent crime	Level of violent crime Qualitative assessment by EIU analysts
Violent demonstrations	Likelihood of violent demonstrations Qualitative assessment by EIU analysts
Incarceration	Number of jailed population per 100,000 people World Prison Brief, International Centre for Prison Studies, University of Essex
Security Officers & Police	Number of internal security officers and police per 100,000 people UNODC; EIU estimates
Military expenditure	Military expenditure as a percentage of GDP The Military Balance, IISS
Armed Services Personnel	Number of armed services personnel per 100,000 people The Military Balance, IISS
Access to Weapons	Ease of access to small arms and light weapons Qualitative assessment by EIU analysts

Uppsala Conflict Data Program (UCDP). The Institute for Economics and Peace (IEP). The Economic Intelligence Unit (EIU). United Nations Peacekeeping Funding (UNPKF). GDP: Gross Domestic Product. The International Institute for Strategic Studies (IISS). WDI: World Development Indicators of the World Bank.

Table 2: Summary Statistics and presentation of countries

Panel A: Summary Statistics

Variables	Mean	Standard dev.	Minimum	Maximum	Obsers
Tourism (Ln)	14.450	1.761	8.987	18.243	732
Global Terrorism Index (GTI)(Ln)	0.835	0.763	0.000	2.397	977
Intensity of internal conflict	2.412	1.162	1.000	5.000	978
Criminality	3.153	0.917	1.000	5.000	978
Political instability	2.545	1.030	1.000	5.000	978
Political Terror	2.584	1.091	1.000	5.000	978
Homicides	2.797	1.154	1.103	5.000	978
Violent crime	2.768	1.136	1.000	5.000	978
Violent demonstrations	2.912	0.969	1.000	5.000	978
Incarceration	2.194	0.889	1.150	5.000	978
Security Officers & Police	2.728	0.911	1.081	5.000	978
Military expenditure	1.966	0.824	1.000	5.000	978
Armed Services Personnel	1.648	0.725	1.000	5.000	978
Access to Weapons	3.116	1.080	1.000	5.000	978

Panel B: Sampled countries (163)

Afghanistan; Albania; Algeria; Angola; Argentina; Armenia; Australia; Austria; Azerbaijan; Bahrain; Bangladesh; Belarus; Belgium; Benin; Bhutan; Bolivia; Bosnia and Herzegovina; Botswana; Brazil; Bulgaria; Burkina Faso; Burundi; Cambodia; Cameroon; Canada; Central African Republic; Chad; Chile; China; Colombia; Costa Rica; Cote d' Ivoire; Croatia; Cuba; Cyprus; Czech Republic; Democratic Republic of the Congo; Denmark; Djibouti; Dominican Republic; Ecuador; Egypt; El Salvador; Equatorial Guinea; Eritrea; Estonia; Ethiopia; Finland; France; Gabon; Georgia; Germany; Ghana; Greece; Guatemala; Guinea; Guinea-Bissau; Guyana; Haiti; Honduras; Hungary; Iceland; India; Indonesia; Iran; Iraq; Ireland; Israel; Italy; Jamaica; Japan; Jordan; Kazakhstan; Kenya; Kosovo; Kuwait; Kyrgyz Republic; Laos; Latvia; Lebanon; Lesotho; Liberia; Libya; Lithuania; Macedonia (FYR); Madagascar; Malawi; Malaysia; Mali; Mauritania; Mauritius; Mexico; Moldova; Mongolia; Montenegro; Morocco; Mozambique; Myanmar; Namibia; Nepal; Netherlands; New Zealand; Nicaragua; Niger; Nigeria; North Korea; Norway; Oman; Pakistan; Palestine; Panama; Papua New Guinea; Paraguay; Peru; Philippines; Poland; Portugal; Qatar; Republic of the Congo; Romania; Russia; Rwanda; Saudi Arabia; Senegal; Serbia; Sierra Leone; Singapore; Slovakia; Slovenia; Somalia; South Africa; South Korea; South Sudan; Spain; Sri Lanka; Sudan; Swaziland; Sweden; Switzerland; Syria; Taiwan; Tajikistan; Tanzania; Thailand; The Gambia; Timor-Leste; Togo; Trinidad and Tobago; Tunisia; Turkey; Turkmenistan; Uganda; Ukraine; United Arab Emirates; United Kingdom; United States of America; Uruguay; Uzbekistan; Venezuela; Vietnam; Yemen; Zambia and Zimbabwe.

