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WHICH IS MORE EFFECTIVE ON TOURISM, GEOPOLITICAL RISK OR ECONOMIC POLITICAL UNCERTAINTY?

Abstract. *We aim to determine the effect of geopolitical risk and economic political uncertainty on the number of international tourist arrivals. In order to identify the countries, Hofstede's uncertainty avoidance index was applied. Considering this index, 16 countries' data on geopolitical risk, economic political uncertainty, and the number of international tourists have been reached. For the period 1997–2019, the Westerlund cointegration test was applied to investigate the relationship between the variables. The results of the panel cointegration test show that the variables are cointegrated. Economic political uncertainty is effective in countries where tourist arrivals are above the uncertainty avoidance index average and geopolitical risk is effective in countries where tourist arrivals are below it. Our aim is for policymakers to make suggestions for sustainable policies by taking the cultural aspects of the countries into account when making decisions about tourism.*

Keywords*: Tourism, Geopolitical Risks, Economic Policy Uncertainty, Hofstede, Panel Data Analysis*

JEL Classification: Z32, F50, C33

1. Introduction

Tourism is expressed as a "smokeless industry" and is a driving force for economic, social, and cultural development (Khan et al., 2021). Tourism is one of the industries that is the most sensitive to concerns about risk. Tourism can be negatively impacted by many domestic and global risks, including the September 11, 2001, attacks, the 2007–2008 mortgage financial crisis, China-the USA, and Russia-Ukraine tensions, as well as the Arab Spring. When risks increase in destination centres, tourists and investors postpone their plans until conditions are more stable, and this leads to a decline in tourism activities. Also, when uncertainty increases, destination centers may lower prices in different ways to increase tourism demand (Demir et al., 2020; Zhang et al., 2022). This situation negatively affects the

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development of countries. As a consequence, countries regard tourism-related activities as part of their economic policy. Understanding how risks and uncertainties affect tourism is essential for this reason. Political and security issues raise geopolitical risk (GPR) and economic policy uncertainty (EPU) in the literature (Tiwari et al., 2019).

The aim of our study is to determine the effect of the risks of the countries on the number of international tourist arrivals (TA) in the 1997-2019 period by using panel data analysis. For this purpose, the GPR and EPU variables discussed recently in the literature have been taken into account as risk variables. Caldara and Iacoviello (2018) develop the GPR index for 43 countries by considering 10 newspapers' electronic archives. The text algorithm calculates the GPR value of countries based on news headlines about political tensions, geopolitical, nuclear, war, and terrorist threats and activities in national and international relations. Also, Baker et al. (2016) developed the EPU that is for 22 countries using a text algorithm considering the newspaper's keywords related to politics, the economy, and uncertainty. It captures the uncertainty about who will make economic policy decisions, which policy actions will be taken, and who will be affected by the economic effects of these actions. The main difference between them is that EPU evaluates real economic risks, whereas GPR assesses war and war-like situations (Zhang et al., 2022).

It is highlighted that individuals' risk-taking behaviours are influenced by cultural differences in the literature (Crotts, 2004; Kozak et al., 2007; Seabra et al., 2013; Gholipour and Tajaddini, 2014). Hofstede et al. (2010) is the most widely used framework for comparing and contrasting different cultures. There are six cultural dimensions[1] in the Hofstede' study. It is stated that the uncertainty avoidance dimension (UAI)[2] dimension is more crucial than other dimensions in understanding cultural differences (Seabra et al., 2013). In light of these studies, we employed the countries by taking the UAI into account.

Kozak et al. (2017) and Crotts (2004) analysed countries by dividing them into groups (low and high) based on UAI. According to their research, there are significant differences between country groups in tourism. As a consequence, we examined countries by dividing two groups as below the average (BA) and above the average (AA) of this dimension. The purpose of this paper is to highlight the difference between groups. Uncertain or risky situations frequently disturb people in destination centres where UAI is high. Many believe that uncertainty and the unknown in these countries threaten them. On the other hand, individuals may be willing to take the risk in countries with low UAI (Hofstede et al., 2010).

The number of international tourist arrivals from countries is shown in Figure 1. According to the Worldbank (2019) report, the countries included in the

[1] This dimensions include power distance, individualism versus collectivism, masculinity versus femininity, uncertainty avoidance, long term orientation versus short term normative orientation, indulgence versus restraint.

