THE RELATIONSHIP BETWEEN POLITICAL INSTABILITY, TERRORISM AND TOURISM IN SAARC REGION

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Abstract

The objective of the study is to examine the long-run relationship between political instability, terrorism and tourism in selected SAARC countries over a period of 1995 to 2012. For this purpose, different panel techniques has been used for robust analysis i.e., panel unit root test for stationary process, panel cointegration test for long-run relationship, panel dynamic ordinary least squares (DOLS) and Fully Modified Ordinary Least Squares (FMOLS) for short and long-run elasticities of the variables. The empirical results from FMOLS show that there is a positive relationship between economic growth and tourism on one hand, while on the other side; there is a positive relationship between terrorism and tourism in SAARC region. In the long-run, there is a negative relationship between political instability and tourism in the region. The results suggest that it is necessary to have a clear understanding of political issues, key political actors’ interests and how to mitigate personal interests to facilitate and maintain sustainable tourism development in SAARC region.

Keywords: Political instability, terrorism, tourism, SAARC region.

1. Introduction

Worldwide, tourism has emerged as a crucial sector having substantial developmental impact in terms of gains in income and employment, foreign exchange earnings, growth of indigenous sectors through forward and backward linkages and the spread of infrastructures that it entails. Many governments enlarge tourism on precedence and also support its regional growth through participation in conversation with the regional partner countries. The United Nations World Tourism Organization (UNWTO) in its vision statement has predicted global annual tourism expenditure to hit US$ 2 trillion (i.e., US$ 5 billion per day) and the number of foreign tourists to reach 1.5 billion by 2020.

In the 21\textsuperscript{st} century, tourism emerges as a noteworthy income generating sector as well as weapon for growth and survival for a variety of countries (Gonzalez et al., Heath, Shackley., and Sharpley). Tourism is the major global industry with constantly rising global market which will triple in size by 2020 (WTO 2005). Nevertheless, the journey in many countries has been broken
up by huge number of natural and man-made casualties. Besides, numerous natural and human-caused disasters, the threat that accompanies political turmoil tends to frighten potential tourists more cruelly.

For many countries, tourism is a important sector of their national economy. Many such countries are reliant on the survival and growth of this sector. The tourism sector is, however, fragile in nature (Maditinos & Vassiliadis, 2008). Unlike other industries, tourism is seriously affected by political events. While tourists choose for relaxing and carefree holidays and expect to experience comfort, peacefulness, fun and leisure, these experiences are only accessible when the political circumstances of the host country are constant (Hwa Hong et al., 1999). Moreover, for a tourist, the money spent on a hotel or resort is not able to be recouped; hence, the risk of incurring losses due to threats in a host nation’s stability is heightened.

Tourism is highly vulnerable to external shocks such as natural disasters, terrorism and political instability (PI) (Mansfeld and Pizam, 2006) because it is an industry where spending is based on faith and trust. Events that harm that faith destabilize the tourism system and affect the fundamentals within the structure and the neighboring environments through demand fluctuations (Blake and Sinclair, 2003; Neumayer, 2004). The impact of such events is especially high in unrestricted forms of tourism where tourists, especially first-time visitors, largely rely on destination images to conduct the process of travel decision-making (TDM) (Fletcher and Morakabati, 2008). This is primarily because of the distinctive, service specific characteristics of tourism product i.e. intangibility and inseparability (Zeithaml et al., 2006), which mean that the product is produced and consumed concurrently, thus cannot be tested prior to its purchase (Tasci et al., 2007). In this respect, supposed risk related to safety and security levels are essential as they determine tourists’ decisions (Beirmann, 2003; Reisinger and Mavondo, 2005).

Among diverse events which destabilise the tourism system, it is the man-caused disasters that seem to threaten people the most (Cavlek, 2002; Heng, 2006). In this respect, Fletcher and Morakabati (2008) point out that political instability and terrorism have a particularly elevated extent of impact. One of the main penalty is that, in addition to physical damage, such events may largely restrict the flow of tourists towards the impacted destination, by growing fear, uncertainty and scrutiny of risk in individuals’ minds (Sonmez and Graefe, 1998a).

Tourists are very susceptible to news of violence and political unrest in probable holiday destinations (Neumayer, 2004) and the tourism sector is vulnerable to shocks such as wars, incidences of terrorism, outbreaks of disease, economic fluctuations, natural disasters and biosecurity threats (Maditinos & Vassiliadis, 2008). Although some tourists choose adventure and are not deterred by incidents of war, conflict, riots and other violence, the number of tourists who wish for a safe trip significantly exceeds those who want a riskier adventure (Neumayer, 2004).

