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Entitled THE EFFECT OF NORTH KOREA ON SOUTH KOREAN TOURISM DEMAND: A NOVEL APPLICATION OF DESTINATION IMAGE EFFECT

For the degree of   Master of Science

Is approved by the final examining committee:

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THE EFFECT OF NORTH KOREA ON SOUTH KOREAN TOURISM DEMAND:

A NOVEL APPLICATION OF DESTINATION IMAGE EFFECT

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ABSTRACT

Noh, Eun-young. M.S., Purdue University, August, 2010. The Effect of North Korea on South Korean Tourism Demand: A Novel Application of Destination Image Effect. Major Professor: Joseph A. Ismail.

Tourism has become the number one industry in many countries representing the fastest growing economic sector in terms of job creation, foreign exchange earnings, and accounting for a significant share of their gross domestic product. Due to the economic impact, effective tourism planning has become vital for many destination countries. A primary tool for effective planning is accurate forecasts of tourism demand and impacts. To improve tourism forecasting accuracy, previous studies have included the effects of factors such as disasters, international politics, advertising effects, and other non-economic events. Until recently, econometric forecasting models have not taken into account the impact of a destinations image on tourism demand. Destination image is widely accepted as important for tourism development as destinations strive to be perceived as a safe, clean, friendly place to visit. Perceived image, has traditionally been considered a qualitative factor, with quantification efforts limited to focused studies of specific events or time points. The Dynamic Destination Image Index (DDII) was proposed by Stepchencova (2009) as a continuous proxy for the perceived image of a destination in an origin country. The measure

of image proposed in Stepchencova (2009) represents a method of deriving a continuous measure of destination image from newspapers in origin countries. Content analysis was used to evaluate and quantify news articles about destination countries appearing in newspapers widely circulated in the tourism generating country. Since the index uses daily media sources over an extensive period of time, the DDII presents destination image as a numeric time-series-based data and absolute figure, and can be applied in an econometric model as an independent variable to improve the R-square value of the model.

This study utilized the DDII methodology to determine if the activities of a country with close geopolitical ties to a destination country have a significant impact on tourism demand. The DDII of North Korea in the US market was created for inclusion in an econometric model developed to estimate tourism demand for South Korea from the US. Unlike Stepchenkova's study that demonstrate how changes in the destination image of Russia influence that country's inbound tourism, this research investigated how the image of a neighboring country (North Korea) can impact the level of visitation to a destination country(South Korea). News articles about North Korea, published in the US market, were analyzed to construct DDII-North Korea, which was then added to the forecasting model of US arrivals to South Korea. The model including the DDII of North Korea was compared to the base model which included income, price, past tourist arrivals, seasonality and dummy variables for specific events such as Sep 11th terrorist attack. This research found that including the DDII-North Korea significantly improved the fit of the base model,

with the impact being of the direction and magnitude expected. It does appear that the activities of North Korea significantly affect the level of US visitation to South Korea. The coefficient of the model with DDII indicated that an increase of 10 index units (ranged from 0 to 100) is associated with 440 US visitors to South Korea per month. This finding on the monthly variations of the US arrivals quantifies the effects of a previously accepted but untested concept and should be useful for tourism planners in general and in South Korea specifically.

CHAPTER 1. INTRODUCTION

1.1. <u>Introduction</u>

Due to the perishable nature of tourism products and services, maximizing the possibility of success by minimizing risk through planning and decision-making is essential for tourism practitioners and developers (Law, 2001). The primary way to accomplish these tasks is to accurately forecast tourism demand (Archer, Ritchie, & Goeldner, 1987). However, inaccurate forecasting can lead to either underestimation or overestimation of the tourism demand. Underestimation results in congestion at entry points and tourist attractions, transportation and accommodation shortages, and poor quality of service. This may negatively influence travelers' perception and impact their likelihood of revisiting due to the deterioration of the destination's image. In contrast, overestimation leads to an overabundance of service facilities and labor, and an inefficient use of resources that, results in low returns on investment (Tideswell, Mules, & Faulkner, 2001). To address this important matter, efforts to develop accurate predictions have been of interest to both academics and practitioners since 1950s (Loeb, 1982; Martin & Witt, 1989; Song, Witt, & Jensen, 2003; Tremblay, 1989)

Witt and Witt (1992) provided a general framework for developing models of international tourism demand. One of the approaches is to use a number of

independent variables to explain variations of the dependent variable that can be quantified as the number of tourist arrivals or total travel expenditures. In other words, this approach involves analyzing cause and effect relationships between the dependent variable and explanatory variables under consideration. Therefore, an understanding of the factors of determinant forces that impact level of tourism is vital in developing a tourism model.

A literature review of past studies investigating tourist demand suggests that the most frequently used explanatory variables are income, prices, exchanges rates, and transportation costs. Among these, income is the most statistically significant variable, followed in descending order by prices, exchange rates, and currencies.

To obtain more accurate forecasting results, previous studies have also captured seasonal effects and the effects of the following specific events: oil crises, political disturbance, crime, SARS (Severe Acute Respiratory Syndrome)outbreak, terrorism and weather conditions (S. S. Kim & Wong, 2006; Witt & Witt, 1995). Furthermore, some studies included marketing expenditure to determine advertising effect in tourism demand. (Archer, Ritchie, & Goeldner, 1987)

Although a handful empirical studies about estimating and forecasting international tourism demand using the variables shown above have been published, none of the econometric models described takes into account the impact of the destination image on tourism demand. Tourism researchers agree that destination image is an important factor influencing the vacation purchase

decisions of tourists (Chon, 1990). If the image of a particular destination is favorable relative to its competition, or positively positioned in the mind of potential travelers, people may choose that destination over otherwise similar places (Echtner & Ritchie, 2003). However, perceived image is a qualitative factor that is not readily included in econometric models because the image is difficult to transform into numerical data, and such models are time-series based.

The establishment of a quantifiable measure of tourism image, as types of index, has previously been attempted by tourism researchers (Baloglu, 2001; Mallou et al., 2006). However, the index is not suitable for this purpose because it only reflects the static image perceptions based on surveys performed at specific time points. Therefore, the numerical data obtained is not time-series based. However, the Dynamic Destination Image Index (DDII) that was, proposed by Stephancova (2009) and is used in this study represents a new method deriving of destination image measurements from media materials. The method of content analysis used quantifies newspaper content that is available 365 days a year. The DDII is based on the assumptions that the media heavily influences public awareness, perceptions, and behavior, including purchasing decisions (Macnamara, 2006). Representations of destination images in media and their influence on destination choice have been discussed previously by tourism researchers. (Bandyopadhyay & Morais, 2005). In summary, the DDII includes the theoretical concept of destination image and presents it as numeric time-series-based data and absolute figures. Therefore, the DDII can be applied

in an econometric demand model as an independent variable to improve the R-square value of the model.

In South Korea, inbound tourism has been as a strategic industry since 1993 when Kim Young Sam's government was in power (Waitt, 1996). For 1994, the Korea National Tourism Corporation set targets of at least 4.5 million international tourists and earnings of US$5000 million in foreign exchange (KNTC, 1993). As a result, the Bank of Korea (2002) found that value-added revenue obtained from tourism-related industries totaled US$ 4800million, accounting for 3.5% of the Gross Domestic Product (GDP) in 1998. Such rapid growth of the tourism industry led to the initiation of several empirical studies regarding the estimation and forecasting of international tourism demand for South Korea (Kim & Song, 1998; Song & Witt, 2003; Oh & Ditton, 2005). Park and Jei(2008) examined volatility of US and Japanese tourist demand for South Korea based on the exponential generalized autoregressive heteroskedasticity model. Their study revealed the role of leverage effects (i.e., negative shocks generate higher volatility than positive shocks), and indicated that the observed leverage effects seemed to be generated by large previous negative shocks that correlated to major 'bad' events. However, none of these papers considered the effect of North Korea on inbound tourism in South Korea.

The Korean Peninsula has been divided since the Korean war and North-South relations remain distant due to North Korea's threats against South Korea and, other neighboring countries (Kim & Prideaux, 2003). It is unclear to what degree the South Korean tourism market has suffered because of the various

actions of North Korea including: testing of nuclear devices, threats of war, restarting frozen plutonium, and firing missiles over Japanese territory. These North Korea-related events are constantly occurring, and the news broadcasts covering them spread very quickly around the world through various mass media sources (Kim & Wong, 2006). Some researchers have postulated that the unstable political situation caused by the actions of North Korean might have an impact on destination image of South Korea (Hunt & Chung, 1987; Waitt 1996; Kim & Morrison, 2005). Waitt stated that South Korea "will remain a marginal international tourist destination because of … personal images of South Korea sourced in overseas news media reports that undoubtedly propound potential nuclear strife, political instability…" (1996:113). Kim and Morrison (2005) investigated the image change of South Korea as a tourism destination among Japanese, Chinese and US visitors as a result of a 2002 Korea-Japan World Cup; the researchers included the item "Korea (South) is exposed to danger of aggression from North Korea" under the image domain "Stability" because they assumed that recent media coverage might make international visitors consider travel to South Korea to be dangerous due to the potential aggression of North Korea. The result of this study indicated that all foreign tourists were concerned about the threat from North Korea.

In essence, this study is different from other studies that have investigated the impact of destination image on destination tourism market. For example, Stepchenkova (2009) demonstrated how changes in the destination image of Russia influence that country's inbound tourism. From a wider perspective,

although North Korean action might have an influence on the image of South Korea (particularly in relation to safety and political instability; Kim & Morrison, 2005), this research investigated how the image of a neighboring country (North Korea) can impact the level of visitation to a destination country (South Korea) when no implications are drawn about the behavior or image of destination country (South Korea). In other words, regardless of the image changes of South Korea, we focused exclusively on the image changes of North Korea, and its impact on South Korean tourism market. Richter and Linda stated that "sometimes nations which are quite tranquil may find that their own international tourism demand may be negatively influenced by regional political condition with neighbor" (1986: 232). Situation to that of North and South Korea include the following: Indian and Maldives tourism being negatively affected by Sri Lankan terrorism; Pakistani tourism suffering from the civil war in Afghanistan; Uganda coups deterring East African tourism and Zimbabwe's violence discouraging Zambian travel (Teye, 1986). Even tourism demand in Switzerland, a pre-eminent symbol of domestic tranquility and political neutrality, dropped as a result of terrorist attacks in Italy, France, Austria, and FR Germany (Richter & Linda, 1986).

To verify the impact of North Korea's action on the international tourism demand for South Korea, travelers from the United States were chosen because they are one of the major national visitor origin groups to South Korea (KTO, 2009). We assumed that the image of North Korea reflected in US newspaper would have an impact on US travelers to South Korea. However, in the process

of identifying relevant news articles to North Korea, we observed that that most of them (92%) publishing in US were related to foreign relations, international safety, or both. Thus, the image derived from North Korea related to the political situation of the two countries was only considered These themes are significantly related to perceptions of destination attributes through the aspects of political stability and safety from harm (Crompton, 1979; Echtner & Ritchie, 1991).

1.2. Purpose of the study

The main purpose of this study was to demonstrate that how the image of North Korea can be constructed in the origin country (US), and investigate how the destination image of North Korea influences US tourism demand for South Korea. In addition, the study intended to establish a preliminary demand model of South Korea inbound tourism flow from the United States and to examine the major contributing factors that influence the demand using an econometric approach.

The goal of this study were organized as follows: (1) to develop an econometric model of tourism demand as a base model (2) to establish the DDII-North Korea from media materials using content analysis methodology (3) to add the DDII-North Korea into a forecasting model of US arrivals to South Korea, thus developing an improved forecasting model . The improvement of model fit means that North Korea possibly influences intending tourist arrival from US to South Korea.

CHAPTER 2. LITERATURE REVIEW

This chapter provides an overview of the study of tourism demand, a review of published studies on the modeling and forecasting of tourism demand, and an overview of the DDII-North Korea.

2.1. Forecasting tourism demand

Tourism " the activities of persons traveling to and staying in places outside their usual environment for not more than one consecutive year for leisure, business and other purposes"(WTO 1995: 2), has become the number one industry in many countries and is the fastest growing economic sector in terms of job creation and, foreign exchange earnings, and it represents a significant share of the gross domestic products in a nation, or in a province, state, department, department, municipality, or other local area within a nation (Frechtling, 1994; Lundberg, Stavenga, & Krishnamoorthy, 1995). According to the WTO and the World Travel and Tourism Council, the travel and tourism industry has the following characteristics:

- A 24-hour-a-day, 7-day-week, 52-week a year economic driver
- Account for 14 percent of world GDP
- Is an employer of 200 million people or 7.8 percent of the global work force

- Travel and tourism will support the creation of more than 5.5 million jobs per year during the 2000s
- Is a leading producer of tax revenues
  (Walker, 2006:82)

These economic contributions are of interest to privately owned businesses, public agencies, and individuals living in tourist destinations. Visitors contribute to the local economy both directly through tourism-based industry and indirectly through the support of other businesses that provide products and services to tourism-based industry.

