Griffith UNIVERSITY

Griffith Business School

DISCUSSION PAPER SERIES

Economics and business statistics

Modelling the inbound tourism demand in Sri Lanka

Anushiya Sireeranhan, Jeyapiratheepa Antonarulrajah, EA Selva Selvanathan and Saroja Selvanathan

No. 2017-05

Series editors Dr Nicholas Rohde and Dr Athula Naranpanawa **ISSN** 1837-7750

Department of Accounting, Finance and Economics

Modelling the inbound tourism demand in Sri Lanka[1]

Anushiya Sireeranhan[2], Jeyapiratheepa Antonarulrajah[3], E A Selva Selvanathan[4] & Saroja Selvanathan[5]

Abstract

Sri Lanka is one of the most popular tropical tourism destinations, due to its' abundance of natural and cultural tourist attractions. During the 30-year civil war between the Liberation Tigers of Tamil Eelam (LTTE) and the Sri Lankan armed forces in Northern and Eastern Sri Lanka however, tourism demand declined, but since the end of war in 2009 it has steadily increased. To take advantage of this renewed interest in Sri Lanka as a preferred destination, it is necessary to identify the characteristics of the tourists from countries different to Sri Lanka and the determinants of tourism demand as a preferred destination. In this study, we identify seven major countries from where most of the tourists come to Sri Lanka and model the determinants of tourist numbers from these countries using annual data for the period 1994-2015.

Key words: Tourism, Demand Analysis

JEL Codes: D11

[1] The authors would like to acknowledge the DFAT Australian Awards program, Australian Government, and Griffith University for providing us with the financial support to carry out this research at Griffith University during December 2016.
[2] Department of Agricultural Economics, Faculty of Agriculture, University of Jaffna, Jaffna, SRI LANKA
[3] Discipline of economics Faculty of Arts and culture Eastern University, SRI LANKA
[4] Economics and Business Statistics Discipline, Griffith Business School, Griffith University, Queensland, AUSTRALIA

1. Introduction

Sri Lanka is a popular tropical tourism destinations situated about 30kms from the Southern tip of India. With an abundance of natural and cultural tourist attractions, the number of international tourist arrivals to Sri Lanka has been on the steady increase from mid-2009, when the 30 years old civil war came to an unexpected end.

In many developing countries, the tourism sector contributes significantly to their GDP either, or indirectly through tourism related activities. Therefore, if the tourism sector is managed properly, it can be used as an important source of government revenue, foreign exchange earnings and local employment. As Sri Lanka needs high growth in the tourism sector, it would be advisable for it to put polices in place to achieve such a favourable outcome. In light of this, it is necessary to identify the factors that influence the inbound tourist arrivals to Sri Lanka and the locations from where most tourist are coming from.

In 2015, the tourism sector contributed approximately 2.5% to the Sri Lankan national GDP. The tourism sector also generated 352,000 new jobs in 2014, which equated to 4.3% of total employment. At the conclusion of the 30 years of the armed conflict in May 2009, tourism had become a major export industry. According to the Central Bank Report (2013), tourism is considered as the 3rd largest export earner of Sri Lanka amounting to $1.7 billion. Moreover, in 2012 tourist arrivals increased rapidly passing the forecasted number of one million..

Previous studies have shown that a number of factors such as consumer income, cost of food, local travel and accommodation, exchange rate, and political stability at the tourist destination play a significant role in determining the selection of the country a tourist would like to visit. Sharma (2007) pointed out that unlike most other products and services, there is no urgency about a holiday and it is in fact an infrequent purchase which occurs once a year or less, especially when it comes to an international trip. Adding to this, tourists have a vast number of destination choices around the world.

As with any other sector in the Sri Lankan economy, the tourism sector has been experiencing various challenges over the last three decades. The security situation in the country has been the major challenge for the growth of the tourism sector due to the 30-year period of war between Liberation Tigers of Tamil Eelam (LTTE) and the Sri Lankan armed forces, which ended in 2009. Local and foreign investors were very reluctant to commit to large-scale investments in the Sri Lankan tourism industry until 2009 and so it has only been from mid-2009, that foreign direct investment in the tourism industry, tourist arrivals and foreign exchange earnings have been increasing steadily; improving tourism infrastructure such as hotel facilities and services over the last seven years. Sri Lankan tourism industry has, however, had to face severe competition from other similar neighbouring attractive tourist destinations such as India, Malaysia, Singapore and Thailand. Good governance and private investment in the health sector in those countries might provide an advantage to attract more tourists to these countries.

Given the significant contribution which the tourism sector can make to the Sri Lankan economy, the development of the tourism sector appears to be as important as the development of other sectors of the economy. Although tourism plays a key role in the Sri Lankan economy, in terms of academic research, very little attention has been directed to this sector and there have been a few prior attempts to address the issues relevant to the economic impact of tourism in Sri Lanka (for example, see, Gamage, 1978; King and Gamage, 1994; and Ihalanayake, 1996). In reviewing what has been published, Garcia (2002) examined the role of tourism, particularly the negative impact, on society and culture,. Selvanathan (2006), Fernando et al (2013) and others have examined the effect of the war and other factors on Sri Lankan tourism. The problem is that very few research studies have used more recent advanced econometric techniques combined with most recent data on disaggregated country-wise inbound tourist arrivals, especially analysing the impact of the war on Sri Lankan tourist arrivals.

2. Literature Review

There are several studies in the literature which attempt to explain the demand for tourism for various countries (see for example, Falk, 2014; Brown, 2015; Nkosi, 2010; Fernando et al, 2013; Seetaram et al, 2016; Jayathilake, 2013; Selvanathan et al, 2009; Selvanathan, 2006; and Fernando et al, 2013). Common factors identified as determinants of the demand for tourism include real exchange rate and income level of the tourists' home country, tourism price, travel cost, foreign direct investment, warm weather and climate in the country, crimes against tourists, and political instability in the destination country.

A recent study by Falk (2014) reveals that weather and climate of a country can be functioned as a push and a pull factor in motivating tourists in selecting a country as their preferred destination to travel. Accordingly, there are several possible avenues for future research which considers the impact of weather conditions on tourism demand.

In another recent study, Brown (2015) concludes that crimes against tourists in a country impacts on inbound tourist arrivals. Risk perception and fear of crime play a role in the tourist travel decision. In addition, terrorism and civil unrest are found to heavily influencing the demand for tourism in a country or region and Fernando et al (2013) also found seasonal factors affect tourist arrivals in Sri Lanka.

Song and Li (2008) found real exchange rates to play a significant role in determining the demand for tourism in a country. Two other studies by Seetaram et al (2016) and Jayathilake (2013) found that the tourism price in the destination country, travelling cost, income and exchange rates, and tourism prices at alternative destination are significant determinants of the international tourism demand in a country.

Selvanathan (2006) studied the effect of war and other factors on Sri Lankan tourism. The results show that the weaker the value of the Sri Lankan local currency with respect to the US dollar, the more attractive it is for international tourists and the Sri Lankan consumer prices.

