

POLICY PROMOTING TOURISM, FOREIGN TOURISM REVENUE AND ECONOMIC GROWTH IN THAILAND: CAUSALITY AND RESPONSE PATTERNS

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Abstract: Thailand has been recognized by tourist as the top destination in the world with many and variety of tourism resources and cultures. Thai government has engaged in tourism development for the purpose of promoting economic growth. Ministry of Tourism and Sports (MOTS) set up strategies for tourism to stimulate tourism sector both in the term of tourists and their expenditures. As a result, tourism revenue sharply increased. Not only the increasing in government budget and tourism revenue, gross domestic products also move the same pattern. However, we never find the empirical research which is concentrated in the relationship among government spending in tourism, foreign tourism revenue and economic growth in Thailand. Therefore, this paper aims to explore the relationship among these three variables in the past decade by employing Geweke causality test, structural vector autoregressive (SVAR) and impulse response function. By employed quarterly data during 2005 to 2014, the results of Geweke Causality explore the strong causality in all direction between foreign tourism revenue and GDP both in aggregate and sub-sector in Thailand. For impulse response function, the policy of promote foreign tourism can shift the level of foreign tourism revenue. I also found that any unexpected shocks involving tourism will be disappear only in one quarter. In the case of subsector GDP, the response patterns are the same pattern which depicted in the case of aggregate GDP. The results can be applied for policy recommendation that tourism promoting policy should be implemented continuously in order to create a sustain economic growth.

Keywords: Tourism policy, Economic growth, Foreign tourism revenue, Thailand tourism

1. INTRODUCTION

Thailand has been recognized by tourist as the top destination in the world with many and variety of tourism resources and cultures. In the recent year, subject to the circumstance of uncertainty in the Thai and world economy, Thai government has engaged in tourism development for the purpose of promoting economic growth. Ministry of Tourism and Sports (MOTS) set up strategies for tourism to stimulate tourism sector both in the term of tourists and their expenditures. As a result, government budget allocate to promote tourism sector has been increased rapidly and continuously. In 2004, the budget spending on tourism purpose was

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843.1 billion baht. The government budget allocated to promote tourism was increased continuously. In 2010, 1,379.8 million baht was set up for promoting tourism. Government allocated the budget on tourism purpose with 106.4 percent growth (2,848.0 billion baht) in 2011. The campaign of promoting tourism sector still implemented continuously. In 2015, the budget allocated to promote tourism purpose recorded the highest amount which equals 4,230.2 million baht. During the past decade (2005-2014), the government budget in tourism purpose was increased about 20.4 percent each year.