Tourism also produces secondary impacts beyond the original expenditures of visitors. When a tourist spends money to travel, that money is recycled by travel businesses to purchase more goods, therefore generating further money usage. In addition, tourism –based businesses spend their income locally on various goods and services for their own consumption (the induced impact). This cycle represents the so-called "multiplier impact of tourism expenditure" (Walker, 2006).

Due to the impact of those economic advantages, tourism planning has become vital since the 1950s. For both academic professionals and industry practitioners, it is important to develop short-term and long-term plan when making project and budget decision, and when investing to build infrastructure. To this end they have developed not only sophisticated forecasting models, but also refined methods for estimating economic impact and future demand (Song & Witt, 2003).

2.2. <u>Tourism demand modeling</u>

Forecasting method can be generally divided into two approaches: quantitative and qualitative. Quantitative methods have been of interest to researchers for many years in forecasting tourism demand (Song & Turner, 2006). Mjakridakis and Hibon (1979) concluded that the quantitative techniques are able to forecast demand more accurately than judgmental methods based on the opinions of the sales staff and corporate executives.

Quantitative methods are dominated by two sub-categories: Time-series models (non-causal) and econometric models (causal). The difference between the two is whether the forecasting model estimates the causal relationship between tourism demand and its determinants.

2.2.1. Univariate time-series model

The time-series model explains variations of the dependent variable based on known past values and a random disturbance term. This method is used to explore the historic trends and patterns over time, and to forecast future values by incorporating the observed trends and patterns in the model (Song & Li, 2008). Chu conveys her view about the accuracy of using a time series model in forecasting tourism demand:

"Such methods offer the possibility of making accurate forecasts, even when the underlying structural model is unknown, by replacing the

structural restrictions needed to reduce the sampling error and improve forecasts, with restrictions determined by the data (1998:598)"

The time series model for forecasting is more attractive than the causal model from a cost-benefit perspective, because the time-series model only requires historic data collections of variables.

2.2.2. Econometric model

The econometric (causal) model approach indentifies functional relationships between tourism demand and its determinants using multiple regression analysis. The model includes independent variables (explanatory or predictor variables) such as income, own price, GDP, substitute prices, exchange rate, population, lagged dependent variable, dummy variables for specific events and seasonal effect, and promotional expenditure (Witt & Witt, 1995). However, each of these variables must be estimated; therefore, the accuracy of the prediction depends on the precision of each data sample. One of major advantages of the causal models over time-series models is that it enables the analysis of causal relationships between dependent variables and explanatory variables, and thus can be used, to identify determinant factors inducing changes in the model. Therefore, a causal forecasting system can be used to evaluate the effectiveness of existing tourism policies and, to predict the influence of alternative future policies on tourism flow (Chu, 1998; Song & Li, 2008). According to some researchers:

"The purpose of causal models is not purely forecasting. Indeed, they attempt to explain econometric or business phenomena and increase our understanding of relationship between and among variables. To this direction causal models provide unique information not available by time serious methods" (Makridakis, 1986:17).

"Econometric analysis fulfils many useful roles other than just being a device for generating forecasts; for example, such models consolidate existing empirical and theoretical knowledge of how economies function, provide a framework for a progressive research strategy, and help explain their own failures" (Clements and Hendry, 1998:16).

2.2.3. (Pure) Cross sectional model

Cross sectional regressions can be used to estimate the quantitative relationship between a dependent variable and explanatory variables, though for only one period time location. This method has been used extensively in finance literature (Cochrane, 1996; Sefcik & Thompson, 1986). In the study of tourism demand, the estimation is forecasted using historic data. According to a review by Witt and Witt (1995), previous studies that have used multiple regression to analyze causal relationship between tourism demand and its determinants, only accommodated time-series data. Hence, a cross-sectional model is not appropriate since it cannot accommodate the possibility of trend changes and is not stable over time (Peterson, Stynes & Arnold, 1985)

2.2.4. Efforts to estimate effects of specific events in tourism demand modeling

Tourism demand is subject to the effects of specific events. There has been increased effort to quantifying the effects of these external shocks on tourism demand using various forecasting techniques (Eugenio-Martin, Sinclair, & Yeoman 2006; Huang & Min, 2002). The general procedure for quantifying the effects of a particular event is to develop a reliable demand model (either a times-series or causal model), using historical data prior to the event and to, then use this model to predict the tourism demand during the affected period. The predicted values are defined as the expected tourism demand had the event not occurred. Thus, the differences between the predicted and actual demand indicate the estimated effects of the event (Song & Li 2008). Law (2001) investigated the impact of the Asian financial crisis on the demand for travel to Hong Kong by Japanese visitors using seven tourism -forecasting techniques that included five time-series and two causal-regression models. Huang and Min (2002) developed a model to forecast the number of visitors to Taiwan after the earthquake in September 1999, by applying the seasonal autoregressive integrated moving average (SARIMA) model. Eugenio-Martin, Sinclair and Yeoman (2005) used causal structural time-series models to qualify the effects of the September 11 terrorist attacks and the foot-mouth disease outbreak on the tourist demand to Scotland from America, France and Germany. Goh and Law (2002) used the SARIMA and MARIMA models with interventions to examine the influences of the Asian financial crisis along with other one-off events, such as

relaxation of the issuance of out-bound tourist visas, the handover between the United Kingdom and China, and the outbreak of bird flu, on inbound tourism in Hong Kong. Lim and McAleer (2002) used the SARIMA models to analyze the effect of one-off events on the demand for tourist arrivals to Australia from Hong Kong, Malaysia and Singapore.

2.3. Factors that affect international tourism demand

The factors that influence tourism demand are diverse, ranging from - natural disasters, political issues, macroeconomics, to diplomatic relations among countries. It is necessary to determine the key factors that influence tourism demand to effectively understand changes and trends in the tourism market, and adapt the forecast to new information in tourism industry (Wang, 2009).

2.3.1. Economic effect factor

A review of past literature revealed the interaction between tourism demand and explanatory variables, representing economic changes and relationships, including income, prices, exchange rates, transportation costs, the GDP in the origin country, and the substitute price. Anastasopoulos (1989) concluded that incomes and exchanges rates are the most important factors influencing international travel to and from the USA. Covington, Thunberg, and

Jauregui (1995) explored international tourism demand for the United States as a travel destination and found that the costs of transportation represented an important variable because they can account for significantly percentage of total purchases. Lee (1996) investigated the impact of personal income, relative prices, and exchanges rates on tourists visiting South Korea. Aki (1998) studied the significant influence of income and relative prices on tourist arrivals in Turkey. The results of these studies suggested that income of origin countries positively affects demand and a tourism price negatively affects demand. Lim (1999) incorporated several previous studies on the causal relationship between tourism and macroeconomic variables. Ismail, Iverson and Cai (2000) studied the income elasticity of Japanese tourists visiting Guam to investigate the relationship between income level and monthly air arrival patterns. Manuel and Croes (2000) conducted an econometric model of Americans traveling to Aruba, and found that income was the most significant factor, while the exchange rate was significant. Gallet and Braun (2001) observed the complementary relationship (or causal relationship of the substitute price) between European destinations. Webber (2001) investigated the long-term demand for outbound tourism by Australian leisure tourists from 1983 to 1997 for nine major tourism destinations, finding that exchange rate fluctuations were a significant factor influencing long-term demand. Hiemstra and Wong (2003) developed a demand model forecasting arrivals in Hong Kong that included financial variables such as GDP, relative prices, exchange rates, and interest rates; all the parameters were found to be very important. Querfelli (2008) noticed that income and relative prices were

significant explanatory factors in the process of the destination choice to Tunisia among European tourists; due to different price elasticity, Tunisia is considered a luxurious destination by tourists from France and Italy, but a not tourists from Germany and the UK.

According to Lim's (1999) study of 100 papers investigating tourist demand factors, the most cited explanatory variables of tourist demand are economic factors such as income (84%), relative prices (74%) and transport costs (55%). However, some of studies included dummy factors to explain the influence of economic events on tourism demand.

The intention to take a trip and its actualization are likely to be affected by one-off economic events such as oil and financial crises. After the Asian financial crisis of mid-1997, the number of Japanese tourist to Hong Kong immediately dropped to 1,368,988, a 42.5% reduction compared to 1996; moreover, this was followed by a further drop to 945,334 in 1998 (30.9% less than 1997) (Law 2001). Lim and McAleer (2005) examined the impact of two financial crises, the 1987 stock market crash and the Asian financial crisis of 1997, on Japanese tourists visiting to Australia from 1976 to 2000. Okumus, Altinay and Arasli(2005) explored the impact of the February 2001 economic crisis in Turkey on tourism in Northern Cyprus, finding that the long-term negative effects of the crisis would likely outweigh the long-term positive effects on hospitality organizations. It revealed that a majority of the firms in Northern Cyprus failed to foresee the financial crisis or take any preventive measures to deal with it. Chu (2008) used the Asian financial crisis and the September 11 attacks as examples of economic

and political events that might affect tourism, and examined the accuracy of incorporating a fractionally integrated ARMA (ARFIMA) model to forecast tourism using the number of tourist arrivals in Singapore.

2.3.2. Non-economic effect factor

A significant issue that researchers in this area need to consider to obtain more accurate forecasting results may be to understand and capture the effects of non-economic events on the tourism industry. Numerous studies have discussed the effect of non-economic effect on the tourism market and demand. These influential factors include natural disasters (earthquake and tsunamis), man-made disasters (war, terrorism and political instability), media and advertising, and destination image.

Disasters

Disasters can have a definitive and crippling impact on tourist destination choice and the economies of particular destinations (Richter & Linda, 1986).Wang comments that "tourism demand is subject to the effects of natural disasters, such as hurricanes, volcano eruptions, earthquakes, tsunamis, and epidemics" (2009:75). These effects play a decisive role in decreasing international tourism demand and economic values. Mazzocchi and Montini (2001) assessed the impact of the earthquake on tourist arrivals in Umbria region of Central Italy on September 26, 1997. They observed a large gap between

forecast values and actual totals of the number of visitors during the period after the seismic event from October 1997 to July 1998. Huang and Min (2002) examined the impact of the 21st September 1999 earthquake in Taiwan, finding that the recovery period exceeded 11 months and, with associated with restricted growth of inbound tourist arrival. Min (2005) investigated the effect of the SARS outbreak on the volume of tourist arrivals both during and after the outbreak (March 2003 to November 2003) using the seasonal autoregressive integrated moving average (SARIMA) model; their findings indicated that the SARS outbreak resulted in a significant reduction in the volume of visitors, and the tourism demand has not yet fully recovered in spite of Taiwan's withdrawal from the SARS travel advisory list by the WHO on June 17th.

While natural disasters can significantly impact the flow of tourism, the threat of danger derived from terrorism or political turmoil tends to intimidate actual and potential tourists more severely (Sonmez, 1998). Referring to political problems, Scott highlighted the potential for long-term damage: "… whereas a natural disaster creates havoc and passes, a political crisis may last for days, months, or event years"; thus political crises can have a devastating effect on the image of developing tourist industries (1988:58). Since the mid 1980s, the number of volatile political situations worldwide has grown, and the volume of academic research on how these phenomena effect tourism demand has begun to increase. Papadopoulos and Witt (1985) examined the demand of international tourists in Greece from eight countries over the period of 1972-82. The forecasting model included a dummy variable to represent the impact of political

instability between Turkey and Greece during 1974 and indicated that the level of foreign tourism to Greece in 1974 dropped because of the Turkish invasion of Cyprus and the intensified threat of war between two countries. Ritcher and Linda (1986) reported that 1.8 million Americans changed their plans for travel abroad in 1986 due to American raids on Libya and terrorist attacks on several European airports. Hurley (1988) examined occupancy rates of major hotels after terrorist attacks in the mid-1980s through comparing foreign visitation to Rome in 1985 to that in 1986, finding that occupancy rates decreased by over 37% for 4-5 star hotels. Enders, Sandler and Parise (1992) estimated a forecasting equation model to quantify the impact of terrorism on tourism in Greece, Italy, and Austria from 1974-88 using the theoretical structure for consumer buying decision. Ryan (1993) also investigated the effects of terrorism and crime on tourism. Soemodinoto, Wong and Saleh (2001) observed a dramatic drop of 6,860 tourist arrivals in the Gili Islands of Indonesia during the 7 Months from October 1999 to April 2000 when large-scale riots broke out; the estimated loss of revenue was between US$329,280-658,560 compared to the same period in the previous year. Goodrich (2002) investigated the impact- September 11th attacks on the travel industry in the US using secondary data compiled from news media and informal opinions. Pizam and Fleisher (2002) examined that tourism demand in Israel was significantly dependent upon the frequency of terrorist actions, not the severity of terrorism, during the period between May 1991 and May 2001. Because acts of terrorism occur frequently in regular intervals, tourism demand constantly

decreases. However, as long as terrorist attacks are in frequent, tourist destinations can recover from the affects of terrorist activities.