[2] It measures how anxious a country's citizens are about the future's unknown and ambiguity of the future.

study, it was determined that most of the countries in the BA group (Spain, Mexico, Italy, Germany, Japan, and the Russian Federation) were among the top 30 most visited countries compared to the AA countries.

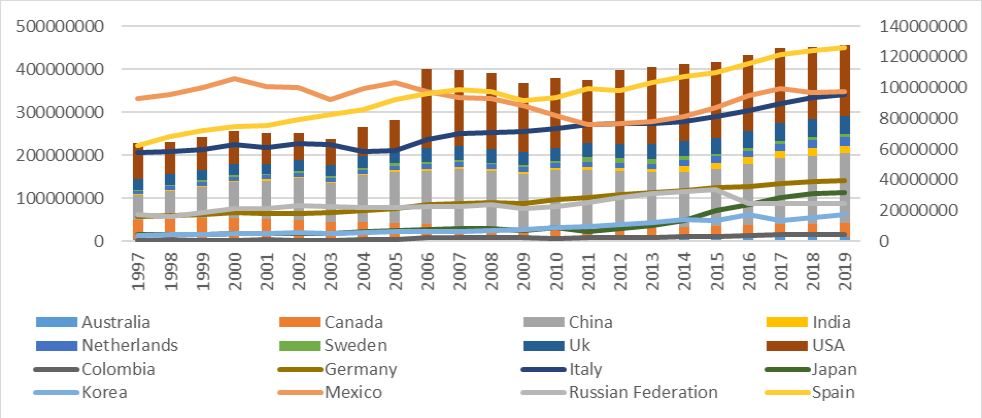

Figure 1. The Number of International Tourist Arrivals
Source: Worldbank, 2022

However, the most international tourist arrivals were in the United States of America (USA) and China in 2019. This is because these countries have larger population densities than other nations (Worldbank, 2022). These countries are followed by Spain, Mexico, and Italy in the BA group. Spain and Italy arrival the most European tourists, whereas Mexico arrivals the most American tourists. Due to economic and geopolitical risks, tourists tend to travel to countries that are economically close or nearby (The World Tourism Organisation (UNWTO), 2022). In addition, tourists usually travel for personal reasons. The most visited countries for business and professional purposes are generally in the AA group (UNWTO, 2022).

In Figure 1, the countries with the lowest number of TA among the AA countries are the Netherlands and Australia. The TA numbers of these countries generally increase over the years, whereas there is a decrease in Canada. In the BA countries, Colombia has the least TA to compare to the other countries in the study. Even though the number of TAs is increasing in general, those in the Russian Federation are going down after 2015. This is because geopolitical risks have recently increased.

According to Pizam et al. (1997), investigating the effect of cultural differences on tourism not only provides scholarly contribution, but also provides an information for political makers. To our knowledge, generally, the role of a single EPU or GPR on tourism has been focused. The studies investigating the impact of EPU and GPR on tourism together are limited in the literature and analyses have run for a country in these studies. Because the results of the studies vary, it is challenging to draw general conclusions about the effect of EPU and GPR on tourism. For this reason, different from the literature, we determined countries by taking notice of the UAI dimension in our study. This is the most important contribution of our study to

the literature. The period covered is different from other studies in the literature, and we used the longest period possible. It has been retained that cointegration tests are not used to investigate the relationship between variables in the literature. Therefore, we used the Westerlund cointegration test. Thus, we take into account the criticism the effects of risks and uncertainties in attractive tourism centres do not appear in the short run and examine long-run effects. It is also our contribution to the literature. In summary, the contribution of our study to the literature focuses on the country group, time period, and use of the econometric method.

The rest of the paper is organised as follows. The comparative literature on the variables is included in Section 2, which follows the introduction. Sections 3 and 4 explain our data and methodology. Section 5 presents the empirical results. The last section includes the conclusion of the paper.

2. Literature review

A variety of dummy or substitute variables have been used to look at how risks affect tourism. Unfortunately, there has been no consensus in the literature on the findings. The risk indices developed by Baker et al. (2016) (EPU) and Caldara and Iacoviello (2018) (GPR) provided for the use of a standardised variable in the literature. Studies can be classified into three categories using EPU and GPR as proxy indicators of uncertainties.

