Impacts of regional conflicts on tourism in Africa and the Middle East: a spatial panel data approach

Mohammad Sharif Karimi a, Mohsen Khezri b and Somayeh Razzaghi b

a Department of Economics, Razi University, Kermanshah, Iran; b Faculty of Economics and Social Sciences, Bu-Ali Sina University, Hamedan, Iran

ABSTRACT
The present study explores the impacts of regional conflicts on tourism in the Middle East and African countries. The adopted dataset covers 2001–2017 and examines the effects of such conflicts and the resulting risks on the tourism industry for thirty-nine countries. Diagnostic tests confirmed and the spatial Durbin model selected as the estimation model. According to the results, economic growth in the origin country and in neighbouring countries increases domestic tourists in number. The results showed conflicting spillover of domestic and foreign prices in the impacts of relative prices on the arrival of tourists. Rising prices in neighbouring countries lead to more domestic tourists, while higher domestic prices were revealed to be an indicator of developed tourism structures and more tourists. Trade openness was not found to have a significant effect on the arrival of tourists. Also, the results demonstrate that countries with higher levels of conflict experience lower rates of tourist arrival. In addition, according to the results, managing the political risk of countries and reducing conflicts over time cannot significantly improve the arrival of tourists, in the short run. It is observed that political risks for tourists form in a long-term context, and its alteration requires time.

ARTICLE HISTORY
Received 17 February 2021
Accepted 7 May 2021

KEYWORDS
Tourism flows; regional conflicts; political risks; spatial panel data; Africa; Middle East

JEL CLASSIFICATION
C24; C52; Z32; Z38

Introduction
Tourism is considered to be an important international economic growth accelerator and to largely contribute to monetization, foreign exchange earnings, and employment. However, according to the ‘prospect theory’ of Tversky and Kahneman (1992), tourists are rational consumers who prefer to take a safe and low-risk journey and avoid travelling to places that are vulnerable to unrest (Seabra et al., 2020). Therefore, any insecurity could strongly restrict the tourism demand in the affected destination country (Lutz & Lutz, 2020; Novelli et al., 2018; Yang et al., 2020; Zhang et al., 2020). There is a bulk of empirical researches demonstrate how foreign and domestic aggressions (e.g. political-military interference and terrorism) pose numerous adverse impacts on the appearance and appealing capacity of touristic places (Bassil et al., 2019; Hyndman, 2015; Khalid et al., 2020; Neumayer & Plümper, 2016; Saha & Yap, 2014; Santana-Gallego et al., 2020; Song et al., 2019). Also, ambiguous and complicated aspects of politics and geopolitical events on tourism are increasingly studied in the literature. Such aspects include political stability and security, institutions, and peace (Antonakakis et al., 2017; Balli et al., 2018; Demir & Gözgor, 2018; Edgell et al., 2013; Ghalia et al., 2019; Kim et al., 2018; Lanouar & Goaied, 2019; Ritchie et al., 2003). These studies confirm that dynamic attributes in international and national political settings significantly influence tourism, as with the local economy and other market agents. Also, higher political risks with low governance quality are a determinant of...
tourism growth and influence the supply and demand sides of the tourism industry. In addition, civil conflicts and political risk have a negative impact on tourist inflows and outflows (Khalid et al., 2020; Neumayer, 2004; Saha & Yap, 2014; Thompson, 2011).

In the past two decades, however, many countries experienced disturbing events and internal and external conflicts that may threaten traveller safety and security and consequently pose major barriers to the international travel demand. This problem is more severe in the Middle East and Africa, where conflicts have long existed. These regions have recently witnessed a significant rise in warfare, civil conflicts, domestic political problems, political risk, and terrorist incidents (Hazbun, 2017; Makdisi et al., 2017). SIPRI (2020) reported that more than 66% of the fifteen-most military expending countries were located in the Middle East and Africa in 2019. Such regional insecurity and unrest may be considered as hindering factors that debilitate tourism development in the Middle East and Africa since tourists considerably prefer to travel to peaceful social places and visit places with proper security and safety. The Middle Eastern and African unrests have always weakened tourist inflows in these regions; the incidence of conflicts in Middle Eastern and African countries not only worsened the tourism sector but also involved other neighbouring countries that never took part in the conflicts (Mansfeld, 1996; Frechtling, 2004).

The purpose of this study is to investigate the effects of regional conflicts on tourism in the Middle East and Africa and we incorporate the contributions of conflicts, security, governance quality, institutions, and political risks to tourist inflows for explaining the tourist inflow in African and Middle Eastern countries with a spatial panel data approach. This study focuses on Middle Eastern and African countries for several reasons. First, different countries among the presented samples have various levels of political risk and terrorist threats. Also, tourism plays a predominant role in the economies of the countries, with a minor share of the GDP of the sample countries. For example, tourism makes the contributions of 38.52, 26.44, 17.44, 15.82, 15.24, 14.49, and 10.18 percent to the GDPs of Seychelles, Cabo Verde, Sao Tome, and Principe, Lebanon, Mauritius, Jordan, and Bahrain, respectively. The GDP contributions of tourism share are lower than 1 percent in Guinea, Mauritania, Algeria, Congo, Nigeria, Kuwait, Iraq, and Niger. This will help tackle the problem of overestimation/underestimation in analyzing the effects of regional conflicts on tourism and reporting exaggerated biased results. Second, Middle Eastern and African countries, along with Europe, enjoy an important world market share in terms of tourist income receipts. Third, these countries have frequently witnessed growing political risk, civil war, and regional conflicts. Also, this study makes two contributions to the literature. First, this work is comprehensive in covering most of the economic and conflict data sets which affect tourism. Second, this study may indeed pioneer the use of a spatial panel data method for exploring the impacts of regional conflicts on tourism. tourism development in a country affects political risk, war, and terrorism in neighbouring countries. In this context, researchers affirm that the world works as an interdependent system where unrest and warfare in one country could have strong repercussions in neighbouring countries. However, traditional panel econometric analysis frameworks commonly fail to incorporate spatial characteristics and yield biased estimates since spatial correlations are overlooked. Also, they cannot capture the indirect effects (induced by the neighbours) and spatial spillover influences of internal conflicts on tourism development. Therefore, spatial econometric models are more advantageous and provide higher efficiency and effectiveness (Meng et al., 2017; You & Lv, 2018) and we considered the spatial patterns of conflict impacts caused by spillover effect on regions.

The remainder of the study is organized as follows: Section 2 reviews the literature; Section 3 provides the data and research methodology; Section 4 provides and discusses the results, and Section 5 concludes the work and section 6 discusses the results.

**Literature review**

A rapid increase in political risk, civil war, regional conflicts, and terrorist attacks has become a global challenge to peace and economies in recent years. Policy-makers seek to realize whether tourism the
political instability influence the rate of tourism development. Most empirical studies suggest that internal conflicts, political risk, and terrorism have a negative effect on tourism development. This section provides a brief review of the studies that addressed the nexus of tourism, terrorism, regional conflicts, and political instability with tourism development.

Enders and Sandler (1991) found negative impacts of terrorist incidents on tourist inflow in Spain. They argued that a country’s involvement in security and stability issues influenced tourism negatively. Pizam and Mansfeld (1996) argued that conflicts in Egypt, Israel, Jordan, Lebanon, and Syria had benefits to Eastern Mediterranean countries such as Turkey, Greece, and Cyprus since tourists chose those destinations as they were perceived to be safer. Neighbouring countries or those with shared identical characteristics gain tourists in the same proportion as the countries with lower safety would lose visitors.