Intense events such as terrorism or political susceptibility have negative impact on demand and supply of tourism (Richter, 1996 and C. Ryan, 1993). The nonexistence of terror or violence is a must for the growth of destinations to an adequate level since tourists prefer harmony and peaceful social environments (Neumayer, 2004., Y. Reisinger and F. Mavondo, 1986., B. Ritchie, 2003., Sonmez, 1998). N. Cavlek, 2002 explored that the purpose to visit a destination is hit by human-caused crises like war, regional tensions, civil unrest, terrorism, political
instability, violence of any kind and crime as travelers give highest main concern on safety and security. Many have found that the tourists normally try to keep away from risky situations or destinations (G. Aktas and E. A.Gunlu, 2005., A. Pizam, and A. Fleischer, 2001., C. M. Hall, 1994., C. Cooper et al, 2004., A. Pizam and Y. Mansfeld, 2006., and S. Wahab, 2006). While tourism is highly exposed to wars and political instability it is most vulnerable to terrorism (Alsarayreh, Jawabreh & Helalat, 2010). Political conflicts among nations may encourage the domination of one country over another. That is, if the conflict does not adequately discourage tourists to travel to combating countries, a country’s leader may enforce travel bans on the warring country. This is a extra probable factor influencing the decrease in the numbers of potential tourists and consequently a decline in GDP.

According to Sonmez and Graefe (1998), tourism is a chief economic driver to a country’s overall economy. However, with the danger of political instability in the form of terrorism, tourism has come face-to-face with its ultimate nemesis. Shifts in tourist activities in response to the pressure of terrorism have seriously scarred the industry. In 1985, the World Tourism Organization (WTO) blamed terrorism as the major reason in the loss of $105 billion tourism receipts. Sonmez and Graefe (1998) deduced that tourism is encapsulated inside capitalism. Hence, terrorism often occurs in countries where there are many tourist destinations.

It is therefore to define the terms ‘political violence’ and ‘instability’ for the purpose of this paper. The term ‘violence’ refers to the act of harming a victim or endangering his/her welfare by exerting physical force (Neumayer, 2004). In line with the definition of violence, ‘political violence’ refers to the exertion of such force by the government or an anti-government group. Thus, political motive is the key factor for political violence (Neumayer, 2004). ‘Instability’, as defined by Cook (1990, p.4), is “a situation where a government has been toppled, or is controlled by fractions following a coup, or where basic functional fundamentals for social order control and maintenance are unstable and periodically disrupted.” A country can be said to be stable if the political leaders stay in office, if there are restricted incidences of violence and turmoil and if the regime is long-lasting. In general, political instability goes hand-in-hand with political violence (Neumayer, 2004).

Terrorism is the “deliberate use or threat of use of violence by individuals or sub national groups to obtain a political or social objective through the intimidation of a large audience, beyond that of the immediate victim.” (Enders, 2003). Terrorism can untie a country’s tourism industry. Terrorism directly affects tourist decision making. Tourists may substitute between vacation spots if they feel threatened or unsafe in a country. Fewer annual tourists as a result of terrorism will typically result in losses of tourism revenue. Losses in tourism revenue may have a larger impact in those countries in which tourism constitutes a larger percentage of GDP (Enders, 2003).

Moreover, the image of destinations in tourist generating regions is highly prejudiced by the political stability and political relations (C.M. Hall, and V O'Sullivan, 1996). The political conflict that causes close concerns in the attraction of visitors is warfare, coups and political strikes or protests. (P.K. Ankomah and J.L. Crompton, 1990) speak out that any evidence of domestic political turmoil influences potential tourists not to visit that country. However, if something happens to disrupt the stability of a country, such as war, political tension, or acts of
terrorism, and so on, these can have a powerfully negative influence on tourism demand (T. Mihalic, 1996, A. Pizam and Y. Mansfeld, 1996).

broadly classified into two categories – ‘qualitative’ and ‘quantitative’. Sonmez (1998) had provided a comprehensive list of qualitative studies (case studies) that have explored this relationship. However, quantitative studies are inadequate in the literature examining the impact of terrorism on tourism as it has been rightly pointed out by Llorca-Vivero (2008). For the present paper, the focus, in this section, will be on the studies that have quantified the impact of terrorism and political instability on tourists’ inflow as well as the duration of this impact, both at the global level and separately for the SAARC Region.

One of the early attempts to estimate the impact of terrorism on tourism and vice versa was made by Enders and Sandler (1991). The study focused on Spain for the period 1970–1988. Using Vector Auto-regression (VAR) methodology on monthly data on the number of foreign tourists visiting Spain and the number of terrorist incidents taking place, the authors found that terrorism affected tourism but not the reverse. A subsequent study by Enders et al. (1992) estimated the impact of international terrorism on domestic tourism in countries like Austria, Italy and Greece for the period of 1974–1988. They found terrorist activities not only reduced tourism in the targeted countries but also affected the neighbouring countries negatively. Drakos and Kutan (2003) showed that international terrorism has a negative impact on tourism in countries like Turkey, Greece and Israel for the period of 1991–2000. The impact of terrorism on tourism industry in Turkey was also examined by Yaya (2008). For the period of 1985–2006, the author found that the impact of terrorism on tourism is negative but the magnitude of reduction of foreign tourist inflow is small. Moreover, the duration of the impact is observed approximately within one year. It also shows that terrorism has caused a loss of 6 million tourists in the span of nine years and the economic cost of terrorism on tourism industry was more than US $ 700 million in 2006.

