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ECONOMIC IMPACTS OF VISA RESTRICTIONS ON TOURISM: A CASE OF TWO EVENTS IN CHINA

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Abstract: Increasing attention has been paid to evaluate the impacts of large scale events on tourism demand. For providing policy suggestions, it should consider the economic impact of both events themselves and other factors. This paper evaluates the economic effects of visa restrictions on tourism as a result of the 1989 Tian'an Men Square Incident and the 2008 Beijing Olympic Games by using an innovative combination of econometric and computable general equilibrium (CGE) models. The results show that both events generated economic losses. The unexpected negative economic impact of the Beijing Olympics seems attributable to visa restrictions. Suggestions for the alleviation of the negative impact of visa regulations are provided. **Keywords:** economic impacts, visa restrictions, one-off events, China, econometric, CGE. © 2013 Elsevier Ltd. All rights reserved.

INTRODUCTION

Researchers have begun to evaluate the impacts of large-scale social, economic, political and natural events on tourism (Ritchie, 1984). The September 11, 2001 terrorist attack on America, the Indian Ocean earthquake and tsunami in 2004, the 2008 financial crisis, and the Olympic Games are examples of one-off events (Jennings, 2010; Lagadec, 2004). Such events are normally highly visible with economic, social and political consequences (Decker et al., 2005). In this paper, only crises and special events are examined. The Organisation for Economic Co-operation and Development (2003) identified five sources of crises: natural disasters, technological accidents, epidemics, terrorism, and food safety. Special cultural and sporting events are

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“major one-time or recurring events of limited duration, developed primarily to enhance awareness, appeal and profitability of a tourism destination” (Ritchie, 1984, p. 2). Policy-making in tourism involves risk. Thus assessing the impact of one-off events on tourism activities is imperative for policy-makers to avoid unnecessary fears, waste of scarce resources, or missing other important factors that may influence their decisions (Hardaker, Fleming, & Lien, 2009). Detailed evaluation of the impact of one-off events on tourism demand can lead to the formulation of effective and efficient management strategies at both the firm and industry levels (Eugenio-Martin, Sinclair, & Yeoman, 2005).

Any evaluation should consider the economic impact of a one-off event and the effects caused by other factors. The economic consequences of inbound tourism during a one-off event may be attributed to factors such as exchange rate changes, bad weather, inflation, and social instability. Many studies have evaluated the economic influences of tourism due to such one-off events as foot and mouth disease (Irvine & Anderson, 2005), terrorist attacks (Arana & Leon, 2008; Eugenio-Martin et al., 2005; Pizam & Smith, 2000), economic crises (Okumus, Altinay, & Arasli, 2005; Smeral, 2010; Song & Lin, 2010) and sporting events (Giesecke & Madden, 2011; Li, Blake, & Cooper, 2011). Researchers have also identified the factors that may influence the demand for tourism and have evaluated their economic consequences. For example, Li et al. (2011) studied the total effects of visa control and the torch relay incidents on tourism due to the Beijing Olympics; however, they did not capture the separate impact of each of these two factors. Song, Gartner and Tasci (2012) evaluated the economic consequences of visa restrictions as a result of the 1989 Tian'an Men Square Incident and the 2008 Beijing Olympics, but they did not evaluate the effect of the events themselves. Page, Song and Wu (2012) examined the simultaneous influences of the 2008 economic crisis and swine flu on inbound tourism to the UK using an innovative method that separated the effects of the two events that happened during the period of the assessment.

There are two levels of economic evaluation of one-off events. The first is to analyse their economic consequences in terms of a change in tourism demand, especially a decrease or increase in the number of tourists and in their spending. The second is to evaluate the economic impact of these consequences, which is the economic impact of a change in tourism demand. It can be shown in terms of a decrease or increase in Gross Domestic Product (GDP), prices, employment and household welfare. However, the differences between these two levels of assessment have not been clarified in the literature. This paper evaluates the economic influences of one-off events which are attributed to the event itself and visa restrictions. The two events include one crisis (the 1989 Tian'an Men Square Incident) and one special event (the 2008 Beijing Olympic Games). This study makes a dual contribution. It evaluates the economic consequences of inbound tourism demand as a result of the events themselves and of visa restrictions imposed during the events. This study also innovatively combines two approaches—the econometric and computable general equilibrium (CGE) models

in the impact assessment. The estimation results of the econometric models, especially the estimates of the demand elasticities, are used as inputs of the CGE models. The published impact studies have only either used econometric models or CGE models to evaluate the economic consequences of tourism. The CGE studies have mainly used the crude tourism demand estimates and elasticities from other secondary sources, which might not be directly related to the destination under consideration. As a result, the calibrated CGE models were often criticized for their unreliable results. This study, therefore, attempts to overcome these challenges by combining the strengths of both econometric and CGE approaches, and to obtain more robust and reliable results in addition to a separate evaluation of the effects created by the events and visa restrictions.

