SPILLOVER EFFECTS OF TOURISM POLICY CHANGES ON HOSPITALITY INDUSTRIES

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ABSTRACT

This study aimed at using the industry-related spillover model to examine the spillover effects of the change in tourism policy and employed the induced employment model and the gross-induced added value model to measure the employment income, gross added value, and employment creation. Our results showed evidence that the consumption of Chinese tourists visiting Taiwan has brought a substantial impact on the hospitality and restaurant industries. In addition, the economy of scale created in the restaurant industry was smaller than that in the hospitality industry, since Chinese tourists allocated less expenditure for food. However, the spillover effects in the restaurant industry were larger than that in the hospitality industry.

JEL: C67, D57

KEYWORDS: Change in Tourism Policy, Employment, Added Value, Spillover Effect

INTRODUCTION

In 2008, the sub-mortgage crisis in the United States induced a global financial tsunami. The crash in financial markets resulted in a negative wealth effect, causing a substantial decline in asset values. The consumption capacity of countries in Europe and North America decreased, resulting in tremendously reduced imports from Asian countries. Declining international trade severely worsened the economies of countries worldwide (Lane and Milesi-Ferretti, 2008; Apergis and Tsoumas, 2009; Farhi and Tirole, 2009; Hume and Sentance, 2009; Warnock and Warnock, 2009; McCauley and Scatigna, 2011).

Taiwanese economy has been relied heavily on manufacturing and foreign sectors. The government paid little attention to the tourism industry. Under the unbalanced industrial structure, the fragile Taiwanese economy was deteriorated during the global financial crisis beginning in 2008. The global financial crisis led to a decline in exports and a rise in unemployment. It provided the government with an opportunity to re-consider the economic development policy. One way to resolve economic difficulties was that Taiwanese government made an adjustment in the tourism policy toward Chinese people by allowing them to visit Taiwan since July 2008. In the second half of 2008, the amount of Chinese tourists visiting Taiwan reached 329,204 and increased to 972,123 by 2009. By 2010, more than a million Chinese tourists had visited Taiwan, exceeding the amount of tourists from other countries and reaching the top rank of outbound tourists. The amounts of Chinese tourists visiting Taiwan in 2010 and 2011 were respectively 1,630,735 persons and 1,784,185 persons. To cater the flourishing consumption of Chinese tourists, the providers of Taiwanese tourism industry have invested considerable capital in establishing hotels and restaurants for the rapidly growing consumption demanded of Chinese tourists. Some hospitalities provide accommodation services only, whereas some provide accommodation with food services. The relationship between hospitality and restaurant industries is close. The providers of hospitality in Taiwan purchase and renovate old buildings in downtown as hotels or restaurants. Although the accommodation price is relatively low, both the transportation and facilities cater the requirements of Chinese tourists. It is a new economic activity that has not been observed in Taiwanese economic development. Through change in the tourism policy toward Chinese people, the Taiwanese government expects to mitigate the

pressure aroused by the downturn economy and continually rising unemployment induced by the global financial crisis.

The economic development in Taiwan has predominantly been driven by promoting exports. Few have expected the adjustment in the tourism policy to create current economic growth and employment opportunities. Based on the change in tourism policy, numerous new hotels and restaurants have been provided by remodeling older buildings in urban areas and have become part of and developed within emerging tourist attractions. The government is expectant toward the economic effects generated by new economic activities and hotel and restaurant providers are confident. The amount of increased income earned by the employees and employers in the hospitality and restaurant industries right after the adjustment in the tourism policy is unknown. The present study aimed to employ an industry-related spillover model to measure the spillover effect of adjustment in the tourism policy on the hospitality and restaurant industries, in terms of employment income, gross added value, and employment creation. The estimation in employment effects presents the contribution of Chinese tourists' consumption to the income and employment for the island economy. The estimation of gross added value illustrates the returns of the investments in the hospitality and restaurant. Few prior studies regarding the aspect have covered. We contribute to the existing literature by first using the industry-related spillover model to examine the economic effects of the change in tourism policy and employed the induced employment model and gross-induced added value model to measure the employment income, gross added value and employment creation. The rest of the paper is organized as follows: Section 2 reviews previous studies. Section 3 presents the methodology which contains the establishment of empirical models. Section 4 provides the empirical evidences and the conclusion is in Section 5.