<u>International and domestic policies</u>

Alterations of international or domestic policies and plans such as restrictions or liberalization of tourism markets have an influence on the flow of inbound or outbound tourists (Kim & Wang, 2006). For example, in South Korea, outbound tourism had been strictly controlled by the government, with the exception of individuals contributing to nation building. Age and monetary restrictions permitted limited leisure travel abroad from 1983 to one year before the 1988 Olympics in Seoul (Lim, 2004). The changes in the tourism policies may be connected to marketing aimed at improving the nation's tourist stance or political efforts of the government. In empirical studies, a political change was portrayed by a dummy variable to identify the impact of special policy change in forecasting international tourism demand. Himestra and Wong (2002) used the change in Hong Kong sovereignty in July 1997 as a dummy variable to forecast tourist arrivals from major countries, showing that the sovereignty change led to substantial declines in tourism from other countries.

<u>International events</u>

International events, such as world fairs, sporting events and special campaigns, can affect demands of actual or potential tourists during or after the events. Qui and Zhang (1995) included two special mega-events, the 1976

Summer Olympics in Montreal and the combined 1986 Winter Olympics in Calgary and World's Fair in Vancouver, as dummy variables to estimate international tourism demand to Canada from five countries. Their results indicated that the special events were significant factors in estimating the number of U.K. tourists and were sometimes significant in estimating the number of tourist arrivals from other countries. Athanasopoulos and Hyndmand (2008) investigated the impact of the Sydney 2000 Olympics on domestic tourism demand in Australia, finding that the number of business travelers increased. Tan, McCahon and Miller (2003) included the dummy variables of the special "Visit Malaysia Year" campaign in 1992 and the "Visit ASEAN" campaign in 1992 to predict the flow of international tourists to Malaysia. They found that the "Visit Malaysia Year" variable considerably affected the tourist flow, whereas the "Visit ASEAN" campaign did not have a statistically significant effect. Some empirical studies reported that the impact of international event on tourism demand was not as significant as expected. For example, Lee, Var and Blaine (1996) found that the 1988 Olympic game were not significant determinant factor in forecasting tourism demand to South Korea. Regardless, special events have been considered in many studies forecasting international tourism demand.

Advertising

The promotional activities of tourist organizations influence tourism demand to destinations. Marketing promotions of the destination country specifically attract potential tourists, and may take various forms including media

advertising and public relations (Witt & Martin, 1987). Several empirical studies of the demand for international tourism incorporated marketing variables as demand determinants. Barry and O'Hagan (1972) constructed log-linear models to explain the demand for tourism in Ireland by British citizens from 1956 to 1969. The explanatory variables included several macroeconomic factors and marketing expenditures made by national agencies. The results indicated that the marketing variable is significant only when it is solely used in the model and when it is combined with income variable. However, this model has been seriously criticized because the relative cost of travel, as a significant explanatory variable, was excluded. Witt and Martin (1987) reviewed this study and commented that the most reliable forecasting model excluded marketing expenditure. Uysal and Crompton (1984) included promotional expenditures in their analysis of foreign tourist flow from important origin countries to Turkey; empirical results showed that the impact of promotional expenditures were not meaningfully significant. Crouch, Schultz and Valerio (1992) investigated the impact of international marketing activities of the Australian Tourist Commission in forecasting tourism demand to Australia and found that marketing expenditures represented an important factor that influencing the number of international tourists visiting Australia.

Destination image and media

Image has been described as "simplified impressions" (Mayo, 1973) and "the sum of beliefs, impressions, ideas, and perceptions that people holds of

objects, behaviors, and events" (Crompton, 1979). Images are classified into two categories: organic (formed as a result of actual visitation to destination country) and induced (formed from external information such as advertisements, publicity, news reports, or input from acquaintances) (Gartner, 1989; Gunn, 1972). Media coverage of issues about destination have the potential to form the induced image individuals have of destinations (Sonmez, 1998). Thus, if the image created by media coverage favorably differentiates from its competition, or is positively positioned in the mind of potential travelers, people may select this destination instead of otherwise similar places (Echtner & Ritchie, 1993). People often make decisions based on images and perceptions rather than on facts (Boulding, 1956). Hunt (1975) and Pearce (1982) illustrated that destination images influence tourist behavior in the travel decision process. In essence, tourism destinations are more likely considered and chosen when the destinations have strong and positive image, and negative media coverage can impact attitude formation quite easily (Goodrich, 1978; Sonmez, 1998).

It has been well documented among tourism scholars that representations in mass media have a major impact on destination image. Urry (1990) argued that:

> *"… places are chosen to be gazed upon because there is an anticipation, especially through daydreaming and fantasy, or intense pleasures, either on a different scale or involving a different sense from those customarily encountered. Such anticipation is constructed and sustained through a*

variety of non-tourist practices such as film, TV, literature, magazines, records, and videos…"(1990:3).

Bandyopadhyay and Morais (2005) revealed dissonance between the ways that India is represented in Western media and how it is represented by the Indian government itself. They found similar representations due to the Indian government's efforts to attract American tourists, and also observed dissonance arising from an attempt to resist colonialist fantasies. Mercille (2005) investigated the influence of media, including movies, guidebooks, and magazines on the destination image of Tibet by describing the congruence between the two using a theoretical model along with the analytical grid described by Hall (1980). The results indicated that medium to strong congruity was found between media representations and image. The effect of destination image reflected by the media on consumer decision-making has also been discussed. Riley, Baker and Doren (1998) studied the impact of movies on tourist visit to filmed locations, and observing an increase in tourism demand that lasted at least four years after the release of movies.

2.4. Overview of the DDII-North Korea

The Dynamic Destination Image Index (DDII) proposed by Stepchenkova (2009) is a numerical measure of changes in destination image produced by media sources in the origin tourist market. Since the DDII represents time series

data and is an absolute figure, it is eligible for using as a variable in the econometric model. Stepchenkova stated that:

> *"the DDII is a combined measure reflecting positive and negative events that happened at a destination in a particular time period, destination's natural resources and how safe it is for tourist…as they are presented in mass media on a certain tourist market" (2009:30).*

In her study, she established the DDII-Russia using data collected from the most influential UK newspaper and investigated the destination image of Russia in the UK tourist market. To validate the DDII-Russia, it was included in the econometric tourism demand model as an explanatory variable to evaluate whether media reports about Russia influence the decisions of US tourists to travel there. The study concluded that the inclusion of the DDII inclusion improves the model fit, thus, proving the effect of the media on tourism demand.

To date, several destination image indices have been developed based on consumer surveys. However, they are static because the indices only reflect a particular time point or the current state of image perception. Moreover, obtaining such indices on a regular basis is both costly and time consuming. In contrast, the DDII is dynamic because it utilizes data from newspaper articles about a destination as a record of image changes through time; specifically, it uses the content analysis method to quantify media messages as weekly, monthly, quarterly, or annual time series. Due to the ease of using this approach and the availability of data, obtaining the DDII on a regular basis is quite feasible.

Based on Stepchenkova's method, with a little modification, this study constructed the image index of North Korea and verified its effect on inbound tourism to South Korea from the United States. The DDII-North Korea and DDII-Russia are very similar from a method development standpoint, but, different in terms of the method of application. The DDII of North Korea was developed for application to the study of the South Korean tourism market rather than the North Korean market. The rationale of this study is explained below.

The South Korean tourism market has long suffered as a result of unexpected actions by North Korea. Actions such as nuclear and missile tests, threats of war, and restarting frozen plutonium significantly affect on inbound tourist demand in South Korea. The Korean Tourism Organization reported that some of Japanese travelers to South Korea cancelled their trip after North Korea's announcement of a nuclear weapon test in Oct 2006. In addition, there was a 1.7% reduction in the total number of tourist arrivals in June 2009, compared with the same period in 2008; in this case, news reports about North Korean threats (missile and nuclear tests), regardless of actual commitment, were determined to be partially responsible for the drop. Furthermore, the room occupancy rates of international tourist hotels plummeted, and the number of cancellations of international flights increased (KTO, 2009). Due to the perishable nature of the tourism product, cancellations of hotel rooms and airline seats results in a loss in tourism revenue (Archer, 1987; Law, 2001; Cho, 2003). In a recent example, on March 26, 2010, the South Korean Navy patrol ship (the Cheonan) sank near the disputed western sea border with North Korea after

suffering damage to its hull. A total number of 46 sailors were killed. As a result, the Korean economy became unstable. The Korea Composite Stock Price Index (=Kospi) in South Korea dropped 4.8 percent since the official report on the sinking of the ship, and the won (Korean currency) fell 5.3 percent against the dollar ("North Korea severs all ties with South; Move follows sanctions imposed by Seoul over sinking of warship" in Washington Post, March 26, 2010) Although the involvement of North Korea is still being debated, the assertion that the action was committed by North has been pervasive. As the only partitioned country in the world, the Korean peninsula is still recognized as dangerous location where war could break out at anytime between two countries in spite of armistice of over 50 years. All of these factors and the unique circumstances of the two countries make potential travelers to South Korea consider not only the image of South, but the image of North Korea as well. The DDII-North Korea was constructed for the time period of Jan 2001-Aug 2009 in the US tourist market.

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CHAPTER 3. METHODOLOGY

To validate the DDII-North Korea and investigate whether media presentation of the image of North Korea in US market affects US inbound tourism for South Korea, tourism demand model including the DDII-North Korea, numeric time-series image factor, was developed. Among the various approach of tourism modeling, a causal model (econometric model) was chosen to apply the DDII, since this approach involves analyzing cause and effect relationships between the independent and dependent variables under consideration (Witt & Witt, 1992). If the difference of adjusted R-square between the unrestricted model (improved model) including the DDII and the restricted model (base model) is statistically significant, the DDII is valid as an explanatory variable, and thus its impact on the tourism demand can be verified.

The validation of the DDII-North Korea is following the process of: (1) development of the base model (2) construction of the DDII-North Korea (3) development of the model containing DDII-North Korea.