For these reasons, world consumer income levels have no significant impact on the number of international tourist arrivals to Sri Lanka. The study by Fernando et al (2013) also found that major war-related incidents are strong enough to reduce the tourist arrival compared to a period peace in the country

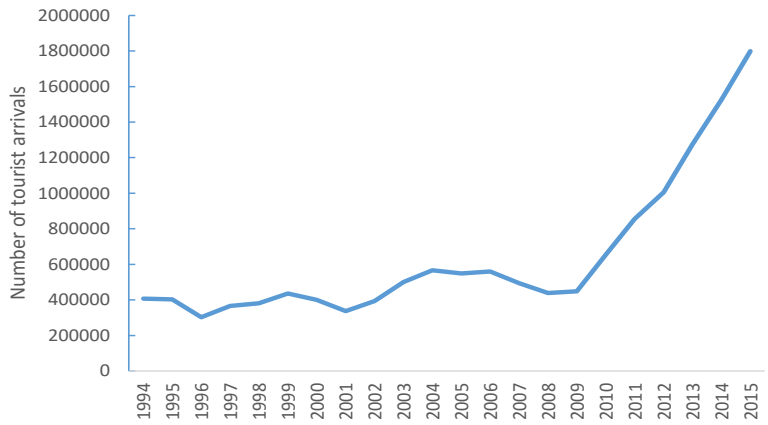
A study by Naudé and Saayman (2004) on the determinants of tourist arrivals to African countries concluded that political stability, tourism infrastructure, marketing and the level of development in the destination country are key determinants of tourist arrivals to Africa. Typical "developed country determinants" of tourism demand, such as the level of income in the origin country, the relative prices and the cost of travel, are not that significant in explaining the demand for tourism to African countries as a tourist destination. A study by Kadir et al (2013), however, concluded that Malaysia needs to maintain a competitive relative price level to other similar destinations to attract more tourists from ASEAN countries.

3. Inbound Tourism to Sri Lanka: A Preliminary Data Analysis

In this section, we present a preliminary data analysis of the tourism data for Sri Lanka. Annual tourist arrivals data from a number of countries for the period 1994 to 2015 are sourced from *Annual Statistical Report* of the Sri Lanka Tourism Development Authority (Table 1, various issues).

Figure 1 plots the total number of international tourist arrivals to Sri Lanka during the period 1994-2015 based on the data published by the Sri Lanka Tourism Development Authority (2015). As can be seen, the inbound tourism to Sri Lanka has grown steadily with some major fluctuations during war and non-war periods. The number has grown at a faster rate from 2009 compared to the period of time before when the war was on and off. In general, the geographical factors and inherent nature of tourist attractions in Sri Lanka have had a positive effect in attracting tourists to Sri Lanka. However, it appears that the political instability due to the 30-year war between the Sri Lankan Armed forces and the Liberation Tigers of Tamil Eelam (LTTE) had a major setback on tourist arrivals between 1977 and 2009. There was also been major decrease in tourist arrivals during the years 1996 and 2001 when fighting between the two forces was intense. In 1994, the number of international tourist arrivals was about 400,000 and halved to approximately to 200,000 in 1996, which was due to the bomb blast in Colombo at

Figure 1: Number of inbound tourist arrivals to Sri Lanka, 1994 -2015



the Central Bank of Sri Lanka and at the attach at the Colombo international airport, both by LTTE. The picture has changed totally since the end of the war in May 2009. As can be seen from Figure 1, the inbound tourist arrivals reached a new high of 1,798,380 in 2015, registering a 17.8 per cent increase in 2015 compared to 2014.

Figure 2 shows the inbound tourist arrivals to Sri Lanka from its top seven major tourists' countries, namely Australia, China, France, Germany, India, Maldives, and the UK. As can be seen, the trend in inbound tourism to Sri Lanka changed over the years 1994 to 2015, with this especially noticeable after 2009 when tourism growth increased dramatically. Tourists from India, China and, UK have been the major contributors to Sri Lankan tourism in recent years.

Figure 2: Number of tourist arrivals from top seven major markets, Sri Lanka, 1994-2015

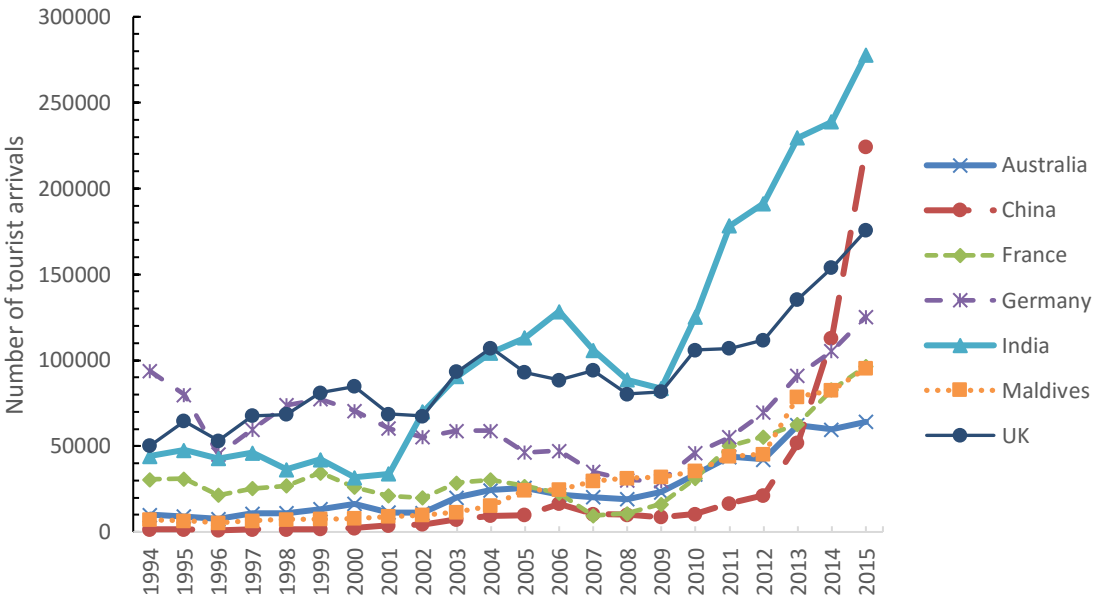


Table 1 presents a similar snapshot of this information but looks at tourist arrivals as a proportion of total inbound tourist arrivals to Sri Lanka. These seven countries account for approximately 59 percent of the total number of tourist arrivals. The share from France, Germany, and UK has fallen from about 43 percent in 1994 to 22 percent. On the other hand, the contribution by the remaining three neighbouring countries, China, India, and Maldives, has increased from 12 percent in 1994 to 33 percent in 2015. India is the leading tourism supplier to Sri Lanka and its share has increased from 10.8 percent to 15.5 percent during 1994 to 2015. The second major source of the inbound tourist supplier to Sri Lanka in recent years (since the end of the war) has been China. China's contribution has increased forty-fold, from a small 0.3 percent (7^{th}) in 1994 to 12.5 percent (2^{nd}) in 2015. The share of tourist arrivals to Sri Lanka from Australia remained relatively stable throughout the reference period.