LITERATURE REVIEW

The input-output model and the computable general equilibrium (CGE hereafter) models have been widely adopted as analysis tools in studies regarding the economic effects of tourism consumption in the 1990s. Adams and Parmenter(1995) employed CGE models to examine Australia's industrial and regional structure and predict its impact on Australia's tourism-related industry. Lee(1996) used the input-output model to evaluate the economic impact of South Korea's tourism industry, and employed the Gini's coefficient and Lorenz curve to show that the tourism industry had outperformed other industries regarding employment creation and tax income. Zhou, Yanagida , Chakravorty and Leung (1997) used the input-output model and the CGE model to evaluate the economic impact of Hawaii's tourism industry and compared those provided by the two models. Frechtling and Horvath(1999) employed the regional input-output model to estimate the multiplier effects of tourists' spending in Washington, D.C., and determined that, through tourism-related industries, an increase in total tourists' spending would benefit local workers' income and employment opportunities. Gheorghe, Valentina, Marius and Camelia (2010) documented that the appropriate use of local materials and labor potential would contribute to an economic revival. By employing a Logit model, Chen(2000) investigated variations in the consumption types of Japanese, Taiwanese, and South Korean tourists visiting the U.S. during 1997 and 1998, while Asia was experiencing a financial crisis.

Since the late of 1970s, China has reformed and opened its economy. Consequently, an increasing trend of investments in China has prevailed worldwide. The economic growth rate of China has grown by more than 10% annually and its gross domestic product (GDP) has increased substantially, leading to an increasing amount of outbound tourists annually. Since the mid-1990s, a large body of studies on the behaviors of Chinese tourists has been conducted (Wang and Sheldon, 1996; Zhang and Lam, 1999; Cai, Lehto and O'leary, 2001; Kim, Guo and Agrusa, 2005; Li, Harrill, Uysal, Burnett and Zhan, 2010). Particularly according to Wang and Sheldon (1996), the amount of Chinese tourists visiting Hong Kong increased to 1,943,678 in 1994 from 21,854 in 1984, with an annual growth of 24.6%. Zhang and Qu

(1996) reported that Chinese tourists' spending in Hong Kong rose to HK$10.6 billion in 1994 from HK$8 billion in 1993. Prior to 2000, Outbound Chinese tourism was in the initial stages. Cai, Boger and O'Leary (1999) also highlighted that Chinese tourists' purchasing power would increase with China's ongoing economic development.

Since 2000, Chinese outbound tourists have substantially increased, thus attracting the attention of countries worldwide owing to their amazing consumption capacity. Generally, the consumption propensity of Chinese tourists is a shopping-oriented type.World Tourism Organization(2003) and United Nations World Tourism Organization (2008) documented that shopping was the most popular activity or itinerary for Chinese tourists. The commodities purchased were primarily local specialties. United Nations World Tourism Organization (2003) and United Nations World Tourism Organization(2008) also investigated Chinese tourists' awareness of European tourism. Song and Witt(2006) found and forecasted that Macau would meet growing tourism demand through tourists from China by using the vector autoregressive models. The demand of tourism from mainland China was usually different from those from Western countries. The tourism-related industry in Macau should pay more attentions to meet the demand of residents from mainland China.

Agarwal(2012) explored the role and economic functioning of two English coastal resorts by the implementation of business and household surveys. Agarwal(2012) further indicated that resort economies were focused on the purchase and sale of low order goods and services through examining the spatial distribution of direct economic linkages among these resorts and hinterlands. It also provided dominant factors of the scope of the local economy integrated by households and firms. Wu, Li and Song(2012) examined three major tourism consumption including shopping, accommodation and foods outside hotels of the top four source markets for tourism in Hong Kong through a time-varying parameter almost ideal demand system model. Wu, Li and Song(2012) suggested various consumption trends and models across the source markets, and a useful reference for Hong Kong tourism-related industries and the government to enhance their competitiveness.

Their expenditures on shopping account for a large portion of their travel expenses, which is the type of shopping-oriented tourists (Becken, 2003; UNWTO, 2003; UNWTO, 2008). Previous studies regarding the hospitality and restaurant industries have mainly investigated the individual operations of businesses (Tavitiyaman, Qu and Zhang, 2011). Few studies have examined the impacts of tourism on the overall economy in Taiwan; instead, most previous studies have explored the operating performance of businesses. In Taiwan, the tourism issue attracted little attention until Chinese tourists were allowed to visit Taiwan. Wang and Wen (2010) evaluated the economic effects of change in tourism policy with allowing Chinese tourists to visit Taiwan, a policy which began in 2008. Wang and Wen (2010) documented that the consumption of Chinese tourists have brought positive economic effects on the Taiwanese economy.

DATA AND METHODOLOGY

Based on the year 2006 Industry-related table released by the Taiwanese government in 2009, we employed an industry-related spillover model to measure the spillover effect of adjustment in the tourism policy on the hospitality and restaurant industries. The rest of the data in the present study are collected from the publications by the Taiwan Tourism Bureau, such as the number of international tourists visiting Taiwan in 2011, tourists' daily expenditures, expenditure items, and the average number of days that foreign tourists would visit Taiwan.