Apart from the use of univariate and multivariate time series models to explain the relationship between terrorism and tourism, Ordinary Least Squares (OLSs) technique has also been applied to explain this relationship. Dhariwal (2005), using the annual data of international tourist arrivals over the period 1966–2000, confirmed the existence of significant negative impact of terrorism on tourism. The author has found that in a disturbance year growth of tourist arrivals and growth of real tourism receipts decrease by nearly 6 and 8 percent respectively because of the disturbances as compared to a non-disturbance year. Moreover, growth in real tourism receipts declines by nearly 9 percent in a typical disturbance year compared to a typical non-disturbance year. Another study in the Indian context, by Bhattacharya and Basu (2010) established a one-way causality between incidences of terror attacks and foreign tourist arrivals. The one-way causality runs from terror incidents to foreign tourist arrivals and not the other way round. Foreign Tourist Arrivals (FTAs) in India begin to decline in the second month after the occurrence of the event till the fifth month after the terror attack. They then start rising from the sixth month onwards. After the seventh month, tourism reverts back to its original level.

Other than time series models, scholars have also used various other techniques such as cross-sectional gravity equations, market demand-supply models and general equilibrium models depending on the situation and availability of data, to explore the above-said relationship. Llorca-Vivero (2008), using cross-sectional gravity equation for tourism over the period 2001–2003, showed that domestic incidents and international events affect tourist inflows negatively.
The impact of a domestic event is less when compared with an international event. They also found that cost of terrorist attacks in developing countries in terms of tourist flows is more severe than developed countries. Fleischer and Buccola (2002), using the market demand-supply model, in case of Israel, found that two standard deviation or four unit increase in the terrorist index causes a decline of the visitors’ demand for bed by 49,600 bed nights per month which is almost 7.5% from the sample mean. Their study also found that the effect of terrorism on tourism starts two months after the terror incident. Aly and Strazicich (2000) had examined the annual data on tourists’ night visits for Egypt for the period 1955–1997 and for Israel for the period 1971–1997 to investigate whether shocks (events such as terrorism or war) have permanent or transitory effects on the time path of tourist visits. The authors had found that a shock creates a transitory disturbance to tourist flows. Blake and Sinclair (2002) used a Computable General Equilibrium (CGE) model to estimate the impact of 11 September 2001 attacks in the United States on travel and tourism. The authors found out that the impact was severe in terms of loss of income and employment. Their estimate shows a loss of US $ 30 billion GDP and more than half a million job.

Saha, S., & Yap, G. (2013), analyze the effects of interaction between political instability and terrorism on tourism development using panel data from 139 countries for the period 1999–2009. The study measures the extent to which a country’s political conflicts and terrorism can negatively impact its tourism industry. The results reveal that the effect of political instability on tourism is far more severe than the effects of one-off terrorist attacks. Surprisingly, the findings suggest that terrorist attacks increase tourism demand for those low- to moderate-political-risk countries. However, countries that experience high levels of political risk witness significant reductions in their tourism businesses. In addition, political volatility and terrorism together can cause serious damage to the tourism industry. Yap, G., & Saha, S. (2013), evaluates the effects of political instability, terrorism, and corruption on tourism development. Using a fixed-effects panel data analysis for 139 countries over the period 1999–2009, the result reveals that a one-unit increase in political instability decreases tourist arrivals and tourism revenue between 24% and 31% and 30% and 36%, respectively. Furthermore, terrorism has negative effects on tourism demand even though its effect is lower than that of political instability. However, the study shows that an increase in corruption index would not have an adverse influence on tourist arrival numbers.

Raza, S. A., & Jawaid, S. T. (2013), in this study investigates the impact of terrorism activities on tourism in Pakistan by using the annual time series data from the period of 1980 to 2010. Johansen and Jeuselius and ARDL bound testing cointegration approach confirms the valid long run relationship between terrorism and tourism. Results indicate the significant negative impact of terrorism on tourism in the long run as well as in the short run. Feridun, M. (2011), aims at investigating the causal impact of terrorist attacks on the tourism industry in Turkey based on the Autoregressive Distributed Lag (ARDL) bounds testing procedure for the period between 1986 and 2006. The ARDL bounds test reveals that terrorism is in a long-run equilibrium level relationship with terrorism. The evidence obtained from the long-run and short-run parameter estimates indicates the existence of a negative causal effect of terrorism on tourism.