Standard dev: standard deviation. Obsers: Observations.

Table 3: Correlation matrix (uniform sample size: 731)

Crime	Sec	Hom	Inca	Wea	CoIn	Dem	Crim	PolIn	PolTe	Milit	ASP	GTI	T1	T2	
1.00	-0.023	**0.510**	-0.054	**0.615**	**0.517**	**0.473**	**0.672**	**0.449**	**0.531**	-0.008	-0.158	0.126	-0.258	-0.258	Crime
	1.000	-0.024	0.274	-0.035	-0.014	-0.084	-0.117	-0.0007	-0.068	0.128	0.228	-0.082	0.111	0.111	Sec
		1.000	0.184	**0.564**	0.320	0.276	0.612	0.241	0.394	-0.150	-0.246	-0.011	-0.352	-0.352	Hom
			1.000	-0.104	-0.037	-0.149	-0.059	-0.138	-0.018	0.076	0.180	0.035	0.259	0.259	Inca
				1.000	**0.548**	**0.526**	**0.649**	**0.573**	**0.551**	0.089	-0.119	0.136	-0.421	-0.421	Wea
					1.000	**0.533**	**0.480**	**0.658**	**0.639**	0.198	0.026	0.337	-0.352	-0.352	CoIn
						1.000	**0.566**	**0.659**	**0.533**	0.048	-0.043	0.157	-0.321	-0.321	Dem
							1.000	0.433	**0.528**	-0.199	-0.269	0.122	-0.322	-0.322	Crim
								1.000	**0.589**	0.294	0.092	0.183	-0.509	-0.509	PolIn
									1.000	0.186	-0.018	0.319	-0.216	-0.216	PolTe
										1.000	**0.579**	0.171	0.046	0.046	Milit
											1.000	0.037	0.177	0.177	ASP
												1.000	0.186	0.186	GTI
													1.000	**1.000**	T1
														1.000	T2

Crime: Perceptions of criminality. Sec: Security Office & Police. Hom: Homicide. Inca: Incarceration. Wea: Access to Weapons. CoIn: Intensity of Internal Conflict. Dem: Violent Demonstrations. Crim: Violent crime. PolIn: Political Instability. PolTe: Political Terror. Milit: Military Expenditure. ASP: Armed Services Personnel. GTI: Overall Global Terrorism Index. T1: Natural logarithm. T2: Logarithm with base 10.

3.2 Methodology

3.2.1 GMM: Specification, identification and exclusion restrictions

The GMM estimation approach is selected as empirical strategy for five main reasons. The first-two are basic requirements for the employment of the strategy whereas the last-three as associated advantages. (i) The number of cross sections or countries (163) is considerably higher than the unit of periodicity (or 6 years) in each country. (ii) Tourism displays a characteristic of persistence because the correlation coefficient with its first lag (i.e. 0.994) is higher than the rule of thumb threshold needed to established persistence which is 0.800 (Tchamyou, 2018a, 2018b). (iii) Since a panel data structure is consistent with the GMM approach, cross-country differences are not eliminated in the regressions. (iv) Endogeneity is handled by the estimation approach because the instrumentation process accounts for simultaneity on the one hand and on the other hand, the use of time invariant variables enables the control for the unobserved heterogeneity. (v) Inherent biases that are specific of the *difference* estimator are corrected with the *system* estimator.

Within the framework of this inquiry, the Arellano and Bover (1995) extension of Roodman (2009a, 2009b) is adopted because it produces more efficient estimates when compared with more traditional GMM estimation approaches. Moreover, as has been argued in recent literature (Love & Zicchino, 2006; Baltagi, 2008; Asongu & Nwachukwu, 2016a; Boateng *et al*., 2018), the approach restricts over-identification and limits the proliferations of instruments.