Stafford et al. (2002) claimed that terrorist attacks might cause political instability, leading to the decline or disappearance of tourism inflows in some main tourist destinations. Drakos and Kutan (2003) discussed the regional effects of terrorism on tourism in Mediterranean countries. They confirmed that terrorist events in Greece, Israel, and Turkey between 1991–2000 might represented the neighbouring countries as immediate substitutes. They also suggested that there was a negative impact on tourism demand for the wider region and that the tourism industry in Turkey and Israel was more sensitive to terrorism than in Greece. Sequeira and Nunes (2008) studied a large number of countries during 1985–2002 and investigated the effects of country risk (proxied by composite risk and political risk measures) on tourism inflows. They concluded that there was a negative relationship between tourist arrivals and country risk in both poor and rich countries. This would be inconsistent with Llorca-Vivero (2008), who employed a cross-sectional gravity model to estimate the flow of tourists from G-7 countries during 2001–2003, demonstrating that terrorism negatively impacted international tourist flow. Their results confirmed that inbound tourists’ choice of destination is strongly influenced by attacks on both local and international targets. Fletcher and Morakabati (2008) explored the influences of terrorism and political instability on tourism inflow in Kenya and Fiji. They concluded no stable association. However, a number of political events (e.g. international conflicts and coups) were demonstrated to pose much more significant influences than low-to-medium one-off terrorist attacks. Alsarayreh et al. (2010) employed questioner techniques and explored the impacts of terrorism on tourism inbound within forty-two 42 countries. The respondents mostly believed terrorism to have diminished international tourism activities. Saha and Yap (2014) utilized panel data estimation and studied the effects of political instability on tourism in 139 countries from 1999 to 2009. Political instability was concluded to negatively affect tourism at any tourist threat levels. More recently, Demir et al. (2019) evaluated the effects of geopolitical risk on tourism inbounds in eighteen countries. They overlooked the relationship between geopolitical risk and tourism. Ghalia et al. (2019) employed a gravity framework and explored the influences of institutional quality in combination distance, political risks, and socio-economic factors on tourist flow. It was found that the absence of conflicts and institutional quality were drivers of tourism inbound enhancement in both origin and destination countries. Saint Akadiri et al. (2020) investigated the direction of causality between tourism inflows and economic growth and the geopolitical risk for Turkey. They modified the Granger causality approach through quarterly data during 1985Q1-2017Q4. The results showed that a standard deviation shock to geopolitical risk would noticeably negatively affect tourism inflows and the economy in both short- and long-terms. Furthermore, a unidirectional causality was identified from geopolitical risk to economic growth and tourism inflows. Karamelikili et al. (2020) analyzed the effects of terrorism on domestic and international tourist flows in Turkey. They adopted a nonlinear autoregressive lag model to relate proxies in short- and long-terms. They found that terrorism was unidirectionally and nonlinearly related to tourism not only in the short term but also in the long term. Furthermore, foreign and domestic tourists differently respond to increased or decreased terrorist incidents in Turkey. Seabra et al. (2020) employed data from 2002–2016 to evaluate the regional influences of terrorism on tourism in Europe. They adopted the unrestricted vector autoregressive methodology. Terrorist
attacks were found to strongly affect tourist arrivals. Also, terrorism spillover, including the substitution and generalization effects, was confirmed.

Most studies in the literature attempted to relate terrorism and political risk to tourism countries and rejoins. They adopted linear and nonlinear time series and panel data models. The present study seeks to make various contributions to the literature. First, the present work improves some shortcomings of earlier studies, such as small data sets and unsuitable indexes. Second, there is a literature gap in the exploration of the effects of terrorism through economic spatial panel data models that allow for estimating spillovers induced by changes in the determinants of tourist development in neighbouring economies. Therefore, this study attempts to construct spatial panel models to analyze the impacts of regional and country conflicts and other factors on tourist development in Africa and the Middle East as well as their spatial spillover effects through panel data.

**Methodology and data**

**Empirical model**

The model adopted to study the possibility of examining the effects of political risks in a country on tourism inputs allows for exploring the effects of political risks in neighbouring countries. The effects of variables in neighbouring countries on the variables of the origin country are known as spatial effects. To take into account such spatial effects, three different models can be used. A spatial panel data model can include a lagged dependent variable or follow a spatially-autoregressive process in the error term (Anselin et al., 2008). The spatial lag model incorporates the effects of the dependent variable in a neighbouring country on the dependent variable in the origin country. The dependent variable of the present study is tourist arrivals. Thus, this model allows for studying the effects of the tourist inbound of the neighbouring country on the tourism industry of the origin country. The mathematical formulation of the spatial lag model is:

$$y_{it} = \lambda \sum_{j=1}^{N} w_{ij} y_{jt} + \varphi + x_i \beta + c_i(\text{optional}) + \alpha_t(\text{optional}) + u_{it} \quad (1)$$

where $x_i$ is a 1×K vector of independent variables in cross-sectional country $i = 1, \ldots, N$ at time $t = 1, \ldots, T$, $\beta$ is a $K \times 1$ vector of parameters, $y_{it}$ represents a dependent variable, $\sum_{j=1}^{N} w_{ij} y_{jt}$ stands for the interaction effect of $y_{jt}$ as the independent variable in neighbouring countries on $y_{it}$ in the origin country, $\lambda$ is the corresponding parameter, $w_{ij}$ is element $ij$ of the $N \times N$ spatial weight matrix $W$. Before standardizing the matrix, the value of element $ij$ is set to one of two neighbouring countries, while it is set to zero if the two countries are not neighbours. $c_i$ is a spatial-specific intercept that captures heterogeneity across countries, while $\alpha_t$ is a time-period-specific intercept that captures heterogeneities across periods. The omission of these two latter variables could bias the estimates in a cross-sectional and time-series study, respectively (Baltagi, 2005). Furthermore, $u_{it}$ is a random error term.

As the second model, the spatial error model is introduced as:

$$y_{it} = \lambda \sum_{j=1}^{N} w_{ij} y_{jt} + \varphi + x_i \beta + c_i(\text{optional}) + \alpha_t(\text{optional}) + u_{it}$$

$$u_{it} = \rho \sum_{j=1}^{N} w_{ij} u_{jt} + v_{it} \quad (2)$$

where the error term of unit $i$, $u_{it}$, is dependent on the error term of neighbouring country $j$, $u_{jt}$, an idiosyncratic component, $v_{it}$, and the spatial weights matrix $W$. The spatial Durbin model also performs the extension of the spatial lag model with spatially-lagged independent variables. This model allows for studying the impacts of independent variables in neighbouring countries on the
independent variable in the origin country (LeSage & Pace, 2009, Ch. 6):

\[ y_{it} = \lambda \sum_{j=1}^{N} w_{ij}y_{jt} + \varphi + x_{it}\beta + \sum_{j=1}^{N} w_{ij}x_{jt}\theta + c_{i}(\text{optional}) + \alpha_{i}(\text{optional}) + \nu_{it} \]  

(3)

where \( \sum_{j=1}^{N} w_{ij}x_{jt} \) investigates the interaction effect of the independent variable \( x_{jt} \) in neighbouring countries on the dependent variable \( y_{it} \) in the origin country. Also, \( \theta \) is a \( K \times 1 \) vector of parameters. Tourism arrivals via a conventional log-linear functional form can be expressed as a function of the logarithm of GDP per capita (**lnGDPP**), the logarithm of trade openness (**lnOPE**), the logarithm of the level of prices in the destination country (**lnPRICE**), and political risk indexes (**POLI**). This study divided the tourist arrival data by the population to obtain the per capita quantity and control for the size of the destination country. This work considers the logarithm of the real GDP per capita as a proxy for the level of development at the destination (Rosselló et al., 2020; Yap & Saha, 2013):

\[
\ln\text{TOURISM}_{it} = b_1 + b_2 \ln\text{GDPP}_{it} + b_3 \ln\text{PRICE}_{2it} + b_4 \ln\text{OPE}_{it} + b_5 \ln\text{POLI}_{it} + c_{i}(\text{optional}) \\
+ \alpha_{i}(\text{optional}) + \nu_{it}
\]  

(4)

**Data**

Drawing on data from thirty-nine African and Middle Eastern countries\(^2\) during 2001–2017, the present study analyzed the factors affecting tourism development with a special emphasis on the role of regional conflicts. Figure 1 depicts the internal and external conflicts in the countries under study. Some countries whose data were unavailable have been excluded from the study. There seems to be a spatial connection between such conflicts; in some areas, the rate is lower, while it is higher in some other areas. Figure 2 illuminates the values of Global Moran’s I to examine the spatial relationship between internal and external aggression. According to Figure 2, most conflicts in the thirty-nine countries exhibit a positive autocorrelation, while some conflicts have a negative autocorrelation. The fitting lines reveal the total autocorrelation to be positive. Table 1 summarizes the constructed variables and Table 2 provides the summarized statistics of the data.

**Results**

Before estimation, it is required to perform a series of diagnostic tests to select the optimal model. The likelihood ratio (LR) test is employed to evaluate the possibility of spatial and time-period effects.