3.1. <u>Data</u>

This study used secondary sources of data related to tourist arrivals in South Korea from the United States for forecasting model estimation and model-

validation. An extensive search of secondary sources was performed in the study. The final selection of data sources was based on data reliability, availability and measurability. Monthly data on GDP, CPI and quarterly data on exchange rate from the period of Jan 2001 to Aug 2009 used in this stuffy were obtained from the International Financial Statistics Yearbook published by the International Monetary Fund (2001-2009). Monthly data on US tourist arrivals (Figure 3-1) were obtained from the Korean Tourism Organization (2009). Due to seasonality of tourism demand, it has been suggested that monthly or quarterly data, rather than annual data, be used to build a forecasting model (Witt & Witt, 1995).
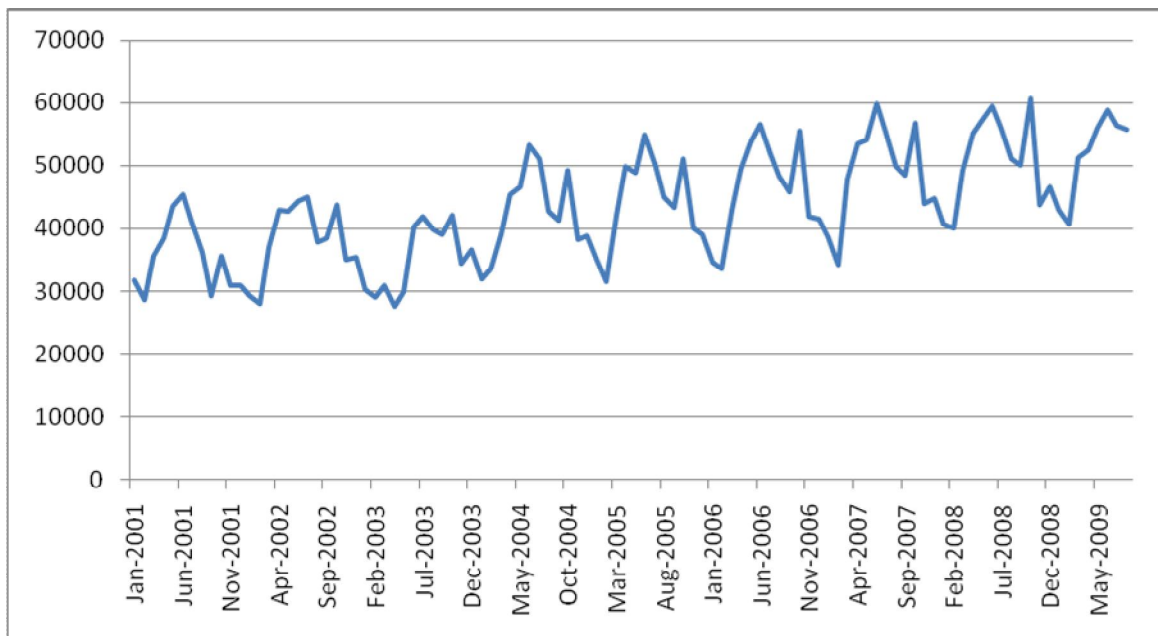

Figure 3-1 US tourist arrivals from Jan. 2001 to Aug. 2009

3.2. Data analysis

The ordinary least square (OLS) technique, which has been used in the estimation procedure in past tourism demand models (Crouch, 1994), was utilized to find good estimators of the multiple regression parameters and to estimate the tourism demand for South Korea. Morley (1996) conducted a simulation experiment to compare three estimation techniques in modeling tourism demand: the ordinary least squares (OLS) method, the seemingly unrelated regression methods (SUR), and the generalized methods of moments (GMM). He found that OLS technique performed well compare to more complex estimation methods even when OLS models violated the common assumptions required for multiple regression modeling. The OLS method was employed in this study. When multi-collinearity was observed, the problem was overcome partially by eliminating insignificant coefficients from the equation one at a time, and a number of regression runs that involved different combinations of the independent variables (those that were not strongly correlated) were undertaken. And also, three diagnostic tests were conducted: F-test, Durbin h-test, and Residual Plot.

3.3. Base model specification (unrestricted model)

Econometric models were estimated to investigate tourism demand from the United States to South Korea. The first demand model employed is based on the classic demand theory of economics that suggests that demand is affected

by changes in prices of goods and services, prices of competing products, and the income of consumers (positively). A review of previous related literature and the availability of data were also primary sources of concern in model specification.

The first model indicated in Table 3-1 included the following factors: level of income, exchange rates, relative prices (CPI), past tourist arrivals, special events, and seasonality. The number of tourist arrivals from US was used in this study as the measure of tourism demand, referred as a dependent variable (Dritsakis, 2004; Kulendran & Witt, 2001;Song & Witt, 2006; Witt & Witt, 1995). Tourism expenditure also can be used for some purposes (Coshall, 2000) and is regarded as a more logical measurement, but it creates many data collection problems. For instance, expenditure data are preferably collected by survey methods that are based on panel's memory rather than direct measurements.

Table 3-1 The first model of factors affecting tourist arrivals from the United
States to the destination country, South Korea

$$USAR_t = \alpha + \beta_0 Income_t + \beta_1 Ex_t + \beta_2 CPI_t + \beta_3 USAR_{t-1} + \beta_4 D01 + \beta_5 D02$$
$$+ \beta_6 D03... + \beta_{16} D13 + e_t$$

Where:

$USAR_t$ is the number of tourist arrivals from the Unites States to South Korea in

month t.

α is a drift component.

$Income_t$ is the GDP of US in time t.

Ex_t is the exchange rate of KRW against USD.

CPI_t is the consumer price index in US relative to that in South, in month t.

$USAR_{t-1}$ is a one-period, lagged dependent variable over time t.

$D01$ & $D02$ are dummy variables representing special events.

$D03$ to $D13$ are indicator variables which measure the effects of monthly seasonality

for January-November (1) in relation to the reference month, December (0).

e_t is the random error term.

The GDP in the United States was used to represent the income variable. Data for the GDP were defined to account for the effects of inflation in US. Therefore, $income_t$ is defined as the GDP of US divided by the CPI in US.

The exchange rate was defined as the destination country's real currency per unit of origin country's real currency. Therefore, any significant changes in the number of tourist arrivals could not be influenced by the inflation (Tan, McCahon, and Miller, 2002).

The relative prices in this study were measured using the CPI of the origin country relative to the CPI of the destination country. This price is also represented as the inflation price of goods in the US (origin country). According to the Slutsky equation of substitution effect, when the overall price of a product goes up while holding the income constant, the consumer's purchasing power drops. In contrast, decreasing prices result in increase of relative income. In the model, $price_t$ is represented as the CPIs of the US divided by the CPI of South Korea.

The inclusion of a lagged one month dependent variable ($USAR_{t-1}$) can be justified on the grounds of habit persistence. Inbound tourists in the past tend to return to that destination due to less uncertainty associated with visiting the country in comparison to previously unvisited destinations. Furthermore, information gathered from friends, families, colleagues, and neighbors, who previously traveled to the destination, may reduce uncertainty for potential visitors to that country (Witt & Witt 1995). The variable, therefore, captured

possible trends often associated with time-series data (Ismail, Iverson, & Cai, 2000).

Dummy variables were included in the model to account for one-off events and seasonality. Floyd et al. (2003) investigated the relationship between perceived risk and travel intentions among residents in the New York City area through the survey, finding that intentions to take a pleasure trip in the next 12 months largely effect on their plans and decisions to travel. Therefore, $D01$ is a dummy variables with a value of 1 corresponding to the September 11 arracks in Sep 2001-Aug 2002 (12 months) and is 0 otherwise. $D02$ is a dummy variable with a value of 1 corresponding to the 2002 Korea and Japan World Cup in Jun 2002-Jul 2002 and is 0 otherwise. $D03$ to $D13$ are monthly dummy variables, which shows the pattern of each season, with January through November having a value of 1 and December as the reference.

Due to the unavailability of transportation cost data, those were not included in the demand models. Many previous tourism researchers omitted transportation cost data in the demand model due to a lack of data, the complexity of the transportation cost structure, and the significant multi-collinearity between travel cost and income in the demand functions (Kwack, 1972; Lee, 1996; Loeb, 1982; O Hagan & Harrison, 1984; Uysal & Crompton, 1984). The general consequences of omitting travel cost in a demand model still remain inconclusive. However, many tourism demand studies have omitted a cost of transportation variable due to insignificant correlation between tourism demand and the travel cost (Crouch, 1996; Gray, 1966; Little, 1980).

Previous researchers suggested that log linear functional form is most appropriate and has the advantage that the estimated regression coefficients can be interpreted as elasticities (Lee, 1996; Witt & Witt, 1995). A linear form has also been used to forecast international tourism demand (Ismail, Iverson, & Cai, 2000). This study used the linear functional form in spite of the popularity and the convenience of log linear form because the former model provided a better fit to the data.

The first model using ordinary least squares regression indicated the presence of significant multi-collinearity among financial variables. This finding was verified by the relatively high value of variance inflation factors (VIF's). Mendenhall and Sincich (1989) stated that a VIF that is greater than 10 is considered to represent serious correlation between independent variables. Thus, independent variables with high VIF were excluded and transformed. A step-wise procedure (selection method) was performed to determine the appropriate lag structure. The default significance level for selection and for removing predictors from the model is 0.15 by the stepwise method (Peng, 2009). Among the individual lagged variables (i.e., one month lagged GDP, two months lagged GDP, three months lagged GDP, etc.) and the combined lagged variables (two months lagged GDP+ three months lagged GDP+ four months lagged GDP), the lagged variable that enabled the best fit of the model was employed.

Thus, the second model includes the following independent variables: $USAR_t$, $D01$, D03-D013, modified $Income_t$ with 3 month lag, and CPI_t with 3 month lag. The lagging variable method was incorporated because it is expected

due to the existence of a level relationship between a dependent variable and a set of regressors (Pesaran, Shin, & Smith, 2001). A selection method (step-wise) was also been used to determine the lagging month. $Income_t$ was divided by South Korea exchange rates against US dollar to hold the value changes of Korean currency(hereafter $Income\_ex_t$). Since the OLS regression result of the second model was outperformed with the ad-R^2 of 0.9211 at a significance level of .001, the second model was selected as the base model. To increase the predictability of the model and to examine the impact of North Korea on the South Korean tourism market, the newly specified model using the Dynamic Destination Image factor (DDII-North Korea) was developed as explained in the next section.

$$USAR_t = \alpha + \beta_1 USAR_{t-1} + \beta_2 Income\_ex_{t-3} + \beta_3 CPI_{t-3} + \beta_4 D01$$
$$+ \beta_{5...15} DM_{Jan...Nov} + e_t$$

(the second model: base model)

3.4. Construction of the DDII-North Korea

The construction process of the DDII consists of the following stages: textual population & sample selection, identification of relevant articles, favorability coding, applying circulation, and transformation of monthly scores to the DDII.

3.4.1. Textual population and sample selection

Newspapers were selected as a textual population since those are suitable sources for content analysis research. Newspapers were selected according to the following criteria: they appeared on a regular basis and had uniform formats and parameters, including circulation and geographical area of distribution (Lasswell, Lerner, & de Sola Pool, 1952; Riffe, Lacy, Fico, & Fico, 2005). Newspapers were easily obtained from the LexisNexis Academic database, one of the most heavily used electronic databases for media research. The LexisNexis is introduced as follow:

"a leading global provider of content-enabled workflow solutions designed specifically for professionals in the legal, risk management, corporate, government, law enforcement, accounting, and academic markets...provides customers with access to billions of searchable documents and records from more than 45,000 legal, news and business sources" (http://www.lexisnexis.com/about-us/).

For this study, three newspapers in the top lists of circulation were selected as the samples because of their strong influence on public opinion, high accessibility to the general public, and wide geographical dispersion:

USA Today (Arlington, Va.) – 2,528,437
Times (New York, N.Y.) -1,683,855
Post (Washington, DC) – 960,684
(http://www.infoplease.com/ipea/A0004420.html)

Other newspapers such as Wall Street Journal, Times (Los Angeles), Tribune (Chicago), Daily News (New York, N.Y.) were also considered for inclusion for the sample. However, the LexisNexis database found either very few or no articles related to North Korea from those sources even though those ran stories on North Korea, and thus were excluded.

3.4.2. Identification of relevant articles

The purpose of this study was to define the impact of destination image of North Korea on inbound tourism in South Korea. To ensure relevance of the selected materials to construction of the DDII-North Korea, we searched for articles that were published during the period of January 01, 2001 – August 31, 2009 and contained the words "North Korea". The search resulted in more than 1000 articles from each source. Thus, in the second trial, the articles with words "North Korea" in headlines were searched for the same period. The search resulted in a combined total of 1348 articles all of the selected sources: 1013 articles from the New York Times, 265 articles from the Washington Post, and 70 articles from the USA today. The use of newspaper headlines only to investigate the impact on forecasting has been widely employed, especially in finance studies (Eddelbuttel & McCurdy, 1998; Peramunetilleke & Wong, 2002). Peramunetilleke and Wong (2001) also applied news headlines in predicting currency exchange.