Table 1: Share of inbound tourist arrivals by country (in percentages), Sri Lanka, 1994-2015

Year	Australia	China	France	Germany	India	Maldives	UK	Total
1994	2.4	0.3	7.5	23.0	10.82	1.8	12.3	58.2
1995	2.2	0.4	7.7	19.8	11.82	1.6	16.0	59.6
1996	2.5	0.3	7.1	14.9	14.16	1.8	17.6	58.4
1997	3.0	0.4	6.9	16.3	12.61	1.8	18.5	59.4
1998	2.9	0.4	7.1	19.4	9.58	1.9	18.0	59.2
1999	3.0	0.4	7.9	17.7	9.68	1.7	18.6	59.0
2000	4.1	0.6	6.5	17.6	7.95	2.0	21.2	59.9
2001	3.4	1.1	6.2	17.9	10.08	2.7	20.4	61.7
2002	2.9	1.1	5.1	14.0	17.79	2.5	17.2	60.6
2003	4.0	1.5	5.7	11.8	18.10	2.3	18.6	62.0
2004	4.3	1.7	5.4	10.4	18.44	2.7	18.9	61.8
2005	4.7	1.8	4.8	8.4	20.58	4.4	16.9	61.7
2006	3.9	2.9	4.1	8.5	22.97	4.4	15.8	62.5
2007	4.1	2.1	1.9	7.1	21.44	6.0	19.0	61.7
2008	4.4	2.3	2.4	6.9	20.21	7.2	18.3	61.6
2009	5.2	1.9	3.6	6.6	18.68	7.1	18.2	61.4
2010	5.1	1.6	4.8	7.0	19.12	5.4	16.2	59.2
2011	5.1	1.9	5.9	6.5	20.84	5.1	12.5	57.8
2012	4.2	2.1	5.5	6.9	19.02	4.5	11.1	53.4
2013	4.9	4.1	4.9	7.2	18.02	6.2	10.6	55.8
2014	3.9	7.4	5.4	6.9	15.65	5.4	10.1	54.8
2015	3.6	12.5	5.4	7.0	15.46	5.3	9.8	58.9

4. Model Specification and Estimation

Model specification

We use the following log-linear regression model to determine the factors that influence the number of tourist arrivals to Sri Lanka (all variables, except the dummy variable to represent the war are in natural logarithm). Due to data constraints and unavailability of consistent data, we estimate model (1) for the seven individual countries as:

$$\ln TA_t = \beta_0 + \beta_1 \ln GDPPC_t + \beta_2 \ln TPISL_t + \beta_3 DWar_t + \beta_4 T_t + \varepsilon_t, \quad (1)$$

$$t=1, 2, \ldots, 21$$

where

- TA_t is the total number of tourist arrivals from a country (Australia, China, France, Germany, India, Maldives and the UK) in year t to Sri Lanka;
- $GDPPC_t$ is per capita real GDP of the country of tourists' origin in year t which is used as a proxy for the income variable;
- $TPISL_t$ is the tourism price index (1960=100) in Sri Lanka in year t;
- $DWar_t$ is a dummy variable, which is used to capture the effect of the war and takes value 1 during war years (1994-2001, 2005-2009) and 0 for non-war years (2002-2004, 2010-2015);
- T_t is the time trend variable; and
- ε_t is the error term.

Data for the variables considered are collected from the *Annual Statistical Report* of the Sri Lanka Tourism Development Authority (Table 1, various issues) and the World Development Indicators (WDI) online data source (The World Bank).

To avoid any spurious regression results, the first step is to investigate whether all the variables to be used in estimating Model (1) are stationary. Figure 3 plots the number of tourist arrivals to Sri Lanka from the seven individual countries in log level form and first difference form. Figure 4 plots the GDP per capita from the seven individual countries in log level form and first difference form and Figure 5 plots the tourism price in Sri Lanka in log level form and first difference form.

As can be seen from Figures 3-5, the level form graphs suggest that all variables in level form have some form of natural trend and may therefore be non-stationary. However, it can be seen that all variables in their first differenced form can be considered as stationary. We now formally test for stationary of each time series using Augmented Dicky-Fuller (ADF) Test. The null and alternative hypotheses are:

H_0: Variable has a unit root (or the series is non-stationary)
H_A: Variable has no unit root (or the series is stationary)

Table 2 presents the ADF unit root test results. As can be seen from columns 2-3 of the table, for all countries, except for China, at the 5 percent level, all variables in level form have a unit root in the series (all *p*-values are larger than 5 percent) and hence each variable is non-stationary in its level form. Looking at the results in columns 4-5 of the table, we can

conclude that all variables are stationary in their first difference form. This means that all variables included in the model (1) are integrated of order 1, I(1).

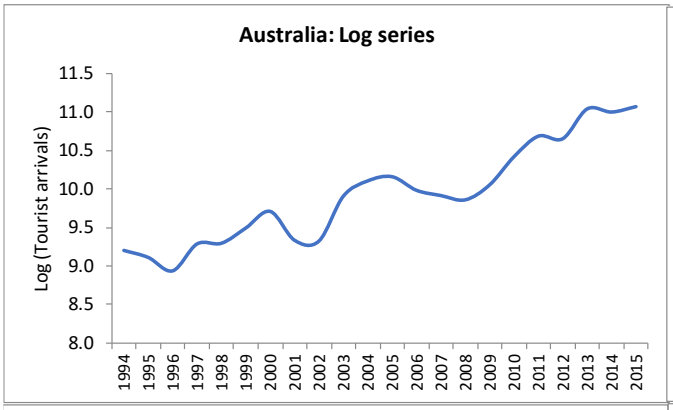
Even if the variables are I(1), it is possible that the estimates obtained from Model (1) may not be spurious, provided that the variables in Model (1) are co-integrated. Therefore, the next step is to investigate whether the variables are cointegrated. For this purpose we use the residuals from each country estimation and investigate whether each residual series is I(0).

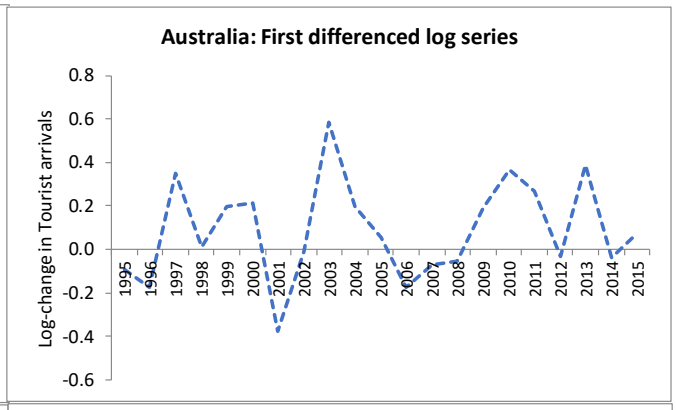
We use the following null and alternative hypotheses to test for cointegration:

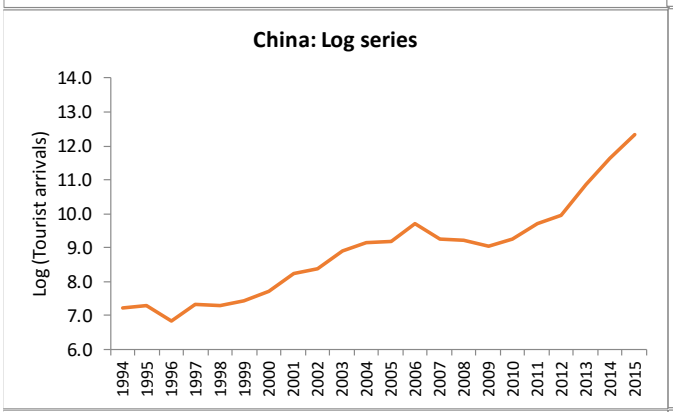
H_0: The error term has a unit root (not cointegrated)
H_A: The error term has no unit root (cointegrated)

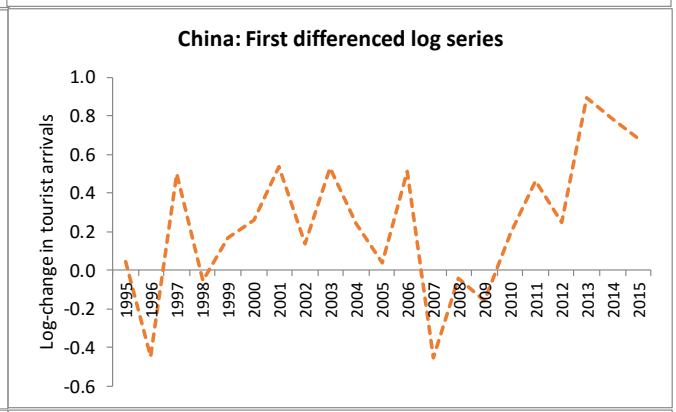
For all countries, the null hypothesis of the error term having a unit root (non-stationary) is rejected and hence there is some support for the alternate hypothesis that the error term is stationary and therefore the variables are cointegrated at the 5% level of significance. That is, there exists strong evidence for the presence of a cointegrating relationship between the variables, tourist arrival numbers, per capita GDP and Sri Lankan tourism price index for all seven countries.