There are two types of industry-related models, which are the competitive import and the non-competitive import models. The former describes the competitive relationship between imported and exported goods within the same industry. The later formulas that the competitive relationship does little exist between

them. As for the extent of Taiwan's import level influenced by the size of the domestic demand, we employ the competitive type of the industry-related spillover model for Taiwan's trade-oriented economy. Based on the estimates from the industry-related model, we would investigate the extent of interdependence among industries. The processes of spillover effects consist of direct and indirect effects. The indirect spillover effects might include the first, the second, and the third and so on. In the present study, we just estimate the first two (On the basis of the estimates from the industry-related model, the third indirect spillover effect is gradually died out. It is trivial for the whole economy. In this study, therefore, we only obtain the estimate the direct, the first and second spillover effects.)

The supply-demand equilibrium equation of the competitive import type of the industry-related spillover model could be constructed as

$$\sum_{j=1}^{n} x_{ij} + F_i^d + E_i = X_i + M_i, i = 1,2,\cdots n \quad (1)$$

where x_{ij} denotes the per output for industry j resulting from the input of industry i; is the amount of the domestic final demand for industry i and E_i is the amount of the export demand for industry i ; X_i is the amount of production for industry i ; M_i is the amount of import for industry i. We could then rewrite equation (1) to obtain the following,

$$\sum_{j=1}^{n} a_{ij}X_j + F_i^d + E_i = X_i + M_i, i = 1,2,\cdots n \quad (2)$$

where $a_{ij}= x_{ij}/x_j$; a_{ij} is the input coefficient which denotes the input from industry i per output for industry j (i = 1, …, n; j=1,2, …n); x_j represents the total output of industry j and x_{ij} stands for per output for industry j resulting from the input of industry i. The measure of import (M_i) is specified:

$$M_i = m_i(\sum_{j=1}^{n} a_{ij}X_j + F_i^d), i = 1,2,\cdots n \quad (3)$$

From equation (3), the import coefficient could be formulated as

$$m_i = {M_i}\Big/{(\sum_{j=1}^{n} a_{ij}X_j + F_i^d)} \quad , i = 1,2,\cdots n \quad (4)$$

Combining equations (2) and (3), we obtained as follows

$$X_i - (1 - m_i)\sum_{j=1}^{n} a_{ij}X_j = (1 - m_i)F_i^d + E_i, i = 1,2,\cdots n \quad (5)$$

In terms of matrix, equation (5), which is the competitive import type of the industry-related spillover model, could be rewritten as

$$X = [I - (I - \bar{M})A]^{-1}[(I - \bar{M})F^d + E] \quad (6)$$

where A is the input coefficient matrix (n×n), A could be given

$$A = \begin{bmatrix} a_{11} & \cdots & a_{1n} \\ \vdots & \ddots & \vdots \\ a_{n1} & \cdots & a_{nn} \end{bmatrix} \quad (7)$$

I is the identity matrix; $\bar{M}$ represents the diagonal matrix of import coefficient (n×n), $\bar{M}$ is

$$\bar{M} = \begin{bmatrix} m_1 & \cdots & 0 \\ \vdots & \ddots & \vdots \\ 0 & \cdots & m_n \end{bmatrix} \quad (8)$$

$I - \bar{M}$ stands for rate of Taiwan's self-supplying ; $I - \bar{M}$ is specified as

$$I - \bar{M} = \begin{bmatrix} 1 - m_1 & \cdots & 0 \\ \vdots & \ddots & \vdots \\ 0 & \cdots & 1 - m_n \end{bmatrix} \quad (9)$$

FD deducted import from the aggregate expenditures is the matrix of Taiwanese final consumption and investment; E denotes the export vector(n×1) at period t, which is specified as

$$E = \begin{bmatrix} E_1 \\ \vdots \\ E_n \end{bmatrix} \quad (10)$$

; $[I - (I - \bar{M})A]^{-1}$is the Leontief inverse matrix, which is so called Leontief multiplier. It measures the extents of the direct and indirect spillover effects of the foreign tourists on the tourism-related industries. Assume that there is no impact on Taiwan's export from the consumption of foreign tourists; the industry-related spillover model could be modified as