The first category includes studies between tourism and the EPU. The results change depending on the period (short-run, long-run) and comparative studies between country/country groups. Some studies found a negative relationship (Demir et al., 2020; Khan et al., 2021) while others found a positive one (Sing et al., 2019; Navarro-Chávez et al., 2020). Nguyen et al. (2022), on the other hand, found a positive effect in low-middle-income countries and a negative effect in high-income countries.

Studies between tourism and the GPR that the second category includes are less than EPU and the relationship between variables is expected to be negative. From these studies, Balli et al. (2019) Mexico, South Korea, and South Africa; According to Demir et al. (2019) 18 developing countries; Hailemariam and Ivanovski (2021) the USA, and Ghosh (2022) India support the expectation that the GPR has a negative effect on tourism.

Finally, studies comparing EPU and GPR have recently started to shed light on the issue. These studies show which EPU or GPR is crucial for countries. For the first time in the literature, Tiwari et al. (2019) discussed this comparison and used wavelet analysis to perform the relationship between the variables for India. The results of the analysis show that the effect of GPR is more effective and prolonged compared to EPU, while other studies generally find the opposite result. Shahzad et al. (2022) examined the effect of EPU and GPR on the number of international tourist arrivals to the USA during the COVID-19 period using a time-varying causality test. As a result of the study, there is a unidirectional causality between EPU and TA, and a bidirectional causality between TA and GPR but EPU effects on TA in the long-

term. Similarly, Zhang et al. (2022) examined the effect of EPU and GPR on international tourist arrivals to China using a time-varying parameter vector autoregression (TVP-VAR) model and concluded that EPU shocks affect more.

To our knowledge, few studies have dealt with EPU and GPR together. It is important to examine the source of risk and uncertainty that tourists are sensitive to by comparing EPU and GPR. Taking this fact into account, our study provides policymakers with the opportunity to link these factors in real time. So, it makes it possible to come up with flexible policies to help the tourism sector grow. However, studies examining EPU and GPR simultaneously seek to detect which risks are more prevalent in tourism; the analyses are generally for the short-run. Individuals' destination preferences are planned in advance, so the effect may not be obvious in the short-run (Balli et al., 2019). In our study, our aim is to fill this gap in the literature with the cointegration test. In addition, because previous studies only examined a country, no cross-country comparisons were made for the same method and time period. In contrast to the other studies, we used panel data analysis techniques to compare the results from different countries. This is another contribution of our study.

3. Data

The 1997-2019 period of our study covers all of the available homogenous data for the variables and the 16 countries (AA – Australia, Canada, China, India, Netherlands, Sweden, the UK, the USA; BA – Colombia, Germany, Italy, Japan, Korea, Mexico, Russia Federation, Spain). Hofstede's UAI was used to determine the countries. This index has an essential effect on the tourism of the host country (Gholipour and Tajaddinni, 2014). Thus, our aim is to examine the effect of GPR and EPU on the number of international tourists' arrival to the host country by grouping them as above and below the average by taking the average of the UAI. TA, GPR, and EPU were obtained from Worldbank, Caldara, and Iacoviello (2018) and www.policyuncertainty.com, respectively. GPR and EPU are published monthly, and TA is published annually. For this reason, the Eviews 10 package program was used to convert all variables into annual data set. In this context, the study of McKenzie and Takaoka (2012) was used. Table 1 shows the descriptive statistics of the variables. Descriptive statistics show that all of the variables have a skewness to the right, and their kurtosis exhibits a leptokurtic distribution.

Table 1. Descriptive Statistics

	TA_{AA}	EPU_{AA}	GPR_{AA}	TA_{BA}	EPU_{BA}	GPR_{BA}
Mean	43366328	124.35	0.56	41365710	113.14	0.24
Median	21482000	104.75	0.19	24404500	106.13	0.15
Std. Dev.	52741090	83.48	0.81	37365990	43.47	0.23
Skewness	1.45	2.88	2.32	0.59	1.01	1.75
Kurtosis	3.75	13.26	8.8	1.83	4.34	5.98

The EPU index of countries in the AA and BB groupings is shown in Figures 2 and 3. Until 2008, the EPU index of the AA countries did not indicate many changes in Figure 2. But after the mortgage crisis, there was an increase in all countries and it had an “inverted U” shape until 2014. Although countries have generally returned to their previous trend since 2014, there are rapid increases again in China, the UK, and Canada. Germany, Japan, and Korea had a similar trend in 2008-2014 in the BA countries. After 2014, Germany's and Korea's EPU index continued to increase rapidly. The countries in this group generally have a different trend from each other, whereas it is observed that they had close values between 2003-2007. Mexico has the highest EPU average until 2007. The EPU decreased after 2007 and Mexico is the country with the lowest EPU average. Although the EPU average of the AA countries is higher than that of the BA countries, there has been an increase in all of them in recent years.