Next, among the 1348 articles, irrelevant and duplicated articles were excluded. To verify the relevance of each article to this study, the author read the first 5-10 sentences of each, and found that most of them (92%) were related to international political relations, international safety, or both. These themes are significantly related to perceptions of destination attributes through the aspects of political stability and safety from harm (Crompton, 1979; Echtner & Ritchie, 1991). According to previous studies investigating destination image of South Korea (Hunt & Chung, 1987; Kim & Morrison, 2005), the image derived from North Korea related to the political situation of the two countries was only considered among 21 image items. Thus, materials relating to domestic issues and sports in North Korea were excluded. Examples of irrelevant articles include: "North Korea Qualifies (World Cup)" (New York Times, June 18, 2009) and "Report Identifies North Korea's First Lady" (New York Times, July 24, 2006). The LexisNexis Academic database sometimes includes duplicates of the articles that were identical in terms of following fields: source, date, title, and contents. Duplicated articles were excluded. As a result, total of 1265 articles were selected for final sample: 949 from the New York Times, 239 from the Washington Post, and 61 from the USA today. Figure 3-2 shows monthly distributions of the articles by source. Monthly distributions of all collected articles are given in Figure 3-3.
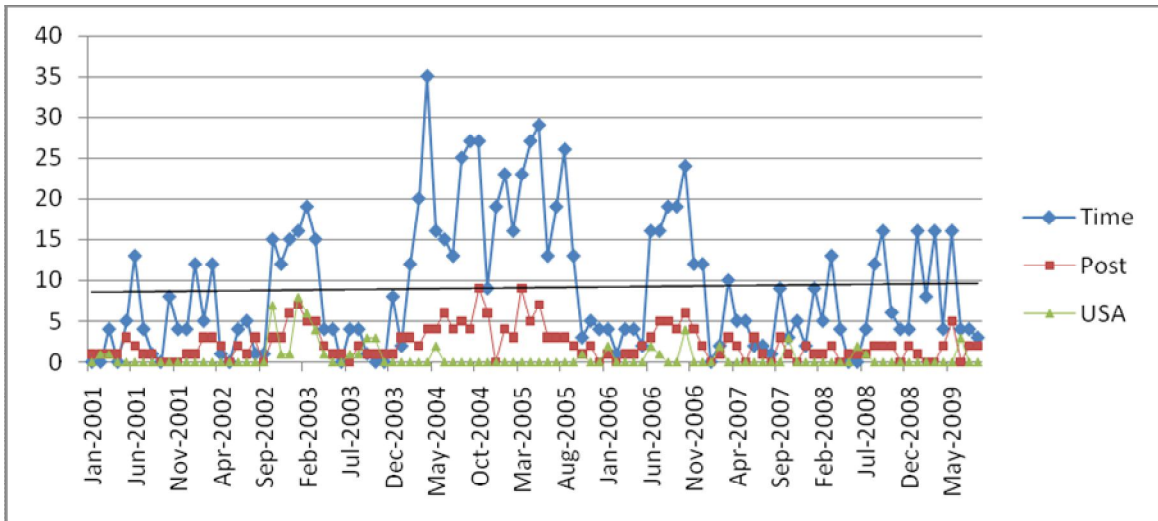
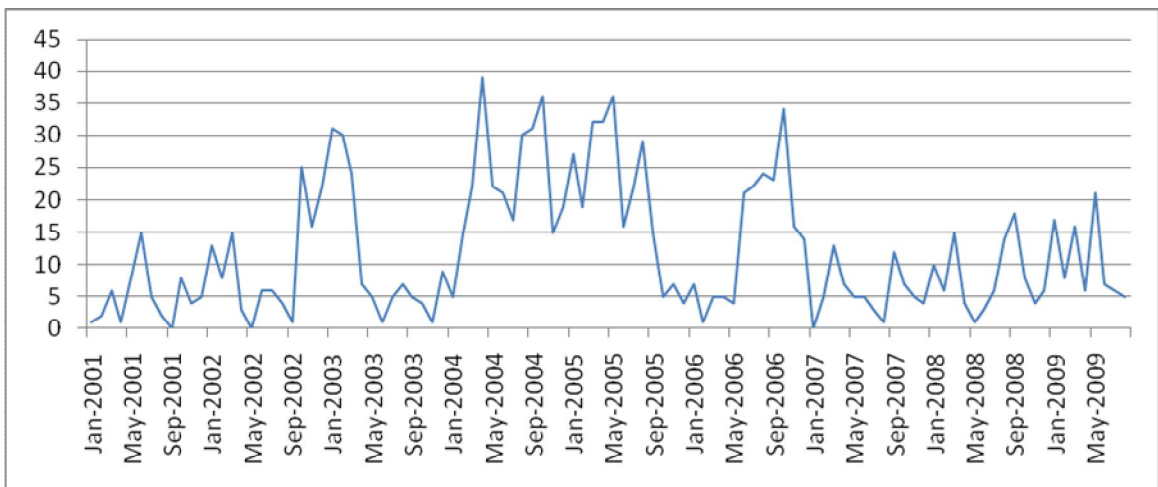Figure 3-2 Collected articles, by source and by month

Figure 3-3 Collected articles, by month

3.4.3. Favorability coding

In the coding procedure, a single article was selected as a recoding unit

for both category and favorability coding. It was reasoned that the potential error

of coding the articles by each sentence is possibly greater than in a more holistic

approach of coding by the whole article (Stephenkova, 2009). Because the number of articles (1265) in the sample was quite large, only the first 5-10 sentences of selected articles were read.

Next, each article was evaluated with in to its favorability according to the following three-point scale: favorable (+1), unfavorable (-1), and neutral (0). For example, all references to nuclear and missile tests were evaluated as unfavorable since those actions negatively impact the destination image of safety, and thus negatively influence decisions on destination choice of potential tourists. Similarly, references to President Bush's "axis of evil" speech on January 29th, 2002 were also considered to be unfavorable because he accused Iran, Iraq and North Korea of assisting terrorists and seeking weapons of mass destruction (New York Times, Jan30, 2002). Table 3-2 provides examples of unfavorable references. At the same time, articles that referenced to a friendly relationship between the two Koreas in terms of international politics and relations, or references to any actions or signs mitigating the negative image derived from the problems such as nuclear or missile or threat of war were classified as favorable. Examples of favorable articles include: "New York Philharmonic Concert in North Korea" (New York Times, Feb 7, 2008), and "North Korea Receives Funds and Says It Will Shut Down Its Main nuclear Reactor" (New York Times, June 26, 2007). Table 3-3 shows examples of favorable references. If an article could not be judged as being negative or positive, it was coded as neutral, see Table 3-4. Figure 3-4 shows monthly dynamics of positive and negative news about North Korea published during the period January 2001-August 2009.

Table 3-2 Examples of unfavorable articles

Article's Title	Source	Date
North Korea: Nuclear Deadline Missed	NYT	1/1/2008
North Korea Says It Is Holding Two American TV Reporters	NYT	3/22/2009
Japan Launches Spy Satellite Despite North Korean Threats	NYT	3/28/2003
U.S. Envoy Angers North Korea	NYT	10/8/2002
U.N. Panel Adopts Wider Sanctions on North Korea	WP	6/13/2009
North Korea's latest outrage	USA	6/9/2009
North Koreans Condemn U.S. And Sanctions At Huge Rally	NYT	6/29/2009
North Korea Talks Resume, Still in a Standoff	NYT	9/15/2005

NYT=New York Times   WP= Washington Post   USA= USA Today

Table 3-3 Examples of favorable articles

Article's Title	Source	Date
North Koreans Pay Respects in South	NYT	8/22/2009
Concert in North Korea	NYT	2/7/2008
North Korea's Open Door	NYT	9/24/2002
In the latesest friendly gesture, North Korea releases fisherman from the South	NYT	8/29/2009
U.S. Declares North Korea Off Terror List	NYT	10/12/2008
North Korea Receives Funds and Says It Will Shut Down Its Main Nuclear Reactor	NYT	6/26/2007
Reactor Disabled In North Korea	NYT	11/6/2007
North Koreans And Americans Begin Dialogue	NYT	8/28/2003

NYT=New York Times   WP= Washington Post   USA= USA Today

Table 3-4 Examples of neutral articles

Article's title	Source	Date
North Korea: Fishing Boat Crosses Into North's Waters	NYT	7/30/2009
Russia Turns Sour on North Korean Refugees	NYT	1/3/2005
North Korean Is Said to Pick A Son as Heir	NYT	6/3/2009
21 North Koreans Flee to South Korean Port	NYT	8/19/2002
U.S. to Resume Food Aid to North Korea, at a Reduced Level	NYT	2/26/2003
Ex-Spy Speaks Of an Abduction By North Korea	NYT	3/12/2009
North Korea Ready for Talks, U.S. Envoy Says	NYT	10/21/2005
U.S. and Seoul Share a Goal but Not a Strategy on North Korea	NYT	11/17/2005

NYT=New York Times   WP= Washington Post   USA= USA Today

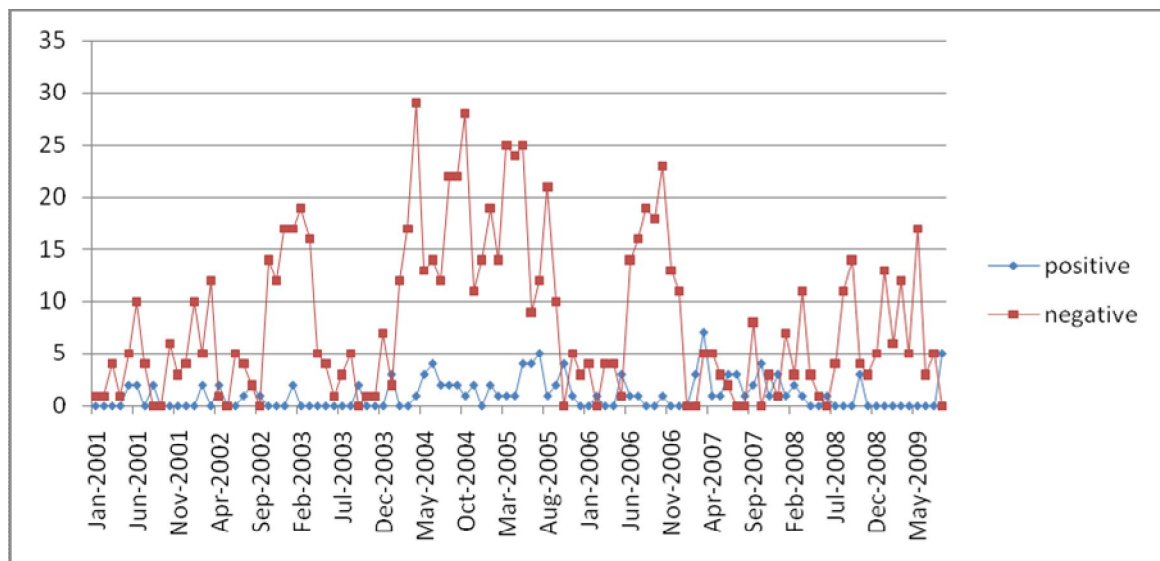

Figure 3-4 Monthly dynamics of news

<u>Reliability of favorability coding</u>

As the part of favorability coding, a reliability test was conducted to estimate the consistency of coding using Cohen's kappa coefficient (Cohen, 1960), a statistical measure of inter-rater agreement for qualitative items. Prior to the reliability test, the author of this study coded 1265 articles. Two raters (Americans) were selected: Student 1 and Student 2, and provided with 12 randomly selected articles. Before the coding began, favorability guidelines were explained (Table 3-2, 3-3, and 3-4).

To estimate agreement between each rater and the author of the research, two indicators were used- the percentage of cases in which the coders agreed and Cohen's kappa. Student 1 and the author disagreed on 4 cases out of 12, which gives 67% matches. And student 2 and the author disagreed on 2 out of 12, which gives 83% match. The completed coding among the raters is shown in Table 3-5.

Cohen's kappa coefficient is a statistical measure of inter-rater agreement for qualitative items. It is generally thought to be a more robust measure than simple percent agreement calculation since κ takes into account the agreement occurring by chance. Cohen's Kappa measures the agreement between two rates who each classify N items into C mutually exclusive categories. In favorability assessment, N equals 12 and C equals 3, since favorability was estimated as -1, 0, +1.

The equation for κ is:

$$\kappa = \frac{\Pr(a) - \Pr(e)}{1 - \Pr(e)}$$

where Pr(*a*) is the relative observed agreement among raters, and Pr(*e*) is the hypothetical probability of chance agreement. If the raters are in perfect agreement then κ=1. If there is no agreement among the raters, other than what would be expected by chance, then κ≤0 (http://en.wikipedia.org/wiki/Cohen's_kappa).

The relative observed agreements for favorability coding was 0.67(student 1) and 0.83 (student 2). The probability to agree by chance in any single instance is 1/3, since out of 9 possible assessment outcomes (00, 01, 0-1, 10, 11, 1-1, -10, -11, -1-1) three (00, 11, -1-1) constitute the agreement between the raters. Therefore, Cohen's kappa for favorability assessment equals 0.51 for student 1 and 0.75 for student 2. To describe the relative strength of agreement, the guideline developed by Landis and Koch (1977) was used.

