



Tourism and insecurity in the world

Simplice A. Asongu¹ · Joseph I. Uduji² · Elda N. Okolo-Obasi³

Received: 9 January 2019 / Accepted: 16 June 2019 / Published online: 21 June 2019
© Springer-Verlag GmbH Germany, part of Springer Nature 2019

Abstract

The study assesses the role of forces of law and order in modulating the insecurity-tourism nexus in 163 countries for the period 2010 to 2015. Policy syndromes or insecurity dynamics include: violent crime, access to weapons, political instability and perception of criminality, while the policy variables of forces of law and order are captured with “security officers and police” and “armed service personnel.” The empirical evidence is based on negative binomial regressions. The findings show that the policy variables can be effectively used to crowd-out the negative incidence of policy syndromes on tourist arrivals. The results are contingent on net effects (from conditional and unconditional effects), insecurity dynamics and thresholds. A threshold is an inflexion point at which the unfavorable unconditional effect from a policy syndrome of insecurity on tourist arrivals is completely neutralized by policy variables of forces of law and order. Policy implications are discussed.

Keywords Insecurity · Peace · Tourism

JEL classification D74 · Z32 · Z38

✉ Simplice A. Asongu
asongusimplice@yahoo.com; asongus@afridev.org

Joseph I. Uduji
joseph.uduji@unn.edu.ng; joseph.uduji@gmail.com; joseph.uduji@yahoo.com

Elda N. Okolo-Obasi
eldanduka@yahoo.com; ndukaelda@yahoo.com

¹ Department of Economics, University of South Africa (UNISA), P. O. Box 392, Pretoria 0003, South Africa

² Department of Marketing, Faculty of Business Administration, Enugu Campus, University of Nigeria, Nsukka, Nigeria

³ Institute for Development Studies, Enugu Campus, University of Nigeria, Nsukka, Nigeria

1 Introduction

This study is underpinned by two fundamental perspectives in academic and policy circles, notably: the growing relevance of insecurity and gaps in the tourism literature. In what follows, these two fundamental points are substantiated in the same order of chronology.

First, as recently documented by Asongu and Kodila-Tedika (2017), over 13% of the global annual GDP is spent on fighting and preventing insecurity-related issues. This substantial portion of world GDP represents the combined annual wealth produced by a significant number of technically advanced nations, namely: Brazil, Canada, France, Germany, Spain and the UK. The study also projects global insecurity and corresponding negative externalities to rise in the coming years. This narrative and projection are broadly consistent with less contemporary reports from the *United Nations Office on Drugs and Crime* (UNODC). According to UNODC (2013), violence, murders, crimes and political instability represent growing policy syndromes that need to be prevented and mitigated if resources are to be diverted to more valuable policy initiatives that are reflected in the post-2015 sustainable development agenda.¹ This is essentially because on the one hand, public spending is substantially diverted from the provision of public commodities and on the other hand, insecurity-related externalities have detrimental effects on the sound development of many economic sectors. An example of an industry that to the best of our knowledge is most affected by insecurity is the tourism industry. Unfortunately, recent literature has not connected policy variables to the discussed policy syndrome with the aim of providing policy insights into how the tourism industry can be promoted.

Second, the tourism literature has largely focused on the determinants of tourism. The substantial bulk of studies constituting this strand include: Sönmez et al. (1999), Seddighi and Theocharous (2002), Pizam and Fleischer (2002), Kingsbury and Brunn (2004), Sönmez and Graefe (1998), Saha and Yap (2014), Alvarez and Campo (2014), Mehmood et al. (2016) and Asongu et al. (2019a). A common denominator of the studies is the absence of a framework that connects policy syndromes with policy variables in order to determine tourism. We deviate from this stream of the literature by assessing how policy variables (of forces of law and order) can be used to mitigate the unfavorable consequences of insecurity on tourism. The policy variables are “security officers and police” and “armed service personnel,” whereas insecurity dynamics include: violent crime, access to weapons, political instability and perception of criminality. Hence, the research question answered by this study is the following: how do forces of law and order modulate the effect of insecurity on tourism across the world?

¹ Fosu (2013) has defined policy syndromes as circumstances that are perilous to economic growth, notably: “administered redistribution,” “state breakdown,” “state controls” and “suboptimal inter temporal resource allocation.” Tchamyou et al. (2019) understand policy syndrome as inequality. Within the framework of this paper, policy syndromes are insecurity dynamics, notably: access to weapons, violent crime, perception of criminality and political instability.

The theoretical framework underlying the paper is the wound culture. The Wound Culture Theory (WCT) is consistent with this study in the perspective that it is the responsibility of forces of law and order to prevent insecurity-related issues by enforcing the rule of law and maintaining order. Accordingly, forces of law and order control insecurity dynamics (such as violent crime, access to weapons, political instability and perception of criminality) that are likely to fuel insecurity and, hence, discourage tourist arrivals.

Consistent with Mark Seltzer (1998), as recently documented by Gibson (2006), the WCT can be summarized as follows: *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* (Seltzer 1998, p. 19).

In the light of the WCT, the drive to entertain an atmosphere of shattered human bodies is prevalent in societies. Such a drive to “rip the human body asunder is both figurative (through criticism) and literally (through mutilation).” In essence, the insecurity dynamics considered in this study are characteristics of citizens committed to wound appreciation: *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 observed that the wound theory has substantial implications 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.”* The articulated wound culture intuitively fuels insecurity, and it is the duty of forces of law and order to reduce the negative externalities of insecurity dynamics on macroeconomic outcomes like tourism. Moreover, it is important to articulate that the adopted WCT aligns with the positioning of this study from two angles. (i) As will be expanded in Sect. 2 from the surveyed literature, the insecurity dynamics used in this research have been documented to influence tourist arrivals. This is principally because the insecurity dynamics are associated with conditions that negatively affect the human body and wound atmosphere as emphasized in the WCT. (ii) The forces of law and order can by intuition be used to reduce externalities of wound culture in order to promote development outcomes, including tourism (Asongu and Amankwah-Amoah 2018; Asongu et al. 2019a).