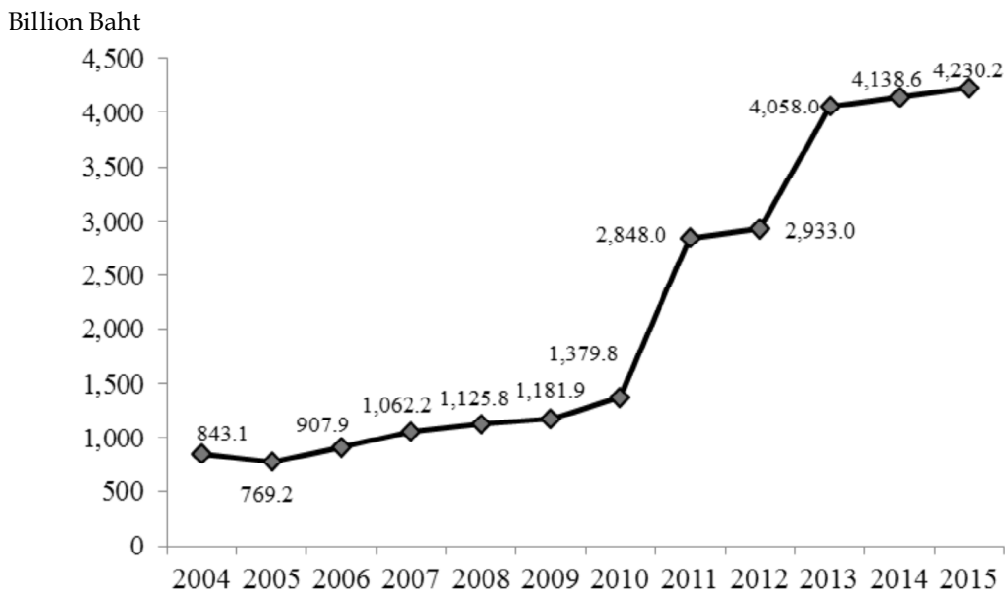


Figure 1.1: Government Budget to Promote Tourism

Source: Bureau of the Budget, Ministry of Fiscal

At the same period of promoting tourism sector, tourism revenue shows a positive trend (figure 1.2). Tourism revenue increased from 760.4 billion baht in 2005 to 992.1 billion baht in 2010. In recent year, tourism revenue was in the highest level equal to 1,869.9 billion baht and 1,881.3 million baht in 2013 and 2014. The highest volume of tourism revenue is foreign tourism revenue (approximately 60 percent of total tourism revenue during 2005-2014, Figure 1.3). Not only the increasing in government budget and tourism revenue, during 2005 to 2014, gross domestic products in figure 1.4 also move the same pattern. Real GDP shows the positive trend even in the period of uncertainty both in domestic and external economy. Tourism revenue generates final demand in many sectors especially in 4 sub-sectors which are related to tourism revenue; (1) hotels and restaurants (YHR), (2) health and social work (YHS), (3) transport, storage and communication (YTC)

and (4) wholesale and retail trade (YWR). Figure 1.5 indicated that real output of these sectors also represent a positive trend as indicated in government budget, tourism revenue and aggregate gross domestic products.