![Figure 1. Internal and external conflicts in the countries.](image-url)
in the model. The null hypothesis of this test was the simultaneous spatial and time-period fixed effects, and the alternative hypothesis emphasized the existence of time-period fixed effects or spatial fixed effects separately. In the bottom row of Table 3, the LR test statistics are provided. Based on the test results, the null hypothesis of converting the spatial and time-period fixed-effect model into the spatial fixed-effect model is confirmed, while the opposite results were obtained for the time-period fixed-effect model. Therefore, only spatial constant effects are confirmed in the model.

In the next step, using the Lagrange multiplier (LM) test, the possibility of spatial interaction effects is investigated. This test is critical to confirm the spatial effects in the model and to utilize spatial econometrics. The hypothesis test examines the possibility of the spatial lag or spatial error in the model. The test is performed using the residuals of a non-spatial model, with or without the spatial fixed effects. If the alternative hypotheses are confirmed, the spatially-lagged

### Table 1. Variables constructed.

| Variable     | Variable constructed                                           | Source |
|--------------|----------------------------------------------------------------|--------|
| InTOURISM$_{it}$ | InTOURISM$_{it}$ = log(TOURISM$_{it}$)                   | UNWTO  |
|              | TOURISM$_{it}$ = Tourist arrivals per capita                  |        |
| lnGDPP$_{it}$ | lnGDPP$_{it}$ = log(GDPP$_{it}$)                             | WDI    |
|              | GDPP$_{it}$ = GDP per capita in 2010 prices$ in the country $i$ in period $t$ |        |
| lnOPE$_{it}$ | lnOPE$_{it}$ = log(OPE$_{it}$)                               | WDI    |
|              | OPE$_{it}$ = Trade Openness (total exports and imports divided by GDP) |        |
| lnPRICE$_{it}$ | lnPRICE$_{it}$ = log(PRICE$_{it}$)                         | WDI    |
|              | PRICE$_{it}$ = the ratio of PPP conversion factor to market exchange rate |        |
| WAI$_{it}$   | WAI$_{it}$ = War Index                                       | PRS    |
| CBI$_{it}$   | CBI$_{it}$ = Cross-Border Conflict Index                     | PRS    |
| FPI$_{it}$   | FPI$_{it}$ = Foreign Pressures Index                         | PRS    |
| CWI$_{it}$   | CWI$_{it}$ = Civil War Index                                 | PRS    |
| TEI$_{it}$   | TEI$_{it}$ = Terrorism Index                                 | PRS    |
| CDI$_{it}$   | CDI$_{it}$ = Civil Disorder Index                            | PRS    |
| MPI$_{it}$   | MPI$_{it}$ = Military In Politics Index                      | PRS    |
| RTI$_{it}$   | RTI$_{it}$ = Religious Tensions Index                        | PRS    |
| ETI$_{it}$   | ETI$_{it}$ = Ethnic Tensions Index                           | PRS    |

UNWTO: United Nations World Tourism Organization; [https://www.unwto.org/data](https://www.unwto.org/data)
WDI: World Development Indicator; [https://datacatalog.worldbank.org/dataset/world-development-indicators](https://datacatalog.worldbank.org/dataset/world-development-indicators).
PRS: Political Risk Services International Country Risk Guide; [www.prsgroup.com](http://www.prsgroup.com)
dependent variable or spatial error autoregressive in the model is proved, rejecting the non-spatial model. As only the fixed spatial effects were confirmed in the model, this study considered the LM test only. The rejection of the null hypothesis confirmed spatial interaction effects in the model. Based on the results, only the presence of spatial lag effects in the model is confirmed, while the existence of spatial error effects in the model is rejected. Therefore, assuming the spatial lag in the model, the present study proceeds with the selection of the optimal model.

### Table 2. Summary statistics of the variables over the years 2001–2017.

| Variable       | Mean | Median | Maximum | Minimum | Std. Dev. | Observations |
|----------------|------|--------|---------|---------|-----------|--------------|
| lnTOURISM<sub>i</sub> | 4.301 | 4.049  | 9.173   | −0.577  | 1.969     | 663          |
| lnGDPP<sub>i</sub> | 7.799 | 7.612  | 11.152  | 5.609   | 1.466     | 663          |
| lnOPE<sub>i</sub>  | 4.241 | 4.218  | 5.777   | 2.950   | 0.456     | 663          |
| lnPRICE<sub>i</sub> | 3.712 | 3.720  | 4.703   | 2.771   | 0.318     | 663          |
| WAI<sub>i</sub>    | 3.780 | 4.000  | 4.703   | 0.318   | 0.651     | 663          |
| CBI<sub>i</sub>    | 3.130 | 3.000  | 4.000   | 0.000   | 0.687     | 663          |
| FPI<sub>i</sub>    | 3.417 | 3.500  | 4.000   | 0.000   | 0.523     | 663          |
| CWI<sub>i</sub>    | 2.598 | 2.500  | 4.000   | 0.000   | 0.711     | 663          |
| TE<sub>i</sub>     | 2.532 | 2.500  | 4.000   | 0.000   | 0.583     | 663          |
| CDI<sub>i</sub>    | 3.102 | 3.000  | 6.000   | 0.000   | 1.673     | 663          |
| RTI<sub>i</sub>    | 3.807 | 4.000  | 6.000   | 0.000   | 1.280     | 663          |
| E<sub>i</sub>      | 3.736 | 4.000  | 6.000   | 0.000   | 1.243     | 663          |

### Table 3. Spatial lag or spatial error in the spatial and time-period fixed-effect model.

| Model | Pooled OLS | Spatial fixed effects | Time-period fixed effects | Spatial and time-period fixed effects |
|-------|------------|-----------------------|---------------------------|--------------------------------------|
| A1    | LM spatial lag | 18.135 (0.000*** | 4.803 (0.028**) | 15.96 (0.000*** | 0.616 (0.433) |
|       | LM spatial error | 17.968 (0.000*** | 0.07 (0.791) | 17.044 (0.000*** | 0.01 (0.92) |
|       | LR-test     | 17.911 (0.394) | 1719.563 (0.000*** |
| A2    | LM spatial lag | 37.348 (0.000*** | 5.988 (0.014**) | 12.529 (0.000*** | 0.022 (0.881) |
|       | LM spatial error | 12.916 (0.000*** | 0.032 (0.859) | 1684.036 (0.000*** |
|       | LR-test     | 21.351 (0.211) | 1652.717 (0.000*** |
| A3    | LM spatial lag | 11.081 (0.000*** | 5.7 (0.017**) | 12.529 (0.000*** | 0.022 (0.881) |
|       | LM spatial error | 0.894 (0.344) | 8.674 (0.003*** | 0.088 (0.933) |
|       | LR-test     | 19.856 (0.282) | 1652.717 (0.000*** |
| A4    | LM spatial lag | 20.32 (0.000*** | 5.182 (0.023**) | 16.84 (0.000*** | 0.654 (0.419) |
|       | LM spatial error | 9.64 (0.002*** | 8.092 (0.004*** | 0.004 (0.949) |
|       | LR-test     | 17.47 (0.423) | 1791.732 (0.000*** |
| A5    | LM spatial lag | 10.402 (0.001*** | 8.136 (0.004*** | 8.607 (0.003*** | 1.186 (0.276) |
|       | LM spatial error | 0.002 (0.966) | 0.091 (0.763) | 0.094 (0.76) |
|       | LR-test     | 24.322 (0.111) | 1747.326 (0.000*** |
| A6    | LM spatial lag | 18.32 (0.000*** | 5.883 (0.005**) | 14.267 (0.000*** | 0.654 (0.419) |
|       | LM spatial error | 7.808 (0.005*** | 0.035 (0.852) | 6.418 (0.011** | 0.001 (0.981) |
|       | LR-test     | 19.52 (0.3) | 1738.843 (0.000*** |
| A7    | LM spatial lag | 10.005 (0.002*** | 5.799 (0.016**) | 8.429 (0.004*** | 0.709 (0.4) |
|       | LM spatial error | 9.806 (0.002*** | 9.56 (0.002*** | 0 (0.984) |
|       | LR-test     | 20.208 (0.264) | 1818.141 (0.000*** |
| A8    | LM spatial lag | 4.081 (0.043**) | 4.846 (0.004*** | 2.516 (0.113) | 0.99 (0.32) |
|       | LM spatial error | 3.639 (0.056*) | 4.47 (0.035**) | 0.222 (0.637) |
|       | LR-test     | 25.58 (0.082*) | 1705.329 (0.000*** |
| A9    | LM spatial lag | 13.943 (0.000*** | 5.651 (0.017**) | 10.815 (0.001*** | 0.617 (0.432) |
|       | LM spatial error | 0.879 (0.349) | 0.463 (0.496) | 0.007 (0.932) |
|       | LR-test     | 19.286 (0.312) | 1677.825 (0.000*** |
| A10   | LM spatial lag | 3.676 (0.055*) | 5.685 (0.017**) | 4.157 (0.041) | 0.619 (0.432) |
|       | LM spatial error | 0.13 (0.718) | 0.026 (0.872) | 0.009 (0.926) |
|       | LR-test     | 19.343 (0.309) | 1584.599 (0.000*** |

Note: *p*-value, ***, **, and * show significance at 1%, 5%, and 10% level respectively Source: Authors’ estimations.
In the next test, using Hausman test statistics, the probability of selecting a random-effect model rather than a fixed-effect model is investigated. The null hypothesis in this test emphasizes the existence of a random-effects model. The results of the Hausman test for both the spatial Durbin and the spatial lag models in Table 4 are significant at a level of 1%. Therefore, the existence of random effects in the model is rejected.