A crisis discourages potential inbound tourists from visiting a destination by increasing their perceptions of psychological risk (Li, Blake, & Cooper, 2010). A special event, however, is expected to attract more inbound tourists. Politicians perceive special events as an opportunity to showcase their country, and to over-estimate the positive consequences of the event while under-estimating its potential risks (Moran, 2001). Policy makers tend to be risk averse and thus sensitive to possible losses due to security risks during an event (Jennings, 2010). One way of reducing the potential security risk is to impose visa restrictions on potential tourists to the country during the event. The main purpose of the visa regulation is to “control the movement of modern and masterless men” (Song et al., 2012, p. 398). Visas, which control the movement of a population, are an effective and straightforward means of preventing the entry of potential terrorists (Torpey, 1998).

Visa regulations can negatively influence the inbound tourism to a destination, and therefore its economy. According to VisitBritain, as a result of visa restrictions imposed to the Chinese tourists, the UK received 60% fewer potential tourists from mainland China (Tourism Alliance, 2012). The visa restrictions imposed by the USA after the September 11, 2001 terrorist attacks have reduced tourist revenue by \$859 billion with potential job losses of at least half a million (Silva, 2011). The World Travel and Tourism Council (2012) estimated that relaxing visa regulations would bring 122 million international tourists to the G20 economies and a total of US\$206 billion in additional tourist revenue. This would create over five million new jobs by 2015.

Tourism is vulnerable to external factors. Song et al. (2012) showed that although Chinese tourism growth was quite stable between 1978 and 2009, there were three obvious downturns associated with the Tian'an Men Square Incident in 1989, the severe acute respiratory syndrome epidemic in 2003, and the financial crisis in 2008. These downturns may have been caused by multiple factors. For example, Song et al. (2012) identified the negative impacts of visa restrictions during and after the Tian'an Men Square Incident on the tourist expenditure in China using the econometric approach. They stated that the downturn in 1989 could be attributed to not only the event itself but also to the visa restrictions. However, their assessment was mainly related to the direct economic impacts.

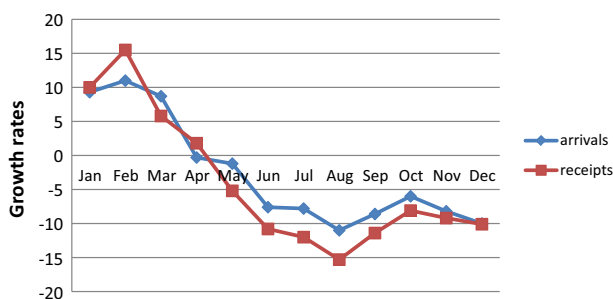


Figure 1. Monthly Growth Rates of China's Inbound Tourist Arrivals and Receipts in 2008

The situation in 2008 was even more complex; three factors affected tourism in China: the Beijing Olympics, visa restrictions during the Olympics, and the global financial crisis. There were more news and reports indicating the visa restrictions during the 2008 Beijing Olympics. The government prioritised security and thus tightened visa regulations when facing safety challenges including “warnings about a potential terrorist attack during the Games, riots in Tibet, Olympic torch-relay protests and an alleged terrorist plot to kidnap journalists covering the Olympics, and the Sichuan earthquake” (Barboza, 2008; Bennhold & Rosenthal, 2008; Song et al., 2012, p. 399). Concerning of security and visa regulations, some foreign tourists cancelled or delayed their travel bookings from Chinese travel companies during the Beijing Olympics (Premo, 2008).

Figure 1 shows the monthly growth rates of inbound tourists and their expenditure in China in 2008. Both growth rates started to decrease in February and became negative from April onward. However, the growth started to reduce again in October. Before and during the Olympics, the government cancelled or refused to renew many visas, such as multiple visas and demanded that visa applicants provide detailed supporting documents such as hotel and airline booking confirmations (Li et al., 2011). The government's concern for security inevitably damaged China's tourism industry. For example, the occupancy rate of large hotels was below 70% and lower than 50% for small hotels (Branigan, 2008). The Olympics itself, however, seemed to have slowed down the decline in both tourist arrivals and receipts.

LITERATURE REVIEW

Crises increase tourists' negative perceptions about a destination as they may affect the safety and health of tourists when they visit the destination. Crises may also create a fear of being trapped, as happened in the 1999 Taiwan earthquake (Huan, Beaman, & Shelby, 2004), of contracting a disease, as happened in the UK in 2001 with foot and mouth disease (Ritchie, Dorrell, Miller, & Miller, 2003), of being attacked by terrorists (Blake & Sinclair, 2003; Fall & Massey, 2006), or being in an

unsafe social or political environment (Beirman, 2002; Okumus, Altinary, & Arasli, 2005). Special events can also generate tourists' perceptions about pollution, noise, high prices, and traffic congestion in the destination (Li & Blake, 2009; Preuss, 2004). These perceptions towards one-off events may discourage tourists from—arriving at the host destination (Huan et al., 2004).

Economic Influences of One-Off Events on Tourism

The literature has evaluated the economic influences of crises on tourism at the firm and industry levels. Irvine and Anderson (2005) conducted surveys to analyse the impact of the foot and mouth disease on small and large firms; the results showed that larger firms suffered more from the negative effects because smaller firms were more adept in responding to the crisis. Okumus et al. (2005) revealed that the 2001 economic crisis in Turkey had both negative and positive effects on the tourism industry in Northern Cyprus. The impacts of crises on consumers have also been examined. Arana and Leon (2008) studied the impact of the September 11, 2001 terrorist attacks on tourists' preferences and found a significant decrease in tourists' utility and a change in various destinations' images.