Strength of agreement in Cohen's kappa coefficient
   Poor(no) agreement (<0)
   Slight agreement (0.0-0.20)
   Fair agreement (0.21-040)
   Moderate agreement (0.41-0.60)
   Substantial agreement (0.61-0.80)
   Almost perfect agreement (0.81-1.00)

Following the guideline, the relative strength of agreement between the author and student 1 is moderate, and that of agreement between the author and student 2, is substantial.

Table 3-5 Favorability assessment among the raters

Article's Title	Source	Date	S 1	S 2	A
North Korea to Allow Family Reunions and Release Fishermen	NYT	8/29/2009	U	U	P
U.S. Declares North Korea Off Terror List	NYT	10/12/2008	N	U	P
North Korea Says It Stopped Disabling Nuclear Complex	NYT	8/27/2008	N	N	N
North Korea Continues to Prepare for Multistage Rocket Test	NYT	4/4/2009	N	N	N
CHINA AND RUSSIA STALL SANCTIONS ON NORTH KOREA	NYT	10/13/2006	U	U	U
BUSH REBUKES NORTH KOREA; U.S. SEEKS NEW U.N. SANCTIONS	NYT	10/10/2006	U	N	N
North Korea Receives Funds and Says It Will Shut Down Its Main Nuclear Reactor	NYT	6/26/2007	U	P	P
U.S. Will Give More Food Aid to North Korea	NYT	12/25/2003	U	U	U
In North Korea, Clinton Helped Unveil a Mystery	NYT	8/19/2009	N	N	N
In Surprise Move, U.S. Envoy Visits North Korea	NYT	6/22/2007	U	U	U
U.S. officials defend nuke accord with North Korea	USA	2/14/2007	N	U	N
U.S. to Weigh Returning North Korea to Terror List	WP	6/8/2009	N	N	N

N=negative P= positive N=neutral S 1= student 1 S 2= student 2 A= author of the research

3.4.4. Applying circulation

After the coding was completed, each article was multiplied by "average daily circulation of each media source (Table 3-6)" to give a weighted effect on the article individually. Table 3-6This stage has been added to the original DDII development process proposed by Stepchenkova (2009) to ensure that impacts of the same article on the different newspaper would be different since influential power of each paper to public is varied depending on the number of circulation. Picard (1991) stated that "it is generally understood that there is a relation between size of circulation and advertising rates because advertisers are willing to pay more to reach larger groups of people". Next, resulting value of each article was aggregated in monthly scores. Figure 3-5 shows dynamic changes in monthly scores.

Table 3-6 Average daily circulation of each newspaper: 2001-2009

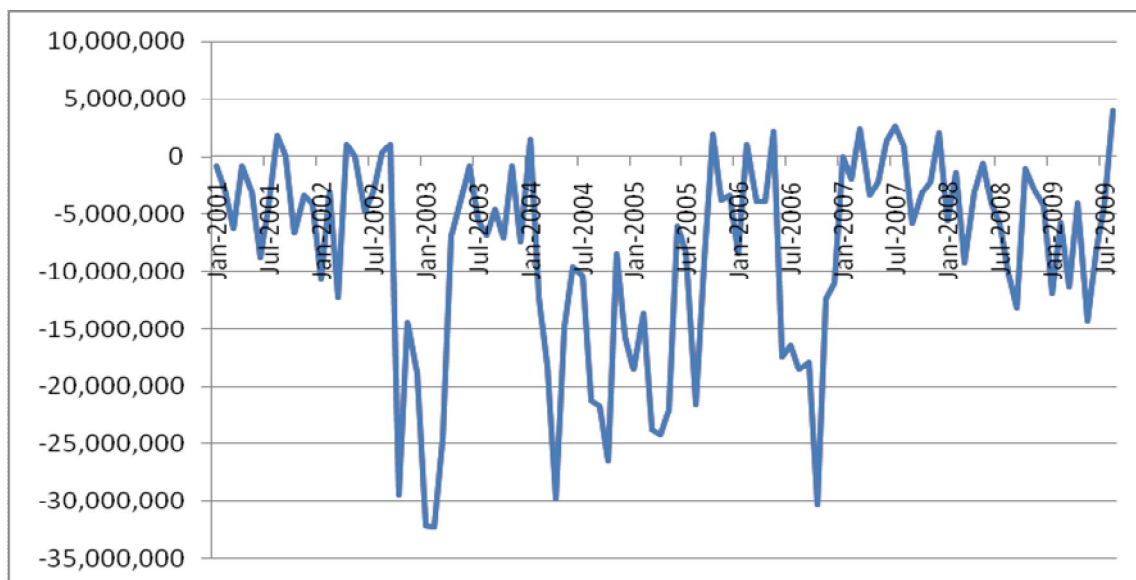| Year	USA Today	New York Times	Washington Post
2001	2,149,933	1,109,371	759,864
2002	2,136,068	1,113,000	746,724
2003	2,154,536	1,118,565	732,872
2004	2,220,863	1,121,057	715,052
2005	2,199,052	1,136,433	751,871
2006	2,269,509	1,086,798	656,297
2007	2,293,137	1,037,828	635,087
2008	2,293,310	1,000,665	603,728
2009	1,826,622	951,063	578,482

Figure 3-5 Aggregated scores, by month

3.4.5. Transformation of monthly scores to the DDII

The numeric values of aggregated monthly scores ranged from 4,010,153 (August 2009) to -32,251,486 (Febuary 2003). Here, the score 4,010,153 represents the most positive news effect, and -32,251,486 represents the most negative news effect. However the score 0 (September 2001, May 2002 and Jan 2007) does not mean that there is no effect on those months. In other words, due to the score ranged over from negative to positive numbers, 0 means more positive than the negative scores or more negative than the positive scores. To make easier to interpret and compare these scores, the transformation of the monthly scores to the index value ranged between 0-100 were carried out based on following steps:

Step1: To create the DDII with the range between 0 to 100, all the scores should be positive numbers. Therefore, the lowest score -32,251,486 was transformed into 0. To transform -32,251,486 into 0, 32,251,486 was added to all monthly scores. The scores ranged from -32,251,486 to 4,010,153 turned into the range from 0 to 36,261,639.

Step2: To transform the monthly scores ranged from 0 to 36,261,639 into the index value ranged from 0 to 100, all monthly scores was divided by 362,616.39 (=36262639/100). For example, the monthly score for January 2001 is 4770017. The formula of the score transformation is following:

$$4770017 \div 362616.39 - 13.15$$

Thus, the index for January 2001 is 13.15. Using this formula, all monthly scores were transformed into the index value.

Step3: After the step2, each index value was subtracted from 100 to make the lowest to the highest index value and the highest to the lowest index value. This transformation made the higher index value to represent more negative, and the lower index value to represent less negative. For example, the index value 0 (August 2009) represents the least negative news effect, and the index value 100 (February 2003) represents the most negative news effect for the periods between Jan 2001 to Aug 2009. Monthly DDII-North Korea is given in Figure 3-6.
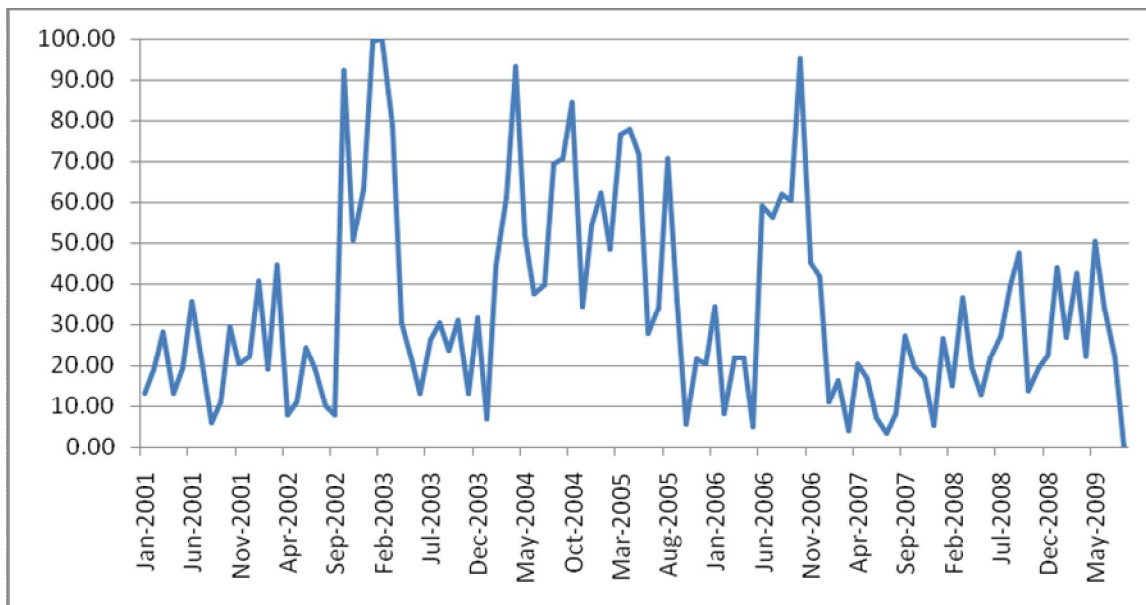
Figure 3-6 DDII-North Korea, by month

3.5. Improved model specification (restricted model)

To develop the improved model, DDII-North Korea was simply included. Using the step-wise regression, DDII-North Korea was tested with one to five-period lagged effects. As a result, lagged 3 months DDII ($DDII_{t-3}$) came significant and provided the best fit of the model.

$$USAR_t = \alpha + B_1 DDII_{t-3} + \beta_2 USAR_{t-1} + \beta_3 Income\_ex_{t-3} + \beta_4 CPI_{t-3} + \beta_5 D01$$
$$+ \beta_{6...16} DM_{Jan...Nov} + e_t$$

(improved model)

CHAPTER 4. RESULTS

In this chapter, the results of this research were reported by analyzing the collected data and testing the validity of the forecasting model. The first chapter describes the improved model, followed by the diagnostic analysis.

4.1. Improved model

The aim of this research was to examine the impact of North Korea on South Korean tourism using the destination image approach. Before applying the DDII-North Korea, the economic model that gave the best fit was developed by employing the variables of income, CPI, one month lagged tourist arrivals, dummy variables representing the Sep 11th attacks, and seasonality. The adjusted R-square indicator of the model for US arrivals was 0.9211. This model was regarded as an unrestricted model for modeling the effects of media messages about the North Korea on tourist arrivals from the United States to South Korea. In the next process, the DDII-North Korea was included in the base model (unrestricted model) and analyzed. As a result, the model fit (adjusted R-square) increased from 0.9211 to 0.9334. This is the improved model (restricted model) reported in this study.

Income Elasticity Using the coefficient of $Income\_ex_{t-3}$ in the improved model containing DDII, the income elasticity for the US demand to visit South Korea was calculated to be 0.17:

$$\text{Income elasticity} = 375681 \times \frac{0.01918}{43655} = 0.17$$

indicating that for each 10% increase in the US monthly earnings and after accounting for inflation and Korean exchange rate against dollar, there is expected to be a 1.7% increase in the US travelers to South Korea. The variable was given 3 month lag: thus, income changes in three months ago will influence tourism demand for this month.