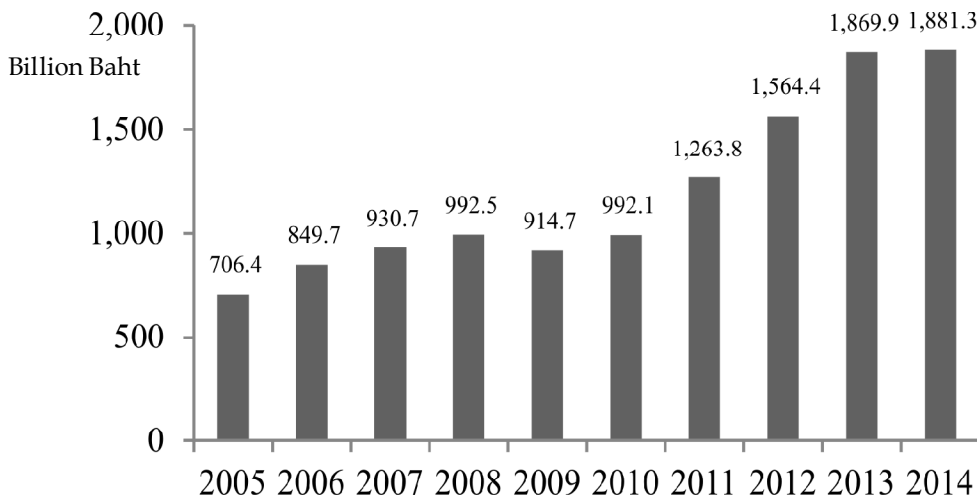


Figure 1.2: Tourism Revenue

Source: Ministry of Tourism and Sports

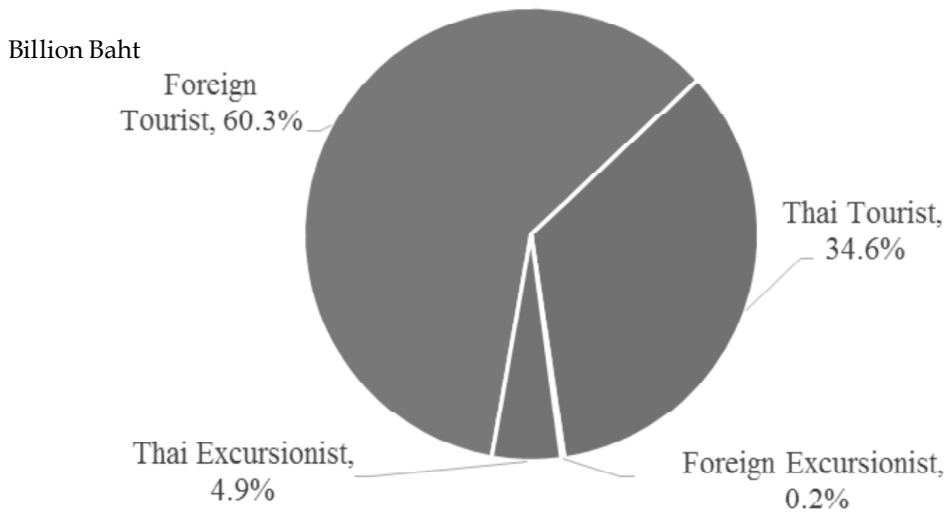


Figure 1.3: Structure of Tourism Revenue (2005-2014)