The rest of the study is structured as follows. Section 2 provides a review of extant literature. Section 3 covers the data and methodology, while the empirical analysis and discussion of results are disclosed in Sect. 4. Section 5 concludes with implications and future research directions.

2 Review of existing literature on perceived risks and tourists' arrivals

Existing research motivating this study which has been highlighted in the introduction can be discussed in four main categories pertaining to the nexuses between tourists' arrivals and perceived risks (Asongu et al. 2019a). These include: a first category of a scholarly consensus on the linkage between perceived risks and terror activities; a second category of research focusing on the relationship between tourists arrivals and terrorism; a third category articulating long- and short-term dynamic impacts related to the nexus between insecurity and tourists arrivals; and a fourth category pertaining to the incidence of civil wars and military interventions on the nexuses being investigated. The strands are expanded in turn.

In the first category of studies in the literature, the ramifications of terrorism are associated with risk perceptions that intuitively deter the arrival of tourists to host destinations. In essence, scholarly emphasis on drivers of tourism is sympathetic to the perspective that standards of safety in a destination of tourism are essential in determining the decisions of travelers on destinations that are safe relative to those that are unsafe (Kingsbury and Brunn 2004; Pizam and Fleischer 2002; Sönmez et al. 1999). Accordingly, the selection of a traveling destination by a tourist is largely determined by safety concerns which are contingent on security risks and ability of forces of law and order to mitigate such underlying security risks (Seabra et al. 2013; Tarlow 2006; Pizam and Mansfeld 2006; Ryan 1993). It goes without saying that the unfavorable ramifications of the underpinning concerns of security influence tourists' perception of risk in host countries (Lepp et al. 2011). Furthermore, such perceptions of risks are not exclusively country-focused because in situations where a particular tourist destination is not directly characterized by political strife and significant risks of insecurity, risks factors may constraint tourists to avoid the tourist destination because of potential transnational insecurity incidences (Lepp and Gibson 2003; Yaya 2009). This view of cross-country influence is consistent with many thematic scholarships, *inter alia*: how externalities of the Gulf war influenced tourists' decisions to travel of Kenya and Tanzania (Honey 1999) and recently, the incidence of the Syrian war on Jordanian tourism corporations (Liu et al. 2016). In summary, global characteristics of peace and insecurity influence travelers' decision on potential countries of destination (Mansfeld and Pizam 2006).

According to Drakos and Kutan (2003) and Kapuściński and Richards (2016), the factor of perceived risks in potential travelers fundamentally builds on the fact that violence, crime and political strife instill fear in people desiring to visit affected areas (Drakos and Kutan 2003; Kapuściński and Richards 2016). This narrative is consistent with Hoffman (2006) on the negative psychological ramifications of terror, Shin (2005) on the creation of psychological chaos associated with violent activities and a significant body of the literature on the negative association between violence and perceived risks from tourists (Pizam 1999; Taylor 2006; Llorca-Vivero 2008; Neumayer and Plümper 2016; Goldman and Neubauer-Shani 2017). In summary, the underlying association which has been established in panel-oriented studies (Asongu et al. 2019a) is also apparent in

country-specific scholarship, notably: Enders and Sandler (1991) for the case of Spain, evidence from China by Gartner and Shen (1992), Buckley and Klemm (1993) for Northern Ireland, Lepp and Gibson (2003) for the USA, Darkos and Kutan (2003) for cases of Greece, Israel and Turkey, Bhattarai et al. (2005) for evidence from Nepal, Raza and Jawaid (2013) for the case of Pakistan and Causevic and Lynch (2013) on perspectives from Bosnia and Herzegovina.

In the second category of the literature, scholarship has been oriented toward research that has resulted in either positive or insignificant linkages between violence and tourist arrivals. It has been established by Pizam and Mansfeld (2006) that continuous articulation of hot spots of violence and crime in risky tourist destinations reduces long-run perceptions of risks in the corresponding tourists destinations. Saha and Yap (2014) document that countries which are associated with moderately low levels of terror activities and political risks are unexpectedly also linked with moderately significant arrival of tourists.

The third category on short- and long-run dynamics entails emphasis that while the impact of violence and terror vary from one destination to another, it is also contingent on a time factor. According to Coshall (2003) and Liu and Pratt (2017), terror incidents engender short-term unfavorable effects on tourists arrivals, while Sönmez and Graefe (1998) and Saha and Yap (2014) are of the position that such consequences of conflicts persist over time. This is consistent with Sönmez (1998) who had earlier concluded that political strife substantially affects long-run decisions on the choice of travel destinations. Some illustrative examples are apparent from Alvarez and Campo (2014) and Mehmood et al. (2016) who have concluded that the long-standing crisis between Israel and Palestine affects the decision of tourists to travel the countries in conflicts. In another example, Rittichainuwat and Rattanaphinanchai (2015) also show that the entrenched strife between South Korea and North Korea has significantly affected the long-run destination image of both countries and by extension, tourists' arrivals in these countries.

In the fourth category pertaining to military expenditure and military coups, Fletcher and Morakabati (2008) have established that the latter has an unfavorable incidence on the prosperity of the tourism industries in Kenya and Fiji, while according to Mansfeld and Pizam (2006), a significant nexus is apparent between the tourism industries and wars. Sharpley (2003) and Farmaki et al. (2015) establish that the 1974 invasion of Cyprus by Turkey considerably deterred the arrival of tourists, whereas Mehmood et al. (2016) in more contemporary development scholarship have documented that the war in Syria has wiped-out the country's industry of tourism.