This work also proposes two separate hypotheses of $H_0: \theta = 0$ and $H_0: \theta + \lambda \beta = 0$ for the variables in Equation (3) by using the LR test or Wald test to investigate the probability of the existence of the spatially-lagged independent variables. If the first assumption is confirmed, the spatial Durbin model converts into the spatial lagged model. Also, the second hypothesis simplifies the spatial Durbin model into a spatial error model. Based on the Hausman test results, Table 4 represents the test results for the fixed-effect model. The LR and Wald test results are significant at a level of 1%, suggesting the existence of the spatially-lagged independent variables in the models. Therefore, the spatial Durbin model with the spatial fixed effects is selected as the final model.

Tables 5 and 6 provide the estimation results of different models. There are 10 different models for tourist inbound. The difference between the models arises from their fourth variable; the fourth variable of the first model is the logarithm of trade openness, while that of the other variables is one of the political risk indexes in different models due to possible collinearity. According to Tables 5 and 6, the logarithm of GDP per capita has significant, positive effects on tourist inbound. An increase of 1% in the logarithmic GDP per capita leads to an increase of nearly 0.8% in tourist arrivals. Also, the logarithm of the price level ratio has a positive and significant effect on tourist arrivals. The coefficient of variable $W \times \ln GDP_{it}$, which indicates the effect of the logarithm of GDP per capita in neighbouring countries on the tourist arrivals in the origin country, is also positive and significant. This implies that the development level in neighbouring countries makes a positive contribution to the development of tourism since it enhances tourists from neighbouring countries. Furthermore, the coefficient of variable $W \times \ln PRICE_{it}$, which stands

| Table 4. The spatial Durbin model and Hausman test results. |
|---------------------------------------------------------------|
| Model | Model A1 | Model A2 | Model A3 | Model A4 | Model A5 |
|-------|----------|----------|----------|----------|----------|
| Hausman test-statistic: the spatial lag model | 68.58 (0.000***) | 78.23 (0.000*** ) | 59.93 (0.000*** ) | 34.81 (0.000*** ) | 70.92 (0.000*** ) |
| Hausman test-statistic: the spatial lag model | 97.95 (0.000*** ) | 50.19 (0.000*** ) | 20.46 (0.000*** ) | 51.48 (0.000*** ) | 94.24 (0.000*** ) |
| Wald test: spatial Durbin model against spatial lag model | 16.71 (0.000*** ) | 17.69 (0.000*** ) | 17.69 (0.000*** ) | 16.04 (0.000*** ) | 27.79 (0.000*** ) |
| Wald test: spatial Durbin model against spatial error model | 21.86 (0.000*** ) | 23.72 (0.000*** ) | 23.57 (0.000*** ) | 21.39 (0.000*** ) | 35.11 (0.000*** ) |
| LR test: spatial Durbin model against spatial lag model | 18.21 (0.000*** ) | 19.15 (0.000*** ) | 19.26 (0.000*** ) | 17.34 (0.000*** ) | 30.51 (0.000*** ) |
| LR test: spatial Durbin model against spatial error model | 24.05 (0.000*** ) | 26.37 (0.000*** ) | 26.14 (0.000*** ) | 23.61 (0.000*** ) | 40.5 (0.000*** ) |
| Hausman test-statistic: the spatial lag model | 72.44 (0.000*** ) | 56.95 (0.000*** ) | 75.99 (0.000*** ) | 71.15 (0.000*** ) | 71.42 (0.000*** ) |
| Hausman test-statistic: the spatial lag model | 50.28 (0.000*** ) | 58.47 (0.000*** ) | 25.57 (0.000*** ) | 64.76 (0.000*** ) | 52.57 (0.000*** ) |
| Wald test: spatial Durbin model against spatial lag model | 17.77 (0.000*** ) | 21.58 (0.000*** ) | 25.71 (0.000*** ) | 17.54 (0.000*** ) | 17.56 (0.000*** ) |
| Wald test: spatial Durbin model against spatial error model | 23.9 (0.000*** ) | 26.19 (0.000*** ) | 33.81 (0.000*** ) | 23.6 (0.000*** ) | 23.53 (0.000*** ) |
| LR test: spatial Durbin model against spatial lag model | 19.4 (0.000*** ) | 22.3 (0.000*** ) | 28.35 (0.000*** ) | 19.32 (0.000*** ) | 19.22 (0.000*** ) |
| LR test: spatial Durbin model against spatial error model | 26.54 (0.000*** ) | 23.4 (0.000*** ) | 38.62 (0.000*** ) | 26.14 (0.000*** ) | 26.08 (0.000*** ) |

Note: $p$-value, ***, **, and * show significance at 1%, 5%, and 10% level respectively. Source: Authors’ estimations.
for the level of prices in neighbouring countries, has a positive, significant effect on tourism development. Higher prices in neighbouring countries lead to more affordable goods and services in the origin country than in the neighbouring countries. As a result, a larger number of tourists would arrive from neighbouring countries. Low prices of goods and services seemingly cannot alone be a determinant for tourism development, and the impacts of this variable should be measured in comparison to the level of prices in neighbouring countries. Figure 3 shows the relationship between the level of prices and tourist arrival per capita for 170 countries in 2017. It shows that higher tourist arrivals occurred in countries with higher prices. Figure 4 also illustrates the relationship between the level of prices and GDP per capita. This relationship seems to be positive. Lower prices can indicate the economic situation of a country. The depreciation of national currency may indicate the weakness of industry and trade, lower income per capita, and the lack of infrastructure for tourists inbound. Hence, the present study found the level of prices to have a positive influence on tourist arrivals. Moreover, when the neighbouring countries have higher prices, proper infrastructure in the origin country would raise the influx of tourists from the neighbouring countries. It is worth noting that the comparison of the results of the present study to those of single-country works would be misleading since single-country works usually use the real exchange rate variable of the destination country relative to the country of origin. In such a case, an increase in the real exchange rate would imply an appreciation of the national currency and a reduction in the competitive power of the destination country relative to the countries of origin. In contrast, the present study did not consider the effects of the price level in the origin country and destination within relative terms and included the variables \( \ln \text{PRICE}_{it} \) and \( W \times \ln \text{PRICE}_{it} \) in the model. Therefore, the results indicate that the depreciation of

| Table 5. Estimation results for Models A1-A5. |
|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|
| \( \ln \text{GDPP}_{it} \) | 0.795 | 0.781 | 0.799 | 0.803 | 0.695 |
| \( \ln \text{PRICE}_{it} \) | 0.175 | 0.198 | 0.197 | 0.197 | 0.1 |
| \( \ln \text{OPE}_{it} \) | -0.03 | -0.117 | -0.01 | -0.025 | -0.46 |
| \( \text{WAI}_{it} \) | -0.117 | -0.01 | -0.01 | -0.025 | -0.46 |
| \( \text{CBI}_{it} \) | -0.117 | -0.01 | -0.01 | -0.025 | -0.46 |
| \( \text{FPI}_{it} \) | -0.117 | -0.01 | -0.01 | -0.025 | -0.46 |
| \( \text{CW}_{it} \) | 0.136 | 0.064 | 0.043 | 0.041 | 0.613 |
| \( W \times \ln \text{GDPP}_{it} \) | 0.537 | 0.573 | 0.549 | 0.549 | 0.659 |
| \( W \times \ln \text{PRICE}_{it} \) | 0.372 | 0.357 | 0.358 | 0.358 | 0.453 |
| \( W \times \ln \text{OPE}_{it} \) | 0.068 | 0.043 | 0.041 | 0.041 | 0.613 |
| \( W \times \text{WAI}_{it} \) | 0.024 | 0.043 | 0.041 | 0.041 | 0.613 |
| \( W \times \text{CBI}_{it} \) | 0.024 | 0.043 | 0.041 | 0.041 | 0.613 |
| \( W \times \text{FPI}_{it} \) | 0.024 | 0.043 | 0.041 | 0.041 | 0.613 |
| \( W \times \text{CW}_{it} \) | -0.079 | -0.079 | -0.079 | -0.079 | -0.079 |
| \( W \times \ln \text{TOURISM}_{it} \) | 0.018 | 0.019 | 0.018 | 0.019 | 0.038 |

Note: \( p \)-value, ***, **, and * show significance at 1%, 5%, and 10% level respectively. Source: Authors’ estimations.
the national currency, which stems from increased prices in the neighbouring countries, can have a partial positive effect on tourism. Trade openness in neighbouring countries did not show a significant effect on tourist inputs. Thus, trade openness was excluded from the model.