Many studies have analysed the impact of crises on the demand for tourism. Pizam and Smith (2000) identified major terrorism attacks between 1985 and 1998 and found that more than three-quarters of the crises examined significantly reduced tourism demand. By comparing the responses of French, American and German tourists to two crises, it was found that the foot and mouth disease affected French tourists the most while the September 11 attack mostly affected Germans in terms of arrivals and receipts (Eugenio-Martin et al., 2005). The findings of Kuo, Chen, Tseng, Ju and Huang (2008) reflected that tourism demand in Asian countries was more negatively affected by severe acute respiratory syndrome than by avian flu. Some researchers have also explored the impact of crises on the whole economy. Dwyer, Forsyth, Spurr and Vanho (2006) indicated that the world tourism crises, including the Iraq War and severe acute respiratory syndrome in 2003, caused a net decrease in real GDP by \$62.418 million in Australia.

The economic impact of an event is attributed mainly to an increase in tourism spending from tourists, organizers, delegates, sponsors and others (Dwyer, Forsyth, & Spurr, 2005). There is a rich literature on the evaluation of economic consequences and impacts of special events, especially sporting events (see Daniels, Norman, & Henry, 2004; Gelan, 2003; Giesecke & Madden, 2011; Hotchkiss, Moore, & Zobay, 2003; Kim, Gursoy, & Lee, 2006; Lee & Taylor, 2005; Li et al., 2011). Although most of these studies have shown large positive economic consequences generated by special events, several have shown that special events have negative economic impacts. For example, Li et al. (2011) conducted both *ex-ante* and *ex-post* analyses of the economic impact of the 2008 Beijing Olympics. Their findings suggested that

the *ex-ante* research forecasted a positive economic impact, while the *ex-post* research revealed a negative economic impact which was attributed largely to visa restrictions by the Chinese government.

Approaches to Evaluate the Economic Influences of One-Off Events

This research combines two approaches—the econometric and CGE modeling methods in assessing the economic impacts of two distinctive one-off events. Blake, Durbarry, Eugenio-Martin, Gooroochurn, Hay, Lennon, Sinclair, Sugiyarto and Yeoman (2006) suggested that econometric models should not be considered as substitutes for CGE methods, but the former can complement the latter. The output of the econometric models (the change of tourism demand) can be used as the input of the CGE models. Furthermore, the accuracy of these parameters is important and may affect the results of the CGE models. Therefore, reliable estimates of these feeder parameters by the econometric models are the key to insure the reliability of the CGE models. However, since the demand elasticities are generally unavailable in many destinations, studies that used the CGE approach always adapt these parameters from other CGE studies, which may not always corresponding to the destinations under study. This study, therefore, improve the reliability of the CGE models by incorporating the demand elasticities obtained from the econometric models.

The most common approaches used to evaluate the economic influences of crises and special events on tourism include econometric, CGE and input and output (I-O) models. Although most studies claim to have evaluated the economic impact of crises or special events on tourism, most of these studies only captured the economic impacts by using one of the two categories of methods. The first category is econometric models which evaluate tourism effects of demand. Particularly, the econometric models were used to evaluate the changes in either tourist arrivals or their expenditure, caused by an event. The second category is CGE and I-O modelling which evaluates the economic impact of tourism demand. Specifically, the changes in economic indicators such as GDP, employment, imports and exports caused by a change in tourism expenditure as a result of an event are captured. Most studies confuse the direct tourism effects with the total economic impacts. The tourism effects are the changes in either tourist arrivals or expenditure caused by the event; the latter pertains to the economic changes brought about by the changes in tourist arrivals or receipts within the economy.

The tourism demand function is the basis of econometric models that are used to assess tourism impacts of special events. Econometric models can estimate the changes in tourism demand caused by one-off events, which the CGE and I-O models cannot do. Econometric models have been used to assess the economic gains and losses of tourism caused by one-off events such as financial crises (Lim & McAleer, 2005; Smeral, 2010; Song & Lin, 2010), terrorist attacks and activities (Goodrich, 2001; Pizam & Fleischer, 2002), diseases (Kuo et al.,

2008), and the Olympics (Athanasopoulos & Hyndman, 2008). One of the advantages of the econometric models is that the causal relationships between the dependent variable (tourism demand) and the explanatory variables (its influencing factors) can be evaluated (Song & Li, 2008). These influencing factors include but are not restricted to tourists' income, tourism prices, exchange rates, transportation costs, and the one-off events (Song & Li, 2008; Wang, 2009). Another advantage of the econometric models is that they can measure the change in tourism demand as a result of one-off events based on long-run relations between tourism demand and its influencing factors (Blake, Gillham, & Sinclair, 2006). The influences of one-off events on tourism demand are normally accounted for by the use of dummy variables in the demand model (Wang, 2009). The results of the econometric models are very useful for tourism policy formulations especially when the influencing factors change or when a one-off event occurs (Blake et al., 2006). However, the policy implications may be restricted to tourism policy makers only since the wider economic impact of tourism at macroeconomic and industry levels cannot be evaluated by the econometric models.