Alvarez, M. D., & Campo, S. (2014), in this paper analyzes the effect of a political event on Israel’s image. A measurement model is examined before and after a specific international incident. The research concludes that a political conflict between countries significantly
increases the negative influence of the affective image on the overall country image and on the intention to visit the place. Fletcher, J., & Morakabati, Y. (2008), in this paper discusses the effects of terrorism and political unrest on the level of tourism activities in two developing countries that are a part of the Commonwealth, Kenya and Fiji. The results do suggest that political events such as a coup and internal political problems have far more severe impacts on the level of tourism activity than a low-to-medium, one-off terrorist attack.

Yasarata, M., et al. (2010) investigates different ways in which political obstacles inhibit the formulation and implementation of sustainable tourism development in North Cyprus. The methodology draws on in-depth interviews and participant observation of significant actors in the tourism sector. The research findings suggest that understanding the intricate political system and power structure in a society is the key to understanding sustainable tourism policy development, planning and implementation.

From the brief review of literature pertaining to the international level, it can be said that among the various scholars there is a consensus that the act of terrorism and political instability affects inflow of foreign tourists. Though the duration of the impact varies, general agreement is that it is transitory in nature and subsides at the most within a span of two years. To best of the author’s knowledge this study is unique in a sense that this study evaluated most promising macroeconomic variables i.e., terrorist incidents and political instability on the foreign tourist arrivals for the SAARC countries. Therefore, it provides a scope to study the impact of terrorism and political instability on foreign tourists’ arrivals in the four countries of SAARC region namely, Pakistan, India, Sri Lanka and Bangladesh. The objective of the study is to evaluate the impact of political instability on tourism in SAARC region. In addition, the study finds the impact of terrorism on tourism.

2. Data source and methodological framework

In this study, we use yearly data of for foreign tourism receipts. The aggregate data have been collected from the World Development Indicators (WDI) database. The variables from WDI are annual and cover GDP per capita, tourism receipts and the inflation i.e., CPI for the period of 1995-2012. The data on incidence of terrorism and political instability were gathered from ICRG (International Country Risk Guide). Due to non availability of data for the whole SAARC region data for only four SAARC members i.e., Pakistan, India, Sri Lanka and Bangladesh is collected.

2.1. Panel Econometric Model

There are a few studies using panel cointegration to access long-run relationship between terrorism, political instability and tourism, this study takes an initiative to explore this relationship in the panel of SAARC nations of the world. For this purpose, this study employed panel cointegration technique to test multiple factors that affects tourism over a period of 1995-2012. The model used to test the relationship between educational indicators and research factors are as follows:

\[ \ln (TR) = f \ln (GDPPC, TERR, CPI, PI) \]

The general representation of the equation mentioned above is as follows:
\[
\ln(\text{TR}_i) = \beta_0 + \beta_1 \ln(\text{GDPPC}_{1i}) + \beta_2 \ln(\text{TER}_{2i}) + \beta_3 \ln(\text{CPI}_{3i}) + \beta_4 \ln(\text{PI}_4i) + \varepsilon_{it}
\]  
(1)

Where:
\[
\begin{align*}
\beta_0 &= \text{intercept;} \\
\beta_i &= \text{slope of the independent variables;} \\
T &= 1, 2, \ldots 18 \text{ periods;} \\
i &= 1, \ldots, 4 \text{ countries;} \\
\varepsilon_{it} &= \text{error term;}
\end{align*}
\]

Three different panel unit roots tests, i.e., Levin-Lin- Chu (LLC) test, Im-Pesaran-Shin (IPS) test, Breitung and Hadri test have used in this study.

### 2.2. Panel Unit Root Tests

Panel unit root tests could be considered as an extension of the univariate unit root test. The LLC test is based on the pooled panel data as follows (Levin & Lin, 1992):

\[
\Delta y_{it} = \rho \Delta y_{it-1} + \alpha_0 + \sigma_0 + \tau_i + \varepsilon_{it}
\]

Where \(\rho, \alpha_0, \sigma\) are coefficients, \(\alpha_i\) is individual specific effect, \(\tau_i\) is time specific effect.

According to Levin & Lin (1992), the LLC test could be conducted by the following steps. In step 1, subtract the cross-section average from data:

\[
\bar{y} = \frac{1}{N} \sum_{i=1}^{N} y_{it}
\]

In step 2, an ADF test is applied to each individual series and normalizes the disturbance. The ADF model could be expressed as:

\[
\Delta y_{it} = \rho_i y_{it-1} + \sum_{j=1}^{g} \delta_j \Delta y_{it-j} + \alpha_i + \varepsilon_{it}
\]

Maddala and Wu (1999) argued that this is equivalent to perform two auxiliary regressions of \(\Delta y_{it}\) and \(y_{it-1}\) on the remaining variable \(n\) equation (3). Let the residuals from these two regression be \(\hat{e}_{i,t}\) and \(\hat{v}_{i,t-1}\) respectively. The, regress \(\hat{e}_{i,t}\) on \(\hat{v}_{i,t-1}\).