$$\begin{aligned} X &= [I - (I - \bar{M})A]^{-1}[(I - \bar{M})F^d] \\ &= \left[(I - \bar{M})F^d\right] + (I - \bar{M})A\left[(I - \bar{M})F^d\right] + [(I - \bar{M})A]^2\left[(I - \bar{M})F^d\right] \\ &\quad + [(I - \bar{M})A]^3\left[(I - \bar{M})F^d\right] + \cdots \\ &= \left[(I - \bar{M})F^d\right] + (I - \bar{M})A\left[(I - \bar{M})F^d\right](I + \left[(I - \bar{M})F^d\right] + [(I - \bar{M})A]^2 + \cdots) \\ &= \underbrace{\left[(I - \bar{M})F^d\right]}_{\text{Direct Spillover Effects}} + \underbrace{[I - (I - \bar{M})A]^{-1}(I - \bar{M})A\left[(I - \bar{M})F^d\right]}_{\text{Indirect Spillover Effects}} \end{aligned} \quad (11)$$

Let Leontief inverse matrix $[I - (I - \bar{M})A]^{-1}$ be B^*, equation (8) could be reformulated as

$$X = \underbrace{\left[(I - \bar{M})F^d\right]}_{\text{Direct Spillover Effects}} + \underbrace{B^*(I - \bar{M})A\left[(I - \bar{M})F^d\right]}_{\text{Indirect Spillover Effects}} \quad (12)$$

Industry-related Spillover Model:

Following equation (11), we would estimate the direct, the first, the second indirect spillover effects. The measures could be constructed: The direct spillover effect is the product of change in domestic final demand (δF_i^d) and rate of self-supplying($I - \bar{M}$), that is

$$(I - \bar{M})\delta F_1^d \quad (13)$$

The First Indirect Spillover Effects:

Referring to equation (11), the first indirect spillover effect, which is the domestic induced amount of production (δX_1), is measured as

$$\delta X_1 = B_L[(I - \bar{M})\delta F_1^d] \quad (14)$$

The Second Indirect Spillover Effects:

In order to measure the second indirect spillover effects, we calculate that the rate of income of the employed (W^L) and the gross value added (W^G) measured by the ratio of the induced employment income (w_j^L)to the total input for industry j (X_j) are

$$W^L = \left[w_1^L w_2^L \cdots w_n^L\right], w_j^L = \frac{v_j^L}{X_j}, j = 1,2,\cdots n \quad (15)$$

where v_j^L is the employ income in the industry j. Combining equations (14) and (15), the induced employment income is

$$W^L \delta X_1 \quad (16)$$

The increase in consumption expenditure is

$$\bar{c} W^L \delta X_1 \quad (17)$$

where $\bar{c}$ denotes the Taiwan's average propensity to consumption in 2011

Therefore, the second change in increase in final demand for industry j is yielded

$$\delta F_2^d = C\bar{c} W^L \delta X_1 \quad (18)$$

where

$$C = \begin{bmatrix} c_1 \\ \vdots \\ c_n \end{bmatrix} \begin{bmatrix} f^d{}_{(c)1} \div (\sum_{k=1}^{n} f^d{}_{(c)k}) \\ \vdots \\ f^d{}_{(c)n} \div (\sum_{k=1}^{n} f^d{}_{(c)k}) \end{bmatrix} \quad (19)$$

Accordingly, the second indirect spillover effects could be measured as

$$\delta X_2 = B^*[(I - \bar{M})\delta F_2^d] \quad (20)$$

Combined equations (13), (14) and (20), the formula that we could estimate the total spillover effects of the consumption expenditures from Chinese Tourists on Taiwan's economy could be restated as

$$\underbrace{TE}_{\substack{\text{Total} \\ \text{Spillover Effects}}} = \underbrace{(I - \bar{M})\delta F_1^d}_{\substack{\text{Direct Spillover} \\ \text{Effects}}} + \underbrace{B^*\left[(I - \bar{M})\delta F_1^d\right]}_{\substack{\text{First Indirect} \\ \text{Spillover Effects}}} + \underbrace{B^*\left[(I - \bar{M})\delta F_2^d\right]}_{\substack{\text{Second Indirect} \\ \text{Spillover Effects}}} \quad (21)$$

Plugging the rate of induced employment income (w_j^L) and rate of gross added value(w_j^G) into equation(21), we could measure the induced employment income, gross added value and furthermore employment effect in industry j, which is hospitality or restaurant industry. The measurement is the following: Combined equations (21) and (15), the formula that we could use to measure the direct and indirect induced employment income of the consumption expenditures from Chinese tourists in

hospitality and restaurant industries could be restated as

$$\underbrace{TI^{L}}_{\substack{\text{Total Induced}\\ \text{Employment Income}}} = \underbrace{w_j^{L}(I-\bar{M})\delta F_1^{d}}_{\substack{\text{Direct Induced}\\ \text{Employment Income}}} + \underbrace{w_j^{L}B^{*}\left[(I-\bar{M})\delta F_1^{d}\right]}_{\substack{\text{First Indirect Induced}\\ \text{Employment Income}}} + \underbrace{w_j^{L}B^{*}[(I-\bar{M})\delta F_2^{d}]}_{\substack{\text{Second Indirect}\\ \text{Induced Emploment Income}}} \quad (22)$$