This paper focuses on the assessment of the impacts of one-off events and the associated visa restrictions using the CGE modelling approach, which has been shown to provide more robust results (Dwyer, Forsyth, & Spurr, 2004). Unlike I-O modelling, CGE modelling puts constraints on the factors of production allowing changes in wages and prices, which can more fully capture the negative impact (Dwyer et al., 2004). CGE modelling simulates the economy and reflects changes in the economy when all markets clear simultaneously (Starr, 1997). The CGE models consist of the primary, secondary, and tertiary sectors, so they can take into account the relationships among economic agents including businesses, households, and the government (Li et al., 2010).

Unlike econometric models, the CGE models can capture the feedback effect, i.e., the effect of tourism demand on non-tourism sectors, which further affects the tourism sectors (Blake et al., 2006). For example, if the foot and mouth disease decreased the inbound tourism demand in the UK, there would be a flow of the value of labour and capital use from tourism to non-tourism sectors, such as the primary sector. The increase in the supply of labour and capital would decrease the costs in primary sectors and then reduce the prices of their products, such as agricultural products, which would decrease the retail price of food. As food is central to the catering sector, the decrease in food prices would decrease catering prices. This is just a simple example and the real economic feedback effects are more complex as changes in economic sectors affect each other. Most studies using CGE or I-O models to evaluate the impact of one-off events on tourism/economy are based on secondary data and simulations. None of the studies are based on more accurate estimates of the economic losses/gains from the econometric models. This paper fills in this gap by combining the two methods.

METHODOLOGY

A framework is constructed for this research (see Figure 2). This framework consists of linked outer and inner parts. The outer part suggests that the 2008 Beijing Olympics and the 1989 Tian'an Men Square Incident affected tourism and the economy through two channels—the event itself and visa control. An event can have either positive or negative influences on the demand for tourism. Organized special events normally bring positive effects by enhancing awareness, building new images and attracting additional tourists. Crises, however, bring negative effects to the destination. Both types of events can jointly affect the industry and the economy as a whole. Visa restrictions generally have negative economic influences on the destination economy. When considering these two factors (the event itself and associated visa restriction), the overall impact can either be negative or positive. This framework is applied to both types of events using the same modelling approach. The inner part depicts the connection of the two modelling methods in the assessment—the econometric and CGE models. The input of the econometric models includes economic variables such as tourists' income, tourism price, the substitute prices and the dummy variables, which capture the tourism influence of the one-off events, especially the 2008 Beijing Olympics and the 1989 Tian'an Men Square Incident. The outputs (results) of the econometric models are the tourism impacts of one-off events which are the inputs of the CGE models. The econometric models provide the key parameter—price

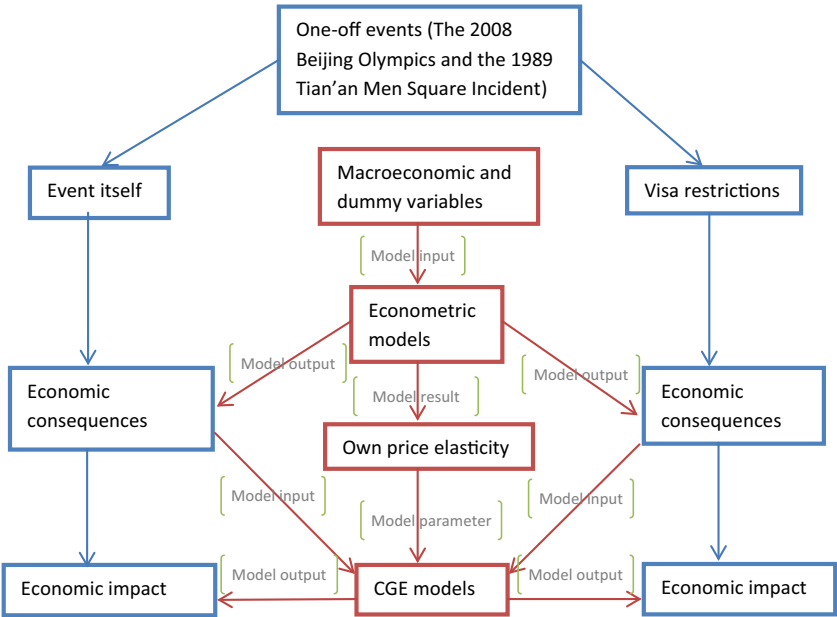


Figure 2. A Framework of this Research

elasticity for the CGE models. The outputs (results) of the CGE models are the economic impacts. These refer to the welfare losses/gains at the macroeconomic level and to the economic indicators such as the values of labour and capital, imports and exports and prices at the industry level.