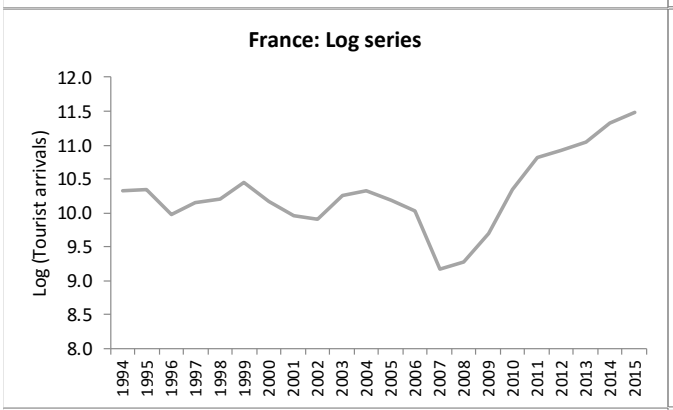
Figure 3: Inbound Tourist Arrivals from seven countries, Log and Log-change series, Sri Lanka, 1994-2015

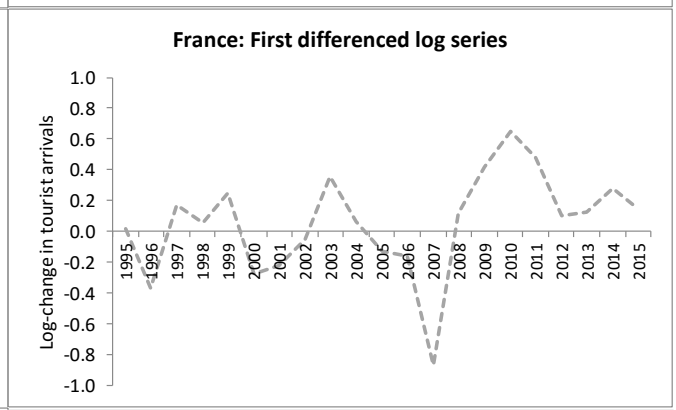

Australia: Log series
Log (Tourist arrivals)
11.5
11.0
10.5
10.0
9.5
9.0
8.5
8.0
1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015

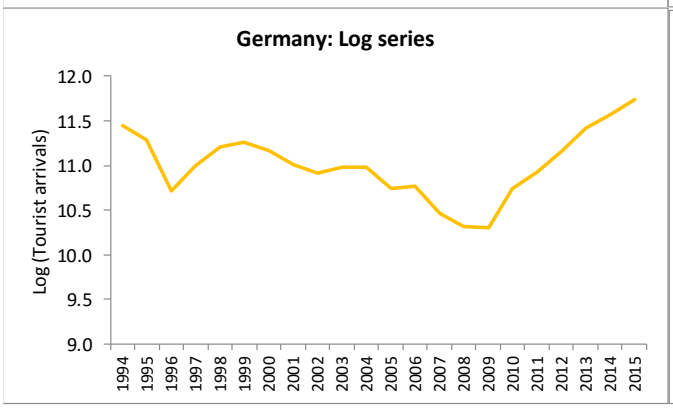

Australia: First differenced log series
Log-change in Tourist arrivals
0.8
0.6
0.4
0.2
0.0
-0.2
-0.4
-0.6
1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015


China: Log series
Log (Tourist arrivals)
14.0
13.0
12.0
11.0
10.0
9.0
8.0
7.0
6.0
1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015


China: First differenced log series
Log-change in tourist arrivals
1.0
0.8
0.6
0.4
0.2
0.0
-0.2
-0.4
-0.6
1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015


France: Log series
Log (Tourist arrivals)
12.0
11.5
11.0
10.5
10.0
9.5
9.0
8.5
8.0
1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015


France: First differenced log series
Log-change in tourist arrivals
1.0
0.8
0.6
0.4
0.2
0.0
-0.2
-0.4
-0.6
-0.8
-1.0
1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015


Germany: Log series
Log (Tourist arrivals)
12.0
11.5
11.0
10.5
10.0
9.5
9.0
1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015

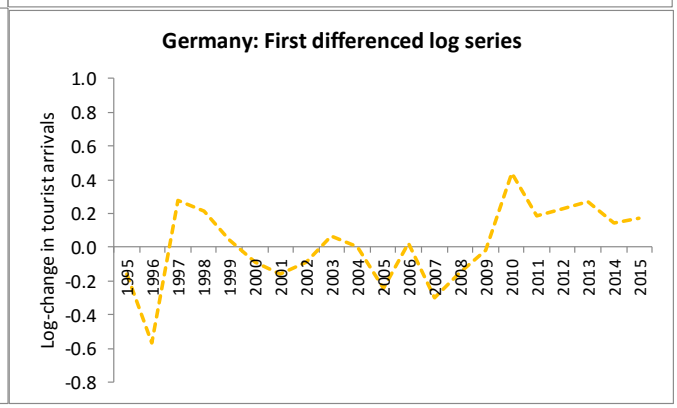

Germany: First differenced log series
Log-change in tourist arrivals
1.0
0.8
0.6
0.4
0.2
0.0
-0.2
-0.4
-0.6
-0.8
1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015

Figure 3: Inbound Tourist Arrivals from seven countries, Log and Log-change series, Sri Lanka, 1994-2015 (continued)