\[
\hat{e}_{i,t} = \rho \hat{v}_{i,t-1} + \varepsilon_{it}
\]

Levin & Lin (1992) suggest the following normalization to control the Heteroscedasticity in error.

\[
\hat{\sigma}_{\varepsilon_{it}}^2 = \frac{1}{T - P_i - 1} \sum_{i=p+2}^{T} (\hat{e}_{i,t} - \hat{\rho} \hat{v}_{i,t-1})^2
\]

\[
\tilde{\varepsilon} = \frac{\hat{e}_{i,t}}{\hat{\sigma}_{\varepsilon_{it}}}
\]

\[
\tilde{v}_{i,t-1} = \frac{\hat{v}_{i,t-1}}{\hat{\sigma}_{\varepsilon_{it}}}
\]

In the next step, the LLC test statistic could be obtained from the following regression:

\[
\tilde{e}_{i,t} = \rho \tilde{v}_{i,t-1} + \tilde{\varepsilon}_{i,t}
\]
The t-statistic for testing $\delta = 0$ is given by

$$t_\delta = \frac{\hat{\delta}}{STD(\hat{\delta})}$$

Where

$$\hat{\delta} = \frac{\sum_{i=1}^{N} \sum_{t=2+p}^{T} \hat{\nu}_{i,t-1} \hat{\epsilon}_{it}}{\sum_{i=1}^{N} \sum_{t=2+p}^{T} \hat{\epsilon}_{it}^2}$$

Next, the paper also employs the IPS test which is based on the mean value of individual ADF statistics or $t$-bar (Im, Pesaran and Shin, 2003). The IPS test provides separate estimation for each $i$ section, allowing different specifications of the parametric values, the residual variance and the lag lengths. Their model is given by:

$$\Delta Y_{i,t} = \alpha_i + \rho_i Y_{i,t-1} + \sum_{k=1}^{n} \phi_k \Delta Y_{i,t-k} + \delta_i t + \epsilon_{it}$$

The null hypothesis and the alternative hypothesis are formulated as:

$$H_0 : \rho_i = 0$$

$$H_A : \rho_i < 0$$

for at least one $i$

Thus, the null hypothesis of this test is that all series are non-stationary process under the alternative that fraction of the series in the panel are assumed to be stationary. IPS also suggested a group mean Lagrange multiplier test for testing panel unit roots. Breitung (2000) and Hadri (2000) attempted to improve to the same degree the drawbacks of all previous tests by proposing a model that could also be estimated with unbalanced panels. Basically, Breitung (2000) and Hadri (2000) are in line with the assumptions that a heterogeneous alternative is preferable, but they disagree with the use of the average ADF statistics by arguing that it is not the most effective way of evaluating stationary.

### 2.3. Panel Cointegration Tests

This study employs Pedroni’s (1999, 2004) panel cointegration method in order to examine the long-run relationship between political instability, terrorism and tourism in SAARC region. If the independent and dependent variables are co-integrated or have a long-run relationship, the residual $\epsilon_{it}$ will be integrated of order zero, denoted I(0). Pedroni used two types of panel Cointegration tests. The first is the “panel statistic” that is equivalent to a unit root statistic against the homogenous alternative; the second is the “group mean statistic” that is analogous to the panel unit root test against the heterogeneous alternative. Pedroni (2004) argued that the “panel statistic” can be constructed by taking the ratio of the sum of the numerators and the sum of the denominators of the analogous conventional time series statistics. The “group mean statistic” can be constructed by first computing the ratio corresponding to the conventional time series statistics, and then computing the standardized sum of the entire ratio over the N dimension of the panel. This study uses panel co-integration tests as suggested by Pedroni (1999, 2004), namely the “panel ADF statistic”. The versions of the ADF statistics could be defined as:
Panel

Where \(\hat{\epsilon}_{ij}\) represents the residuals from the ADF estimation, \(\tilde{S}_{NT}\) is the contemporaneous panel variance estimator, and \(\hat{\delta}_i\) is the standard contemporaneous variance of the residuals from the ADF regression. The asymptotic distribution of panel and group mean statistics can be expressed in:

\[
\frac{K_{N,T} - \mu \sqrt{N}}{\sqrt{\nu}} \Rightarrow N(0,1)
\]

Where \(K_{N,T}\) is appropriately standardized form for each statistics and \(\mu\) m ADF regression is the mean term, and \(\nu\) is the variance adjustment term. Pedroni provides Monte Carlo estimates of \(\mu\) and \(\nu\) (Pedroni, 1999).

The null hypothesis tested is conducted to see whether \(\eta_i\) unity is. The finite sample distribution for the test statistics have been tabulated in Pedroni (2004) using Monte Carlo simulations, if the test statistic exceeds the critical values in Pedroni (2004), the null hypothesis of no Cointegration is rejected, implying that the variables are cointegrated. In addition, the Kao and McCoskey (1998) LM test for the null of Cointegration is applied. The long run is estimated by efficient methods carried out separately for the panel members. Then, the Cointegration residuals are pooled, and the test statistic is asymptotically Gaussian with a right hand side rejection area.