In the light of the engaged studies, the problem statement motivating this research has not been covered in the literature. Moreover, the engaged literature also informs this research on the choice of security variables that affect tourism, the importance of security forces of law and order that mitigate perceived risks as well as elements to be adopted in the conditioning information set that determine tourists' arrivals. As justified in the introduction and further articulated in the data and methodology sections that follow, the choice of the underlying variables is also consistent with the WCT underpinning the empirical analysis.

3 Data and methodology

3.1 Data

The study is focused on a sample of 163 countries in the world with data from 2010 to 2015. The data come from diverse sources, notably: “the United Nations (UN) Committee on Contributions, the International Institute for Strategic Studies (IISS), the Operations of Criminal Justice Systems (CTS), the UN Office on Drugs and Crime (UNODC) Surveys on Crime Trends, the Institute for Economics and Peace (IEP), the Uppsala Conflict Data Program (UCDP) Battle-Related Deaths Dataset and Qualitative assessments by Economic Intelligence Unit (EIU) analysts’ estimates.” The temporal and geographic scopes of the study are contingent on data availability constraints. This justification is consistent with Asongu et al. (2019a, b).

The outcome indicator is the number of tourist arrivals, while the policy variables of forces of law and order include: “security officers and police” and “armed service personnel.” The insecurity variables are captured with four main dynamics, namely: “access to weapons,” “violent crime,” “perception of criminality” and political instability. The choice of these policy variables and policy syndromes is consistent with recent literature on conflicts; crimes; and violence (see Blanco and Grier 2009; Freytag et al. 2011; GPI 2016).

Other adopted variables in the conditioning information set include: homicides, incarcerations and violent demonstrations. These indicators are in accordance with recent literature on tourists arrivals (Sönmez and Graefe 1998; Sönmez et al. 1999; Seddighi and Theocharous 2002; Pizam and Fleischer 2002; Kingsbury and Brunn 2004; Saha and Yap 2014; Alvarez and Campo 2014; Mehmood et al. 2016). We expect homicides and violent demonstrations to reduce the number of tourist arrivals, while incarcerations should be positively associated with it. The two policy variables are used interchangeably as control variables in order to verify an intuition underpinning the study, notably: the positive role of policy variables on tourist arrivals. Hence, in regressions in which “security officers and police” is the policy variable; “armed service personnel” is used as a control variable, while in regressions in which “armed service personnel” is the policy variable; “security officers and police” is included in the conditioning information set. We expect these policy variables to positively affect the number of tourist arrivals when they are adopted as control variables.

The definitions and sources of variables are disclosed in Table 1, and the sampled countries and summary statistics are provided in Table 2, while the corresponding correlation matrix is shown in Table 3. Given that the standard deviation of the outcome variable is higher than the corresponding mean, a negative binomial model is more appropriate because of evidence of over-dispersion.

3.2 Negative binomial regression

In accordance with recent literature on positively skewed data (Choi and Luo 2013; Choi 2015; Asongu et al. 2019a, b), the research employs a negative binomial

Table 1 Definition of variables

Variables	Definitions of variables and sources
Tourism	“The number of tourists arrivals”
Security officers and police	“Number of internal security officers and police per 100,000 people UNODC; EIU estimates”
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”
Violent crime	“Level of violent crime” “Qualitative assessment by EIU analysts”
Perceptions of criminality	Level of perceived criminality in society Qualitative assessment by EIU analysts”
Political instability	“Political instability” “Qualitative assessment by EIU analysts”
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”
Incarceration	“Number of jailed population per 100,000 people World Prison Brief, International Centre for Prison Studies, University of Essex”
Violent demonstrations	“Likelihood of violent demonstrations Qualitative assessment by EIU analysts”

UCDP Uppsala conflict data program, *IEP* The Institute for Economics and Peace, *EIU* the economic intelligence unit, *UNPKF* the United Nations peacekeeping funding, *GDP* gross domestic product, *IISS* The International Institute for Strategic Studies

regression. 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 Eq. (1)”:

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

where $x_1 \equiv 1$ and β_1 is the intercept. $\beta_1, \beta_2, \dots, \beta_k$ “correspond to unknown parameters to be estimated. Their estimates are symbolized as b_1, b_2, \dots, b_k . The fundamental negative binomial regression model for an observation i is written as in Eq. (2)”:

$$\Pr(Y = y_i | \mu_i, \alpha) = \frac{\Gamma(y_i + \alpha^{-1})}{\Gamma(\alpha^{-1})\Gamma(y_i + 1)} \left(\frac{1}{1 + \alpha\mu_i} \right)^{\alpha^{-1}} \left(\frac{\alpha\mu_i}{1 + \alpha\mu_i} \right)^{y_i}, \tag{2}$$

“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).”

Table 2 Summary statistics and presentation of countries

Variables	Mean	SD	Minimum	Maximum	Obsers
<i>Panel A: summary statistics</i>					
Tourist arrivals	6.7533e+6	1.2644e+7	8000.0	8.3767e+7	732
Security officers and police	2.728	0.911	1.081	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
Violent crime	2.768	1.136	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
Homicides	2.797	1.154	1.103	5.000	978
Incarceration	2.194	0.889	1.150	5.000	978
Violent demonstrations	2.912	0.969	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”

SD standard deviation, *Obsers* Observations

Consistent with recent literature (see Mlachila et al. 2017), the independent variables are lagged by 1 year in order to increase control for endogeneity.