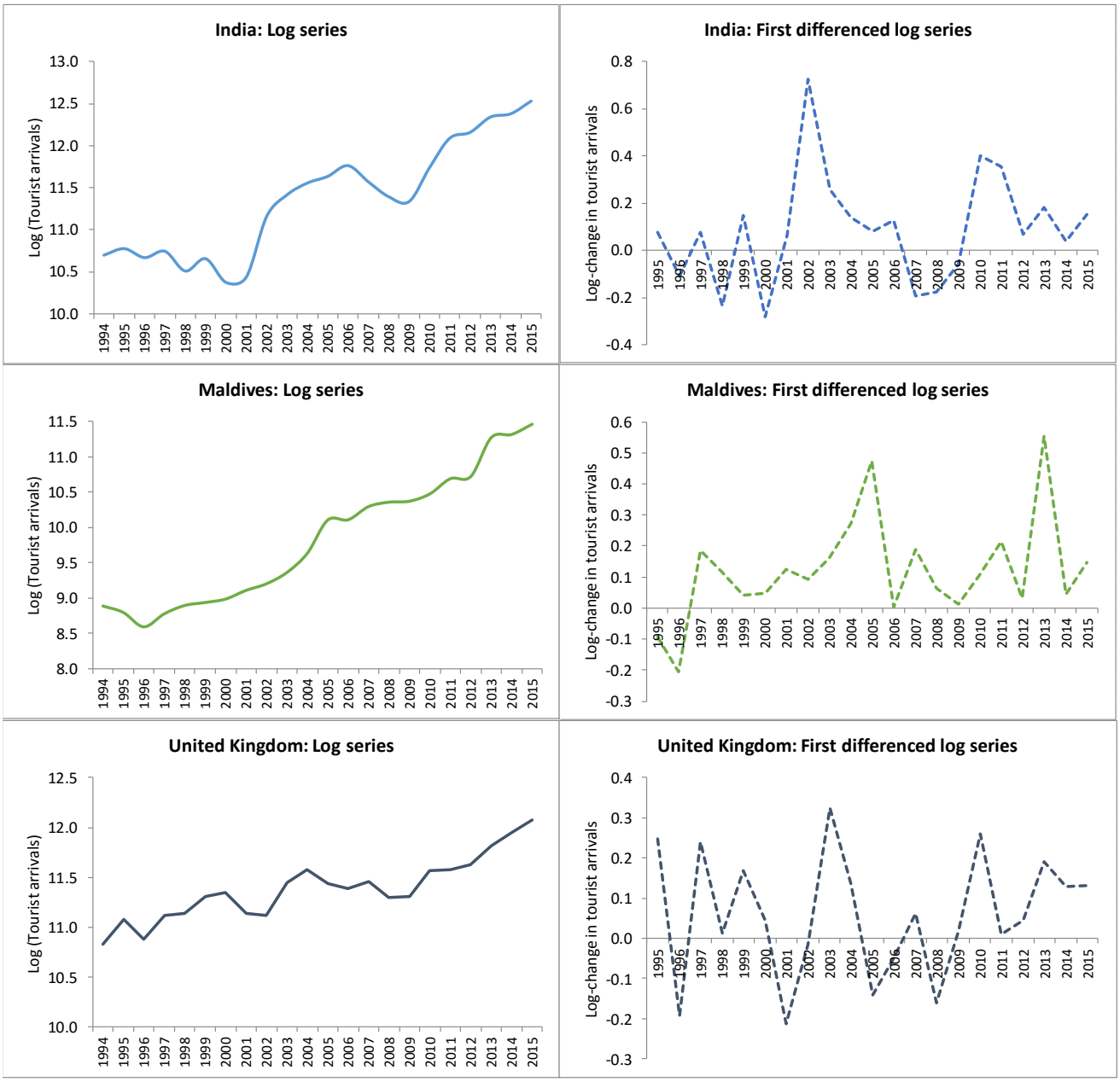


Figure 4: Per Capita GDP in seven countries, Log and Log-change series, 1994-2015

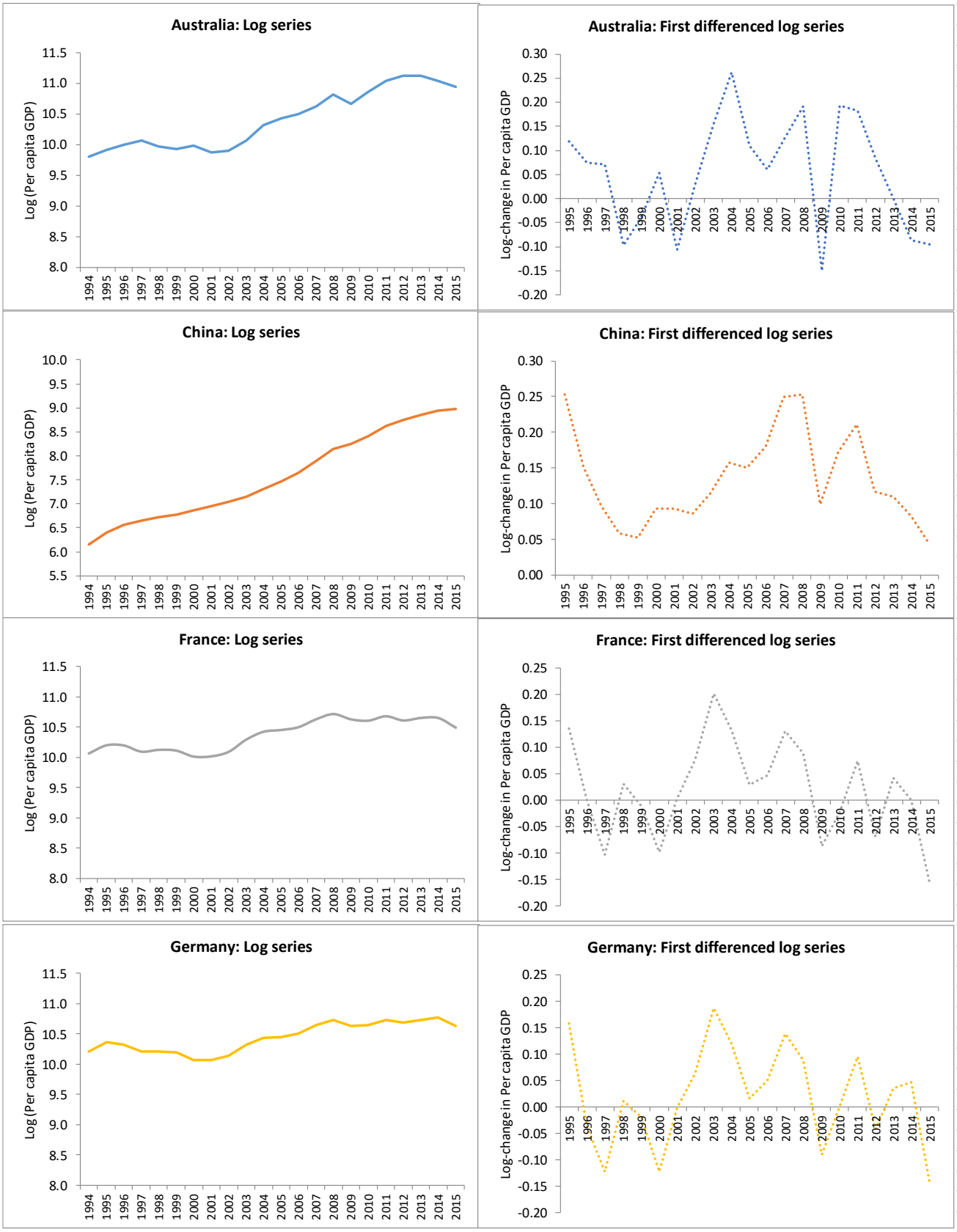


Figure 4: Per Capita GDP in seven countries, Log and Log-change series, 1994-2015 (continued)