Table 4-1 Summary statistics from the base model

	DF	SS	MS	F-Value	p-value
Base	15	6764672752	450978183	78.04	<.0001
Error	84	485412649	5778722		
C Total	99	7250085401			
R2	0.933	Adj R2	0.9211	D-W	1.968
Variable	Para Est	Stan Err	t Value	Pr > |t|	VIF
Intercept	41972	22261	1.89	0.0628	0
lag1US	0.77797	0.06071	12.81	<.0001	4.56063
lag3dfgdpex	262611	102853	2.55	0.0125	2.24603
lag3uskorcpi	-19192	11089	-1.73	0.0872	1.39047
Dum911	-3901.38829	1902.1383	-2.05	0.0434	1.22718
Jan	-4266.58622	1204.56973	-3.54	0.0007	1.84803
Feb	-2773.39698	1212.559	-2.29	0.0247	1.87263
Mar	7001.08951	1237.07989	5.66	<.0001	1.94913
Apr	4452.22302	1187.46814	3.75	0.0003	1.99846
May	2937.00944	1252.4144	2.35	0.0214	2.22304
Jun	5701.35154	1287.51573	4.43	<.0001	2.3494
Jul	-513.04825	1411.02689	-0.36	0.7171	2.82178
Aug	-3732.49699	1345.37921	-2.77	0.0068	2.30534
Sep	-931.0941	1267.51104	-0.73	0.4646	2.04621
Oct	7953.74369	1242.94877	6.4	<.0001	1.96767
Nov	-9183.63529	1362.56584	-6.74	<.0001	2.36462

Table 4-2 Summary statistics from the improved model containing the DDII-North Korea

	DF	SS	MS	F-Value	p-value
Improved	16	6845319259	427832454	87.73	<.0001
Error	83	404766142	4876701		
C Total	99	7250085401			
R2	0.9442	Adj R2	0.9334	D-W	2.112
Variable	Para Est	Stan Err	t Value	Pr > |t|	VIF
Intercept	88615	23447	3.78	0.0003	0
lag1US	0.67822	0.06093	11.13	<.0001	5.44278
l3dfgdpex	375681	98491	3.81	0.0003	2.44053
l3uskorcpi	-41257	11542	-3.57	0.0006	1.78495
Dum911	-3557.95318	1749.42719	-2.03	0.0452	1.23005
l3ddii	-43.99673	10.81909	-4.07	0.0001	1.42115
Jan	-3654.76823	1116.75131	-3.27	0.0016	1.8822
Feb	-3271.52845	1120.62472	-2.92	0.0045	1.89527
Mar	6421.28014	1145.34492	5.61	<.0001	1.97981
Apr	4945.53435	1097.58453	4.51	<.0001	2.02318
May	3572.63272	1161.09148	3.08	0.0028	2.26407
Jun	6790.75802	1212.72717	5.6	<.0001	2.46993
Jul	538.38789	1321.76616	0.41	0.6848	2.93405
Aug	-3168.26122	1243.68812	-2.55	0.0127	2.3344
Sep	-731.35865	1165.42659	-0.63	0.532	2.04985
Oct	7975.08176	1141.83922	6.98	<.0001	1.96771
Nov	-8057.64343	1281.97191	-6.29	<.0001	2.48033

Cross-Price Elasticity This study used "Consumer Price Index" which is a measure estimating the average price of all consumer goods and services purchased by households instead of "Travel Price Index (TPI)" which measures the seasonally unadjusted inflation rate of the cost of travel to South Korea, since the TPI data is not available. Therefore, calculated price elasticity using the coefficient of CPI_{t-3} was -2.14 and regarded as Cross-Price Elasticity(CPE). CPE is defined as the measurement of the reaction of quantity purchase (X=travel demand to South Korea) to changes in the price of some other good (Y=price of all US products changes except travel cost to South Korea).

$$\text{Cross Price Elasticity} = \frac{\text{percentage change in demand for X}}{\text{percentage change in price of Y}}$$

The CPE of -2.14 indicated that 1% increases in the US product prices, holding the price for tourism to South Korea constant, 2,14% decrease in the US traveler to South Korea is expected. Due to the negative CPE, the goods -travel goods to South Korea and all US goods except travel goods to South Korea- are gross complement. If the goods are complements, we should see a price rise in one good cause the demand for both goods to fall (Nicholson, 1985). The variable was given 3 month lag, thus, price changes in three months ago will influence tourism demand for this month.

Lagged dependent variable indicates that the number of US inbound tourists during the previous periods (months). Since the coefficient of the variable is positive, US travels are loyal to South Korea and that word of mouth recommendation has a influence on the intentions of potential US tourists to visit South Korea. This interpretation is motivated by Wong (2009).

Dummy variables for the event and seasonality The coefficient of Sep 11th terrorist attack in 2001 is sincerely negative, and statistically significant. As Sep 11th was occurred in US, and thus, greatly influenced on US outbound tourism. After Sep11[th], there was noticeable decrease of tourism demand in the United States and around the world.

The dummy variables for the seasonality (months) show that October has significantly more US arrivals to South Korea than December on average over the past 9 years. On the other hand, November has significantly fewer arrivals, with having an average of 8057 fewer arrivals.

DDII-North Korea The coefficient of the DDII is -43.99673. It means that if one unit of the index increases, about 44 US travelers may cancel the trip to South Korea. Using the coefficient, the elasticity of the DDII was calculated:

$$\text{DDII Elasticity} = -43.99673 \times \frac{34.53769}{43776} = 0.35$$

The elasticity of the DDII .035 indicates that 10% increase of the index results in .35% (153 tourists arrivals) decrease in monthly tourism demand.

4.2. <u>Diagnostic test</u>

To verify the significance of this result, three diagnostic tests were conducted. First, the presence of first-order autocorrelation (correlation among the error terms) in the residuals is major concern. Generally it is tested by Durbin-Watson (DW) statistics. However, according to Durbin's study "testing for serial correlation in least squares regressors are lagged dependent variables", the forecasting model including lagged dependent variable is biased to DW statistic "2" which indicates no autocorrelation. To solve this problem, Durbin designed Durbin-h statistic. Thus, Durbin's h- statistics were utilized in this study instead of Durbin-Watson because the demand model includes the lagged dependent variable (lag1us) as an independent variable (Durbin 1970) in the right hand side of the model.

Second, the F-test was used to compare the base model (unrestricted model) and the improved model (restricted model) to identify the model that best fits the data. If the difference between two models is statistically significant for a given confidence level, the null hypothesis that the improved model does not provide a significantly better fit can be rejected. Thus, we can conclude that the improve model give a better fit to the data than the base model.

Finally, a residual plot was used. Two types of a residual plot-residuals and predicted value and residuals and each independent variable-were constructed. The first type of residual plot is a graph that shows the residuals on the vertical axis and the predicted values of the dependent variable on the

horizontal axis. According to one of the "classical assumptions of linear regression model" notion that "residuals are statistically independent", the residual plot should be randomly dispersed. In the mean time, the second type is the graph that shows the residuals on the vertical axis and the independent variable on the horizontal axis. This residual plot also should not have a pattern around the horizontal axis. It follows the classical assumption that independent variable has no relations with error terms. If the residual plot with the independent variable is randomly dispersed around the horizontal axis, a linear regression model is appropriate for the data, which had been incorporated in this study; otherwise, a non-linear model is more appropriate.

4.2.1. Durbin h-test

The formula for the Durbin h- test (Durbin, 1970) is:

$$h = \left(1 - \frac{d}{2}\right)\sqrt{\frac{T}{1 - T\{se(\alpha)\}^2}}$$, where

$se(\hat{\alpha}_3)$: standard error of lagged depend model

d : Durbin-Watson

T: number of sample

We note d = 2.112, T = 99 and $se(\hat{\alpha}_3) = 0.06093$ for the improve model. As a result, the h-statistic equals 0.8853. Durbin's h-statistic has a standard normal distribution, and at the 5% level of significance (two tails-placing 2.5% of the distribution in each tail), the critical value is 1.96. As a rule of thumb, if h>1.96,

we fail to reject the null hypothesis of no autocorrelation. If h<1.96, we accept the null hypothesis of no autocorrelation (Halcoussis 2004). Since the h-statistic (0.8853) of the improved model is smaller than 1.96, there is no serial correlation among error terms.

4.2.2. F-test

F-value was calculated using the following formula (Kmenta, 1971):

$$F = \frac{(SSE_R - SSE_U)/r}{SSE_u/(n-k-1)}$$

SSE_R-error sum of squares for the restricted model

SSE_u-error sum of squares for the unrestricted model

r-number of restrictions

n-number of observations

k-number of coefficients in the restricted model

The number of restrictions in the improved model is one (lag3DDII), the number of observations is 99, and the number of right-hand-side variables in the restricted model is 17, including the intercept. F-statistic of 10.12 was calculated. According to the F-value table, this is significant at .001 level of p-value, and thus, the DDII-North Korea is a significant factor in the tourism model for South Korea.

4.2.3. Residual plot

The graph of residual plot with predicted value shows randomly dispersed points, and thus residuals are statistically independent (Figure 4-1). All graphs of residual plot with each independent variable show no patterns, and randomly dispersed dots, which means that each independent variable does not have relations with error terms. Therefore, a linear regression model is appropriate for the data. (Figure 4-2, 4-3, 4-4 and 4-5)
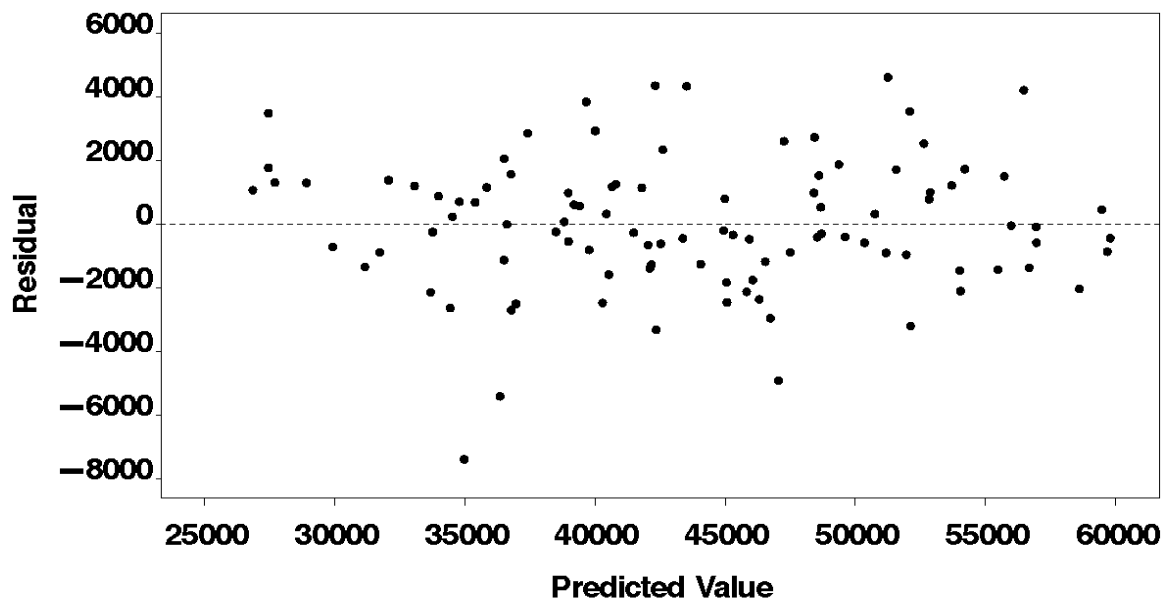
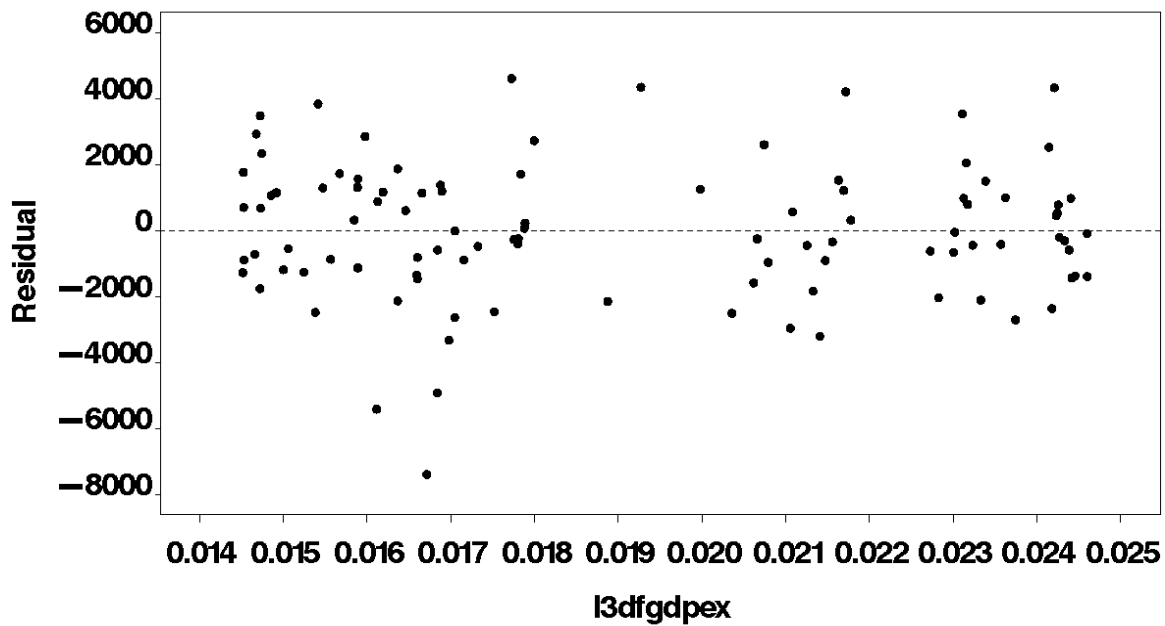Figure 4-1 Residuals and the predicted value