Table 6. Estimation results for Models A6-A10

| Model | \( \ln GDP_{it} \) | \( \ln PRICE_{it} \) | \( TEl_{it} \) | \( CDI_{it} \) | \( MPI_{it} \) | \( RTI_{it} \) | \( ETI_{it} \) | \( W \times \ln GDP_{it} \) | \( W \times \ln PRICE_{it} \) | \( W \times TEl_{it} \) | \( W \times CDI_{it} \) | \( W \times MPI_{it} \) | \( W \times RTI_{it} \) | \( W \times ETI_{it} \) | \( W \times \ln TOURISM_{it} \) |
|-------|-----------------|-----------------|-------------|-------------|-------------|-------------|-------------|-----------------|-----------------|-------------|-------------|-------------|-------------|-------------|-------------|
| ModelA6 | 0.807 (0.000*** ) | 0.185 (0.054** ) | 0.046 (0.117 ) | -0.04 (0.203 ) | 0.046 (0.117 ) | -0.04 (0.203 ) | 0.046 (0.117 ) | 0.532 (0.008*** ) | 0.37 (0.005*** ) | -0.021 (0.684 ) | 0.109 (0.042** ) | -0.093 (0.151 ) | -0.033 (0.658 ) | 0.036 (0.32 ) | 0.018 (0.804 ) |
| ModelA7 | 0.798 (0.000*** ) | 0.192 (0.045** ) | 0.046 (0.117 ) | -0.04 (0.203 ) | 0.046 (0.117 ) | -0.04 (0.203 ) | 0.046 (0.117 ) | 0.602 (0.003*** ) | 0.378 (0.004*** ) | 0.109 (0.042** ) | -0.093 (0.151 ) | -0.033 (0.658 ) | 0.036 (0.32 ) | 0.018 (0.804 ) |
| ModelA8 | 0.632 (0.000*** ) | 0.175 (0.057* ) | 0.046 (0.117 ) | -0.04 (0.203 ) | 0.046 (0.117 ) | -0.04 (0.203 ) | 0.046 (0.117 ) | 0.604 (0.002*** ) | 0.396 (0.002*** ) | 0.109 (0.042** ) | -0.093 (0.151 ) | -0.033 (0.658 ) | 0.036 (0.32 ) | 0.018 (0.804 ) |
| ModelA9 | 0.79 (0.000*** ) | 0.175 (0.057* ) | 0.046 (0.117 ) | -0.04 (0.203 ) | 0.046 (0.117 ) | -0.04 (0.203 ) | 0.046 (0.117 ) | 0.551 (0.006*** ) | 0.378 (0.004*** ) | 0.109 (0.042** ) | -0.093 (0.151 ) | -0.033 (0.658 ) | 0.036 (0.32 ) | 0.018 (0.804 ) |
| ModelA10 | 0.791 (0.000*** ) | 0.193 (0.044** ) | 0.046 (0.117 ) | -0.04 (0.203 ) | 0.046 (0.117 ) | -0.04 (0.203 ) | 0.046 (0.117 ) | 0.547 (0.007*** ) | 0.361 (0.006*** ) | 0.109 (0.042** ) | -0.093 (0.151 ) | -0.033 (0.658 ) | 0.036 (0.32 ) | 0.018 (0.804 ) |

Note: *p*-value, ***, **, and * show significance at 1%, 5%, and 10% level respectively
Source: Authors’ estimations.

Figure 3. Correlation between the level of prices and tourist arrivals per capita for 170 countries in 2017 (Source: WDI).
Among the political risk variables, only the civil war and the military-in-politics indexes had significant, positive impacts on the tourism industry. Also, as a political risk indicator of neighbouring countries, the civil disorder index was found to have a positive, significant influence on tourist

**Figure 4.** Correlation between the level of prices and GDP per capita for 170 countries in 2017. (Source: WDI).

Table 7. Estimation results for Models B1-B5.

|                     | Model B1  | Model B2  | Model B3  | Model B4  | Model B5  |
|---------------------|-----------|-----------|-----------|-----------|-----------|
| lnGDPP\(_{it}\)     | 0.84      | 0.881     | 0.919     | 0.941     | 0.899     |
|                     | (0.000***)| (0.000***)| (0.000***)| (0.000***)| (0.000***)|
| lnPRICE\(_{it}\)    | −0.031    | 0.904     | 0.376     | 0.292     | 0.5       |
|                     | (0.86)    | (0.024**) | (0.105)   | (0.004***)|           |
| lnOPE\(_{it}\)      | 1.186     |           |           |           |           |
|                     | (0.000***)|           |           |           |           |
| WAI\(_{it}\)        |           | 1.453     |           |           |           |
|                     |           | (0.000***)|           |           |           |
| CBI\(_{it}\)        |           |           | 0.889     |           |           |
|                     |           |           | (0.000***)|           |           |
| FPI\(_{it}\)        |           |           |           | 0.386     |           |
|                     |           |           |           | (0.000***)|           |
| CWI\(_{it}\)        |           |           |           |           | 0.604     |
|                     |           |           |           |           | (0.000***)|
| W × lnGDPP\(_{it}\)| −0.112    | 0.098     | 0.261     | 0.013     | 0.2       |
|                     | (0.192)   | (0.291)   | (0.006***)| (0.894)   | (0.032***)|
| W × lnPRICE\(_{it}\)| 0.287     | −0.699    | −1.114    | −0.2      | −0.044    |
|                     | (0.468)   | (0.058)   | (0.004***)| (0.623)   | (0.91)    |
| W × lnOPE\(_{it}\)  | −0.499    | −0.042    |           |           |           |
|                     | (0.11)    | (0.878)   |           |           |           |
| W × WAI\(_{it}\)    |           |           | −0.201    |           |           |
|                     |           |           | (0.194)   |           |           |
| W × CBI\(_{it}\)    |           |           |           | 0.311     |           |
|                     |           |           |           | (0.066*)  |           |
| W × FPI\(_{it}\)    |           |           |           |           |           |
|                     |           |           |           |           |           |
| W × CWI\(_{it}\)    |           |           |           |           | 1.016     |
|                     |           |           |           |           | (0.000***)|
| W × lnTOURISM\(_{it}\)| 0.252     | 0.234     | −0.003    | 0.203     | −0.098    |
|                     | (0.000***)| (0.000***)| (0.963)   | (0.001***)| (0.159)   |

Note: p-value, ***, **, and * show significance at 1%, 5%, and 10% level respectively. Source: Authors’ estimations.
arrivals, which is similar to the positive series. Increased civil disorder increases in neighbouring countries and reduced index diminish the influx of tourists from neighbouring and other countries to the destination country. This suggests that civil disorder in the neighbouring countries reduces the motivation for travelling to destination countries, also the civil disorder may transmit to the destination country, as the transmission of the 2011 Arab Spring event in the region.