Equation (3) summarizes the corresponding statistical model used in the analysis

$$T_{i,t} = \partial_0 + \partial_1 PS_{i,t} + \partial_2 PV_{i,t} + \partial_3 PSPV_{i,t} + \sum_{h=1}^4 \omega_h W_{h,i,t-\tau} + \eta_i + \varepsilon_{i,t}, \quad (3)$$

where $T_{i,t}$ is the number of tourists arrivals for country i in period t ; ∂ is a constant; PS is a policy syndrome (violent crime, access to weapons, political instability and perception of criminality); PV is a policy variable (“security officers and police” or armed service personnel); $PSPV$ is the interaction between a policy syndrome and a

Table 3 Correlation matrix (uniform sample size = 971)

Weapons	Crime	Criminality	Pol. Inst	Homicide	Incarce	Demon	ASP	SOP	Tourists
1.000	0.649	0.613	0.573	0.563	-0.104	0.526	-0.119	-0.035	-0.278
	1.000	0.669	0.433	0.611	-0.059	0.566	-0.269	-0.117	-0.227
		1.000	0.448	0.512	-0.056	0.469	-0.156	-0.024	-0.105
			1.000	0.242	-0.138	0.658	0.092	-0.0007	-0.332
				1.000	0.182	0.274	-0.254	-0.024	-0.275
					1.000	-0.148	0.179	0.274	0.162
						1.000	-0.043	-0.083	-0.189
							1.000	0.228	0.034
								1.000	0.030
									1.000

Weapons access to weapons, *Crime* violent crime, *Criminality* perceptions of criminality, *Pol. Inst* political instability, *ASP* armed service personnel, *Incarce* incarceration, *Demon* violent demonstrations, *SOP* security officers and police, 5% critical value (two-tailed) = 0.0629 for $n = 971$

policy variable; W is the vector of control variables (*homicides, incarcerations, violent demonstrations and a policy variable*); and $\varepsilon_{i,t}$ is the error term.

Since the research is employing an interactive estimation approach, it is important to articulate some fundamentals in the adopted approach. Consistent with Brambor et al. (2006), all constitutive variables are involved in the specifications. Furthermore, the estimated interactions are interpreted as conditional effects and should be combined with the corresponding unconditional effects in order to establish a net effect from the interaction between two variables. Thresholds at which the modifying policy variable influences the policy syndrome to affect the number of tourist arrivals should be within the interval (i.e., minimum to maximum) provided by the summary statistics. This narrative is consistent with recent empirical literature (Tchamyou 2019a, b).

A fundamental point that is worthwhile articulating is that the adopted variables of security in the conditioning information set as well as the independent variables of interest are in accordance with the wound culture theoretical underpinning motivating this research. Accordingly, while the adopted indicators are justified with the relevant tourism-centric literature in the previous section, the nexus between the choice of variables and the underlying Wound Culture Theory is clarified in the introduction and literature review sections. It follows that the application of the underpinning theory within the context of tourism and associated independent variable of interest (i.e., security indicators, insecurity dynamics and control variables) is characterized by some elements of consistency. Moreover, the research anticipates adopted elements in the conditioning information set to reflect the intuition underlying the nexuses between the underlying theory and tourism demand. Six variables are employed in each specification, and the research acknowledges that not all determinants of tourism in the real world can be modeled because of a plethora of issues, *inter alia*: data availability constraints and multicollinearity. This research is naturally confronted with these concerns.

4 Empirical results

This section presents and discusses the empirical results. While Table 4 presents results related to “security officers and police,” the findings disclosed in Table 5 pertain to armed service personnel. For both tables, the first panel encompasses regressions that do not include the conditioning information set, whereas the second panel involves control variables. In order to investigate the relevance of forces of law and order in mitigating the effect of insecurity dynamics on tourism, net effects and thresholds are computed. This approach to computing net effects is consistent with contemporary literature on interactive regressions (Tchamyou 2019a; Agoba et al. 2019).

The computation of net effects is consistent with the narrative in the last paragraph of the previous section. Moreover, when the overall net effect is negative and the corresponding conditional effect (from the interaction between the policy variable and the policy syndrome) is positive, it translates the need for a positive threshold to be established for the policy variable to make economic sense when

Table 4 Negative binomial regressions with security officers and police

	Dependent variable: tourist arrivals							
	Without control variables			With control variables				
Constant	19.018*** (0.000)	18.526*** (0.000)	20.376*** (0.000)	18.180*** (0.000)	17.717*** (0.000)	18.068*** (0.000)	17.496*** (0.000)	17.466*** (0.000)
Security officers and police (SOP) (-1)	-0.539* (0.063)	-0.736*** (0.001)	-1.455*** (0.000)	-0.352 (0.119)	-0.336 (0.200)	-0.631*** (0.000)	-0.671** (0.019)	-0.496** (0.020)
Access to weapons (-1)	-1.302*** (0.000)	-	-	-	-0.728*** (0.000)	-	-	-
Violent crime (-1)	-	-1.208*** (0.000)	-	-	-	-0.445** (0.014)	-	-
Perceptions of criminality (-1)	-	-	-1.647*** (0.000)	-	-	-	-0.285 (0.256)	-
Political instability (-1)	-	-	-	-1.336*** (0.000)	-	-	-	-1.354*** (0.000)
Access to weapons × SOP (-1)	0.235*** (0.000)	-	-	-	0.140* (0.073)	-	-	-
Violent crime (-1) × SOP (-1)	-	0.327*** (0.000)	-	-	-	0.263*** (0.000)	-	-
Perceptions of criminality × SOP (-1)	-	-	0.518*** (0.000)	-	-	-	0.234** (0.010)	-
Political instability × SOP (-1)	-	-	-	0.230*** (0.000)	-	-	-	0.233*** (0.000)
Homicides (-1)	-	-	-	-	-0.405*** (0.000)	-0.725*** (0.000)	-0.678*** (0.000)	-0.496*** (0.000)
Incarceration (-1)	-	-	-	-	0.656*** (0.000)	0.693*** (0.000)	0.712*** (0.000)	0.680*** (0.000)