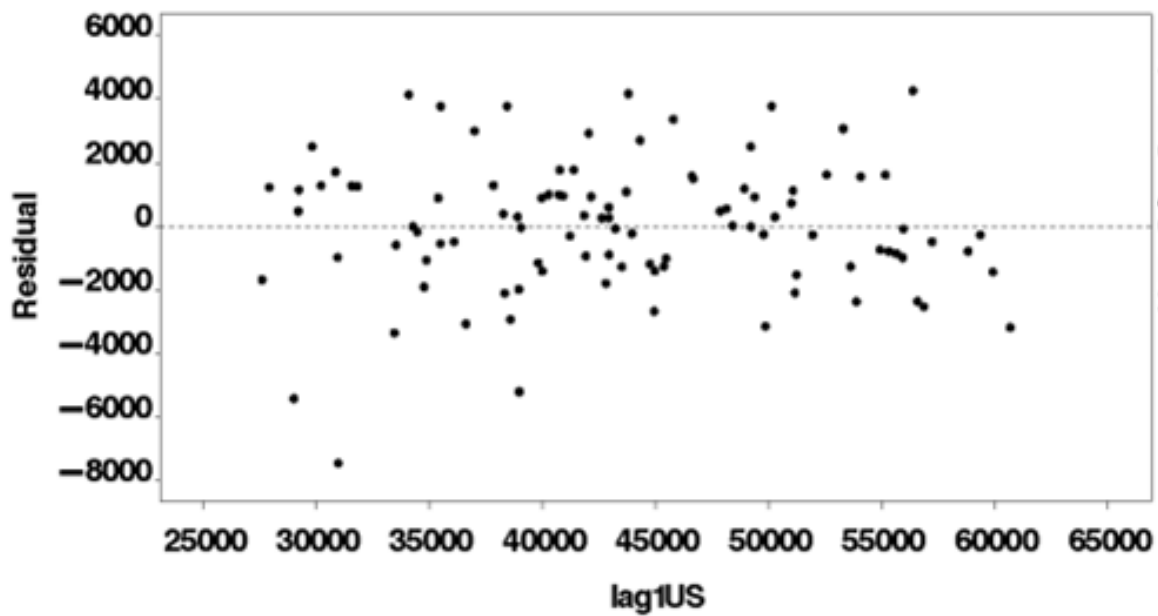Figure 4-2 Residuals and the income variable

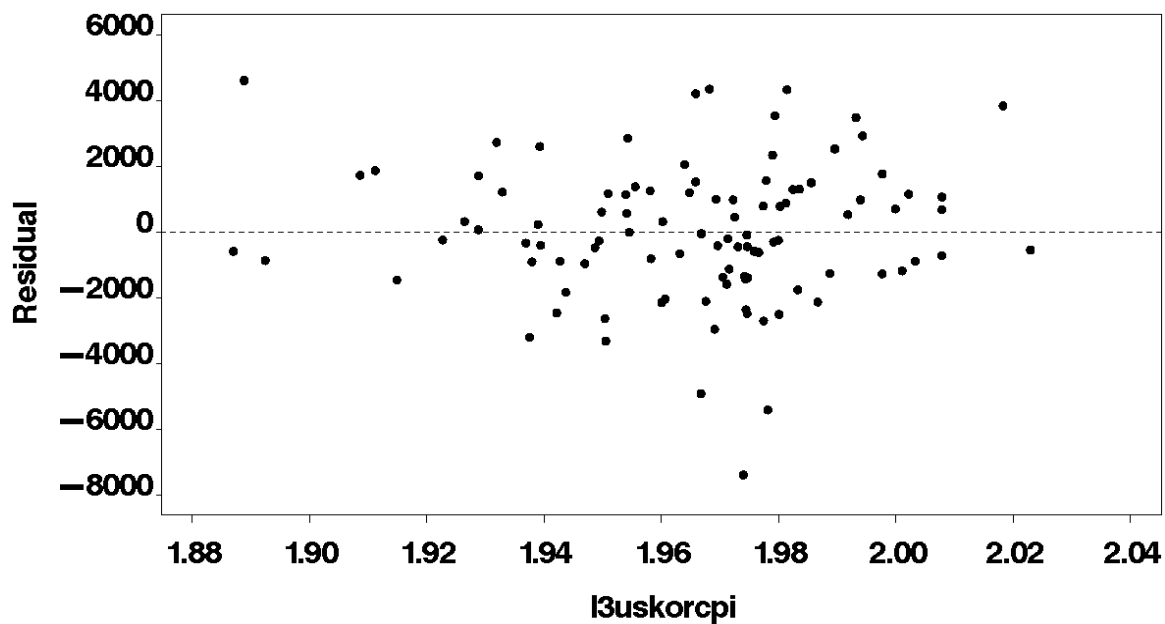Figure 4-3 Residuals and the lagged dependent variable
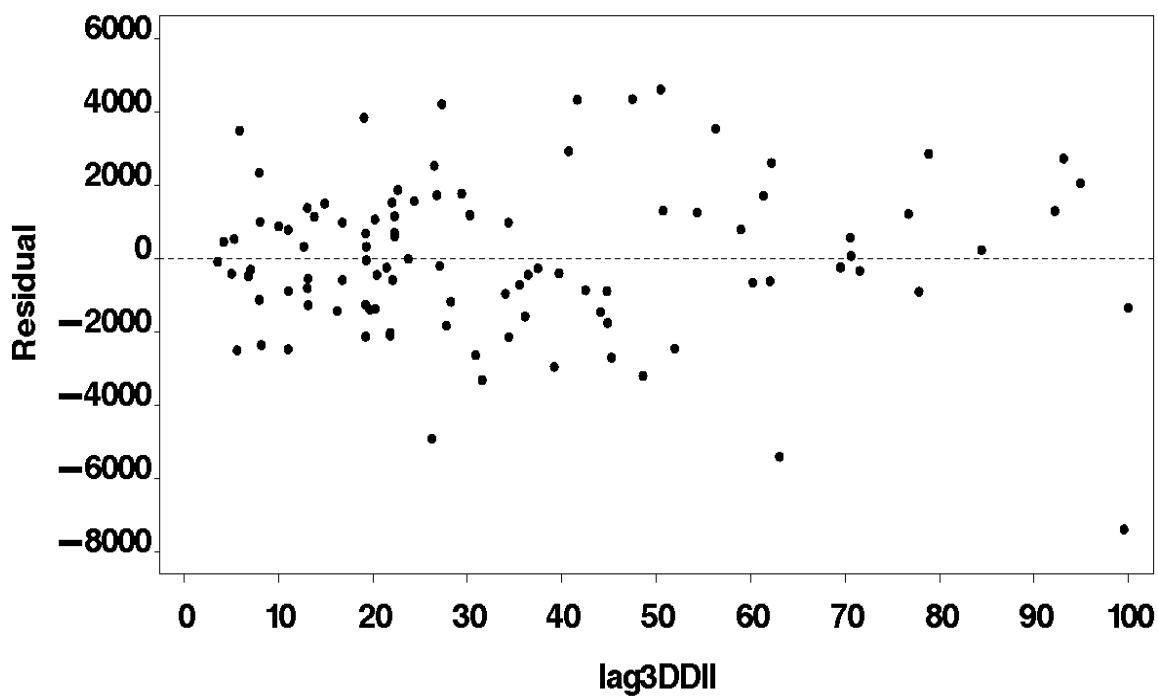
Figure 4-4 Residuals and the price variable

Figure 4-5 Residuals and the DDII variable

CHAPTER 5. CONCLUSION

This chapter summarized the research; provides the importance of the study; and discusses limitations, and suggestions for future research.

5.1. <u>Summary of the study</u>

The main purpose of the study was to demonstrate how the image of North Korea can be constructed in the origin country (US), and investigate how the destination image of North Korea influences US tourism demand for South Korea. To verify reflected image of North Korea, Dynamic Destination Image Index proposed by Stepchenkova (2009) was used in this study. The DDII represents a new method deriving destination image measurements from media materials published about the destination in a particular country, and reflects favorability of news coverage using content analysis. Therefore, the DDII index can be obtained for any origin/destination countries in the form of weekly, monthly, quarterly, or annual time series. The proposed DDII can be applied to represent a qualitative factor of destination image in forecasting tourism model since it is a time series data.

To construct the DDII-North Korea, three major US newspapers (USA today, New York Times, and Washington Post) were selected. To ensure relevance of the selected materials to North Korea, the articles with words "North

Korea" in headlines were searched. Through the reading of the first 5-10 sentences of each article, only the news about international relations and safety was examined because most of the news reports about North Korea were related to those themes. After the favorability coding was completed, the numeric value (-1, 0, 1) of each article was multiplied by the daily circulation of each media source to give a weighted effect. Next, the resulting values of each article were aggregated in monthly scores. Finally, several transformation were applied to the DDII-North Korea monthly scores in order to bring the index to a more interpretable and understandable scale.

To validate the DDII-North Korea, the index was tested using regression analysis of US tourism demand to South Korea. The model containing the DDII was compared to the base model determined by the level of income, price, past tourist arrivals, and dummy variables such as Sep 11th terrorist attack and seasonality. The result indicated that: the fit of the model with the DDII was significantly improved than the base model, and thus, the validity of the DDII was confirmed. Therefore, the effect of North Korea on South Korean tourism demand was observed.

5.2. <u>Importance of the study</u>

Based on the results of the study, it was revealed that news articles about North Korea released 3 months prior to analysis have the most impact on South Korea tourism demand from the United States. When one unit of the index-North

korea increases, about 44 US travelers may cancel the trip to South Korea. The elasticity of DDII .035 indicates that 1% increase of the index results in .035% (153 tourist arrivals) decrease in monthly tourism demand. Since the elasticity was calculated based on the average number of the index and the tourism demand, this appears to be relatively small. However, the maximum elasticity of the DDII is .15, resulting in decrease of 657 tourist arrivals to South Korea. Furthermore, because news about North Korea not only is usually reported in US market but also in other international tourism markets for South Korea, an even larger impact on the number of arrivals is expected. This finding on the monthly variations of US arrivals should be useful for tourism professionals in South Korea to engage in decision making regarding issues of tourism activity, such as the settlement of service facilities and labor and planning, and marketing activities such as packaging and promotion that can help compensate for the volatility of the market demand (Ismail, Iverson & Cai, 2000).

Accurate forecasts of tourism demand lead a destination country to make the most effective use of its tourism resources. Stekler (2003) emphasized that understanding the dynamics of a changing environment including the unusual events, would be more important to improve forecast accuracy than just developing models and techniques. Kim and Wong (2006) stated that to detect volatility of tourism circumstances is vital to predict demand more accurately for all tourism destinations. In the meantime, a novel approach of this study may be appropriately applied to examine volatility and its determinants of international tourism demand in other countries.

5.3. Limitations and future research

Although this study offered meaningful information in explaining the variations in South Korean tourism demand derived from the effect of North Korea, future research is needed to extend the conceptual method to overcome a few limitations. First, due to the limited availability of news articles in the LexisNexis Academic database, only three newspapers (New York Times, Washington Post, USA today), particularly from the Eastern US, were selected for the study. However, the DDII-North Korea constructed using a few newspaper samples may not be generalized. Other newspapers, for instance, the Los Angeles Times, might have a different impact on tourist arrivals from the Western US. Therefore, future research should be performed to include more media samples. Collection from the Associated Press (AP) global news network is recommended. And also, among the various media sources that reflect a destination image: i.e., general newspapers, news broad cast, television programs, documentaries, travel guides, books, as well as word of mouth (Gartner, 1994), future research is required to find out what kind of sources are the most appropriate for reflecting destination, thus constructing the DDII.

Second, due to the nature of the textual material, there were cases when a single article could have been classified into three favorable categories (positive, negative, and neutral). Those often happened with the long articles. In these cases, the researcher had to decide what the main topic was in order to code the article. However, judgmental standard of the individual may be varied.

In addition, because only 12 articles were provided to the raters to test the consistency of coding and the relative strength of the agreement was between moderate and substantial, the reliability of favorability coding may be debatable. Reliability test with a larger number of articles are recommended in future research.

Third, for favorability coding, a single article was selected as a recording unit. While content analysis researchers generally agree that a single article is the least reliable recording unit (Holsti, 1969; Krippendorff, 2004), that unit has extremely large amount of textual data, as well as a wide range of topics with respect to North Korea. Hence, the researcher must decide how much degree he needs to obtain a research with great satisfaction.

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