This research presents the economic impact of the Beijing Olympics and the Tian'an Men Square Incident on tourism and its related sectors by considering the events themselves and the visa restrictions in force at the time. [Song et al. \(2012\)](#) identified the input parameters, which are the price elasticities of tourism demand by international tourists. The effects of the two events on the demand for tourism in China in terms of both arrivals and receipts form the basis of the CGE modelling exercise in the following section. The econometric models used by [Song et al. \(2012\)](#) are known as the autoregressive distributed lag model. The Tian'an Men Square Incident, the 2008 Olympics, visa restrictions, severe acute respiratory syndrome and the 2008 financial crisis were accounted for by dummy variables. [Table 1](#) presents the price elasticities of inbound tourism demand to China and Beijing from various source markets.

The CGE approach captures the circular flow of income. It models and simulates the behaviour and activities of each economic agent such as the production, household, government and export-import sectors. It also captures the interactions and feedback among these agents. These economic activities include intermediate and final consumptions, supply and demand, and international trade. The theoretical bases of CGE models are utility maximization subject to resource constraints (demand functions) and profit maximization subject to resource constraints (supply functions). As the model includes hundreds of functions, a high-level modelling system known as the general algebraic modelling system and its subsystem, the mathematical

Table 1. Price Elasticities of Inbound Tourism Demand in China and Beijing from 10 Major Origins

Origins	Price elasticity (China)	Price elasticity (Beijing)
Australia	−0.609	−2.550
Canada	−0.822	0.960
France	−0.963	−0.344
Germany	−1.018	−0.572
Japan	−1.457	0.129
Korea	−0.490	−0.046
Malaysia	−0.557	7.118
Singapore	−1.803	4.510
UK	−0.237	–
USA	−0.062	3.353
Average	−0.802	−0.878

Source: Adapted from [Tables 1 and 2](#) in [Song, Gartner and Tasci \(2012\)](#).

programming system for general equilibrium analysis, are applied to the models.

I-O tables are the main source of CGE models in this research as they provide detailed information on the interaction between economic activities of various economic agents for a given year. Three CGE models are built for this research. The 2008 Beijing model that evaluates the economic impact of tourism demand as a result of the 2008 Olympics is calibrated to the 2007 Beijing I-O table. The 2008 and 1989 China models for the evaluation of the economic impacts caused by the Olympics and the Tian'an Men Square Incident are calibrated to the China 2007 and 1987 I-O tables, respectively. The 1989 China table includes 33 sectors and the 2007 China and Beijing tables include 44 sectors. The three models are single-country static models, which were developed based on a standard model structure constructed by [Lofgren, Harris, and Robinson \(2002\)](#). The main functions used in the models are the Leontief, the Cobb-Douglas, the Constant Elasticity of Substitution and the Constant Elasticity of Transformation technology. The details of these functions can be found in [Li et al. \(2011\)](#). One of the key elasticities is the price elasticity of tourism demand, taken from [Song et al. \(2012\)](#). The averages of the price elasticities from the ten key source markets are -0.802 for China and -0.878 for Beijing (see [Table 1](#)).

The three models are applied to evaluate the economic impacts of the economic losses/gains of tourism demand estimated from the econometric models. Therefore, unlike the standard model structure by [Lofgren et al. \(2002\)](#), the three CGE models are extended to include activities pertaining to the demand for tourism. In the extended models, a new sector (the tourism exported sector) and a new representative consumer (international tourists) are introduced. The tourism exported sector produces tourism products and services such as transportation, hotel rooms and catering services for international tourists. Details of modelling tourism using CGE models are discussed in [Wattanakuljarus and Coxhead \(2008\)](#) and [Li et al. \(2011\)](#). This extension requires the introduction of two additional functions into the standard model.

Aggregate export of tourism-related goods is represented by a Cobb-Douglas function:

$$p^T = \lambda \prod_n p_i^{\alpha_i} \quad (1)$$

where p^T is the aggregate price of international tourism; λ is a shift parameter; p_i is individual product price; and $\sum_i \alpha_i = 1$.

The demand for the Cobb-Douglas aggregate product is a function of the aggregate tourism price:

$$q^T = \overline{Q}^T \left(\frac{e}{p^T} \right)^{\mu-1} \quad (2)$$

where q^T is the quantity demanded by inbound tourists;
 $\overline{Q}^T$ is the benchmark quantity demanded by inbound tourists;
 e is the exchange rate; and
 μ is the price elasticity of tourism demand.

The resulting economic impacts are shown at both the macroeconomic and industry levels. At the macroeconomic level, instead of evaluating the economic impact in terms of GDP, which has been used in most studies, this paper uses equivalent variation (EV) to measure the welfare impacts of the economic losses/gains due to the two one-off events in monetary terms. EV is defined here as “the amount of extra income that, at unchanged prices, would allow consumers to reach the utility that they actually reach as a result of a policy change, or other exogenous shock” (Fane & Ahammad, 2003, p. 176). EV is “the amount of income that would have to be given to (or taken away from) the economy before the policy change (or an external shock) to leave the economy as well off as the economy would be after the policy change” (Andriamananjara et al., 2004, p. 17). Besides, EV is the economic indicator that is more frequently used to measure welfare in CGE modelling in the literature (see Ahmed, 2008; Fane & Ahammad, 2003; Margaret & Mabugu, 2008; Ye, Lee, & Chen, 2006). Maximising gross state product at the state level or GDP at the national level is second best to maximising the economic welfare. GDP includes increased income earned by non-resident owners of capital, non-resident labour and the government through taxes while welfare can measure the well-being of local residents (Abelson, 2011). In this case, EV might have more policy implications than GDP as policy strategies on a one-off event should depend largely on the effect of welfare on local residents.