The following equations in level (1) and first difference (2) summarise the standard *system* GMM estimation procedure.

$$T_{i,t} = \sigma_0 + \sigma_1 T_{i,t-\tau} + \sum_{h=1}^{13} \delta_h W_{h,i,t-\tau} + \eta_i + \xi_t + \varepsilon_{i,t} \quad (1)$$

$$T_{i,t} - T_{i,t-\tau} = \sigma_1 (T_{i,t-\tau} - T_{i,t-2\tau}) + \sum_{h=1}^{13} \delta_h (W_{h,i,t-\tau} - W_{h,i,t-2\tau}) + (\xi_t - \xi_{t-\tau}) + (\varepsilon_{i,t} - \varepsilon_{i,t-\tau}) \quad , \quad (2)$$

where, $T_{i,t}$ is the number of tourist arrivals in country i at period t, σ_0 is a constant, W is the vector of control variables (perceptions of criminality, security officers and polices, homicides, incarcerations, access to weapons, intensity of internal conflicts, violent demonstrations, violent crime, political instability, political terror, military expenditure, armed services personnel and the Global Terrorism Index), τ represents the coefficient of auto-regression which is one for the specification, ξ_t is the time-specific constant, η_i is the country-specific effect and $\varepsilon_{i,t}$ the error term.

It is important to devote some space to elucidating identification and exclusion restrictions. These are indispensible for a sound GMM specification. In accordance with recent literature (see Boateng *et al.*, 2018; Asongu & Nwachukwu, 2016b; Tchamyou & Asongu, 2017; Tchamyou et al., 2018), all explanatory indicators are considered as endogenous explaining, suspected endogenous or predetermined variables. Furthermore, only time invariant variables are defined to exhibit strict exogeneity. The identification strategy is motivated by the fact that, it is not feasible for years or time invariant variables to be endogenous after a first difference (see Roodman, 2009b)[3].

Given the identification process above, the exclusion restriction assumption is assessed by investigating if the identified strictly exogenous variables affect the outcome variable or tourism exclusively through the suspected endogenous variables or predetermined mechanisms. Hence, in the light of the GMM strategy with forward orthogonal deviations, the hypothesis of exclusion restriction is confirmed if the Difference in Hansen Test (DHT) on the exogeneity of instruments is valid. For this hypothesis to be valid, the null hypothesis corresponding to the DHT should not be rejected. Such a null hypothesis argues for the position that the proposed instruments in the identification process are valid or strictly exogenous.

In the light of the above clarifications, in the findings that are reported in Section 3, the exclusion restriction assumption is confirmed if the alternative hypothesis of the DHT is rejected. Note should be taken of the fact that this criterion for assessing exclusion restriction is not dissimilar with the standard instrumental variable (IV) approach, in which a rejection of the alternative hypothesis corresponding to the Sargan Overidentifying Restrictions (OIR) test is an indication that the instrumental variables influence the dependent variable exclusively via the endogenous explaining mechanisms (see Beck *et al.*, 2003; Asongu & Nwachukwu, 2016c).

3.2.2 Negative Binomial regression

Consistent with Choi and Luo (2013) and Choi (2015), a Negative Binomial (NB) regression is also used because the data is positively skewed. In the regression, the mean of y is determined by the exposure time t and a set of k regressor variables (the *x's*). The expression relating these quantities is presented in Equation (3):

$$\mu_i = exp\,(\ln(t_i) + \beta_1 x_{1i} + \beta_2 x_{2i} + \cdots + \beta_k x_{ki}), \quad (3)$$

[3] Hence, the procedure for treating *ivstyle* (years) is 'iv (years, eq(diff))' whereas the *gmmstyle* is employed for predetermined variables.

where, $x_1 \equiv 1$ and β_1 is the intercept. β_1, β_2, …, β_k correspond to unknown parameters to be estimated. Their estimates are symbolized as b_1, b_2, …, b_k. The fundamental NB regression model for an observation i is written as:

$$\Pr(Y = y_i|\mu_i,\alpha) = \frac{\Gamma\left(y_i + \alpha^{-1}\right)}{\Gamma(\alpha^{-1})\Gamma(y_i+1)}\left(\frac{1}{1+\alpha\mu_i}\right)^{\alpha^{-1}}\left(\frac{\alpha\mu_i}{1+\alpha\mu_i}\right)^{y_i}, \quad (4)$$

where, $\mu_i = t_i\mu$ and $\alpha = \frac{1}{\nu}$ in the generalised Poisson distribution which includes a gamma noise variable with a mean of 1 and a scale of ν. The parameter μ represents the mean incidence rate of *y* per unit of exposure or time. Hence, μ is the risk of a new occurrence of the event during a specified exposure period, t (NCSS, 2017). Consistent with recent literature, the independent variables are lagged by one year in order to increase control for endogeneity (see Mlachila *et al*., 2017; Asongu *et al*., 2017).