Source: Ministry of Tourism and Sports

Billion Baht

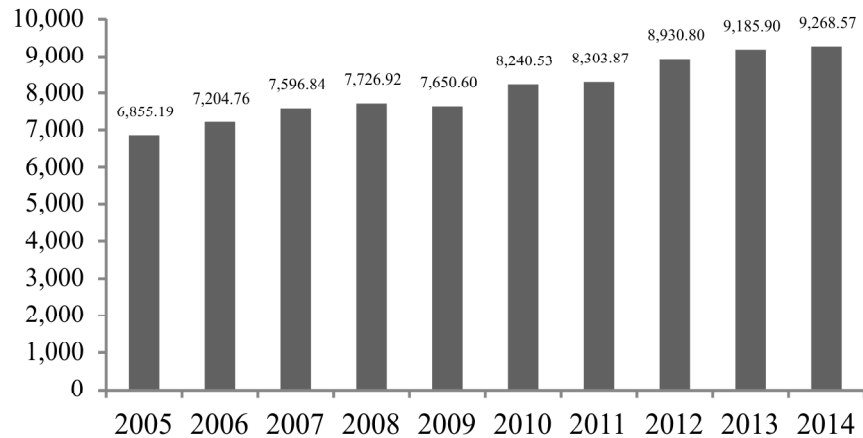


Figure 1.4: Gross Domestic Products at Constant Price

Source: NESDB

Billion Baht

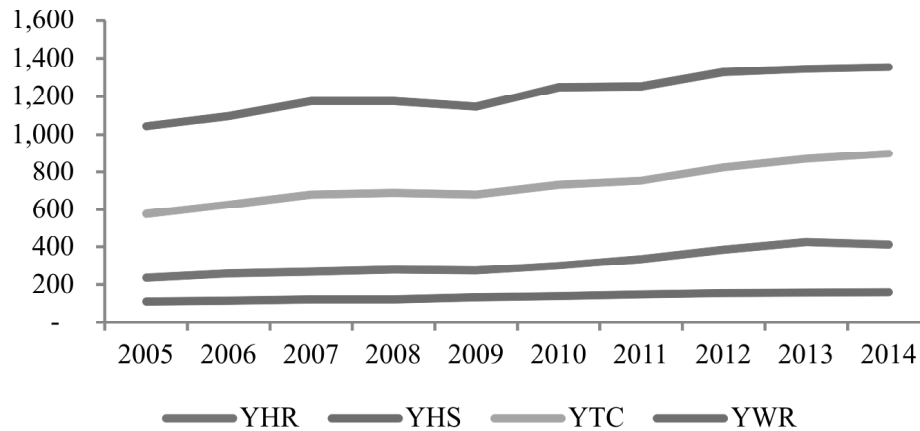


Figure 1.5: Gross Domestic Products in Tourism related Sector at Constant Price

Even we saw the movement of these three variable, we never find the empirical research which is concentrated in the relationship among government spending in tourism, foreign tourism revenue and economic growth in Thailand. Therefore, this paper aims to explore the relationship among these three variables in the past decade by employing Geweke causality test, structural vector autoregressive (SVAR) and impulse response function. The Geweke causality test will be employed to verify the causal relationship between foreign tourism revenue and gross domestic product both in total and sectoral level. The structural vector

autoregressive and impulse response function will be arranged for evaluate the response pattern of foreign tourism revenue, gross domestic product and government spending to promote tourism. The results will be used to set up an effective tourism policy to enhance the sustainable economic growth and, finally, initiate the economic development in the long-term.

2. RELATED WORK

The tourism-led growth hypothesis (TLGH) postulates that tourism expansion leads to economic growth because economic growth can be generated not only by increasing the amount of labor and capital within the economy but also expanding in tourism sector. Foreign tourism is an important receipt for low income countries as well as for developed countries. Policy for promoting tourism especially international tourism became a potential policy to economic growth and development. The role of tourism-led growth hypothesis was accepted in many papers. Hazari and Sgro (1995) concluded that expansion in tourism sector may have a favorable influence on economic growth in small economies. Balaguer and Catavella-Jorda (2002) applied the cointegration test and concluded that TLGH was accepted for Spain. Gunduz and Hatemi-J (2005) also found the unidirection causality, tourism causes economic growth in Turkey (1963-2002). Bihaka, Nsiah and Tadasse (2007) concluded that receipts from the tourism industry significantly contribute both to the current level of gross domestic product and the economic growth of Sub-Saharan African countries. Kim et.al. (2006) and Nowak et.al. (2007) also emphasis that tourism revenue is one of the productive channel to induce economic growth. Chien-Chang (2008) and Chen and Chiou-Wei (2009) supported the TLGH in OECD countries and Taiwan. Brida and Risso (2010) employed the impulse response functions to setup the conclusion that the effect of tourism revenue and economic growth is positive and continue. Samimi, Sadeghi and Sadeghi (2011) examine the causality and long-run relationships between economic growth and Tourism development in developing countries using P-VAR approach during 1995-2009. A bilateral causality and positive long-run relationship between economic growth and tourism development were found. The tourism-led growth hypothesis is confirmed in Sub-Saharan Africa. Not only the TLGH was accepted but the reverse relationship, GR cause TR, also accepted. Oh (2005) found the evidence for economic growth led tourism expenditures in Korea. Brida et.al. (2009), applied Johansen cointegration and Granger Causality Test, concluded that economic growth in Chile has been sensible to the expansion of international tourism. The bi-direction causality between tourism and economic growth can be found in Dritsakis (2004) for Greece, Kim et.al (2006) in the case of Taiwan. Ongan and Demiroz (2005) also agree with the bi-direction causality in Turkey. However, Lee and Chang (2008) also found the weak relationship between tourism and economic growth in ASEAN.

In recent work, Chou (2013) made a conclusion that tourism development promotes economic growth in transition countries based on panel causality analysis in 10 transition countries for the period 1988-2011. However, the directions of the causality in each country are variety. The tourism causes growth can found in Cyprus, Latvia and Slovakia. In Czech Republic and Poland, the reverse relationship was accepted. The feedback hypothesis holds in the case of Estonia and Hungary.

Based on the variety of conclusion, Lee and Chien (2008), Arslanturk *et al.* (2011) and Chen and Chiou-Wei (2009) agree that uncertainty variables, size of country and degree of specialization in tourism activities may affect the direction of the causality relationship at the specific moment. Kim *et al.* (2006) found that the structure of production is a factor which underlying the difference relationship between tourism revenue and economic growth in Taiwan and Korea. Tang and Jang (2009), Tang (2011) and Pablo-Romero and Molina (2013) studied the relationship between tourism and economic growth at sub-industry level.

