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The impact of crisis events and macroeconomic activity on Taiwan's international inbound tourism demand

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ABSTRACT

The number of inbound tourism arrivals directly impacts the tourism industry and the government agency investments therein. Therefore, policymakers need to improve their understanding of how crisis events affect the demand for inbound tourism. From the first quarter of 1996 to the second quarter of 2006, Taiwan experienced four major disasters at approximately two-year intervals. These disasters included the Asian financial crisis in 1997, the 21st September 1999 earthquake, the 11th September 2001 attacks in the United States, and the outbreak of SARS in 2003. This paper examines the impact of crisis events on the demand for tourism in order to establish a better understanding of changes and trends in the demand for international tourism. This paper uses the auto-regression distributed lag model by Pesaran, Shin, and Smith [Pesaran, M. H., Shin, Y., & Smith, R. J. (2001). Bounds testing approaches to the analysis of long-run relationship. *Journal of Applied Econometrics*, *16*, 289–326] to examine the negative impact of these disasters on the demand for inbound tourism. This paper also explores the influence of variables, such as foreign exchange rates, incomes, relative prices, and transportation costs, on the dynamics of the demand for inbound tourism. This paper finds that a long-term equilibrium exists among all variables, indicating that macroeconomic variables may be used to determine the rise or fall of the number of inbound tourism arrivals. Income and foreign exchange rates are both significant explanatory variables. In terms of incurred losses, the number of inbound tourism arrivals suffered the greatest decline during the outbreak of severe acute respiratory syndrome (SARS), followed by the 21st September 1999 earthquake and the 11th September 2001 attacks. The impact of the Asian financial crisis was relatively mild. This paper finds that any impact on safety, whether domestic or international, negatively affects tourism demand. The impact of financial crises on tourism demand is less significant. Ensuring the safety and health of tourists is the key to maintain demand for inbound tourism.

1. Introduction

The factors that affect the demand for tourism are diverse, ranging from international politics, macroeconomics, and diplomatic relations to national policies. It is necessary to identify the key factors that influence tourism demand in order to effectively understand changes and trends in the tourism market, and create competitive advantages for the tourism industry accordingly. For both the relevant authorities and tourism industry professionals, it is necessary to be aware of tourism demand when making project and budgetary plans, and when investing in software, hardware, and infrastructure. Understanding tourism demand is also critical for overall strategic planning, so as to avoid wasting resources or losing investments due to improper planning or capital expenditures. For example, the establishment of hotels and the development of tourist spots are major concerns. In summary, an understanding of the factors that determine tourism demand and the forecasting of such demands are critical for government and industry alike.

Tourism demand is subject to the effects of natural disasters, such as hurricanes, volcano eruptions, earthquakes, tsunamis, and epidemics, and man-made disasters, such as terrorism, political turmoil, war, and international conflict. Therefore, demand can fluctuate drastically, and economic losses are inevitable. The few reports that have investigated the impact of natural disasters on tourism have determined that they do significantly affect the tourism industry (Chu, 2008; Huang & Min, 2002; Lim & McAleer, 2005; Okumus, Altinay, & Arasli, 2005; Pizam & Fleischer, 2002; Prideaux & Witt, 2000). The impact of a major disaster is so immense that the production value of the tourism industry can fall dramatically; however, the industry has always managed to resume or exceed its former production values within a period of just one or two years. Such a phenomenon is worth investigating so that the

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public may learn from past problems and develop prevention and improvement measures.

This paper examines the impact of crisis events on the demand for tourism in order to establish a better understanding of changes and trends in the demand for international tourism. From 1996 to 2006, the Taiwanese tourism industry experienced four major disasters, including the Asian financial crisis of 1997, the 21st September 1999 earthquake, the 11th September 2001 attacks in the United States, and the outbreak of SARS in 2003, with each event occurring approximately two years after the previous. Since travel is not a general necessity for survival, a major disaster drastically reduces interest in traveling, damaging the tourism industry. As per the proverb, "Those who do not plan for the future will find trouble within sight", a lesson should be learned from these previous events. This approach represents a more proactive attitude than passively waiting for disasters to strike, given that current technology is unable to accurately predict disasters. This proactive approach not only mitigates the negative impact of economic damage and emotional sorrow, but also has positive and constructive effects.

It is imperative to understand the negative impacts disasters have on the tourism industry. The autoregressive distributed lag model (ARDL), developed by Pesaran, Shin, and Smith (2001), is used to examine the short-term and long-term influences of these major crisis events on tourism demands. This paper also examines how the Taiwanese tourism industry is able to adjust and recover within a short period of time after a disaster. In other words, we have investigated the response of the inbound tourism demand model to major disasters, and describe the long-term dynamic equilibrium between demand and economic fundamentals based on select tourism demand models developed by scholars. The innovation and development of the tourism industry are not only important for the government's agenda to boost economic development in Taiwan, but are also pivotal for promoting the visibility of Taiwan on the international stage. This paper provides references to authorities of strategic planning, against a backdrop of rapidly changing markets.