According to the results, foreign conflicts cannot have a significant effect on tourist arrivals in a particular country over time since the spatial fixed-effect model examines the influential factors of tourist inbounds based on the tourist infrastructure and political conditions prevailing in the country. When a country undergoes international pressure or threat of war due to its specific political structure, the average tourist arrivals decrease in the entire period, and spatial-specific intercepts in the spatial fixed effects capture heterogeneities in the average numbers. Finally, a decrease or increase in threats over time has no significant effect on tourist arrivals. Heterogeneities across countries seem to be part of the specific conditions of countries that have induced differences in the average number of tourists inbounds. Political risks are an explanation for such differences in the average numbers. The removal of such heterogeneities could improve the estimation results since they would be no longer required to be explained, as the diagnostic tests demonstrated. However, if political risks are a factor of heterogeneity across countries, the use of the spatial fixed-effects model cannot take into account the heterogeneities in the average number of tourists from different countries relative to each other. Therefore, the presented review seeks to examine the role of political risks in heterogeneities in the average number of tourist arrivals in different countries by using time-period fixed effects and eliminating heterogeneities across periods. The estimation results are presented in Tables 7 and 8.

Table 8. Estimation results for Models B6-B10.

|                      | Model B6 | Model B7 | Model B8 | Model B9 | Model B10 |
|----------------------|----------|----------|----------|----------|-----------|
| lnGDPP<sub>t</sub>   | 0.975    | 1.004    | 0.779    | 0.992    | 0.722     |
| lnPRICE<sub>t</sub>  | 0.067    | 0.276    | 0.374    | -0.073   | 0.876     |
| TEI<sub>t</sub>      | 0.568    | 0.139    |          | 0.416    |           |
| CDI<sub>t</sub>      |          |          |          |          |           |
| MPI<sub>t</sub>      |          |          |          |          |           |
| RTI<sub>t</sub>      |          |          |          |          |           |
| ETI<sub>t</sub>      |          |          |          |          |           |
| W × lnGDPP<sub>t</sub> | 0.022    | -0.11    | 0.252    | 0.225    | -0.146    |
|                     | (0.818)  | (0.26)   | (0.004***)| (0.028**) | (0.074*)  |
| W × lnPRICE<sub>t</sub> | 0.122    | -0.27    | -0.624   | -0.577   | 0.51      |
|                     | (0.762)  | (0.552)  | (0.113)  | (0.149)  | (0.143)   |
| W × TEI<sub>t</sub>  | -0.142   |        | (0.24)   |          |           |
|                     |          |          | (0.471)  |          |           |
| W × CDI<sub>t</sub>  | -0.171   |        |          |          |           |
|                     | (0.471)  |          |          |          |           |
| W × MPI<sub>t</sub>  |        |          | 0.522    |          |           |
|                     |          |          | (0.000***)|          |           |
| W × RTI<sub>t</sub>  |        |          | 0.101    |          |           |
|                     |          |          | (0.233)  |          |           |
| W × ETI<sub>t</sub>  |        |          |          | 0.852    |           |
|                     |          |          |          | (0.000***)|           |
| W × lnTOURISM<sub>t</sub> | 0.139    | 0.203    | -0.302   | 0.033    | -0.172    |
|                     | (0.026**) | (0.001***)| (0.000***)| (0.621)  | (0.016**) |

Note: p-value, ***, **, and * show significance at 1%, 5%, and 10% level respectively
Source: Authors’ estimations.
Tables 5 and 6 report the same results for the logarithm of GDP and the logarithm of the price level, except that an increase in prices within other countries does not make a positive contribution to explaining the difference in the average tourist arrivals. Also, the political risks, except for civil disorder, have a positive, significant contribution to explaining the differences in the average of different countries. Furthermore, the political risks of neighbouring countries, including the foreign pressures index, civil war index, military in politics index, and ethnic tensions index, have positive, significant influences on tourist inbounds. This suggests that the improvement of these indexes in neighbouring countries would increase tourist arrivals. A low average civil war index in neighbouring countries and high civil war probability as a whole would decrease tourist arrivals probably since they transfer political risks to neighbouring countries or increase the political risk of the entire region. However, a decline in the civil war index only in a certain period raises tourist arrivals, as previously described.

Spatial models allow for distinguishing the direct and indirect effects of independent variables on the dependent variable. Direct impact estimation measures the effects of a change in an independent variable on the dependent variable, while indirect effects are the changes in the dependent variable due to changes in other variables through a chain of effects. The following table illustrates the marginal effects of various variables on tourist arrivals.

| Model | Coefficient (p-value) | Coefficient (p-value) | Coefficient (p-value) | Coefficient (p-value) |
|-------|-----------------------|-----------------------|-----------------------|-----------------------|
| A1    | 0.799 (0.000***<br>0.178 (0.095*)<br>-0.029 (0.706) | 0.558 (0.006***<br>0.382 (0.008***)<br>0.065 (0.639) | 1.356 (0.000***<br>0.561 (0.000***<br>0.035 (0.787) |<br>| A2    | 0.784 (0.000***<br>0.194 (0.057*)<br>-0.116 (0.064*) | 0.591 (0.003***<br>0.36 (0.011**)<br>0.026 (0.855) | 1.375 (0.000***<br>0.555 (0.000***<br>-0.09 (0.538) |<br>| A3    | 0.8 (0.000***<br>0.199 (0.041**)<br>-0.011 (0.727) | 0.592 (0.002***<br>0.36 (0.008***)<br>0.044 (0.457) | 1.392 (0.000***<br>0.559 (0.000***<br>0.033 (0.577) |<br>| A4    | 0.799 (0.000***<br>0.197 (0.043**)<br>-0.025 (0.469) | 0.573 (0.006***<br>0.372 (0.011**)<br>0.039 (0.648) | 1.372 (0.000***<br>0.569 (0.000***<br>0.014 (0.875) |<br>| A5    | 0.704 (0.000***<br>0.108 (0.255)<br>0.135 (0.000***<br>0.727) | 0.694 (0.001***<br>0.465 (0.001**)<br>-0.079 (0.203) | 1.398 (0.000***<br>0.574 (0.000***<br>0.056 (0.41) |<br>| A6    | 0.805 (0.000***<br>0.19 (0.049**)<br>0.044 (0.13) | 0.563 (0.004***<br>0.378 (0.006**)<br>-0.019 (0.728) | 1.368 (0.000***<br>0.567 (0.000***<br>0.026 (0.646) |<br>| A7    | 0.788 (0.000***<br>0.19 (0.062*)<br>-0.042 (0.194) | 0.616 (0.002***<br>0.377 (0.006**)<br>0.109 (0.043**) | 1.404 (0.000***<br>0.567 (0.000***<br>0.067 (0.206) |<br>| A8    | 0.643 (0.000***<br>0.175 (0.06*)<br>0.183 (0.000***<br>0.194) | 0.661 (0.001***<br>0.431 (0.002**)<br>-0.087 (0.212) | 1.304 (0.000***<br>0.606 (0.000***<br>0.096 (0.211) |<br>| A9    | 0.788 (0.000***<br>0.172 (0.088*)<br>0.032 (0.376) | 0.589 (0.002***<br>0.387 (0.006**)<br>-0.031 (0.692) | 1.377 (0.000***<br>0.538 (0.000***<br>0.0) (0.996) |<br>| A10   | 0.793 (0.000***<br>0.194 (0.051*)<br>0.037 (0.323) | 0.568 (0.004***<br>0.368 (0.009**)<br>0.017 (0.818) | 1.362 (0.000***<br>0.562 (0.000***<br>0.054 (0.497) |<br>|

Note: p-value, ***, **, and * show significance at 1%, 5%, and 10% level respectively. Source: Authors’ estimations.
independent variable on the dependent variable in a particular spatial unit; apart from estimating indirect effects, it measures the effect of changes in an independent variable of other countries on the dependent variable of the origin country. Table 9 represents both direct and indirect influences of the tourist arrival models. A comparison of Table 9 to the other estimation tables implies that the direct effects are slightly different from the estimated parameter values since indirect effects include feedback effects arising from the impacts of crossing neighbouring states and returning to the origin states.