Before we present the results, it is important to articulate how perceived factors (such as risks) affect the specification. The modelling exercise incorporates this notion of perceived factors that affect tourism with a non-contemporaneous approach in which contemporary tourism is affected by non-contemporary determinants. Hence, the lagged structure of the modelling approach emphasizes a historic or perceived dimension in the determinants of the outcome variable. Moreover, the study by Lui and Pratt (2017) which is closest to this research has modelled tourism as function of lag incidences of terrorism.

4. Empirical results

Table 4 and Table 5 present the empirical results corresponding to GMM and Negative Binomial regressions respectively. There are seven main specifications pertaining to each estimation technique. As one moves from the left to the right of the tables, there is more control from multicollinearity. The multicollinearity issues are highlighted in Table 3. Addressing multicollinearity is important because if two variables with a high degree of substitution are specified within the same model, these variables enter into conflict and only one emerges from the regression output with the expected sign (see Beck *et al*., 2003)..

In Table 4, four main information criteria are used to assess the validity of estimated models[4]. It is important to clarity two aspects. First, the second-order Arellano and Bond

[4] "*First, the null hypothesis of the second-order Arellano and Bond autocorrelation test (AR(2)) in difference for the absence of autocorrelation in the residuals should not be rejected. Second the Sargan and Hansen overidentification restrictions (OIR) tests should not be significant because their null hypotheses are the positions that instruments are valid or not correlated with the error terms. In essence, while the Sargan OIR test is not robust but not weakened by instruments, the Hansen OIR is robust but weakened by instruments. In order*

autocorrelation test (AR(2)) in difference is better as information criterion when compared to the corresponding first-order test. Accordingly, many studies in empirical literature have exclusively reported the second-order test (Narayan *et al*., 2011; Asongu & Nwachukwu, 2016d). Second, the Sargan test is not robust but not weakened by instruments while the Hansen test is robust but weakened by instruments. A logical way of tackling the underlying conflict is to adopt the Hansen test and limit instrument proliferation. The study avoids the proliferation of instruments by ensuring that the number of instruments in each specification is lower than the corresponding number of countries (Asongu & Nwachukwu, 2017b).

The following findings can be established from Table 4. First, access to weapons and political instability discourage tourism. Second, the presence of security officers and police and the number of incarcerations positively affect the development of the tourism industry. Third, the number of homicides does not significantly reduce the number of tourist arrivals. Fourth, unexpectedly, the intensity of internal conflict, violent demonstrations and propensity to terrorism, do not seem to negatively affect the tourism industry. On the contrary, these factors instead positively influence tourism. These unexpected signs are consistent with a strand of the literature, notably: (i) terrorism and violence could increase tourism in countries with low and moderate political risks (Saha & Yap, 2014) and (ii) tourism is resilient to terrorism contingent on tourism intensity, income levels and levels of political instability (Liu & Pratt, 2017). It is important to note that Liu and Pratt (2017) did not find a long run relationship between terrorism and tourism demand. Hence, the underlying inference does not mean their findings support terrorism has a positive impact on tourism demand. Fifth, the number of armed service personnel does not significantly affect the dependent variable. The contrast with the significant effect from security officers and police is because, unlike armed service personnel who are largely confined in the military barracks, the job description of security officers and polices is more aligned with day-to-day interactions with the civil society.

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to restrict identification or limit the proliferation of instruments, we have ensured that instruments are lower than the number of cross-sections in most specifications. Third, the Difference in Hansen Test (DHT) for exogeneity of instruments isalso employed to assess the validity of results from the Hansen OIR test. Fourth, a Fischer test for the joint validity of estimated coefficients is also provided" (Asongu & De Moor, 2017, p.200).