3. DATA AND METHODOLOGY

Quarterly data during 2005 to 2014 will applied to analyze the causality between tourism revenue and economic growth and to evaluate the impacts of pure shock in government budget spending for tourism purpose, tourism revenue and economic growth on them. All of data set are collected from the related government office including Ministry of Tourism and Sports (MOTS), Bureau of the Budget (BOB) and Office of the National Economic and Social Development board (NESDB).

There are two econometrics tools which employed in this paper: Geweke's causality test and impulse response function. Geweke's causality test will be used to find the direction of causality between foreign tourism revenue and gross domestic products. The impulse response function is a function of coefficient which demonstrate the character of the time path of an interested variable in response to a pure shock. Three variables, government budget to promote tourism, foreign tourism revenue and gross domestic product, are arranged in SVAR for the calculation of impulse response function.

The causality test, proposed by Geweke (1982), was setup the following canonical representations to test the causal relationships between two variables. The total feedback between foreign tourism revenue (TR) and economic growth (GDP) can be decomposed into 3 directions including (1) causality from TR to GDP, (2) causality from GDP to TR and (3) instantaneous causality between TR and GDP. Geweke (1982) decomposed the total linear causality based on the spectral analysis. TR and GDP are linear projection following the AR process. Then, the causal relationship between TR and GDP can be represented as

$$TR_t = \alpha + \sum_{i=1}^r \beta_i TR_{t-i} + \varepsilon_{1t}; \text{Var}(\varepsilon_{1t}) = \sigma_{\varepsilon 1}^2 \quad (1)$$

$$TR_t = \alpha + \sum_{i=1}^r \beta_i TR_{t-i} + \sum_{j=1}^s \gamma_j GDP_{t-j} + \varepsilon_{2t}; \text{Var}(\varepsilon_{2t}) = \sigma_{\varepsilon 2}^2 \quad (2)$$

$$TR_t = \alpha + \sum_{i=1}^r \beta_i TR_{t-i} + \sum_{j=0}^s \gamma_j GDP_{t-j} + \varepsilon_{3t}; \text{Var}(\varepsilon_{3t}) = \sigma_{\varepsilon 3}^2 \quad (3)$$

$$TR_t = \alpha + \sum_{i=1}^r \beta_i TR_{t-i} + \sum_{j=-p}^s \gamma_j GDP_{t-j} + \varepsilon_{4t}; \text{Var}(\varepsilon_{4t}) = \sigma_{\varepsilon 4}^2 \quad (4)$$

Variance of the residual from each equation has an approximate asymptotic chi-square distribution. The optimal lag and lead lengths (r,s,p) are determined by AIC statistic. The F-statistic prepared to perform the hypothesis testing are:

Null Hypothesis: No total linear causality between TR and GDP

$$F_{TR,GDP} = \ln(\sigma_{\varepsilon 1}^2 / \sigma_{\varepsilon 4}^2) \cdot n \sim \chi^2(2d + 1) \\ = F_{TR \rightarrow GDP} + F_{GDP \rightarrow TR} + F_{TR \bullet GDP}$$

Null Hypothesis: TR does not cause GDP

$$F_{TR \rightarrow GDP} = \ln(\sigma_{\varepsilon 1}^2 / \sigma_{\varepsilon 2}^2) \cdot n \sim \chi^2(d)$$

Null Hypothesis: GDP does not cause TR

$$F_{GDP \rightarrow TR} = \ln(\sigma_{\varepsilon 3}^2 / \sigma_{\varepsilon 4}^2) \cdot n \sim \chi^2(d)$$

Null Hypothesis: GDP does not cause TR

$$F_{TR \bullet GDP} = \ln(\sigma_{\varepsilon 2}^2 / \sigma_{\varepsilon 3}^2) \cdot n \sim \chi^2(1)$$

where n is the number of observations and d is the difference in the degree of freedom between the paired modes. Not only the GDP in the aggregate level which applied to examine the direction of causality but also for the sub-sector GDP which will be tested.