DISCUSSIONS

Table 2 shows that both the events themselves and the associated visa restrictions related to the 1989 Tian'an Men Square Incident and the 2008 Beijing Olympics reduced China's inbound tourist arrivals and decreased China's tourism receipts from the ten origin countries under consideration. Visa restrictions were responsible for larger losses to tourism receipts, which were \$88.232 million as a result of the 1989 Incident and \$963.860 million as a result of the 2008 Olympics.

Economic impacts of China's inbound tourism caused by the 2008 Olympics and the 1989 Incident are depicted in Tables 3 and 4. The input of CGE models—the economic consequences of tourism receipts were generated from the econometric models and the key output of CGE models at macroeconomic level are the welfare losses as a result of the events themselves and visa restrictions, respectively. The rest of Table 3 gives the results of CGE models. The economic loss of tourism receipts caused by the 1989 Tian'an Men Square Incident brought relatively small welfare losses, i.e., \$2.111 million as a result of the Incident and \$2.847 million as a result of visa restrictions (see Table 3). The welfare losses caused by the 2008 Beijing Olympics were much greater. One would expect a crisis to cause a larger welfare loss than a special event, which supposedly should bring welfare gains by attracting more tourists. However, this is not what we have found, for several possible reasons.

Table 2. Effects of the Two Events on China’s Inbound Tourism

	Tian’an Men Square, 1989		Olympic Games, 2008	
	Due to the Incident	Due to visa restrictions	Due to the Olympics	Due to visa restrictions
Tourist arrivals (1) (thousand persons)	−109.312	−109.312	−233.139	−1005.000
Tourism receipts per capita (2) (thousand USD)	0.601	0.674	0.946	0.959
Tourism receipts (3) = (1) * (2) (million USD)	−65.713	−88.232	−220.483	−963.860

Notes: (a) Korea and Malaysia are omitted from the 1989 dummies because data before 1994 are not available for them. Therefore, loss of tourist arrivals, i.e. (1), is calculated by adding the differences in tourist arrivals from eight countries when the 1989 dummy (D89) equals to 1 and 0; (b) Gain/loss of tourist arrivals for the Beijing Olympics in 2008, i.e. (1), is calculated by adding the differences in tourist arrivals from ten countries (Table 1) when the Games dummy (D08G) equals to 1 and 0; (c) For the economic loss due to the 2008 Beijing Olympics, D08G takes effect during 2008Q3 for the Olympics and DR08G takes effect during 2008Q2-2008Q3 for visa restrictions; (d) For the economic loss due to the 1989 Incident, D89 takes effect during 1989Q2-1989Q3 for the Incident and DR89 takes effect during 1989Q3-1990Q2 for visa restrictions; (e) Source of Tourism Receipt per capita for the Beijing Olympics in 2008, i.e. (2), is the Yearbook of China Tourism Statistics, 2009; (f) Receipts (2) and (3) are adjusted to 2008 price levels.

Table 3. Macro-economic Impact of China’s Inbound Tourism in 1989 and 2008

	Tian’an Men Square, 1989		Olympic Games, 2008	
	Due to the Incident	Due to visa restrictions	Due to the Olympics	Due to visa restrictions
Economic consequences of tourism receipts (million USD) (1)	−65.713	−88.232	−220.483	−963.86
Welfare loss (million USD) (2)	−2.111	−2.847	−44.337	−193.563
Real tourism consumption (million USD) (3)	−64.899	−87.11	−217.443	−951.381
Price of inbound tourism consumption (%) (4)	−0.036	−0.049	−0.009	−0.038
Welfare loss per change in tourism demand (5) = (2)/(1)	0.032	0.032	0.201	0.201
Welfare loss per change in real tourism consumption (6) = (2)/(3)	0.033	0.033	0.204	0.203

Note: The values of (1), (2) and (3) for the 1989 Incident are adjusted to 2008 price levels.

Table 4. The Industry-level Impact of China’s Inbound Tourism in 1989 and 2008

The industry-level impact of China’s inbound tourism in 2008	Primary		Secondary		Tertiary	
	Visa restrictions	The Olympics	Visa restrictions	The Olympics	Visa restrictions	The Olympics
Value of labour (million, USD)	9.523	2.175	134.307	30.693	−143.846	−32.879
Value of capital (million, USD)	3.302	0.755	242.016	55.318	−245.303	−56.061
Price index (%)	−0.035	−0.008	−0.033	−0.008	−0.038	−0.009
Output (%)	0.002	0.001	0.021	0.005	−0.024	−0.006
The industry-level impact of China’s inbound tourism in 1989	Visa restrictions		The Incident		Visa restrictions	
	The Incident		The Incident		The Incident	
Value of labour (million, USD)	12.389	9.230	7.200	5.365	−19.591	−14.596
Value of capital (million, USD)	1.719	1.280	12.654	9.428	−14.372	−10.708
Price index (%)	−0.051	−0.038	−0.046	−0.034	−0.050	−0.037
Output (%)	0.010	0.007	0.014	0.011	−0.032	−0.024

Notes: (a) The values in 1989 are adjusted to 2008 price levels; (b) Output refers to domestic production including domestic production selling to the domestic market as well as to foreign markets (exports).