Table 4 (continued)

	Dependent variable: tourist arrivals	
	Without control variables	With control variables
Violent demonstrations (-1)	-	-
Armed services personnel (-1)	-	-
Net effects	-0.660	-0.315
Thresholds	5.540	3.694
Log likelihood	-9527.758	-9557.153
Likelihood ratio (LR) chi-square	138.18***	79.39***
Likelihood ratio (LR) for alpha	1.677***	1.800***
Observations	580	580
	(0.000)	(0.000)
	-0.182***	-0.381***
	(0.009)	(0.000)
	-0.097	-0.052
	(0.366)	(0.638)
	-0.708	0.272
	5.808	1.692
	-9508.718	-9467.974
	176.26***	257.75***
	1.601***	1.447***
	580	580
	(0.000)	(0.000)
	-0.351***	-0.351***
	(0.000)	(0.000)
	-0.012	-0.012
	(0.910)	(0.910)
	0.353	0.353
	1.217	1.217
	-9469.987	-9469.987
	253.72***	253.72***
	1.454***	1.454***
	580	580
	(0.000)	(0.000)
	0.158**	0.158**
	(0.030)	(0.030)
	0.215**	0.215**
	(0.049)	(0.049)
	-0.718	-0.718
	5.811	5.811
	-9422.896	-9422.896
	347.91***	347.91***
	1.291***	1.291***
	580	580

Bold values represent significant estimated coefficients and likelihood ratios

*** ** *significance levels at 1, 5 and 10%, respectively. Mean value of security officers and police: 2.728. Minimum and maximum values of security officers and police are, respectively, 1.081 and 5.000

na not applicable due to the insignificance of unconditional effects of insecurity variables and/or conditional effect from the interaction between the security policy variable and insecurity variables

Table 5 Negative binomial regressions with armed service personnel

	Dependent variable: tourist arrivals						
	Without control variables	With control variables					
Constant	18.857*** (0.000)	17.962*** (0.000)	17.720*** (0.000)	17.029*** (0.000)	17.036*** (0.000)	15.046*** (0.000)	17.000*** (0.000)
Armed S. personnel (ASP) (-1)	-0.817** (0.031)	-0.848*** (0.001)	-0.242 (0.603)	-0.364 (0.227)	-0.503** (0.033)	0.306 (0.321)	-0.588* (0.051)
Access to weapons (-1)	-1.237*** (0.000)	-	-	-0.538*** (0.002)	-	-	-
Violent crime (-1)	-	-1.001*** (0.000)	-	-	-0.073 (0.661)	-	-
Perceptions of criminality (-1)	-	-	-0.482* (0.068)	-	-	0.506*** (0.006)	-
Political instability (-1)	-	-	-	-1.289*** (0.000)	-	-	-1.206*** (0.000)
Access to weapons × ASP (-1)	0.363*** (0.004)	-	-	0.094 (0.321)	-	-	-
Violent crime (-1) × ASP (-1)	-	0.419*** (0.000)	-	-	0.204** (0.036)	-	-
Perceptions of criminality × ASP (-1)	-	-	0.131 (0.414)	-	-	-0.106 (0.283)	-
Political instability × ASP (-1)	-	-	-	0.317** (0.025)	-	-	0.282*** (0.009)
Homicides (-1)	-	-	-	-0.384*** (0.000)	-0.703*** (0.000)	-0.692*** (0.000)	-0.505*** (0.000)
Incarceration (-1)	-	-	-	0.663***	0.730***	0.753***	0.682***

Table 5 (continued)

	Dependent variable: tourist arrivals		
	Without control variables	With control variables	
Violent demonstrations (-1)	-	-	-
Security officers and police (-1)	-	-	-
Net effect	-0.638	-0.310	na
Threshold	3.407	2.389	na
Log likelihood	-9531.982	-9561.645	-9588.299
Likelihood ratio (LR) Chi-square	129.73***	70.41***	17.10***
Likelihood ratio (LR) for alpha	1.694***	1.819***	1.938***
Observations	580	580	580

Bold values represent significant estimated coefficients and likelihood ratios

*** ** * : significance levels at 1, 5 and 10%, respectively. Armed S. personnel: armed service personnel. Mean value of armed service personnel: 1.648. Minimum and maximum values of armed service personnel are, respectively, 1.000 and 5.000

na not applicable due to the insignificance of unconditional effects of insecurity variables and/or conditional effect from the interaction between the security policy variable and insecurity variables

the outcome variable is a positive macroeconomic signal.² The narrative is consistent with a recent stream of the literature with provocative titles like “no positive threshold, no policy” (Asongu et al. 2018). The threshold reflects an inflection point or critical mass at which the unconditional negative effect of the policy syndrome on the outcome variable is completely neutralized. Hence, above this threshold, the positive effect of the policy variable outweighs the negative effect of the policy syndrome on the outcome variable. For the computed threshold to make economic sense, it should be within policy range. In other words, it should be within the minimum and maximum limits of the policy variable disclosed in the summary statistics.

The above conception and measurement of threshold for economic policy are consistent with the attendant literature, notably: (i) critical masses that are essential for desired effects (Cummins 2000); (ii) thresholds for favorable impacts (Roller and Waverman 2001; Batuo 2015) and conditions for inverted U-shaped and U-shaped patterns (see Ashraf and Galor 2013).