The employment coefficient matrix (H_i) is the required labor force (L_i) as producing (X_i). The employment coefficient matrix (H_i) could be computed as

$$H_i = \frac{L_i}{X_i}, \quad i = 1, \dots, n \quad (23)$$

where

$$H_i = \begin{bmatrix} h_1 & \cdots & 0 \\ \vdots & \ddots & \vdots \\ 0 & \cdots & h_n \end{bmatrix}, \; h_i = \frac{L_i}{X_i}, i = 1, \dots, n \quad (24)$$

The change in employment (δL_i)would be

$$\delta L_i = \{(I-\bar{M})\delta F_1^{d} + B^{*}\left[(I-\bar{M})\delta F_1^{d}\right] + B^{*}\left[(I-\bar{M})\delta F_2^{d}\right]\}H_i \quad (25)$$

in which employment effect is equal to spillover effects multiplied by employment coefficient. In the present study, we could employ equation (25) to measure the change in employment induced by tourism consumption from Chinese tourists, respectively.

$$W^{G} = \left[w_1^{G} w_2^{G} \cdots w_n^{G}\right], w_j^{G} = \frac{v_j^{G}}{X_j}, j = 1,2, \cdots n \quad (26)$$

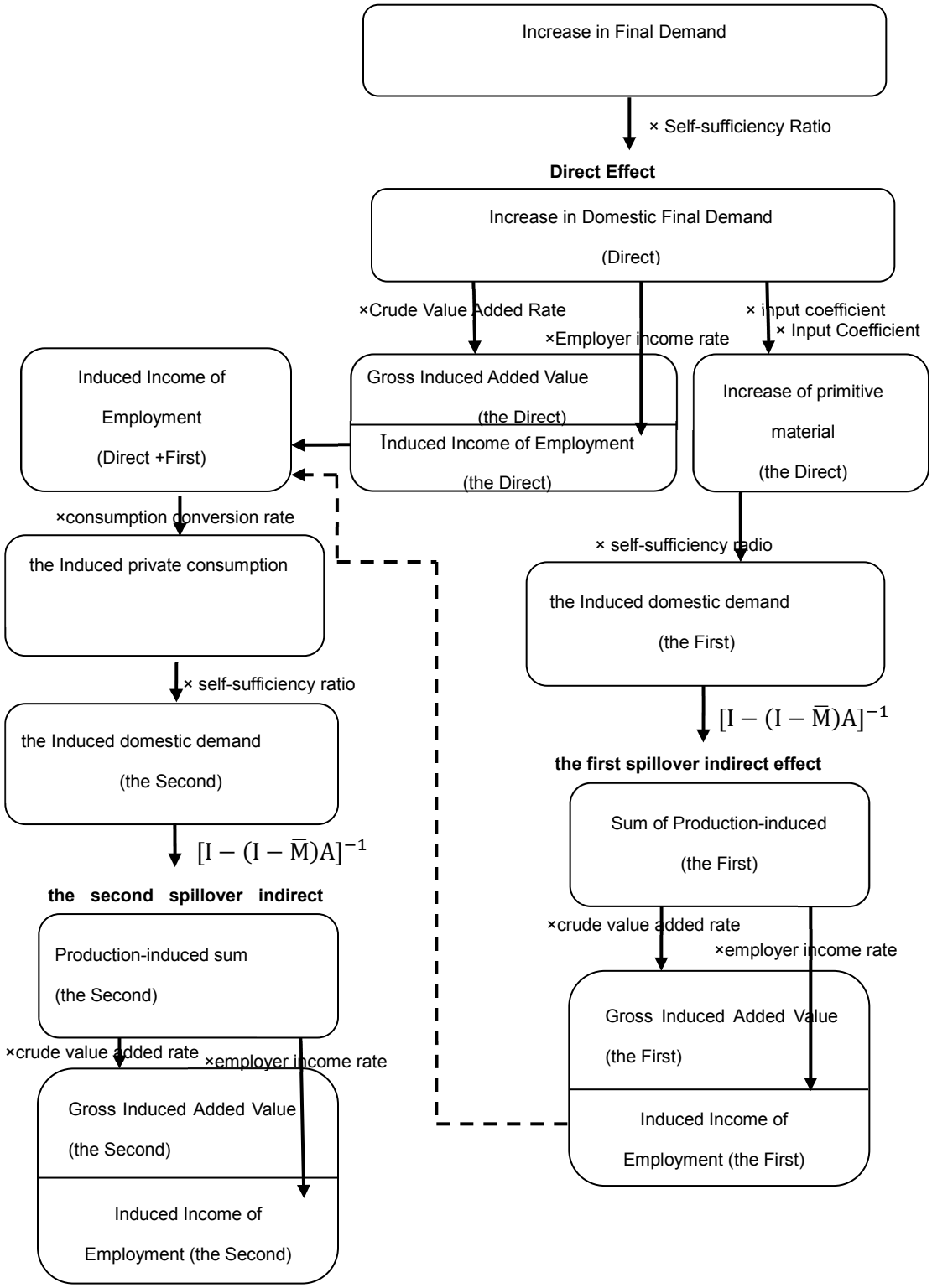
where v_j^{G} is the gross added value in the industry j. Plugging the rate of gross added value(w_j^{G}) in equation (26) into equation (21), we obtain equation (27), consisting of the direct gross added value, the first and the second indirect gross added value.