First, the scale of inbound tourism in China in 1989 was much smaller than that in 2008 and thus the decrease in inbound tourism demand in 1989 was likely to be small. Second, the negative welfare change due to the Olympics itself could be explained by the crowding out effect superseding positive tourism effects. Most policy makers have overlooked the crowding out effect. However, it can play a dominant role. The crowding out of inbound tourism means that inbound tourists either cancel their trips or change their plans of visiting an event host country to avoid traffic jams, long queues, noises, security concerns and increased prices (Li & Blake, 2009). Third, visa restrictions during the Olympics caused the largest welfare loss (\$-963.86). This welfare loss occurred when inbound tourists could not come to China because they had not been able to obtain a visa. Fourth, every unit change in real tourism consumption would reduce welfare for the 2008 event more than it would for the 1989 event. Welfare loss per change in real tourism consumption (6) is around 0.20 for the 2008 Olympics, which is almost seven times higher than it was for the 1989 Incident (about 0.03). One reason might be that when one unit of tourism spending flows into tourism-related sectors, such as hotel, and further money then flows along the supply chain, for example food processing and agriculture, employees in these sectors earn extra income from tourists' spending. Since the income level in 2008 is higher than that in 1989, the extra income received per unit of tourism spending is higher in 2008 than that in 1989.

A decrease in real tourism consumption (4) is slightly less than the economic loss of tourism demand (1). This occurred because of a small decrease in the price of inbound tourism consumption (4), which slightly offset the decrease in real tourism spending. When tourism demand decreases because of a one-off event, the supply may remain unchanged, which then leads to a decrease in equilibrium price. The smallest percentage of price decrease in inbound tourism (-0.009) is due to the 2008 Olympics. This may be because between 2002, when Beijing was chosen to host the Games, and the Games themselves in 2008, there was sufficient time to adjust the supply to meet the demand while the 1989 Incident happened suddenly without leaving sufficient time for the supply to be adjusted.

In order to present the results of the industry-level impact, the sectors included in the I-O table (44 in the 2007 China and Beijing tables and 33 in the 1989 China table) are categorised into primary, secondary and tertiary industries. This division has already been made in the original I-O tables. Primary industries include the agricultural sector; secondary industries include manufacturing sectors such as food production, coal mining and chemical manufacturing; the tertiary industry consists of service providers such as transportation, accommodation, catering and entertainment. In general, the economic effects at the industry level caused by visa restrictions were larger than the impacts generated by the events themselves (see Table 4). The industry results show that both events have reduced changes in the value of labour and capital uses, percentage change in price index and output of tertiary industry in 1989 and 2008 since tourism-related sectors

belong to the tertiary industry which suffered from the economic loss of tourism demand.

In contrast, primary and secondary industries enjoyed an increase in the value of labour and capital uses and percentage change of output, both of which are attributable to allocation effects. When inbound tourism demand decreases and tourism supply and production increase correspondingly, the result is a flow of production factors, for example labour and capital, from tourism to non-tourism related sectors. CGE modelling captures the allocation effects, which have been observed in the literature (Blake, 2005; Li et al., 2010, 2011; Madden, 2002). It can also be observed that primary industry experienced a smaller increase in 2008 than it did in 1989, although the economic loss in 2008 was larger. This might be because of the industry structure of the two years. The proportion of primary industry in GDP composition decreased steadily from about 30% in the late 1980s to about 10% in 2010 according to the *China Statistical Yearbook*.

The 2008 Beijing Olympics attracted 77,910 thousand inbound tourists and an extra \$84.766 million in tourism receipts (Table 5). However, visa restrictions reduced the number of inbound tourists by 270.381 thousand and tourism receipts by \$294.185 million. Due to lack of data, the economic consequences of Beijing's inbound tourism receipts are not calculated for the 1989 Tian'an Men Square Incident. Table 5 is calculated based on Table 5.

Table 6 shows that the event itself had an opposite effect from visa restrictions. Visa restrictions caused a welfare loss of \$73.957 million brought by a \$282.130 million decrease in real tourism consumption. This means that every \$100 decrease in real tourism consumption caused a \$26.2 million decrease in welfare (6). The percentage of price of inbound tourism consumption decreased by 0.328. However, unlike the negative impacts in China, the event itself generated a small welfare gain of only \$21.421 million which was stimulated by an increase of \$80.975 million in real tourism consumption. Although congestion, overpriced hotel rooms, traffic jams and security concerns may have crowded out some potential inbound tourists to Beijing, the Olympics

Table 5. Effects of the 2008 Olympics on Beijing's Inbound Tourism

	Olympic Games, 2008	
	Due to the Olympics	Due to Visa restrictions
Tourist arrivals (1) (thousand persons)	77.910	–270.381
Tourism receipts per capita (2) (thousand USD)	1.088	1.088
Tourism receipts (3) = (1) * (2) (million USD)	84.766	–294.175

Notes: (a) Loss/gain of tourist arrivals, i.e. (1), is calculated by adding up the differences in tourist arrivals across 10 origins (Table 1) when the regulation dummy (DR08G) equals to 1 and 0; (b) DR08G takes effect in 2008Q2–2008Q3 for visa restrictions in 2008; (c) D08G takes effect in 2008Q3 for the Olympics in 2008; (d) Source of tourism receipts per capita, i.e. (2), is the *Yearbook of China Tourism Statistics*, 2009.