In the light of the above clarification, in the second column of Table 4 below, the net effect from the role of “security officers and police” in modulating access to weapons is -0.660 ($[0.235 \times 2.728] + [-1.302]$), where: -1.302 is the unconditional effect from access to weapons; 2.728 represents the average observation of security officers and police, and 0.235 is the conditional impact from the interaction between access to weapons and “security officers and police.” In other words, access to weapons unconditionally reduces tourist arrivals, “security officers and police” dampen the negative effect of access to weapons on tourist arrivals and unfortunately, the net effect of modulation is negative on tourist arrivals.

A positive conditional impact is an indication that there is a threshold or critical mass at which “security officers and police” completely nullify the unfavorable impact of access to weapons on tourist arrivals is 5.540 ($-1.302/0.235$). We revisit the summary statistics to assess whether the threshold makes economic sense and by extension have policy relevance. Unfortunately, this is not the case because the maximum value of “security officers and police” is 5.000 .³ Hence, the computed threshold exceeds the maximum value within policy reach. While this narrative on net negative effects (and corresponding thresholds beyond policy range) is consistent with the policy syndrome of political instability (both in estimations with and without the conditioning information set), this is not the case with policy syndromes of violent crime and perception of criminality because corresponding thresholds are within the minimum to maximum values (i.e., 1.081 to 5.000) of “security officers and police” disclosed in the summary statistics. While this narrative on the policy relevance of the thresholds is consistent with regressions with and without the conditioning information set, net effects in regressions with the conditioning information set are positive on tourist arrivals.

² Tourism is a positive macroeconomic signal, while terrorism is a negative economic signal. Hence, in the interaction between policy syndromes and policy variables, the policy objective is to mitigate negative macroeconomic signals and promote positive macroeconomic signals.

³ Note should be taken of the fact that within the context of the study, whereas “security officers and police” are measured per 100, 000 people, the values are coded on a scale 1 to 5 in the light of the level of security.

It follows that whereas “security officers and police” can be appropriately used to completely mitigate the negative effect of violent crime and perception of criminality on tourism, its relevance on other policy syndromes (i.e., access to weapons and political instability) is contingent on complementary policy initiatives involving other policy variables.

The significant control variables display the anticipated signs. As expected, homicide and violent demonstrations reduce the number of tourist arrivals, while incarcerations and “armed service personnel” are positively associated with it.

Table 5 shows a robustness check with armed service personnel as a policy variable. The findings are broadly consistent with those established in Table 4 pertaining to “security officers and police” as a policy variable, with two main exceptions: (i) The estimated values of interest are not significant in regressions related to the policy syndrome of perception on criminality, and (ii) all computed thresholds are within policy range. The significant control variables have the expected signs.

In order to assess whether potential issues of variables omission bias in the adoption of elements in the conditioning information set can influence the robustness of the findings, this research has further employed fixed effects and random effects estimation techniques to examine the problem statement motivating the study. For instance, the motivation for the fixed effects regressions technique is that omitted variables which are time-invariant can be canceled in the modeling exercise. Unfortunately, after performing this further analysis, the resulting information criteria used to validate the models are unfavorable to robust estimations. This is a confirmation of the fact that such techniques are not adapted for count and/or positively skewed data.

5 Concluding implications and future research directions

The study has assessed the role of forces of law and order in modulating the effect of insecurity on tourism in 163 countries for the period 2010 to 2015. Policy syndromes or insecurity dynamics include: violent crime, access to weapons, political instability and perception of criminality, while the policy variables of forces of law and order are captured with “security officers and police” and “armed service personnel.” The empirical evidence is based on negative binomial regressions. The findings show that the policy variables can be effectively used to nullify the unfavorable impact of policy syndromes on tourist arrivals. The results are contingent on net effects (from conditional and unconditional effects), insecurity dynamics and thresholds. A threshold is an inflexion point at which the unfavorable unconditional effect from a policy syndrome of insecurity on tourist arrivals is completely neutralized by policy variables of forces of law and order.

More specifically, we have established that “security officers and police” can be appropriately used to completely dampen the unfavorable impact of violent crime and perception of criminality on tourism, while its relevance on other policy syndromes (i.e., access to weapons and political instability) is contingent on complementary policy initiatives involving other policy variables. This implies that while “security officers and police” is necessary, other factors need to be taken on board

in order to completely dampen the insecurity-oriented discouragements of tourist arrivals. The established findings pertaining to “security officers and police” are broadly consistent with those from “armed service personnel.”

The findings are relevant to the objectives of our study from two principal angles. On the one hand, we have provided insights into how forces of law and order can be used to assuage the negative effects of insecurity on tourism. On the other hand, we have assessed the existing capacity of responses by forces of law and order to address insecurity-related concerns in the tourism industry. Whereas the former perspective has been clarified with net effects, the latter has been clarified with corresponding thresholds. In what follows, we discuss some policy recommendations that are worthwhile in the light of established findings.

The forces of law and order should avoid repressive policies when fighting insecurity scourges. Moreover, for some insecurity dynamics (e.g., “access to weapons” and “political instability”), some forces of law and order (e.g., “security officers and police”) need to be complemented with other policies designed to mitigate insecurity. Emphasis on the essence of less repressive policies builds on the fact that repressions may be eventually counter-productive, unless associated with other policy measures that curb insecurity, among others: the delivery of public commodities, mitigation of socioeconomic inequalities and improvement in youth education, especially sensitization on the perils of insecurity in macroeconomic outcomes. First, insecurity should be considered as a public health issue and sensitization on this front should be encouraged with new tools of information and communication technologies, especially through parenting and family interventions, childhood education and campaigns of well-being. In a nutshell, these measures should focus on all stakeholders in society. Second, preventive programs should focus on hot spots of insecurity with emphasis on gone control, drugs and socioeconomic inequality. Third, the diplomatic approaches to curbing insecurity should be complemented with new technology tools and mass media in order to constantly keep the international community and tourists (potential and actual) informed on improved security measures being implemented. In summary, the fact that some thresholds are not within policy range is an indication that the use of forces of law and order is an important but not an exhaustive measure for the mitigation of insecurity-oriented issues that discourage tourists’ arrivals.