$$\underbrace{TV^{G}}_{\substack{\text{Total Gross}\\ \text{Added Value}}} = \underbrace{w_j^{G}(I-\bar{M})\delta F_1^{d}}_{\substack{\text{Direct Gross}\\ \text{Added Value}}} + \underbrace{w_j^{G}B^{*}\left[(I-\bar{M})\delta F_1^{d}\right]}_{\substack{\text{First Indirect Gross}\\ \text{Added Value}}} + \underbrace{w_j^{G}B^{*}[(I-\bar{M})\delta F_2^{d}]}_{\substack{\text{Second Indirect Gross}\\ \text{Added Value}}} \quad (27)$$

The estimating procedures of industry-related spillover model could be demonstrated concisely as Figure 1. Table 1 shows that, since the change in tourism policy toward Chinese people, the amount of Chinese tourists visiting Taiwan has increased rapidly, causing development of the hospitality industry. The direct induced employment income in the hospitality industry increased from US$30,718.5 thousand in 2008 to more than US$200 million in 2011. Moreover, the total employment income created after the first and the second indirect induced employment were US$30,915.8 thousand and US$204,981.1 thousand in 2008 and 2011, respectively. Concurrently, the consumption of Chinese tourists has induced a considerable amount of employment opportunities in the hospitality industry. The employment creation increased from 1,992 persons to 13,204 persons during 2008 to 2011. As mentioned above, Chinese tourists' consumption in the hospitality industry has an increase of US$534,960 thousand in induced employment income, accounting for 10.80% of those in overall industries. The consumption of Chinese tourists has also created 34,461 employment opportunities in the hospitality industry, accounting for 27.49% of the

employment creation in the overall industries. It greatly helps the lethargic Taiwanese economy.

Figure1. Flow of Industry-related Spillover Model



In the section, we discuss the gross added value from the perspective of providers. The gross added value is the operational income of restaurant operators, including labor wage, pre-tax operating income, fixed capital depreciation, and various taxes. Table 2 reports that Chinese tourists generated US$50,462.2 thousand of gross added value for Taiwanese hospitality operators in 2008. Subsequently, with the increasing number of Chinese tourists, the gross added value demonstrated an incremental tendency, reaching US$334,579.6 thousand in 2011 and generating enormous income for the hospitality industry in Taiwan.

Table 1: The Employment Income and Employment Creation in Hospitality Industry

Year	(1) Direct Induced Employment Income (ten thousand dollars)	(2) First Indirect Induced Employment Income (ten thousand dollars)	(3) Second Induced Employment Income (ten thousand dollars)	(4)=(1)+(2)+(3) Total Induced Employment Income	Employment Creation (Persons)
2008	3,071.85	12.44	7.29	3,091.58	1,992
2009	10,790.20	43.69	25.62	10,859.51	6,995
2010	18,926.19	76.63	44.93	19,047.76	12,270
2011	20,367.29	82.47	48.36	20,498.11	13,204
Total	53,155.53	215.23	126.20	53,496.96	34,461

1) Table 1 presents that, since the change in the tourism policy toward Chinese people, the amount of Chinese tourists visiting Taiwan has increased rapidly, causing the development of the hospitality industry. Based on the industry-related price model in the present study, the empirical results were obtained.

2) The amount for year 2008 is covered for the periods from July to December.

3) According to the data from the Taiwanese Tourism Bureau, Chinese tourists stayed in Taiwan for an average of five days.