Table 6. Macro-Economic Impact of Beijing’s Inbound Tourism in 2008

	Olympic Games, 2008	
	Due to the Olympics	Due to visa restrictions
Economic consequences of tourism receipts (million USD) (1)	84.766	−294.175
Welfare loss/gain (million USD) (2)	21.421	−73.957
Real tourism consumption (million USD) (3)	80.975	−282.130
Price of inbound tourism consumption (%) (4)	0.095	−0.328
Welfare loss/gain per change in tourism demand (5) = (2)/(1)	0.253	0.251
Welfare loss/gain per change in real tourism consumption (6) = (2)/(3)	0.265	0.262

still increased inbound tourists. A small welfare gain in Beijing but a small welfare loss in China implies that there could be a large drop in inbound tourism demand in the rest of China.

At the industry level, visa restrictions reduced the value of labour and capital use and the percentage of output in tertiary industry (Table 7). Like the industry-level impact of China’s inbound tourism, allocation effects explain the flow of labour and capital into the primary and secondary industries. A decrease in inbound tourism demand as a result of visa restrictions led to a decreased price index for all industries. As to the industry impacts contributed by the event itself, the Olympics brought a small stimulus to tourism sectors. The tertiary industry benefited from employment and capital use and output growth, while the primary and secondary industries were crowded out with a decrease in these indicators. The price index was bid up by a small increase in inbound tourism demand because of the Olympics.

CONCLUSIONS AND IMPLICATIONS

This paper has evaluated the economic effects of the 1989 Tian’an Men Square Incident and the 2008 Beijing Olympics. It is the first attempt to evaluate one-off events in terms of the effects of the events themselves and of the visa restrictions that were in force at the time. This study uses econometric modelling and CGE modelling. Combining the strengths of both methods is rare in the tourism literature but could generate more reliable results and more useful policy recommendations. The autoregressive distributed lag model, which considers the time path of the tourist decision-making process, is used to evaluate changes in the number of tourists in the course of a one-off event. The tourism effects are taken as the model input for the CGE models which then evaluate the economic impact of inbound tourism in terms of the change in welfare at the macroeconomic level and changes in labour

Table 7. The Industry-level Impact of Beijing’s Inbound Tourism in 2008

	Primary		Secondary		Tertiary	
	Visa restrictions	The Olympics	Visa restrictions	The Olympics	Visa restrictions	The Olympics
Value of labour (million, USD)	0.782	−0.225	19.190	−5.499	−19.971	5.724
Value of capital (million, USD)	0.293	−0.084	37.875	−10.870	−38.168	10.955
Price index (%)	−0.258	0.075	−0.257	0.075	−0.326	0.094
Output (%)	0.063	−0.018	0.255	−0.073	−0.066	0.019

and capital use, percentage changes in price index and output at the industry level. CGE models take into account all economic agents—production sectors, factors, household, government, and international trade—and are able to capture their feedback effects.

The results show that in China the economic loss of \$88.232 million caused by visa restrictions and \$65.713 million by the event itself (as a result of the 1989 Tian'an Men Square Incident) reduced welfare only by about \$2.847 million and \$2.111 million, respectively. The 2008 Beijing Olympics caused large economic and welfare losses due to both the event itself and visa restrictions apart from a small economic gain to Beijing due to the event itself. Crises understandably have negative economic consequences, but the large economic welfare loss caused by these special events may be “unusual” and “unexpected”. The “unexpected” outcome is largely affected by visa restrictions which reduced welfare by \$193.563 million in China and by \$73.957 million in Beijing. The event itself brought a welfare loss in China (\$44.337 million) and a small welfare increase in Beijing (\$21.421 million) as a result of the Olympics, which were attributed mainly to the deterrent effects created by pollution, high price and overcrowding.

In the two events examined here, the potential decrease in tourism demand caused by both the event itself and by visa restrictions did not receive sufficient attention nor was relevant information collected and reported. During a one-off event, priority is normally given to security risks, so the number of visas has to be limited. Although the findings of this paper show that the use of visa restrictions could cause a large welfare loss, this study does not suggest granting visas freely. In order to mitigate the economic risk of smaller number of inbound tourists and the accompanying loss of revenue, governments can use public spending to subsidise the tourism sectors if they suffer, and use marketing strategies to promote one-off events during and after the events by improving tourists' negative perceptions of a destination. If visa restrictions are relaxed, then governments must engage in direct actions, such as quickly moving armed forces, managing tourist flows, and extensively adopting technologies of social control, such as security cameras (Jennings & Lodge, 2011). **A**

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