Figure 5: Tourism price index, Sri Lanka, Log and Log-change series, 1994-2015

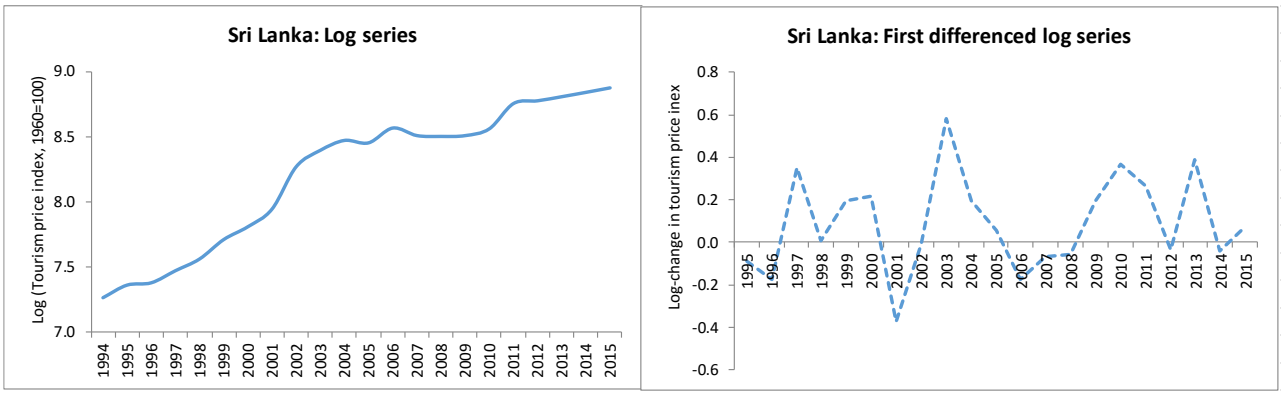


Table 2: Unit Root Test Results

Tourist Arrivals

	Level		First Difference	
Country	Test statistic	*p*-value	Test statistic	*p*-value
Australia	-3.21	0.111	-4.34	0.003
China	-3.71	0.048	-3.31	0.028
France	-1.43	0.548	-3.00	0.005
Germany	-0.70	0.960	-3.20	0.035
India	-2.99	0.160	-3.50	0.019
Maldives	-3.22	0.108	-4.57	0.002
UK	-2.09	0.522	-4.09	0.006

Per capita GDP

	Level		First Difference	
Country	Test statistic	*p*-value	Test statistic	*p*-value
Australia	-2.10	0.513	-3.30	0.029
China	0.16	0.962	-1.72	0.081
France	-1.22	0.648	-3.09	0.004
Germany	-0.97	0.743	-3.51	0.001
India	-1.61	0.755	-3.53	0.018
Maldievs	-2.00	0.569	-5.81	0.000
UK	-1.90	0.618	-3.04	0.048

Tourism Price Index, Sri Lanka

	Level		First Difference	
Country	Test statistic	*p*-value	Test statistic	*p*-value
Sri Lanka	-0.88	0.940	-3.24	0.033

Table 3: Test for cointegration of variables in model (1)

Country	Test statistic	*p*-value	Error term	Cointegrated?
Australia	-3.527	0.0013	Stationary	Yes
China	-4.575	0.0001	Stationary	Yes
France	-3.007	0.0046	Stationary	Yes
Germany	-2.968	0.0051	Stationary	Yes
India	-4.006	0.0005	Stationary	Yes
Maldives	-2.751	0.0084	Stationary	Yes
UK	-2.482	0.0158	Stationary	Yes

Estimation Results

We now estimate the following model for the seven individual countries by:

$$\ln TA_t = \beta_0 + \beta_1 \ln GDPPC_t + \beta_2 \ln TPISL_t + \beta_3 DWar_t + \beta_4 T_t + \varepsilon_t, \qquad t=1, 2, \ldots, 21$$

Table 4 presents the detailed individual country estimation results using model (1) for all seven individual countries. Below, we consider the results from each country separately.

Australia

As can be seen, the income and price coefficients have the expected signs while both are statistically insignificant. As expected, when Australian income increases, Australians tend to select Sri Lanka as one of their favoured tourist destinations. On other hand, when local tourism related prices increase in Sri Lanka it makes Australian tourists look elsewhere for a preferred tourist destination. The estimated coefficients indicate that when Australians income increases by 10 percent, the number of Australians travelling to Sri Lanka will increase by 2.45 percent. On the other hand, an increase in the tourism price in Sri Lanka by 10 percent would result in a 1.9 percent decline in the number of Australians visiting Sri Lanka. As the estimated equation has all variables in natural logarithm, the estimated coefficients can be interpreted as the income (0.245) and price (-0.191) elasticity of Australian tourist arrivals to Sri Lanka. Since the price elasticity of tourism travel demand is less than one, the Sri Lankan travel demand for Australian tourists is price inelastic. The other important observation to be noted from the estimation results for Australia is that the estimated war dummy variable (taking value 1 during the war years and 0 during the non-war years) coefficient is negative as expected and statistically significant at the 10% level of significance. This means that political instability negatively impacts how a tourist destination is viewed and it will persist for years and affect the number of tourist arrivals. It is evident from the estimated results that war and political instability is a major factor that determines the Australian tourism demand to Sri Lanka.

Estimation results also reveal that there is a significant time trend in tourist arrivals to Sri Lanka from Australia, as indicated by the estimated positive and statistically significant coefficient of the trend term (T). The intercept term is positive and significant indicating that there is a positive Australian tourist preference towards Sri Lanka as a preferred tourist destination.

China

With respect to China, the income coefficient is positive and statistically significant indicating that when household income increases, Chinese tourists' preference towards Sri Lanka as a tourism destination tend to increase. The income elasticity of Chinese tourist arrivals is 0.786 indicating that when Chinese income increases by 10 percent, it would increase the number of tourists from China to Sri Lanka by 7.8 percent. Since the income elasticity value is less than one, it appears that Chinese tourists do not consider Sri Lanka as a luxury destination but rather, an important tourism destination.

Surprisingly, the estimated price coefficient is positive but statistically insignificant at the 5 percent level. While the war has a negative impact on Chinese tourist travel to Sri Lanka, it is also statistically insignificant. The estimated intercept term is negative but statistically

insignificant at the 5 percent level. The number of Chinese tourist arrivals to Sri Lanka presented earlier (see Table 1 and Figure 2) clearly shows that Chinese tourist arrivals to Sri Lanka was very small and almost a constant until 2009. During the time of the Rajapakse Government, the relationship between Sri Lanka and China improved dramatically and the sudden increase in Chinese tourist arrivals increased exponentially only in the last few years - since the end of the war. This could be the reason for the estimated negative intercept term of the model.

Table 4 Estimation results by country

	Coefficients	*Standard Error*	*p-value*
Australia			
Intercept	8.146**	4.636	0.097
Income	0.245	0.319	0.454
Price	-0.191	0.333	0.575
War	-0.238**	0.122	0.067
T	0.083**	0.042	0.064
China			
Intercept	-5.894**	3.152	0.078
Income	0.786*	0.347	0.036
Price	1.094**	0.611	0.090
War	-0.231	0.330	0.494
India			
Intercept	4.429*	1.139	0.001
Income	0.738*	0.236	0.006
Price	0.273	0.253	0.294
War	-0.305*	0.139	0.042
France			
Intercept	32.123*	7.183	0.000
Income	-0.956	0.669	0.171
Price	-1.626*	0.548	0.009
War	-0.740*	0.229	0.005
T	0.164*	0.048	0.003
Germany			
Intercept	29.920*	6.577	0.000
Income	-0.861	0.525	0.119
Price	-1.327*	0.433	0.007
War	-0.487*	0.174	0.012
T	0.110*	0.042	0.019
Maldives			
Intercept	-2.939*	1.387	0.048
Income	1.778*	0.457	0.001
Price	-0.222	0.497	0.661
War	-0.005	0.174	0.979
United Kingdom			

Intercept	8.513*	2.984	0.011
Income	0.533	0.438	0.240
Price	-0.369	0.313	0.254
War	-0.218**	0.108	0.059
T	0.041*	0.017	0.025

* denotes significant at the 5% level, and ** denotes significant at the 10% level.