4) The expenditure amount of the Chinese tourists in Taiwan is the US$213.10, US$232.11, US$246.23 and US$236.48 per day in 2008, 2009, 2010 and 2011, respectively. The average expenditure on the accommodation accounts for 29.15% of total expenditures.

Since allowing Chinese people to travel Taiwan, Chinese tourists' consumption expenses have generated a total of US$873,202.1 thousand in the hospitality industry, whereas the gross-induced added value is US$867,629.1 thousand, representing approximately 99.36% of the overall gross-induced added value. The first and the second indirect gross added value account for only 0.40% and 0.24%, respectively. Therefore, the gross added value of the hospitality industry has focused on direct effects, yielding minimum inducing effects. The travel expenses of Chinese tourists in Taiwan were only second to those of Japanese tourists. However, their average expenses on hospitality were merely US$67.62 per day, accounting for about 29.15% of their total expenses, which was apparently lower when compared to those of tourists from other countries. Chinese tourists' traveling expenses are allocated mainly to shopping, accounting for nearly 60% of the total expenses. Therefore, Chinese tourists might belong to the type of shopping-oriented tourists. If the consumption model of Chinese tourists resembles that of European and US tourists in emphasizing hospitality services, the spillover effect of Chinese tourists on the economy of the hospitality industry would be further enlarged.

The relation between the hospitality and restaurant industries is close. However, Chinese tourists allocate only US$15.50 per day on average to cover such expenses, accounting for only 6.68% of total expenses, lower than hospitality expenses. This indicates that Chinese tourists still have considerable room for growth regarding this aspect. Table 3 shows the induced employment income and employment effects on the restaurant industry in Taiwan caused by Chinese tourists. In 2008, Chinese tourists' consumption expenses generated employment-induced income of US$9,816.2 thousand and employment creation of 402 opportunities in the restaurant industry. As the number of Chinese tourists increased, the induced employment income reached US$65,084.1 thousand, and employment creation reached 2,688 opportunities in 2011. Since the change in tourism policy toward Chinese tourists, employment income in the restaurant industry increased by US$169,859.6 thousand and 6,962 jobs were created.

Table 2: The Gross Added Value in Hospitality Industry

Year	(1) Direct Gross Added Value	(2) First Indirect Gross Added Value	(3) Second Indirect Gross Added Value	(4)=(1)+(2)+(3) Total Gross Added Value
2008	5,014.02	20.30	11.90	5,046.22
2009	17,612.27	71.31	41.81	17,725.40
2010	30,892.20	125.09	73.34	31,090.63
2011	33,244.42	134.61	78.93	33,457.96
Total	86,762.91	351.31	205.99	87,320.21

1) *Based on the year 2006 Industry-related table released by the Taiwanese government in 2009, we employed an industry-related spillover model to estimate the gross added value Chinese tourists generated in hospitality industry.*
2) *The amount for year 2008 is covered for the periods from July to December.*
3) *The unit of amount is ten thousand US dollars.*
4) *According to the data from the Taiwanese Tourism Bureau, Chinese tourists stayed in Taiwan for an average of five days.*
5) *The expenditure amount of the Chinese tourists in Taiwan is the US$213.10, US$232.11, US$246.23 and US$236.48 per day in 2008, 2009, 2010 and 2011, respectively. The average expenditure on the accommodation accounts for 29.15% of total expenditures.*

Table 3: The Employment Income and the Employment Creation in Restaurant Industry

Year	(1) Direct Induced Employment Income(ten thousand US dollars)	(2) First Indirect Induced Employment Income(ten thousand US dollars)	(3) Second Indirect Induced Employment Income(ten thousand US dollars)	(4)=(1)+(2)+(3) Total Induced Employment Income(ten thousand US dollars)	Employment Creation (Persons)
2008	750.18	202.67	28.77	981.62	402
2009	2,635.07	711.90	101.06	3,448.03	1,413
2010	4,621.96	1,248.68	177.26	6,047.90	2,479
2011	4,973.89	1,343.76	190.76	6,508.41	2,668
Total	12,981.10	3,507.01	497.85	16,985.96	6,962

1) *Based on the year 2006 industry-related table released by the Taiwanese government in 2009, we employed an industry-related spillover model. Table 3 shows the induced employment income and employment effects on the restaurant industry in Taiwan caused by Chinese tourists over the years. Based on the industry-related price model in the present study, the empirical results were obtained.*
2) *The amount for year 2008 is covered for the periods from July to December.*
3) *According to the data from the Taiwanese Tourism Bureau, Chinese tourists stayed in Taiwan for an average of five days.*
4) *The expenditure amount of the Chinese tourists in Taiwan is the US$213.10, US$232.11, US$246.23 and US$236.48 per day in 2008, 2009, 2010 and 2011, respectively. The average expenditure on the accommodation accounts for 29.15% of total expenditures.*