Table 4: GMM Estimations (Multicollinearity is addressed from left to right)

	Dependent variable: Tourist Arrival(Ln)						
Constant	**2.130*** (0.000)**	**2.776*** (0.000)**	**2.748*** (0.000)**	**2.688*** (0.001)**	**1.984*** (0.000)**	**2.435*** (0.000)**	**2.459*** (0.009)**
Tourists (-1)	**0.853*** (0.000)**	**0.808*** (0.000)**	**0.797*** (0.000)**	**0.798*** (0.000)**	**0.833*** (0.000)**	**0.805*** (0.000)**	**0.780*** (0.000)**
Perceptions of Criminality	0.008 (0.797)	---	---	---	---	---	---
Security Officers & Polices	0.013 (0.686)	0.0002 (0.994)	0.029 (0.491)	0.043 (0.326)	**0.071* (0.095)**	**0.091** (0.043)**	**0.147*** (0.004)**
Homicides	0.022 (0.469)	0.055 (0.143)	0.038 (0.334)	0.027 (0.538)	-0.021 (0.688)	0.033 (0.536)	-0.021 (0.764)
Incarcerations	0.043 (0.125)	**0.061* (0.081)**	**0.079** (0.041)**	**0.091* (0.068)**	**0.123** (0.017)**	**0.130** (0.015)**	**0.105* (0.096)**
Access to Weapons	**-0.101*** (0.005)**	**-0.098* (0.061)**	**-0.107* (0.057)**	**-0.108* (0.067)**	---	---	---
Intensity of internal conflict	0.050 (0.164)	**0.115*** (0.003)**	**0.117*** (0.002)**	**0.130*** (0.002)**	**0.134*** (0.003)**	---	---
Violent demonstrations	**0.114*** (0.000)**	**0.100*** (0.000)**	**0.082*** (0.009)**	**0.076** (0.020)**	**0.060* (0.075)**	**0.081** (0.024)**	**0.076* (0.086)**
Violent crime	0.019 (0.584)	-0.046 (0.301)	---	---	---	---	---
Political instability	**-0.209*** (0.000)**	**-0.237*** (0.000)**	**-0.220*** (0.000)**	**-0.211*** (0.000)**	**-0.190*** (0.000)**	**-0.244*** (0.000)**	---
Political Terror	0.003 (0.838)	---	---	---	---	---	---
Military expenditure	-0.045 (0.216)	-0.049 (0.301)	-0.041 (0.356)	---	---	---	---
Armed Services Personnel	0.087 (0.210)	0.131 (0.134)	0.129 (0.184)	0.070 (0.411)	-0.036 (0.778)	0.023 (0.856)	-0.110 (0.480)
Global Terrorism Index (GTI)	**0.081*** (0.000)**	**0.115*** (0.000)**	**0.134*** (0.000)**	**0.142*** (0.000)**	**0.144*** (0.000)**	**0.169*** (0.000)**	**0.216*** (0.000)**
AR(1)	(0.020)	(0.025)	(0.038)	(0.039)	(0.031)	(0.031)	**(0.168)**
AR(2)	**(0.555)**	**(0.434)**	**(0.410)**	**(0.435)**	**(0.487)**	**(0.655)**	**(0.757)**
Sargan OIR	(0.035)	(0.040)	(0.079)	(0.059)	(0.037)	(0.033)	**(0.295)**
Hansen OIR	**(0.437)**	**(0.623)**	**(0.805)**	**(0.775)**	**(0.702)**	**(0.663)**	**(0.811)**
DHT for instruments							
(a)Instruments in levels							
H excluding group	**(0.715)**	**(0.615)**	**(0.681)**	**(0.700)**	**(0.624)**	**(0.511)**	**(0.505)**
Dif(null, H=exogenous)	**(0.271)**	**(0.534)**	**(0.731)**	**(0.675)**	**(0.622)**	**(0.644)**	**(0.829)**
(b) IV (years, eq (diff))							
H excluding group	**(0.404)**	**(0.695)**	**(0.787)**	**(0.789)**	**(0.689)**	**(0.671)**	**(0.751)**
Dif(null, H=exogenous)	**(0.512)**	**(0.231)**	**(0.521)**	**(0.398)**	**(0.465)**	**(0.404)**	**(0.654)**
Fisher	**274.55***	**200.95***	**105.45***	**100.08***	**93.21***	**116.74***	**72.57***
Instruments	58	50	46	42	38	34	30
Countries	150	150	150	150	150	150	150
Observations	577	577	577	577	577	577	577

***,**,*: significance levels at 1%, 5% and 10% respectively. DHT: Difference in Hansen Test for Exogeneity of Instruments Subsets. Dif: Difference. OIR: Over-identifying Restrictions Test. The significance of bold values is twofold. 1) The significance of estimated coefficients and the Wald statistics. 2) The failure to reject the null hypotheses of: a) no autocorrelation in the AR(1) & AR(2) tests and; b) the validity of the instruments in the Sargan and Hansen OIR tests.