France

As can be seen from Table 4, for France, income coefficient is negative but statistically insignificant. This could be due to the fact that when French household income increases, French tourists could be in a better position to travel to another luxury tourist destination, instead of visiting Sri Lanka. A similar situation was explained by (Song and Witt, 2004) based on the consumer behaviour theory. Consumer behaviour theory assumes that the increase of income up to a certain point will shift consumer demand to a higher order. In this case, French tourists, rather than spending the excess income on travelling to Sri Lanka, prefer to change the destination to a location more suitable to the consumer's current income.

The tourism price coefficient is negative as expected and statistically significant at the 5 percent level. This means that the demand for tourism from France to Sri Lanka decreases with increasing tourism price in Sri Lanka. The price elasticity of tourist arrivals from France is -1.626, which means that the travel demand is price elastic and if tourism price in Sri Lanka increases by 10 percent, the number of tourists from France to Sri Lanka will decrease by -16.26 percent.

The war dummy variable coefficient is negative as expected and statistically significant. This means that French tourists also consider political stability and personal safety as important factors in determining their travel destination. The observed tourist arrival numbers clearly give support to this finding given that during the war period, tourist arrivals from France to Sri Lanka declined (see Figure 2).

Apart from the income and price variables as well as the war dummy, there is also a significant time trend in tourist arrivals to Sri Lanka from France, which is confirmed by the estimated positive and statistically significant coefficient of the trend term (T).

The intercept term is positive and statistically significant indicating an increase in French tourist preferences towards Sri Lanka as a tourism destination.

Germany

The results reported for Germany reveals that the income coefficient is negative but statistically insignificant, indicating that when household income increases, German tourists to Sri Lanka tend to look for some other countries as their tourist destination.

The price elasticity (-1.327) is negative as expected and statistically significant at the 5 percent level. This means that the demand for tourism from Germany to Sri Lanka is price

elastic and if tourism price in Sri Lanka increases by 10 percent, the number of tourist arrivals from Germany to Sri Lanka will decrease by 13.27 percent.

Also, the estimated coefficient of the war dummy variable is negative and statistically significant at 5 per cent level. This suggests that the war has had a negative impact on the tourism demand from Germany to Sri Lanka.

The intercept term is positive and significant implying that there is an increasing trend in German consumer preferences towards Sri Lanka as a tourism destination. Finally, there is also a significant time trend in German tourist arrivals to Sri Lanka which is confirmed by the estimated positive and statistically significant coefficient of the trend term (T).

India

Estimation results for India show that the income coefficient is positive and statistically significant at 5 percent level. Thus, any change in India's income plays a significant role in the decision of Indian tourists to select Sri Lanka as their preferred destination. The estimated value of income elasticity, 0.738, implies that a 10% increase in income in India would increase the tourist arrival numbers from India by 7.38 percent.

The estimated price coefficient is, however, positive against expectation and statistically insignificant. This means that local tourism price in Sri Lanka does not play an important role in Indian tourists' decision to visit Sri Lanka. The reason for such observation could be due to the closer proximity of Sri Lanka as a destination, and that travel price may be comparatively cheaper than other destinations.

The war coefficient is, as expected, negative and statistically significant at 5 per cent level. This means that the war has played a negative role in the decision of Indian tourists to travel to Sri Lanka. The intercept term is, however, positive and significant. The positive and statistically significant intercept term can be interpreted as an increase in Indian tourists' preferences towards Sri Lanka as a tourism destination.

Maldives

As can be seen, the income elasticity for travel demand for Maldives tourists is 1.778 and statistically significant. This means that when income increases by 10 percent in the Maldives, demand for travel to Sri Lanka increases by 17.78 percent. Since the income elasticity is larger than 1, tourists from the Maldives consider Sri Lanka a luxury destination. A similar result is reported in a study by Surugiu et al (2011). The price elasticity of travel from Maldives to Sri Lanka is estimated as -0.22, which is of the expected sign but statistically insignificant. This means that Sri Lankan tourism prices appear to have no significant impact on tourist arrivals from the Maldives. As in the case of India, this may be due to the close proximity of the Maldives to Sri Lanka.

Although the war effect is negative for the Maldives tourists, it is statistically insignificant meaning that war was not a major deterrent to Maldives tourists in their decision to visit Sri Lanka. Finally, the intercept term is negative and significant. A negative intercept term can be interpreted as decreasing Maldives tourist preferences towards Sri Lanka.

United Kingdom

For the UK, estimation results show correct sign for income (0.533) and price (-0.369) elasticities but both are statistically insignificant. Since the income elasticity is less than one, UK travellers do not consider Sri Lanka as a luxury destination. Given the price elasticity is also less than one in absolute value, the demand for travel to Sri Lanka is considered as demand price inelastic.

The war coefficient is negative as expected and statistically significant at 10 percent level of significance. This means that UK travellers also considered their safety before making a travel to Sri Lanka during the war years.

As in France, Germany, and Australia, there is also a significant trend in UK tourist arrivals to Sri Lanka, which is indicated by the estimated positive and statistically significant coefficient of the trend term (t). Finally, the intercept term is positive and significant meaning that there is a shift in UK tourist preferences towards Sri Lanka.

4. Overall Implications of the Results

Measuring the impact of war on tourist arrivals

The war impact on the Sri Lankan tourist arrivals can be calculated as follows. Based on the estimated model;

For war years: Effect on tourist arrivals ($\ln TA_{War}$) $= \beta_3$ (as $DWar_t = 1$)

For non-war years: Effect on tourist arrivals ($\ln TA_{No\text{-}war}$) $= 0$ (as $DWar_t = 0$).

Therefore, $\ln TA_{War} - \ln TA_{No\text{-}war} = \beta_3$. This can be written as

$$TA_{War} = \exp(\beta_3) \times TA_{No\text{-}war}. \quad (3)$$

Equation (3) means that, in a war year, on average, the number of tourist arrivals would have been $[1-\exp(\beta_3)]\times 100$ lower than what it would have been if there was no war. Table 5 below presents these estimated percentages. As can be seen, the war has had the impact of lowering the tourist arrivals from France by 52.3 %, Germany by 38.6%, India by 26.3%, Australia by 21.2%, China by 20.6%, the UK by 19.6%,and very little or no impact on Maldives tourist arrivals.

Table 5 Impact of war on Tourist Arrivals to Sri Lanka

	Australia	China	France	Germany	India	*Maldives*	UK
War	-0.238	-0.231	-0.740	-0.487	-0.305	-0.005	-0.218
Impact of war (%)	21.2	20.6	52.3	38.6	26.3	0.5	19.6

Summary results

Table 6 presents a summary of the estimated results. In summary, we can conclude the following:

With respect to the income of tourists' country of origin, (a) income has a significant and positive influence on tourist arrivals to Sri Lanka from China, India, and Maldives; (b) income has a positive but statistically insignificant influence on tourist arrivals from Australia, and the United Kingdom; (c) income has a negative but insignificant influence on tourist arrivals from France, and Germany; (d) the income elasticity of travel demand for Australia is 0.245, China 0.786, India 0.738, Maldives 1.778 and the UK 0.533; and (e) only Maldives tourists consider Sri Lanka a luxury destination.

In relation to tourism price in Sri Lanka, (a) tourism price increase in Sri Lanka has a negative effect on tourist arrivals from all countries except China, and India. The effect is significant and positive for China but insignificant and positive for India. The demand for travel to Sri Lanka is demand price inelastic for Australian, Maldives, and British travellers, while the demand is price elastic for French and German travellers.