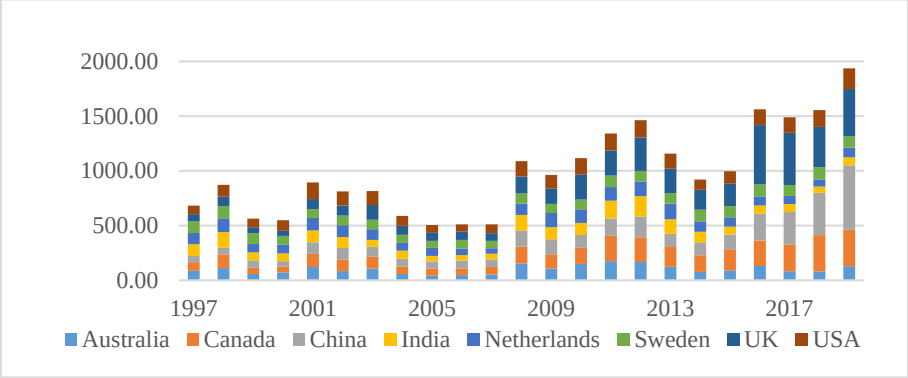

Figure 2. The Economic Policy Uncertainty of the AA Group Countries
Source: www.policyuncertainty.com

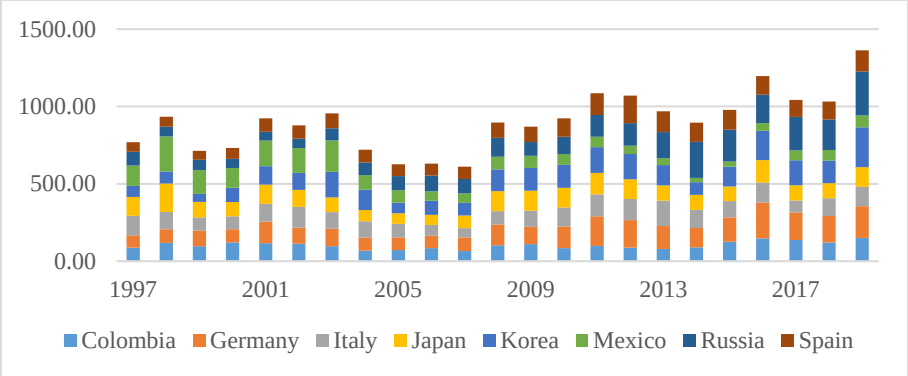

Figure 3. The Economic Policy Uncertainty of the BA Group Countries
Source: www.policyuncertainty.com

The GPR index of the AA and BB countries is shown in Figures 4 and 5. When Figure 4 is examined, it has been determined that in the AA group, the countries with the highest risk are the USA, the UK and China, respectively. The increase in risk in the USA and UK reached its highest level in the September 9, 2001 attacks. In the same period, GPR peaked in Canada and India, yet it did not continue as long as them. China has been within the strongest economies, as well as the tensions with its neighbours and the USA over the years, which increases the GPR. Australia, Sweden, and the Netherlands have the lowest GPR. Since it was at a high level in the years following the 2001 attacks, it is possible to say that attacks generally have an impact on the GPR of the BA countries. Russia, Germany, and Korea are the countries with the highest risk. The tensions that started with Ukraine in 2014 have a particular impact on Russia's GPR and EPU indices. Germany has its other peaks during the Russia-Ukraine tension and the Berlin attacks. Korea experienced its most risky period in 2017 due to national tensions. Other countries have generally had a low GPR over the years. In recent years, the GPRs of the countries in our study have started to decline, while the EPU has increased.