The paper is organized as follows. Section 2 reviews the literature involving tourism demand and crisis events, while Section 3 provides details on the aforementioned data and model specifications. Section 4 provides a discussion of the empirical results. Finally, Section 5 offers a summary and concluding remarks.

2. Tourism demand and crisis events

The interaction between tourism and macroeconomic variables has been discussed in the literature. Lee (1995) studied the significant influence of income, relative prices, and exchange rates on tourists visiting South Korea. Agarwal and Yochum (1999) indicated that income was the most important factor. Lim (1999) consolidated early studies on the interaction between tourism and macroeconomic variables. Lindberg and Aylward (1999) studied the price elasticity of tourists visiting the three national parks in Costa Rica in order to examine the relationship between price level and travel. Coshall (2000) explored the potential impact of travel expenses on tourists visiting the UK, using the time sequential method to track the exchange of the pound sterling against the US dollar and francs. Manuel and Croes (2000) established an econometric model of Americans traveling to Aruba, a popular tourist spot, and found that national income was the important variable. Vanegas and Croes (2000) examined data from 1975 to 1996, and also found that income was an important factor that influenced US tourists visiting Aruba. Lim and McAleer (2001) summarized data for three macroeconomic variables, income, price, and exchange rate, and used the cointegration method to examine the long-term interaction of tourists from Hong Kong and Singapore visiting Taiwan. Webber (2001) investigated popular tourist spots to examine the long-term demand for overseas tourism by Australian tourists from 1983 to 1997. They found that exchange rate fluctuations were a significant determinant for long-term tourism demand. Ouerfelli (2008) noticed that sightseeing in Tunisia was considered a luxury for tourists from France and Italy, while a necessity for tourists from Germany and the UK. A relatively small number of studies investigating international tourist flows to Taiwan have been published (Chen, 2007; Huang & Min, 2002; Kim, Chen, & Jangc, 2006). The consolidation of research methodologies for the study of tourism demand suggests that time series data analysis is the conventional analysis method. Among these methodologies, some scholars have used error correction models (Kulendran & Witt, 2003a, 2003b; Lim & McAleer, 2001; Song & Witt, 2003), cointegration analysis (Dritsakis, 2004; Ouerfelli, 2008), and the vector autoregressive (VAR) modeling technique (Song & Witt, 2006) to estimate the demand for tourism.

A literature review of studies investigating tourist demand suggests the most frequently used explanatory variables are income (Dritsakis, 2004), prices, exchange rates, transportation costs, and some dummy variables. Among these, income is the most statistically significant variable, followed by prices, exchange rates, and currencies. Dummy variables are used to explain the influence of special events on tourism demand. The incorporation of intervening factors in the model allows for the measurement of intervening factors that might skew the parameters. These factors include political and economic events (terrorist attacks and economic crises), travel restrictions (visa-free requirement), large events (Olympics and exhibitions), and natural disasters (tsunamis and earthquakes).

Much of the recent literature discusses crisis management in tourism. Ryan (1993) explored the effects of terrorist attacks and crime on tourism. Prideaux and Witt (2000) discuss the impact of the Asian financial crisis on the tourism industry in Australia. Goodrich (2001) studied the September 11 attack and analyzed its immediate impact on tourism in the US and the subsequent industry response. Huang and Min (2002) examined the impact of the 21st September 1999 earthquake in Taiwan, and found that the recovery period exceeded 11 months, with restricted growth of inbound tourist arrival. Pizam and Fleischer (2002) showed that, between May 1991 and May 2001, tourism demand in Israel was highly dependent upon the frequency of terrorist activities. Terrorist attacks resulted in a drastic reduction of international tourists arriving in Israel. Therefore, in order to ensure that tourist spots do not suffer from terrorism, terrorist activities must be prevented. As long as terrorist attacks are frequent and at regular intervals, tourism demand will continue to decrease. Regardless of the severity of terrorist activities, the tourism industry will eventually stagnate. Lim and McAleer (2005) examined how two financial crises, the stock market crash in 1987 and the Asian financial crisis in 1997, affected Japanese tourists traveling to Australia from 1976 to 2000. Okumus et al. (2005) investigated the impact of the economic crisis in February 2001 in Turkey on tourism in northern Cyprus, and found that a majority of the industry players in northern Cyprus failed to predict a financial crisis or take any preventive measures. Chu (2008) used the Asian financial crisis and the September 11 attacks as examples of economic and political blows, and analyzed the accuracy of using a fractionally integrated ARMA model to predict tourism and make comparisons. Athanasopoulos and Hyndman (2008) examined the influence of the Sydney 2000 Olympics and the bomb blast in Bali in 2000 on domestic tourism demand in Australia, and found that Sydney 2000 promoted an immediate demand in business travel, whereas the number of visitors meeting friends and relatives increased significantly after the blast in Bali.

Some scholars noticed that the impact of crisis events on the demand for tourism was not as large as expected. For example, Lee,