After the causality test, the structural vector autoregressive (SVAR) among government budget on tourism, tourism revenue and gross domestic product will be constructed to calculate the impulse response function. The SVAR setup with 3 members which are government budget spending on tourism purpose (TB), foreign tourism revenue (TR) and gross domestic product (GDP). The SVAR is

$$\begin{aligned}
TB_t &= \alpha_{10} + \sum_{i=0}^p \beta_{1i} TB_{t-i} + \sum_{i=1}^p \chi_{1i} TR_{t-i} + \sum_{i=1}^p \delta_{1i} GDP_{t-i} + \varepsilon_{TB,t} \\
TR_t &= \alpha_{20} + \sum_{i=0}^p \beta_{2i} TB_{t-i} + \sum_{i=0}^p \chi_{2i} TR_{t-i} + \sum_{i=1}^p \delta_{2i} GDP_{t-i} + \varepsilon_{TR,t} \\
GDP_t &= \alpha_{30} + \sum_{i=0}^p \beta_{3i} TB_{t-i} + \sum_{i=0}^p \chi_{3i} TR_{t-i} + \sum_{i=1}^p \delta_{3i} GDP_{t-i} + \varepsilon_{GDP,t}
\end{aligned} \tag{5}$$

where ε_{TB} is pure shock on government budget spending on tourism purpose, ε_{TR} is pure shock on foreign tourism revenue, ε_{GDP} is pure shock on gross domestic products and p is optimal lag length. The GDP in 4 subsectors will be replaced in the case of subsector model.

Following the setup of SVAR, there are three sources of pure shocks in the model including pure shock on government budget spending on tourism purpose, pure shock on foreign tourism revenue and pure shock on gross domestic products. The concept of pure shock is defined as the unexplained change in the variable outside the SVAR and this change involve only one variable in the SVAR. For example, MOTS add-up the budget to promote tourism sector is change is the called pure shock in government budget spending on tourism purpose. This change does not generate any impact on foreign tourism revenue and gross domestic products. The fast growing in Chinese's GDP is one of the pure shock in foreign tourism revenue. The political instability in Thailand is an example of pure shock in gross domestic products.

The reduced form of SVAR present the time path of the variable in the model. Three reduced forms in SVAR are

$$\begin{aligned}
TB_t &= A_{10} + \sum_{j=1}^q A_{1j} TB_{t-j} + e_{TB,t} \\
TR_t &= A_{20} + \sum_{j=1}^q A_{2j} TR_{t-j} + e_{TR,t} \\
GDP_t &= A_{30} + \sum_{j=1}^q A_{3j} GDP_{t-j} + e_{GDP,t}
\end{aligned} \tag{6}$$

where A_{ij} is the impulse response coefficient, e_{TB} is total shock on government budget spending on tourism purpose, e_{TR} is total shock on foreign tourism revenue and e_{GDP} is total shock on gross domestic products

4. RESULTS

There are two empirical results will be presented in this section: causal relationship between foreign tourism revenue and gross domestic product, and response patterns of pure shocks. The details are following;

4.1. Causality Relationship between Foreign Tourism Revenue and Gross Domestic Product

In this sector, I examined the direction of causality between foreign tourism revenue and gross domestic product. The method of Geweke’s causality test was employed to identify the direction of the causality between this two variables. Following this method, there are two steps for the testing. First, the hypothesis of total linear causality between foriegn tourism revenue and GDP. This was arranged to verify the overall causality between variable. Second, in the case that the hypothesis of total linear causality was accepted, the individual pattern of the causality between foreign tourism revenue and GDP will be tested, including 3 patterns tourism revenue causes GDP, GDP causes tourism revenue and instantaneous causality between GDP and tourism revenue.