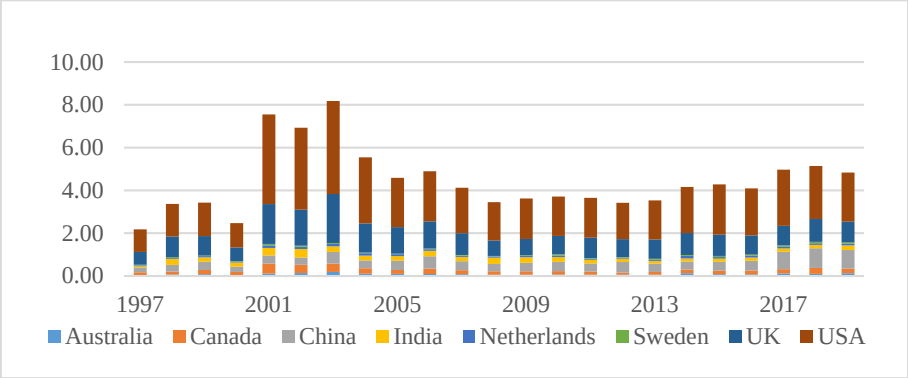

Figure 4. The Geopolitical Risks of the AA Group Countries
Source: www.policyuncertainty.com

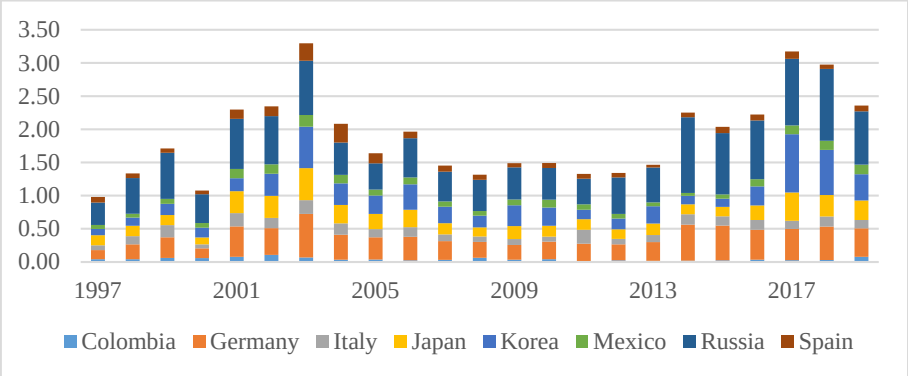

Figure 5. The Geopolitical Risks of the BA Group Countries
Source: www.policyuncertainty.com

4. Metodology

The panel data analysis consists of unit (N) and time (T). Cross-sectional dependency (CD) tests are used to examine shock occurring in one country have an impact on others in these analyses. CD tests being based on the Lagrange multiplier test are proposed for the first time by Breusch ve Pagan (1980) test-CD_1 in the literature. Pesaran (2004) developed two CD tests (CD_2 and CD_3) that provide more powerful results even with a small sample size (Pesaran, 2004). It is also important to determine whether the slope coefficients are homogeneous or heterogeneous in a panel analysis. Pesaran ve Yagamata (2008) developed $\tilde{\Delta}$ and $\tilde{\Delta}_{\text{adj}}$ test statistics proposed to test homogeneous by Swamy (1970). In this test, the null hypothesis claims that the slope coefficient of the units is homogeneous, while an alternative hypothesis suggests that it is heterogeneous.

We used the CADF (Cross-Sectionally Augmented Dickey Fuller) and PANIC (Panel Analysis of Nonstationarity in Idiosyncratic and Common Components) test to investigate unit root. CADF and PANIC tests are, respectively, recommended by Pesaran (2007) and Bai ve Ng (2004) and take CD into consideration. Firstly, to CADF test ADF statistics for each unit are calculated, then are averaged them (CADF test is calculated by an average of the ADF statistic for each unit). PANIC test is also based on ADF test but use a common factor for CD.

We examined the cointegration relationship between variables using the Westerlund (2008) panel cointegration test. This test, based on the Durbin-Hausman principle, uses two statistics, the panel test and group test to investigate cointegration. The panel test (DH_p) assumes that $\phi_i = \phi$ for all i whereas the group test (DH_g) claims that $\phi_i \neq \phi$ for all i. These tests are estimated using the instrumental variable and OLS estimators. Thus, the panel and group test statistics can be formulated as follows.