There is a positive trend in tourist arrivals from Australia, France, Germany, and the United Kingdom, a positive change in tourist preference from Australia, India, France, and Germany, and a negative preference for Chinese and Maldives travellers.

As discussed earlier, war has impacted negatively on tourist arrivals from all countries. The effect is significant for Australia, China, France, Germany, India, and the United Kingdom. The effect is insignificant for Maldives.

Table 6 A Summary of the Estimation Results

Variable	**Australia**	**China**	**France**	**Germany**	**India**	***Maldives***	**UK**
Intercept	8.146**	-5.894**	32.123*	29.920*	4.429*	-2.939*	8.513*
Income	0.245	0.786*	-0.956	-0.861	0.738*	1.778*	0.533
Price	-0.191	1.094**	-1.626*	-1.327*	0.273	-0.222	-0.369
War	-0.238**	-0.231	-0.740*	-0.487*	-0.305*	-0.005	-0.218**
t	0.083**		0.164*	0.110*			0.041*

* denotes significant at the 5% level, and ** denotes significant at the 10% level.

5. Concluding Comments

In this paper, we have analysed the inbound tourism to Sri Lanka for the period 1994 to 2015. We have considered the tourist arrivals from the seven major contributors of the inbound tourism to Sri Lanka, namely, Australia, China, France, Germany, India, Maldives, and the United Kingdom. These seven countries alone contribute about 59 percent of the tourist arrivals to Sri Lanka.

In this paper, we have used a log-linear regression model that explains the tourist arrivals in terms of consumer income of the country of origin (proxied by per capita GDP), tourism price index of Sri Lanka, war dummy variable and a time trend. The results show that in majority of the countries, income has a positive influence on the number of tourist arrivals to Sri Lanka. The income elasticity of travel demand is less than one for Australia (0.245), China (0.786), India (0.738), and larger than one for Maldives (1.778). While the travel demand is price inelastic for Australia (-0.191), the UK (-0.369), and Maldives (-0.222), the travel demand is price inelastic for France (-1.626) and Germany (-1.327). The effect of war is significant in reducing the number of travellers to Sri Lanka during the war years. There is also a positive trend in inbound tourism over time from most countries which has helped increase the inbound tourism to Sri Lanka. It is also noted that in a majority of the countries there is a positive tourist preference towards Sri Lanka when deciding upon a travel destination.

References

Jayathilake, P.M.B. (2013), ‘ Determinants of Demand for International Tourism in Sri Lanka: An Econometric Evaluation’, *Sri Lankan Journal of Banking and Finance* 1(1): 53-65.

Bandara, J.S. (2013). ‘Political Violence and Volatility in International Tourist Arrivals: The Case of Sri Lanka’, *Tourism Analysis* 18: 575–586.

Borhan, N. and Arsad, Z. (2016). ‘Determining Factors Affecting Tourism Demand for Malaysia using ARDL Modeling: A case of Europe countries’, *The 4th International Conference on Quantitative Sciences and Its Applications (ICOQSIA 2016)*

Brown, C.B. (2015), ‘Tourism, crime and risk perception: An Examination of Broadcast Media's Framing of Negative Aruban Sentiment in the Natalee Holloway Case and its Impact on Tourism Demand’, *Tourism Management Perspectives* 16: 266–277.

Central Bank Report (2013). Central Bank Report, Central Bank of Sri Lanka, Colombo, Sri Lanka. http://www.cbsl.gov.lk/pics_n_docs/10_pub/_docs/efr/annual_report/AR2013/English/content.htm

Dritsakis, N., and Athanasiadis, S., (2000). ‘An Econometric Model of Tourist Demand : The Case of Greece’, *Journal of Hospitality and Leisure Marketing* 7: 39-49.

Falk, M. (2014), ‘ Impact of weather conditions on tourism demand in the peak summer season over the last 50 years’, *Tourism Management Perspectives* 9: 24–35.

Fernando, S., J.S. Bandara and C. Smith (2013). ‘Regaining Missed Opportunities: The Role of Tourism in Post-war Development in Sri Lanka’ *Asia Pacific Journal of Tourism Research* 18(7): 685-711.

Gamage, A. (1978), *Tourism in the Economy of Sri Lanka*, Masters Thesis, Scottish Hotel School, The Scottish Hotel School, University of Strathclyde, Glasgow.

Gamage, A. and King, B. (1999). ‘Comparing Migrant and Non-migrant Tourism Impacts’, *International Journal of Social Economics* 26: 312-324.

García, A. (2002). ‘Destination Image: Towards a Conceptual Framework’, *Annals of Tourism Research* 29: 56-78.

Ihalanayake, R. (1996), ‘Assessing the Economic Impact of International Tourism in Sri Lanka’, Masters Thesis, Victoria University, Melbourne.

Lim, C. (1997). ‘An Econometric Classification and Review of International Tourism Models’. Ph.D. Thesis, University of Malaya, Malaysia.

Ranasinghe, R. and Deyshappriya, R.(2010). ‘Analyzing The Significance of Tourism on Sri Lankan Economy; An Econometric Analysis’ ICBI 2010,‘ University of Kelaniya, Sri Lanka

Naude, W.A., and Saayman, A. (2004), ‘The Determinants of Tourist Arrivals in Africa: A Panel Data Regression Analysis’, *Tourism Economics* 11(3): 365-391.

Seetaram, N., Forsyth, P. and Dwyer, L. (2016). ‘Measuring Price Elasticities of Demand for Outbound Tourism using Competitiveness Indices’, *Annals of Tourism Research* 56: 65–67.

Surugiu. C., Leitão, N.C., and Surugiu M.R. (2011). ‘A Panel Data Modelling Of International Tourismdemand: Evidences For Roman’ Ekonomska istraživanja 24(1): 134-145.

Kadir, N., Nayan, S., and Abdullah, M.S. (2013), ‘A Panel Data Analysis of International Tourist Arrivals from ASEAN Countries to Malaysia’, *International Conference on Economics and Business Research 2013 (ICEBR 2013), Procedia Economics and Finance* 7: 80-85.

Leitão, N.C. (2009), ‘Portuguese tourism demand’. *Journal of Global Business and Technology*, 5-2, 63-72.

Nkosi, G. (2010), The Impact of Crime of Tourism in the City of uMhlathuze, KwaZulu-Natal, *South Asian Journal of Tourism and Heritage* 3(2): 76–81.

Middleton, V., T.,C. and Clarke, J. (2001), “Marketing in Travel and Tourism”, 3rd ed, Butterworth Heinemann, Oxford, 487 pages

Sarma, M.K. (2007), ‘ Influence of Information Sources on Tourists: A Segment-wise Analysis with Special Focus on Destination Image’, *The Journal of Business Perspective* 11(1): 35-45

Selvanathan, S., E.A. Selvanathan and B. Viswanathan (2012). ‘Causality between Foreign

Direct Investment and Tourism: Empirical Evidence from India', *Tourism Analysis* 17(1): 91-98.

Selvanathan, S. (2006) 'The Effect of War and other Factors on Sri Lankan Tourism', *Applied Economics Letters* 14(1): 35-38.

Song, H., and G. Li (2008). 'Tourism Demand Modelling and Forecasting – A Review of Recent Research,' *Tourism Management* 29(2): 203–220.

Song, H., and Witt, S.F. (2006). 'Forecasting International Tourist Flows to Macau', *Tourism Management* 27: 214–224.