As shown in Table 4, the gross added value is the operating income for restaurant operators. In 2008, the direct gross added value of the restaurant industry was US$10,912.2 thousand, with US$2,948.1 thousand for the first indirect gross-induced value and US$418.5 thousand for the second indirect gross-induced value. The total spillover amount of the gross added value was US$14,278,800. In 2011, the total spillover amount of the gross added value was US$94,672.8 thousand, which is 6.6 times greater than that of 2008. Between 2008 and 2011, the gross added value for the restaurant industry was US$247,081.6 thousand, when the first and the second indirect gross added value were respectively US$188,826.1 thousand and US$51,013.7 thousand, thus accounting for 20.65% and 2.93%, respectively, of the total gross added value.

Table 4: The Gross Added Value in Restaurant Industry

Year	(1) Direct Gross Added Value	(2) First Indirect Gross Added Value	(3) Second Indirect Gross Added Value	(4)=(1)+(2)+(3) Total Gross Added Value
2008	1,091.22	294.81	41.85	1,427.88
2009	3,833.04	1,035.54	147.00	5,015.59
2010	6,723.21	1,816.36	257.85	8,797.42
2011	7,235.14	1,954.66	277.48	9,467.28
Total	18,882.61	5,101.37	724.18	24,708.16

1) In Table 4, based on the year 2006 industry-related table released by the Taiwanese government in 2009, we employed an industry-related spillover model to estimate the gross added value is the operating income for restaurant operators.
2) The amount for year 2008 is covered for the periods from July to December. The unit of amount is ten thousands US dollars.
3) According to the data from the Taiwanese Tourism Bureau, Chinese tourists stayed in Taiwan for an average of five days.
4) The expenditure amount of the Chinese tourists in Taiwan is the US$213.10, US$232.11, US$246.23 and US$236.48 per day in 2008, 2009, 2010 and 2011, respectively. The average expenditure on the dining accounts for 6.68% of total expenditures.

CONCLUDING COMMENTS

In the present study, based on the year 2006 Industry-related table released by the Taiwanese government in 2009, we employed an industry-related spillover model to measure the spillover effect of adjustment in the tourism policy on the hospitality and restaurant industries. The rest of the data are collected from the publications by the Taiwan Tourism Bureau, such as the number of international tourists visiting Taiwan in 2011, tourists' daily expenditures, expenditure items, and the average number of days that foreign tourists would visit Taiwan. The estimation in employment effects presents the contribution of Chinese tourists' consumption to the income and employment for the island economy. The estimation of gross added value illustrates the returns of the investments in the hospitality and restaurant. We contribute to the existing literature by first using the industry-related spillover model to examine the economic effects of the change in tourism policy and employed the induced employment model and gross-induced added value model to measure the employment income, gross added value and employment creation.

Owing to the change in the tourism policy in Taiwan toward Chinese people, the consumption of Chinese tourists has brought the substantial impact on the hospitality and restaurant industries. We investigated the induced employment income, employment creation, and gross added value resulting from the consumption of Chinese tourists visiting Taiwan. The induced employment income and employment creation correlates the workers' livelihood in the hospitality and restaurant industries. The gross added value reflects operating performance of providers in the hospitality and restaurant industries. The consumption of Chinese tourists has generated enormous economic effects on the depressed Taiwanese economy. The induced employment income in the hospitality industry was US$534,960 thousand, accounting for about 10.80% of that in the overall industries. Moreover, employment creation in the hospitality industry generated 34,461 jobs, accounting for 27.49% of that in the overall industries. The gross added value increased by US$867,629.1 thousand, resulting mainly from direct effects; the first and the second indirect gross added value accounted for only 0.40% and 0.24%, respectively.

The economy of scale created by the restaurant industry was smaller than that by the hospitality industry, since Chinese tourists allocated less expenditure for food. However, the spillover effects in the restaurant industry were larger than that in the hospitality industry. The induced employment income increased by US$169,859.6 thousand, and 6,962 employment opportunities were created. The total spillover amount of the gross added value was US$247,081.6 thousand, mainly resulting from direct effects. However, the first and second indirect gross added values respectively accounted for 20.65% and 2.93% of the total spillover amount, in contrast to that in the hospitality industry, which was significantly different. Thus, the empirical results suggested that the spillover effects in the hospitality industry were smaller than that in the restaurant industry. However, since the direct effects in the hospitality industry were larger than that in the restaurant industry, the magnitude of employment income in the hospitality industry was larger.

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