While the established findings are broadly applicable to sampled countries, future research can improve their relevance for policy by focusing on country-specific cases. Such an approach is imperative for country-specific or more targeted implications.

Acknowledgements The authors are indebted to the reviewers and editor for constructive comments.

Compliance with ethical standards

Conflict of interest The authors declare that they have no conflict of interest.

Human and animal rights This article does not contain any studies with human participants or animals performed by the authors.

References

- Agoba AM, Abor J, Osei KA, Sa-Aadu J (2019) Do independent central banks exhibit varied behaviour in election and non-election years: the case of fiscal policy in Africa. *J Afr Bus*. <https://doi.org/10.1080/15228916.2019.1584263>
- Alvarez MD, Campo S (2014) The influence of political conflicts on country image and intention to visit: a study of Israel's image. *Tour Manag* 40:70–78
- Ashraf Q, Galor O (2013) The out of Africa hypothesis, human genetic diversity, and comparative economic development. *Am Econ Rev* 103(1):1–46
- Asongu SA, Amankwah-Amoah J (2018) Mitigating capital flight through military expenditure: insight from 37 African countries. *Res Int Bus Finance* 45:38–53
- Asongu SA, Kodila-Tedika O (2017) Trade, aid and terror. *Int J Dev Issues* 16(1):2–24
- Asongu SA, Efobi UR, Beecroft I (2018) Aid in modulating the impact of terrorism on FDI: no positive thresholds, no policy. *Forum Soc Econ*. <https://doi.org/10.1080/07360932.2018.1434676>
- Asongu SA, Nnanna J, Biekpe N, Acha-Anyi P (2019a) Contemporary drivers of global tourism: evidence from terrorism and peace factors. *J Travel Tour Mark* 36(3):345–357
- Asongu SA, Nwachukwu JC, Pyke C (2019b) The right to life: global evidence on the role of security officers and the police in modulating the effect of insecurity on homicide. *Soc Indic Res*. <https://doi.org/10.1007/s11205-018-1992-2>
- Batuo ME (2015) The role of telecommunications infrastructure in the regional economic growth of Africa. *J Dev Areas* 49(1):313–330
- Bhattarai K, Conway D, Shrestha N (2005) Tourism, terrorism and turmoil in Nepal. *Ann Tour Res* 32(3):669–688
- Blanco R, Grier B (2009) Long Live Democracy: the determinants of political instability in latin America. *J Dev Stud* 45(1):76–95
- Brambor T, Clark WM, Golder M (2006) Understanding interaction models: improving empirical analyses. *Political Anal* 14(1):63–82
- Buckley PJ, Klemm M (1993) The decline of tourism in Northern Ireland. *Tour Manag* 14(3):184–194
- Causevic S, Lynch P (2013) Political (in)stability and its influence on tourism development. *Tour Manag* 34(February):145–157
- Choi S-W (2015) Economic growth and terrorism: domestic, international, and suicide. *Oxf Econ Pap* 67(1):157–181
- Choi S-W, Luo S (2013) Economic sanctions, poverty, and international terrorism: an empirical analysis. *Int Interact* 39(2):217–245
- Coshall JT (2003) The threat of terrorism as an intervention on international travel flows. *J Travel Res* 42(1):4–12
- Cummins J (2000) Language, power and pedagogy: bilingual children in the crossfire. *Multilingual Matters*, Clevedon
- Drakos K, Kutun AM (2003) Regional effects of terrorism on tourism in three Mediterranean countries. *J Confl Resolut* 47(5):621–641
- Enders W, Sandler T (1991) Causality between transnational terrorism and tourism: the case of Spain. *Stud Confl Terror* 14(1):49–58
- Farmaki A, Altinay L, Botterill D, Hilke S (2015) Politics and sustainable tourism: the case of Cyprus. *Tour Manag* 47(April):178–190
- Fletcher J, Morakabati Y (2008) Tourism activity, terrorism and political instability within the commonwealth: the cases of Fiji and Kenya. *Int J Tour Res* 10(6):537–556
- Fosu A (2013) Growth of African economies: productivity, policy syndromes and the importance of institutions. *J Afr Econ* 22(4):523–551
- Freytag A, Kruger JJ, Meierrieks D, Schneider F (2011) The origins of terrorism: cross-country estimates of socio-economic determinants of terrorism. *Eur J Political Econ* 27(Supplement 1):S5–S16
- Gartner WC, Shen J (1992) The impact of Tiananmen Square on China's tourism image. *J Travel Res* 30(4):47–52
- Gibson DC (2006) The relationship between serial murder and the American tourism industry. *J Travel Tour Mark* 20(1):45–60
- Goldman OS, Neubauer-Shani M (2017) Does international tourism affect transnational terrorism? *J Travel Res* 56(4):451–467