2.4. Panel Long-run Relationship

It is important to note that the panel cointegration tests do not provide an estimate of the long run relationship. More or less, the cointegration vector should be common for the panel members, as fundamental economic principles are involved. Also, hypothesis testing is a critical issue. In fact, the asymptotic distribution of the OLS estimator depends on nuisance parameters. In a panel environment, this problem seems to be more serious, as the bias can accumulate with the size of the cross section. To overcome these deficits, efficient methods like fully modified (FMOLS) and dynamic OLS (DOLS) are required. As these techniques control for potential endogeneity of the repressors and serial correlation, asymptotically unbiased estimates of the long run can be obtained. The methods are asymptotically equivalent (Banerjee, 1999). Hence, their relative merits boil down to a comparison in finite samples. In the FMOLS case, nonparametric techniques are used to transform the residuals from the Cointegration regression and get rid of nuisance parameters (Phillips, 1995, Pedroni, 2001). In the time series model

\[
Y_{it} = \alpha_i + \beta_i x_{it} + u_{it}
\]

\[
x_{it} = x_{it-1} + \varepsilon_{its} = (u_{it}', \varepsilon_{it}')'
\]

The asymptotic distribution of the OLS estimator is conditioned to the long run covariance matrix of the joint residual process. The FMOLS estimator for the i-th panel member is given by

\[
\hat{\beta}^* = (X_i^* X_i^{-1}) (X_i^* y_i^* - T \hat{\delta})
\]

where \(y_i^*\) is the transformed endogenous variable and \(\delta\) a parameter for autocorrelation adjustment. Appropriate correction factors are based on certain sub matrices of the joint long run covariance matrix.

In the DOLS framework, the long run regression is augmented by lead and lagged differences of the explanatory variables to control for endogenous feedback (Saikkonen, 1991). Lead and
lagged differences of the dependent variable can be included to account for serial correlation (see Stock and Watson, 1993). In particular, the equation
\[ y_{it} = \alpha_i + \beta_i x_{it} + \sum_{j=p-1}^{p2} \delta_j \Delta y_{it} + \sum_{j=q-1}^{q2} \lambda_j \Delta x_{it-j} + u_{it} \]
is run for the \( i \)-th panel member, where the appropriate choice of leads and lags is based on data dependent criteria (Westerlund, 2003). Standard errors are computed using the long run variance of the Cointegration residuals. In a panel setting, the Cointegration relationship is homogeneous. Heterogeneity is limited to fixed effects, time trends and short run dynamics. The panel FMOLS estimator is the average of the individual parameters (see Pedroni, 2001).

3. Results

The empirical analysis in this study is performed in 3 steps. First, 2 distinct types of panel unit root tests are employed to confirm the non-stationary of the series in a panel system of the entire SAARC countries. Second, 2 types of panel cointegration tests (Kao and Fisher) are used to establish a cointegrating (long-term equilibrium) relationship between political instability, terrorism and tourism. Third, two types of panel cointegration estimation techniques - DOLS, and FMOLS - are utilized to estimate the regression equation.

Table 1 exhibits the results of two distinct panel unit root tests on the variables of four SAARC countries over 1995-2012: Levin, Lin, and Chu (LLC 2002)’s and Im, Pesaran, and Shin (IPS 2003)’s statistics. Among these, LLC, are based on the common unit root process assumption that the autocorrelation coefficients of the tested variables across cross sections are identical. However, IPS test rely on the individual unit root process assumption that the autocorrelation coefficients vary across cross sections. Both the panel unit root tests have the null hypothesis of unit roots.

<table>
<thead>
<tr>
<th></th>
<th>LLC</th>
<th>IPS</th>
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<tbody>
<tr>
<td>LEVELS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TR</td>
<td>-0.0021</td>
<td>-0.788</td>
</tr>
<tr>
<td>GDPPC</td>
<td>-2.88*</td>
<td>0.542</td>
</tr>
<tr>
<td>CPI</td>
<td>-3.02*</td>
<td>-1.10</td>
</tr>
<tr>
<td>PI</td>
<td>-0.6758</td>
<td>-0.088</td>
</tr>
<tr>
<td>TERR</td>
<td>-1.334***</td>
<td>0.061</td>
</tr>
<tr>
<td>1ST DIFFERENCE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TR</td>
<td>-3.588*</td>
<td>-1.30***</td>
</tr>
<tr>
<td>GDPPC</td>
<td>-0.94</td>
<td>-2.84*</td>
</tr>
<tr>
<td>CPI</td>
<td>-9.54*</td>
<td>-6.91*</td>
</tr>
<tr>
<td>PI</td>
<td>-5.315*</td>
<td>-3.228*</td>
</tr>
<tr>
<td>TERR</td>
<td>-4.789*</td>
<td>-2.978*</td>
</tr>
</tbody>
</table>