**Discussions**

Internal and external conflicts in Africa and the Middle East have had profound effects on the economic structure and policy-making of these countries. Drawing on data from thirty-nine African and Middle Eastern countries during 2001–2017, the present study examined the effects of such conflicts on the tourism industry. The analyzes of diagnostic tests confirmed the existence of spatial interaction on the tourism industry of these countries and the spatial passage of conflicts in the region. This result is in line with the results of Veréb et al. (2018) where they approved the spillover effects of conflicts on regional tourism inflows. Then the spatial Durbin model was selected as the optimal spatial econometrics to study the determinants of tourist arrivals. Although the effect of some model variables confirmed the theoretical expectations, the effects of the other variables showed different realities in the economic structure of the countries. According to the results, the growth of GDP within the origin country and in neighbouring countries increases the number of domestic tourists. This result is matching with theory and also is in line with the results of Saha and Yap (2014), and Ghalia et al. (2019). Economic growth can pave the way for the expansion of the touristic infrastructure. However, as economic growth in neighbouring countries increases, two conflicting effects appear in the influx of domestic tourists: (1) an increase in the income of neighbours allows for increasing domestic demand and (2) the infrastructure developed in neighbouring countries can move tourists from other countries to neighbouring countries with more developed tourism infrastructure. According to the results, the former dominates the latter, suggesting that the movement of tourists between neighbouring countries provides the bulk of tourism demand in these countries. Also, trade openness was found to have no significant effect on the arrival of tourists. This might have arisen from different levels of political instability in the sample countries. Although this result is in contrast to a number of country-level studies (Chaisumpunsakul & Pholphirul, 2018; Habibi & Ahmadzadeh, 2015; Kulendran & Wilson, 2000; Shan & Wilson, 2001; Suresh et al., 2018), it is consistent with some studies (Ali et al., 2018; Chaisumpunsakul & Pholphirul, 2018), as they conclude that the international trade, import, and export ratios were the lowest correlations with the number of tourists from the Middle East to Thailand.

It was found that an improvement in the situations of individual countries over time in terms of reduced conflicts in the civil war and the military-in-politics indexes could enhance the arrival of tourists in the country. Although the results were found to be insignificant for others, however countries with lower levels of internal and external conflicts have experienced a large rate of tourist arrivals. This finding is following the findings of Seabra et al. (2020), Demir et al. (2019), Saha and Yap (2014), Neumayer (2004), and Drakos and Kutan (2003). Despite their contradiction, these results have important implications. They indicate that the attitude of tourists toward the political risk of a country formed in a long-term framework and requires time to change since profound changes in the political structures of countries are usually considered to be a long-term process. A country that suffers from major internal and external conflicts due to its governance structure experiences a decrease in the average tourist arrivals. A decline in the conflicts (even due to the governing structure) would not reduce the political risk of these countries from the perspective of tourists and would not have a significant contribution to tourist arrivals. In this context, Saha and Yap (2014) concluded that although terrorism increases tourism at a very low to moderate level of political
instability, a rise in terrorism above the threshold substantially diminishes tourist arrivals and tourism revenues.

**Conclusions**

Conflict spillover effects on tourism have been widely accepted in many studies. However, the most notable new insights into the effects of regional conflicts on the tourism inbound and the practical implications of this study are summarized as:

Countries that frequently encounter internal and external conflicts suffer from tourism underdevelopment relative to countries that rarely witness conflicts or unrest. This persuades the countries of the Middle East and Africa to take efforts and resolve their internal and external conflicts (which are one of their common features) and consequently decrease or moderate long-run political instability and the risk of war in the region. According to the findings, short-term efforts would be ineffective to reduce political risks and raise the arrival of tourists. The variables of insecurity and political instability as internal and external conflicts should be considered to be important and influential when Middle Eastern and African countries attempt to model the tourism demand or accurately predict the tourism revenue. The results confirmed the spatial effects of conflicts and significant spillover effects in the Middle East and Africa. Policy-makers in these regions need to design effective, region-wide strategies to deal with political instability, such as conflicts and terrorist attacks. Besides, policy-makers must improve political relationships and establish multilateral organizations to cope with external interventions and internal conflicts to manage political tensions and provide long-run security in the region. The findings indicated that the decomposition of political risks into different categories could better explain the impacts of political unrest on the tourism inbound. According to the results, structural changes in the governance of countries can lead to a larger number of tourists in the long run. The sole consideration of price variables without deploying a tourism infrastructure would not raise the arrival of tourists. The results of this study can be examined either for other regional groups of countries or for an individual country.

**Notes**

1. as Lanouar and Goaied (2019), Lutz and Lutz (2020), and Ritchie et al. (2003)
2. Including Algeria, Angola, Bahrain, Botswana, Burkina Faso, Congo, Dem. Rep., Congo, Rep., Egypt, Arab Rep., Gambia, The, Ghana, Guinea, Iran, Islamic Rep., Israel, Jordan, Kenya, Kuwait, Lebanon, Madagascar, Malawi, Mali, Malta, Morocco, Mozambique, Namibia, Niger, Nigeria, Oman, Qatar, Saudi Arabia, Senegal, Sierra Leone, South Africa, Sudan, Tanzania, Togo, Tunisia, Uganda, Zambia, Zimbabwe

**Disclosure statement**

No potential conflict of interest was reported by the author(s).

**ORCID**

Mohammad Sharif Karimi http://orcid.org/0000-0002-5967-6756

**References**

Ali, Q., Khan, M. T. I., & Khan, M. N. I. (2018). Dynamics between financial development, tourism, sanitation, renewable energy, trade and total reserves in 19 Asia cooperation dialogue members. *Journal of Cleaner Production, 179*, 114–131. https://doi.org/10.1016/j.jclepro.2018.01.066

Alsarayreh, M. N., Jawabreh, O. A., & Helalat, M. S. (2010). The influence of terrorism on the international tourism activities. *European Journal of Social Sciences, 13*(1), 145–160. https://www.researchgate.net/publication/288404123_The_Influence_of_Terrorism_on_the_International_Tourism_Activities
Anselin, L., Le Gallo, J., & Jayet, H. (2008). Spatial panel econometrics. In The econometrics of panel data (pp. 625–660). Springer. https://doi.org/10.1007/978-3-540-75892-1_19

Antonakakis, N., Gupta, R., Kollia, C., & Papadamou, S. (2017). Geopolitical risks and the oil-stock nexus over 1899–2016. Finance Research Letters, 23, 165–173. https://doi.org/10.1016/j.frl.2017.07.017

Balli, F., Shahzad, S. J. H., & Uddin, G. S. (2018). A tale of two shocks: What do we learn from the impacts of economic policy uncertainties on tourism? Tourism Management, 68, 470–475. https://doi.org/10.1016/j.tourman.2018.04.008

Baltagi, B. (2005). Econometric analysis of panel data (3rd ed.). John Wiley and Sons.

Bassil, C., Saleh, A. S., & Anwar, S. (2019). Terrorism and tourism demand: A case study of Lebanon, Turkey and Israel. Current Issues in Tourism, 22(1), 50–70. https://doi.org/10.1080/13683500.2017.1397609

Chaisumpunsakul, W., & Pholphirul, P. (2018). Does international trade promote international tourism demand? Evidence from Thailand’s trading partners. Kasetsart Journal of Social Sciences, 39(3), 393–400. https://doi.org/10.1016/kjss.2017.06.007

Demir, E., & Gözgör, G. (2018). Does economic policy uncertainty affect tourism? Annals of Tourism Research, 69(C), 15–17. https://doi.org/10.1016/j.annals.2017.12.005

Demir, E., Gözgör, G., & Paramati, S. R. (2019). Do geopolitical risks matter for inbound tourism? Eurasian Business Review, 9(2), 183–191. https://doi.org/10.40821-019-00118-9

Drakos, K., & Kutan, A. M. (2003). Regional effects of terrorism on tourism in three Mediterranean countries. Journal of Conflict Resolution, 47(5), 621–641. https://doi.org/10.1177/00220027032358198

Edgell, D. L. S., Allen, M. D. L., Smith, G., & Swanson, J. R. (2013). Tourism policy and planning: Yesterday, today, and tomorrow (2nd ed.). Routledge.