Table 5 shows the results of seven negative binomial regressions, predicting the number of tourist arrivals events that occurred per year. All the models are valid based on the information criteria provided at the bottom of the table. First, political instability and violent demonstrations negatively affect tourist arrival events. The former effect is consistent with the GMM results whereas the latter effect is not because in Table 4 a positive effect is established. Second, the number of incarcerations positively influences the number of tourists' arrivals. This effect is consistent with that established in the previous table. Third, the previously established negative effect of access to weapons is now not significant while the

number of homicides which was not previously significant is now negatively significant. Moreover, the number of security officers and police which positively influenced tourist arrivals in the GMM results is now no longer apparent. Fourth, consistent with the findings of the previous table, the effects of the number of armed service personnel and "propensity to global terrorism" are respectively insignificant and positive.

Table 5: Negative Binomial (Multicollinearity is addressed from left to right)

	Dependent variable: Tourist Arrivals						
Constant	**2.723*** **	**1.653*** **	**2.739*** **	**2.743*** **	**2.738*** **	**2.740*** **	**2.743*** **
	(0.000)	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**
Perceptions of Criminality(-1)	0.005	---	---	---	---	---	---
	(0.772)						
Security Officers & Polices(-1)	0.008	0.007	0.007	0.006	0.006	0.005	0.002
	(0.544)	(0.567)	(0.594)	(0.601)	(0.613)	(0.675)	(0.868)
Homicides(-1)	-0.022	-0.020	-0.016	-0.016	**-0.019***	**-0.024** **	**-0.031*** **
	(0.103)	(0.145)	(0.207)	(0.192)	**(0.078)**	**(0.024)**	**(0.003)**
Incarcerations(-1)	**0.027** **	**0.027** **	**0.027***	**0.027** **	**0.028** **	**0.030** **	**0.036*** **
	(0.049)	**(0.049)**	**(0.051)**	**(0.048)**	**(0.038)**	**(0.029)**	**(0.007)**
Access to Weapons(-1)	-0.012	-0.011	-0.007	-0.007	---	---	---
	(0.436)	(0.492)	(0.611)	(0.633)			
Intensity of internal conflict(-1)	-0.024	-0.022	-0.021	-0.021	-0.022	---	---
	(0.139)	(0.169)	(0.191)	(0.187)	(0.168)		
Violent demonstrations(-1)	-0.0009	-0.0002	0.003	0.002	0.001	0.001	**-0.036*** **
	(0.955)	(0.987)	(0.820)	(0.867)	(0.917)	(0.924)	**(0.005)**
Violent crime(-1)	0.008	0.012	---	---	---	---	---
	(0.590)	(0.436)					
Political instability(-1)	**-0.053*** **	**-0.049*** **	**-0.049*** **	**-0.047*** **	**-0.049*** **	**-0.061*** **	---
	(0.005)	**(0.008)**	**(0.008)**	**(0.008)**	**(0.004)**	**(0.000)**	
Political Terror(-1)	0.014	---	---	---	---	---	---
	(0.370)						
Military expenditure(-1)	0.006	0.008	0.006	---	---	---	---
	(0.729)	(0.673)	(0.724)				
Armed Services Personnel(-1)	0.016	0.014	0.012	0.017	0.017	0.017	0.003
	(0.465)	(0.505)	(0.561)	(0.357)	(0.358)	(0.360)	(0.870)
Global Terrorism Index (GTI) (-1)	**0.049** **	**0.057*** **	**0.057*** **	**0.058*** **	**0.058*** **	**0.045*** **	**0.039** **
	(0.018)	**(0.003)**	**(0.002)**	**(0.002)**	**(0.002)**	**(0.005)**	**(0.014)**
Log likelihood	-1341.489	-1341.962	-1342.265	-1342.328	-1342.442	-1343.396	-1351.659
Likelihood Ratio (LR) Chi-Square	**59.10*** **	**58.16*** **	**57.55*** **	**57.43*** **	**57.20*** **	**55.29*** **	**38.76*** **
Observations	580	580	580	580	580	580	580
lnalpha	**-45.79*** **	**-45.79*** **	**-45.79****	**-45.79*** **	**-45.79*** **	**-45.79*** **	**-45.79*** **