The results show that GDPPC, CPI and TERR is stationary at level according to LLC test, however, IPS test suggests that all variables are non-stationary at level, after talking first difference it would become stationary. Then secondly we check the panel cointegration test. Table 2 shows two different kinds of panel cointegration tests: residual-based tests of Kao (1999) and Fisher (2004). The null hypothesis of all the tests is no cointegration. . At 5% level of significance, the Johansen Fisher panel cointegration test and Kao residual cointegration test reject the null hypothesis which means there is a long run relationship exists within the variables.
Table 2: Johansen Fisher Panel Cointegration Test

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<tbody>
<tr>
<td>None</td>
<td>110.8</td>
<td>0.0000</td>
<td>77.52</td>
<td>0.0000</td>
</tr>
<tr>
<td>At most 1</td>
<td>61.64</td>
<td>0.0000</td>
<td>48.15</td>
<td>0.0000</td>
</tr>
<tr>
<td>At most 2</td>
<td>21.82</td>
<td>0.0013</td>
<td>20.68</td>
<td>0.0021</td>
</tr>
<tr>
<td>At most 3</td>
<td>7.071</td>
<td>0.3143</td>
<td>5.441</td>
<td>0.4886</td>
</tr>
<tr>
<td>At most 4</td>
<td>10.54</td>
<td>0.1036</td>
<td>10.54</td>
<td>0.1036</td>
</tr>
</tbody>
</table>

* Probabilities are computed using asymptotic Chi-square distribution.

Table 2 confirms the long-run relationship between the variables, as it indicates three cointegration equations in the model. Similarly, Kao residual test has been estimated in Table 3 to cross check the results.

Table 3: Kao Residual Cointegration Test

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Null Hypothesis: No cointegration</td>
<td></td>
<td>t-Statistic</td>
</tr>
<tr>
<td>ADF</td>
<td></td>
<td>1.441360</td>
</tr>
<tr>
<td>Residual variance</td>
<td></td>
<td>3.51E+1</td>
</tr>
<tr>
<td>HAC variance</td>
<td></td>
<td>4.75E+1</td>
</tr>
</tbody>
</table>

From Table 3, Kao Residual Cointegration test reject the null hypothesis of no cointegration, as prob. Value is 0.07 which is significant at 10 percent confidence level. To estimate the long-run cointegrating vector between political instability, terrorism and tourism, we employ the panel DOLS method proposed by Kao and Chiang (2000) that consists of lags and leads of the independent variables. The results of DOLS are shown in Table 4.
Table 4: DOLS estimation

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>-1.88E+08</td>
<td>4.41E+08</td>
<td>-0.425280</td>
<td>0.6730</td>
</tr>
<tr>
<td>D(GDPPC?(-1))</td>
<td>377703.2</td>
<td>943151.6</td>
<td>0.400469</td>
<td>0.6911</td>
</tr>
<tr>
<td>LOG(TERR?(-1))</td>
<td>1.76E+09</td>
<td>3.60E+08</td>
<td>4.878147</td>
<td>0.0000</td>
</tr>
<tr>
<td>LOG(CPI?(-1))</td>
<td>-2.13E+08</td>
<td>2.01E+08</td>
<td>-1.058587</td>
<td>0.2965</td>
</tr>
<tr>
<td>LOG(PI?(-1))</td>
<td>-7.79E+08</td>
<td>2.95E+08</td>
<td>-2.641902</td>
<td>0.0119</td>
</tr>
</tbody>
</table>

R-squared: 0.685060  Adjusted R-squared: 0.490989  Mean dependent var: 2.73E+08  S.D. dependent var: 7.50E+08
S.E. of regression: 6.74E+08  Akaike info criterion: 43.62218  Schwarz criterion: 43.86548
Sum squared resid: -953.6880  Hannan-Quinn criter.: 43.71241
Log likelihood: 3.030270  Durbin-Watson stat: 2.085236
Prob(F-statistic): 0.021290