$$DH_g = \sum_{i=1}^{n} \hat{S}_i \left(\tilde{\phi}_i - \tilde{\phi}_i\right)^2 \sum_{t=2}^{T} \hat{e}_{it}^2 \; ; \; DH_p = \hat{S}_n \left(\tilde{\phi} - \hat{\phi}\right)^2 \sum_{i=1}^{n} \sum_{t=2}^{T} \hat{e}_{it-1}^2 \quad (1)$$

where $\tilde{\phi}_i$ is the individual instrumental variable estimator of ϕ_i and $\hat{\phi}$ is the OLS estimator of ϕ_i. Thereby, the null hypothesis of tests are $H_0: \phi_i = 1 \;\; i = 1,2, \ldots N$, whereas the alternative hypotheses of DH_g and DH_p are $H_1^p: \phi_i = \phi$ and $\phi < 1$ for all of i, $H_1^g: \phi_i < 1$ for at least some i. Hence, the rejection of the null hypothesis shows for the panel test that there is a common value for the autoregressive parameter. In this case, it indicates for the group test that at least some panel units have a cointegration relationship.

5. Results

To analyse the long-term relationship between the variables, the unit root of TA, GPR, and EPU should be determined. For this reason, we run the unit root

of the series with the PANIC and the CADF unit root tests. Findings are tabulated in Tables 2 and 3.

Table 2. The PANIC Unit Root Test Results

Test Stat.		TA_{BA}	EPU_{BA}	GPR_{BA}	TA_{AA}	EPU_{AA}	GPR_{AA}
$P_{\hat{e}}^{c}$	c	-1.45	-0.78	-0.09	-1.66	-2.22	0.95
	c+t	-1.77	-1.18	0.38	-1.4	-1.72	0.87
$P_{\hat{e}}^{\tau}$	c	7.81	11.61	15.49	6.61	3.45	21.35
	c+t	5.99	9.34	18.15	8.07	6.27	20.91
I(1)							
$P_{\hat{e}}^{c}$	c	2.57^{***}	7.22^{***}	7.32^{***}	1.55^{**}	4.31^{***}	7.99^{***}
	c+t	1.75^{**}	5.45^{***}	5.09^{***}	3.81^{*}	4.81^{***}	7.12^{***}
$P_{\hat{e}}^{\tau}$	c	30.53^{**}	56.85^{***}	57.45^{***}	24.77^{***}	40.41^{***}	61.2^{***}
	c+t	25.92^{**}	46.81^{***}	44.84^{***}	37.56^{***}	43.2^{***}	56.25^{***}

Note: ***, **, 1% and 5% indicate the statistical significance level.

Table 3. The CADF Unit Root Test Results

CIPS Stat.		TA_{BA}	EPU_{BA}	GPR_{BA}	TA_{AA}	EPU_{AA}	GPR_{AA}
I(0)	c	-1.14	-2.23	-2.11	-0.46	-1.07	-2.01
	c+t	-2.49	-2.27	-2.67	-1.41	-1.45	-2.68
I(1)	c	-3.55^{***}	-3.48^{***}	-4.05^{***}	-2.29^{***}	-2.69^{***}	-4.24^{***}
	c+t	-3.66^{***}	-3.69^{***}	-3.97^{***}	-2.79^{**}	-2.95^{**}	-4.34^{***}

Note: ***, **, 1% and 5% indicate the statistical significance level

Tables 2 and 3 show that all variables are stationary level of first difference. Westerlund (2008) panel cointegration test determining the relationship between variables uses bootstrap to account for the cross-sectional dependence, thus giving results both homogeneous and heterogeneous. Due to this, CD and homogeneity tests are run on the above- and below-average panel models. Empirical results are tabulated in Table 4.

Table 4. Cross Section Dependency and Homogeneity Test Results

	TA_{BA}=f(EPU_{BA}, GPR_{BA})	TA_{AA}=f(EPU_{AA}, GPR_{AA})
Breusch and Pagan (1980)	152.61^{***}	173.87^{***}
Pesaran (2004)	16.65^{***}	19.49^{***}
Pesaran (2004)	8.98^{***}	6.56^{***}
$\tilde{\Delta}$	3.16^{***}	3.36^{***}
$\tilde{\Delta}_{adj}$	3.46^{***}	3.68^{***}

Note: ***, 1% indicates the statistical significance level.

Table 4 indicates that both of models have cross-section dependency and heterogeneous. The results of the panel cointegration test calculated considering this situation are tabulated in Table 5. Empirical findings display that GPR and EPU have a significant long-run effect on TA in all models.

Table 5. Westerlund (2008) Cointegration Test Results

Tests Stat.	TA_{BA}=f(EPU_{BA}, GPR_{BA})	TA_{AA}=f(EPU_{AA}, GPR_{AA})
DH_g	-2.06**	-1.77**
DH_p	-1.32*	-1.99**

Note: ***, **, * 1%, 5%, 10% indicate the statistical significance level.