Enders, W., & Sandler, T. (1991). Causality between transnational terrorism and tourism: The case of Spain. Studies in Conflict & Terrorism, 14(1), 49–58. https://doi.org/10.1080/10576109108435856

Fletcher, J., & Morakabati, Y. (2008). Tourism activity, terrorism and political instability within the commonwealth: The cases of Fiji and Kenya. International Journal of Tourism Research, 10(6), 537–556. https://doi.org/10.1002/tr.699

Frehn, D. C. (2004). Assessment of tourism/hospitality journals’ role in knowledge transfer: An exploratory study. Journal of Travel Research, 43(2), 100–107. https://doi.org/10.1177/00472875042200572

Ghalia, T., Fidrmuc, J., Samargandi, N., & Sohag, K. (2019). Institutional quality, political risk and tourism. Tourism Management Perspectives, 32, 100576. https://doi.org/10.1016/j.tmp.2019.100576

Habibi, F., & Ahmadzadeh, K. (2015). Tourism development, trade openness and economic growth: The case of Malaysia. European Journal of Economics, Finance and Administrative Sciences, 78, 129–139. https://www.researchgate.net/publication/287285863_Tourism_Development_Trade_Openness_and_Economic_Growth_the_Case_of_Malaysia

Hazbun, W. (2017). Beyond the American Era in the Middle East: An evolving landscape of turbulence. New Conflict Dynamics: Between Regional Autonomy and Intervention in the Middle East and North Africa, Danish Institute for International Studies, 31–42. https://www.academia.edu/32255162/Beyond_the_American_Era_in_the_Middle_East_An_Evolving_Landscape_of_Turbulence

Hyndman, J. (2015). The securitisation of Sri Lankan tourism in the absence of peace. Stability: International Journal of Security and Development, 4(1). https://doi.org/10.5334/sta.fa

Karamelikli, H., Khan, A. A., & Karimi, M. S. (2020). Is terrorism a real threat to tourism development? Analysis of inbound and domestic tourist arrivals in Turkey. Current Issues in Tourism, 23(17), 2165–2181. https://doi.org/10.1080/13683500.2019.1681945

Khalid, U., Okafor, L. E., & Aziz, N. (2020). Armed conflict, military expenditure and international tourism. Tourism Economics, 26(4), 555–577. https://doi.org/10.1177/1354816619851404

Kim, Y.-R., Saha, S., Vertinsky, I., & Park, C. (2018). The impact of national institutional quality on international tourism inflows: A cross-country evidence. Tourism Analysis, 23(4), 533–551. https://doi.org/10.3727/108354218X15391984820503

Kulendran, N., & Wilson, K. (2000). Is there a relationship between international trade and international travel? Applied Economics, 32(8), 1001–1009. https://doi.org/10.1080/000368400322057

Lanouar, C., & Goaied, M. (2019). Terrorism and political violence in Tunisia: Evidence from markov-switching models. Tourism Management, 70, 404–418. https://doi.org/10.1016/j.tourman.2018.09.002

LeSage, J. P., & Pace, R. K. (2009). Introduction to spatial econometrics. CRC Press Taylor and Francis Group.

Llorca-Vivero, R. (2008). Terrorism and international tourism: New evidence. Defence and Peace Economics, 19(2), 169–188. https://doi.org/10.1080/10242690701453917

Lutz, B. J., & Lutz, J. M. (2020). Terrorism and tourism in the Caribbean: A regional analysis. Behavioral Sciences of Terrorism and Political Aggression, 12(1), 55–71. https://doi.org/10.1080/19434472.2018.1518337

Makdisi, K., Waleed, H., Senyücel Gündoğar, S., & Dark, G. (2017). Regional order from the outside in: External intervention, regional actors, conflicts and agenda in the MENA region. MENARA Methodology and Concepts Papers, 5, 1–24. http://www.iai.it/sites/default/files/1enenegro_menara-cp_5.pdf

Meng, B., Wang, J., Andrew, R., Xiao, H., Xue, J., & Peters, G. P. (2017). Spatial spillover effects in determining China’s regional CO2 emissions growth: 2007–2017. Energy Economics, 63, 161–173. https://doi.org/10.1016/j.eneco.2017.02.001
Neumayer, E. (2004). The impact of political violence on tourism: Dynamic cross-national estimation. *Journal of Conflict Resolution, 48*(2), 259–281. https://doi.org/10.1177/0022002703262358

Neumayer, E., & Plümper, T. (2016). Spatial spillovers from terrorism on tourism: Western victims in Islamic destination countries. *Public Choice, 169*(3), 195–206. https://doi.org/10.1007/s11127-016-0359-y

Novelli, M., Burgess, L. G., Jones, A., & Ritchie, B. W. (2018). 'No Ebola ... still doomed'—The Ebola-induced tourism crisis. *Annals of Tourism Research, 70*, 76–87. https://doi.org/10.1016/j.annals.2018.03.006

Pizam, A., & Mansfeld, Y. (1996). *Tourism, Crime and International Security Issues* (pp. 265–278). Wiley. https://www.worldcat.org/title/tourism-crime-and-international-security-issues/oclc/32666800

Ritchie, J. R., Goeldner, C. R., & McIntosh, R. W. (2003). *Tourism: Principles, practices, philosophies*. John Wiley & Son.

Rosselló, J., Becken, S., & Santana-Gallego, M. (2020). The effects of natural disasters on international tourism: A global analysis. *Tourism Management, 79*, 104080. https://doi.org/10.1016/j.tourman.2020.104080

Saha, S., & Yap, G. (2014). The moderate effects of political instability and terrorism on tourism development: A cross-country panel analysis. *Journal of Travel Research, 53*(4), 509–521. https://doi.org/10.1177/0047287513496472

Saint Akadiri, S., Eluwole, K. K., Akadiri, A. C., & Avci, T. (2020). Does causality between geopolitical risk, tourism and economic growth matter? Evidence from Turkey. *Journal of Hospitality and Tourism Management, 43*, 273–277. https://doi.org/10.1016/j.jhtm.2019.09.002

Santana-Gallego, M., Fourie, J., & Rosselló, J. (2020). The effect of safety and security issues on international tourism. *Annals of Tourism Research, 80*(C). https://doi.org/10.1016/j.annals.2019.02.004

Seabra, C., Reis, P., & Abrantes, J. L. (2020). The influence of terrorism in tourism arrivals: A longitudinal approach in a Mediterranean country. *Annals of Tourism Research, 80*, 102811. https://doi.org/10.1016/j.annals.2019.102811

Sequeira, T. N., & Nunes, P. M. (2008). Does country risk influence international tourism? A dynamic panel data analysis. *Economic Record, 84*(265), 223–236. https://doi.org/10.1111/j.1475-4932.2008.00464.x

Shan, J., & Wilson, K. (2001). Causality between trade and tourism: Empirical evidence from China. *Applied Economics Letters, 8*(4), 279–283. https://doi.org/10.1080/135048501750104114

SIPRI. (2020). *SIPRI military expenditure database*. Oxford University Press, Stockholm International Peace Research Institute.

Song, H., Livat, F., & Ye, S. (2019). Effects of terrorist attacks on tourist flows to France: Is wine tourism a substitute for urban tourism? *Journal of Destination Marketing and Management, 14*, 100385. https://doi.org/10.1016/j.jdmm.2019.100385

Stafford, G., Yu, L., & Armoo, A. K. (2002). Crisis management and recovery how Washington, DC, hotels responded to terrorism. *The Cornell Hotel and Restaurant Administration Quarterly, 43*(5), 27–40. https://doi.org/10.1080/13032917.2011.100367

Suresh, K. G., Tiwari, A. K., Uddin, G. S., & Ahmed, A. (2018). Tourism, trade, and economic growth in India: A frequency-domain analysis of causality. *Anatolia, 29*(3), 319–325. https://doi.org/10.1080/13032917.2017.1408025

Thompson, A. (2011). Terrorism and tourism in developed versus developing countries. *Tourism Economics, 17*(3), 693–700. https://doi.org/10.1080/13548501750104114

Tversky, A., & Kahneman, D. (1992). Advances in prospect theory: Cumulative representation of uncertainty. *Journal of Risk and Uncertainty, 5*(4), 297–323. https://doi.org/10.1007/BF00122574

Verèb, V. N., Nobre, H., & Farhangmehr, M. (2018). The fear of terrorism and shift in cosmopolitan values. *International Journal of Tourism Cities, 4*(4), 452–483. https://doi.org/10.1108/ijtcc-03-2018-0024

Yang, Y., Zhang, H., & Chen, X. (2020). Coronavirus pandemic and tourism: Dynamic stochastic general equilibrium modeling of infectious disease outbreak. 102913–102913. https://doi.org/10.1016/j.annals.2020.102913

Yap, G., & Saha, S. (2013). Do political instability, terrorism, and corruption have deterring effects on tourism development even in the presence of UNESCO heritage? A cross-country panel estimate. *Tourism Analysis, 18*(5), 587–599. https://doi.org/10.3727/108354213X13782245307911

You, W., & Lv, Z. (2018). Spillover effects of economic globalization on CO2 emissions: A spatial panel approach. *Energy Economics, 73*, 248–257. https://doi.org/10.1016/j.eneco.2018.05.016

Zhang, K., Hou, Y., & Li, G. (2020). Threat of infectious disease during an outbreak: Influence on tourists’ emotional responses to disadvantaged price inequality. *Annals of Tourism Research, 84*, 102993. https://doi.org/10.1016/j.annals.2020.102993