Table 4 indicates the results of DOLS. Terrorism is found to be highly significant. The coefficient of terrorism is positive and significant at 1 percent level. We find that some countries in the SAARC region may gain from the problems of their neighbors in that their relative market shares increase as some tourists substitute away from high-risk places towards low-risk locations as the intensity of terrorist incidents increases in a given country (Hall, 1995). Similarly political instability is also found to be significant. Coefficient of political instability is negative indicating that 1% increase in political instability decreases tourism by 77.9%. While tourism is highly vulnerable to wars and political instability it is most susceptible to terrorism (Alsarayreh, Jawabreh & Helalat, 2010). Political conflicts among nations may promote the oppression of one country over another. That is, if the conflict does not sufficiently deter tourists to travel to combating countries, a country’s leader may impose travel bans on the warring country. This is a further potential factor influencing the reduction in the numbers of potential tourists and consequently a decrease in GDP. The CPI is not significant suggesting tourists are insensitive to relative prices. This is contrary to economic intuition that higher prices will deter tourism. However countries like Pakistan, India, Srilanka and Bangladesh are rich in history and have many tourist attractions. The average tourist is evidently more concerned with an enjoyable time than the cheapest deal. These top tourist destinations are able to accommodate the demands of tourists so the tourism industry may not be as sensitive to prices as some other industries. This result indicates that tourists may not substitute a cheaper vacation for a more expensive vacation. GDPPC is also not significant in the long run with t statistic of 0.40.

To estimate the short-run cointegrating vector between political instability, terrorism and tourism, we employ the panel FMOLS method, results of which are shown in Table 5.
Table 5: FMOLS estimations

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>-35793972</td>
<td>4.84E+08</td>
<td>-0.074006</td>
<td>0.9413</td>
</tr>
<tr>
<td>D(GDPPC?)</td>
<td>1960283.</td>
<td>821260.0</td>
<td>2.386921</td>
<td>0.0203</td>
</tr>
<tr>
<td>LOG(TERR?)</td>
<td>7.70E+08</td>
<td>3.54E+08</td>
<td>2.171610</td>
<td>0.0340</td>
</tr>
<tr>
<td>LOG(CPI?)</td>
<td>-2.48E+08</td>
<td>1.64E+08</td>
<td>-1.510274</td>
<td>0.1364</td>
</tr>
<tr>
<td>LOG(PI?)</td>
<td>-1.83E+08</td>
<td>2.97E+08</td>
<td>-0.615191</td>
<td>0.5408</td>
</tr>
</tbody>
</table>

R-squared: 0.614096
Mean dependent var: 1.96E+08
S.D. dependent var: 6.35E+08
S.E. of regression: 5.87E+08
Akaike info criterion: 43.30781
Sum squared resid: 2.00E+19
Schwarz criterion: 43.51020
Log likelihood: -1379.850
Hannan-Quinn criter.: 43.38754
F-statistic: 3.160081
Durbin-Watson stat: 2.119504
Prob(F-statistic): 0.013677

Table 5 shows that both the GDPPC and Terrorism are found to be significant in short run. These countries may be able to lure more foreign direct investment as potential investors will be attracted by profit. With higher GPPC countries have more resources to spend on promoting their country as a tourist destination (Alexi, 2008). In short-run, we find that some countries in the SAARC region may gain from the problems of their neighbors in that their relative market shares increase as some tourists substitute away from high-risk places towards low-risk locations as the intensity of terrorist incidents increases in a given country (Hall, 1995). Political instability and CPI are found to be insignificant in the short run. The price index (CPI) is negatively related to the numbers of arrivals, though statistically insignificant. This means that as things get expensive in the destination country, it will serve as a wrong signal to tourists as this depletes their purchasing power (Kareem and Olayinka, 2008).

4. Conclusion

Naturally, tourists are sensitive to events of political instability in their holiday destination because such events jeopardize a relaxed and unconcerned holiday. Our analysis suggests that policy makers in tourist destinations are rightly concerned about safety and stability. Substantial increases in political instability lower tourist arrivals in the long run. Interestingly, however, increase in the terrorism increases tourists arrival (Murdoch and Sandler 2002). In this study, we used DMOLS and FMOLS models to study the impact of political instability and terrorism on tourism from 1995-2011 for selected SAARC countries. The country sample was selected according to availability of data.

To our knowledge, our results are not directly comparable to any other study because of the methodology used, the variables included in the model and the aim of the analysis. The two distinct panel unit root tests indicate the mix results. They indicate that the variables of tourism receipts and political instability have unit roots and are thus nonstationary at levels both are stationary at 1st difference. According to LLC test GDPPC is stationary at level. While CPI and Terrorism are stationary at levels as well as at 1st difference according to LLC test. But
according to IPS test CPI and terrorism both are stationary at 1st difference. From DMOLS and FMOLS it is found that terrorism is significant and has positive affect on the tourism in both the short run and long run. While political instability has negative impact on tourism. It is therefore essential to have a clear understanding of political issues, key political actors’ interests and how to mitigate personal interests to facilitate and maintain sustainable tourism development in such countries (Yasarata, M., et al 2010). It can be concluded by saying that it can be anticipated that the findings of this study would be practical for the tourism authorities of these four countries in order to recognize the nature of the impact of political instability and violence, including terrorism, on the tourism industries of their own countries. It would also facilitate them to self-assess the effectiveness of the various post-terrorism/post political instability marketing campaigns and strategies that they have adopted at various points of time, to bring back the tourism sector to normalcy in the post-crisis period (Kaushik Basu and Vikram Sarabhai Marg).

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