Cointegration tests do not show how independent variables affect the dependent variable. We consulted CCE (Common Correlated Effects) estimator to examine how EPU and GPR effect on TA. The multifactor error structure and common correlation used in the CCE estimator, proposed by Pesaran (2006), are used to obtain the panel coefficient. When the variables have unit roots and the slope is heterogeneous under cross-sectional dependency, this approach yields powerful results. The CCE estimator results are in Table 6 and 7.

Findings from countries that are below the average in Table 6 are different generally unlike expected. GPR has a positive effect on TA in Japan, Mexico, and Russia, while EPU has a positive effect in Colombia and Mexico and a negative effect in Korea on TA. These countries differ from others due to nature, culture, etc. and are among the most popular tourist destinations. Therefore, the risk and uncertainty of the countries do not have a negative effect on TA except Korea.

According to the results of the AA countries, GPR has a negative effect on TA in India and a positive effect in the Netherlands, while EPU has a negative effect in Australia and India, and a positive effect in the UK and USA.

Table 6. The CCE estimator results (Below-Average)

Countries	C	EPU_{BA}	GPR_{BA}
Colombia	-5347774***	2496.91**	-7838960
Germany	-205000***	2275922759	9744292
Italy	-906688	9589.32	-1280000
Japan	-5160000***	63580.57	6099105*
Korea	-2080000***	-10192.4**	-4666624
Mexico	3660760***	192273.6**	9510000***
Russia	23500000***	52817.08	6279337*
Spain	-1570000**	140058.9	1890000***

Note: ***, **, * 1%, 5%, 10% indicate the statistical significance level

The results of the CCE estimator differ from country to country in the effect of EPU and GPR on TA. While the results regarding the positive effect of EPU on TA support Sing et al. (2019), Navarro-Chávez et al. (2020), and Nguyen et al. (2022) the negative effect confirms by previous studies (Demir et al., 2020; Khan et al., 2021). They are also in line with Sharma and Khanna

(2021) that the relationship turns positive in the long run. The results on GPR on TA are positive except for India, and this contrasts with previous studies.

Table 7. The CCE estimator results (Above-Average)

	C	EPU_{AA}	GPR_{AA}
Australia	2140233***	-22764.04***	-388157.2
Canada	66000000***	29593.83***	89100000
China	-11800000	27297.62	-492476
India	-1057015	-54608.23***	-11300000*
Netherlands	7618010***	-55674.8	10700000***
Sweden	-2647319	13795.3	-68300000
UK	1540000***	19883.35***	-25846100
USA	-5890000***	358332.3*	7607412

Note: ***, **, * 1%, 5%, 10% indicate the statistical significance level.

6. Conclusions

The results of the Panel Cointegration test differ for each country. Our findings show that the effectiveness of EPU and GPR differed between groups. EPU in countries with above-average and GPR in countries with below-average is more effective in the number of international tourists. It is observed that the economies of the countries that are above the average are generally more developed. Thereby, as developed countries' risk aversion rises, economic problems might be argued to be essential in tourism arrivals, not security problems. On the contrary, in countries that are below it, security problems are more effective compared to economic reasons on tourism activity.

The source countries of the international tourist arrivals to these countries are those with a similar level of economic development, and risk, and they travel for personal reasons (Hofstede et al., 2010; UNTWO, 2022). Individuals do not feel the need to postpone their travel plans when the risk levels of the source country and the destination region are close (Balli et al., 2019). In light of this, the effects of the EPI and the GPR on TA are not in the expected direction (negative) in our empirical findings.

Political-makers should implement the necessary steps to protect national security, and the protection of country as a whole against such undesired events. Thus, the destination centres the nationalities of international tourist arrivals to them can be diversified and thus host more tourists.

The variables are not calculated for each country, therefore, the number of countries we examined is smaller. However, in future studies, the sample size can be expanded by using sub-dimensions and substitution variables of GPR and EPU. Furthermore, the period of our research is limited due to the fact

that the data are published until 2019. However, to investigate the changes in tourism caused by the COVID-19 period, econometric methods based on structural changes can be used in future studies. Finally, more effective tourism policies can be determined in the light of the findings by examining the impact of local and global GPR and EPU on tourism.

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