***,**,*: significance levels at 1%, 5% and 10% respectively.

Overall, given the conflicting findings for some determinants, our best estimator is the from the NB regressions because, in the presence of count data, models based on log-transformation (for normalization purposes, e.g. the GMM) perform less better with more bias when compared to NB models (see O'Hara & Kotze, 2010). In the light of this clarification, in the concluding section that follows, we discuss corporate implications paying particular attention to the findings from our best estimator, notably: (i) political instability, violent demonstrations and number of homicides negatively affect tourist arrivals while the number of incarcerations positively influences the outcome variable and (ii) insignificance of the number of "security officers and police" and "armed service personnel".

5. Concluding implications and future research directions

The tourism industry has grown substantially over the past decades and it is undeniable that the effects of terrorism and peace in tourist areas potentially have adverse effects on the tourism industry in particular and the development of tourism-reliant economies in general. Since tourism is a provider of economic prosperity and employment in many countries, it is important to understand the effects of peace and terrorism on tourist arrivals. Building on these insights, this study has examined the effect of terrorism and peace on tourist destination arrival using a panel of 163 countries with data for the period 2010 to 2015. The empirical evidence is based on Generalised Method of Moments and Negative Binomial (NB) regressions. Our best estimators are from NB regressions from which the following main findings are established. First, political instability, violent demonstrations and number of homicides negatively affect tourist arrivals while the number of incarcerations positively influences the outcome variable. Second the effects from military expenditure, "armed service personnel" and "security officers and polices" are not positively significant. NB estimates are better than GMM estimates because NB regression is more appropriate for count data. For instance, adding 1 to the values prior to logging does not completely deal with estimation issues that arise because of a great proportion of zero values. Hence, NB regression provides statistical leverage in addressing zero-inflated data.

We now discuss corresponding managerial implications for tourism companies. These are discussed in two strands, notably: the established significant and insignificant effects. First, managers of Destination Marketing Organizations need to be aware of the deterrent roles of homicides, violent demonstrations and political instability on the number of tourist arrivals. Hence, they should take pro-active and preventive measures that would limit the exposure of tourists to such risks.

Second, whereas the effects of security officers and "armed service personnel" on the number of tourists' arrival are insignificant, the expected positive sign is consistently apparent. This is an indication that increasing the quality and quantity of these peace-enabling security officers can significantly affect the tourism industry. Tourism companies can take preventive steps in order to reduce the damaging effects of political instability, violent demonstrations and homicides by considering the following five suggestions that are not mutually exclusive. First, security should be enhanced in places of higher risks. Such improvements in physical security entities embody personnel, equipment and tourist attraction sites. Second, peace and security consultants should be engaged for insights into the risks posed to the tourism industry from underlying factors and when corresponding reports from

these consultants are promising and encouraging, they should be communicated through various strategies that could also entail the services of marketing consultants.

Third, the tourism sector should be understood from a perspective of a global supply chain and risk factors associated with entities that are horizontally and vertically integrated with the tourism industry should also been assessed and the reports of these assessments communicated accordingly. For instance, transportation networks, food chains and a plethora of other services which are closely related to the tourism industry constitute the global tourism supply chain. Fourth, upon a risk assessment, the tourism industry can mitigate perceived risks from tourists by reducing and/or avoiding tourists travel to politically-unstable and risky areas in tourist destinations. Fifth, perceived uncertainty linked to underlying factors can be reduced by encouraging tourists to subscribe to insurance schemes. Premiums pertaining to such schemes may be paid collectively by the both the tourism company and tourists in order to limit the downsides of information asymmetry on perceived risks between the tourism company and potential tourists.

The above policy recommendations can be improved by tourist companies through feedback questionnaires that are tailored to assess the satisfaction of tourists in relation to perceived peace, security and terrorism concerns. Moreover, managers in the tourism industry need to implement suggested policies in conjunction with government officials within a harmonized framework of boosting national tourism for economic development. Future studies can improve the extant literature by assessing whether the established linkages withstand empirical scrutiny within country-specific frameworks. This is recommendation is premised on the fact that more targeted country-specific policy implications are more apparent and feasible when cross-country studies are complemented with country-specific inquiries.

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