- GPI (2016) Global Peace Index 2016. Institute for economics & peace. http://visionofhumanity.org/app/uploads/2017/02/GPI-2016-Report_2.pdf. Accessed 23 July 2016
- Hoffman B (2006) Inside terrorism. Columbia University Press, New York
- Honey M (1999) Ecotourism and sustainable development: Who owns paradise?. Island Press, Washington DC
- Kapuściński G, Richards B (2016) News framing effects on destination risk perception. *Tour Manag* 57(December):234–244
- Kingsbury PT, Brunn SD (2004) Freud, tourism, and terror: traversing the fantasies of post-September 11 travel magazines. *J Travel Tour Mark* 15(2–3):39–61
- Lepp A, Gibson H (2003) Tourist roles, perceived risk and international tourism. *Ann Tour Res* 30(3):606–624
- Lepp A, Gibson H, Lane C (2011) Image and perceived risk: a study of Uganda and its official tourism website. *Tour Manag* 32(3):675–684
- Liu A, Pratt S (2017) Tourism's vulnerability and resilience to terrorism. *Tour Manag* 60(June):404–417
- Liu B, Schroeder A, Pennington-Gray L, Farajat SA (2016) Source market perceptions: How risky is Jordan to travel to? *J Destin Mark Manag* 5(4):294–304
- Llorca-Vivero R (2008) Terrorism and international tourism: new evidence. *Def Peace Econ* 19(2):169–188
- Mansfeld Y, Pizam A (2006) Tourism, terrorism, and civil unrest issues. In: Mansfeld Y, Pizam A (eds) *Tourism, security and safety*. Butterworth-Heinemann, Boston, pp 29–31
- Mehmood S, Ahmad Z, Khan AA (2016) Dynamic relationships between tourist arrivals, immigrants, and crimes in the United States. *Tour Manag* 54:383–392
- Mlachila M, Tapsoba R, Tapsoba SJA (2017) A quality of growth index for developing countries: a proposal. *Soc Indic Res* 134(2):675–710
- NCSS (2017) “Negative Binomial Regression”, NCSS Statistical Software, https://ncss-wpengine.netdna-a-sssl.com/wp-content/themes/ncss/pdf/Procedures/NCSS/Negative_Binomial_Regression.pdf. Accessed 16 May 2017
- Neumayer E, Plümpert T (2016) Spatial spill-overs from terrorism on tourism: Western victims in Islamic destination countries. *Public Choice* 169(3–4):195–206
- Pizam A (1999) A comprehensive approach to classifying acts of crime and violence at tourism destinations. *J Travel Res* 38(1):5–12
- Pizam A, Fleischer A (2002) Severity versus frequency of acts of terrorism: Which has a larger impact on tourism demand? *J Travel Res* 40(3):337–339
- Pizam A, Mansfeld Y (2006) Toward a theory of tourism security. In: Mansfeld Y, Pizam A (eds) *Tourism, security & safety: from theory to practice*. Butterworth-Heinemann, Boston, pp 1–27
- Raza SA, Jawaid ST (2013) Terrorism and tourism: a conjunction and ramification in Pakistan. *Econ Model* 33(June):65–70
- Rittichainuwat B, Rattanaphinanchai S (2015) Applying a mixed method of quantitative and qualitative design in explaining the travel motivation of film tourists in visiting a film-shooting destination. *Tour Manag* 46(February):136–147
- Roller L-H, Waverman L (2001) Telecommunications infrastructure and economic development: a simultaneous approach. *Am Econ Rev* 91(4):909–923
- Ryan C (1993) Crime, violence, terrorism and tourism: an accidental or intrinsic relationship? *Tour Manag* 14(3):173–183
- Saha S, Yap G (2014) The moderation effects of political instability and terrorism on tourism development. *J Travel Res* 53(4):509–521
- Seabra C, Dolnicar S, Abrantes JL, Kastenholz E (2013) Heterogeneity in risk and safety perceptions of international tourists. *Tour Manag* 36(June):502–510
- Seddighi HR, Theocharous AL (2002) A Model of tourism destination choice: a theoretical and empirical analysis. *Tour Manag* 23(5):475–487
- Seltzer M (1998) *Serial killers: death & life in America's wound culture*. Routledge, New York
- Sharpley R (2003) Tourism, modernisation and development on the Island of Cyprus: challenges and policy responses. *J Sustain Tour* 11(2–3):246–265
- Shin Y-S (2005) Safety, security and peace tourism: the case of the DMZ area. *Asia Pac J Tour Res* 10(4):411–426
- Sönmez SF (1998) Tourism, terrorism, and political instability. *Ann Tour Res* 25(2):416–456
- Sönmez SF, Graefe AR (1998) Influence of terrorism risk on Foreign tourism decisions. *Ann Tour Res* 25(1):112–144

- Sönmez SF, Apostolopoulos Y, Tarlow P (1999) Tourism in crisis: managing the effects of terrorism. *J Travel Res* 38(1):13–18
- Tarlow PE (2006) Terrorism and tourism. In: Wilks J, Pendergast D, Leggat P (eds) *Tourism in turbulent times towards safe experiences for visitors*. Elsevier, Oxford, pp 80–92
- Taylor PA (2006) Getting them to forgive and forget: cognitive based marketing responses to terrorist acts. *Int J Tour Res* 8(3):171–183
- Tchamyou VS (2019a) Education, lifelong learning, inequality and financial access: evidence from African countries. *Contemp Soc Sci*. <https://doi.org/10.1080/21582041.2018.1433314>
- Tchamyou VS (2019b) The role of information sharing in modulating the effect of financial access on inequality. *J Afr Bus* 1:2–8. <https://doi.org/10.1080/15228916.2019.1584262>
- Tchamyou VS, Erreygers G, Cassimon D (2019) Inequality, ICT and financial access in Africa. *Technol Forecast Soc Change* 139:169–184
- UNODC (2013). *Global study on homicide: trends, context and data*. United Nations Office on Drugs and Crime. https://www.unodc.org/documents/data-and-analysis/statistics/GSH2013/2014_GLOBAL_HOMICIDE_BOOK_web.pdf. Accessed 15 Feb 2018
- Yaya ME (2009) Terrorism and tourism: the case of Turkey. *Def Peace Econ* 20(6):477–497

Publisher's Note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.