Table 4.1
Results of Geweke’s Causality Test for TR and GDP

<i>Null Hypothesis</i>	<i>F-stat.</i>	<i>Result</i>	<i>Conclusion</i>
No total linear causality	291.91	Reject	Total linear causality at $\pm = 0.01$
- TR does not cause GDP	50.95	Reject	TR causes GDP at $\pm = 0.01$
- GDP does not cause TR	80.07	Reject	GDP causes TR at $\pm = 0.01$
- No instantaneous linear causality	160.89	Reject	Instantaneous linear causality $\alpha = 0.01$

Table 4.1 explore the results of Geweke’s test. The F-statistic in the first row equals to 291.91. The result indicates that there is a total linear causality between foreign tourism revenue and GDP with statistical significance. For the individual direction of causality, all of F-statistic listed in Table 4.1 are greater than the critical value. Three null hypothesis were rejected. The results explore the strong causality in all direction between foreign tourism revenue and GDP in Thailand.

The causality between foreign tourism revenue and GDP in tourism related sectors will be tested. Table 4.2-4.5 showed that all of null hypotheses were rejected. It is only a null hypothesis was accepted in Table 4.2, no instantaneous linear causality between foreign tourism revenue and GDP in hotels and restaurants. The results emphasis on the significance causality in all direction between foreign tourism revenue and GDP both in aggregate and sub-sector in Thailand.

Table 4.2
Results of Geweke's Causality Test for TR and GDP in Hotels and Restaurants

<i>Null Hypothesis</i>	<i>F-stat.</i>	<i>Result</i>	<i>Conclusion</i>
No total linear causality	428.42	Reject	Total linear causality at $\alpha = 0.01$
- TR does not cause GDPHR	108.17	Reject	TR causes GDPHR at $\alpha = 0.01$
- GDPHR does not cause TR	320.26	Reject	GDPHR causes TR at $\alpha = 0.01$
- No instantaneous linear causality	0.00	Accept	No Instantaneous linear causality

Table 4.3
Results of Geweke's Causality Test for TR and GDP in Healthand Social Work

<i>Null Hypothesis</i>	<i>F-stat.</i>	<i>Result</i>	<i>Conclusion</i>
No total linear causality	376.59	Reject	Total linear causality at $\alpha = 0.01$
- TR does not cause GDPHS	141.74	Reject	TR causes GDPHS at $\alpha = 0.01$
- GDPHS does not cause TR	188.47	Reject	GDPHS causes TR at $\alpha = 0.01$
- No instantaneous linear causality	46.39	Reject	Instantaneous linear causality $\alpha = 0.01$

Table 4.4
Results of Geweke's Causality Test for TR and GDP in Transport, Storageand Communication

<i>Null Hypothesis</i>	<i>F-stat.</i>	<i>Result</i>	<i>Conclusion</i>
No total linear causality	351.83	Reject	Total linear causality at $\alpha = 0.01$
- TR does not cause GDPTC	21.74	Reject	TR causes GDPTC at $\alpha = 0.01$
- GDPTC does not cause TR	168.65	Reject	GDPTC causes TR at $\alpha = 0.01$
- No instantaneous linear causality	351.83	Reject	Instantaneous linear causality $\alpha = 0.01$

Table 4.5
Results of Geweke's Causality Test for TR and GDP in Wholesale andRetail Trade.

<i>Null Hypothesis</i>	<i>F-stat.</i>	<i>Result</i>	<i>Conclusion</i>
No total linear causality	232.67	Reject	Total linear causality at $\alpha = 0.01$
- TR does not cause GDPWR	132.65	Reject	TR causes GDPWR at $\alpha = 0.01$
- GDPWR does not cause TR	33.24	Reject	GDPWR causes TR at $\alpha = 0.01$
- No instantaneous linear causality	66.79	Reject	Instantaneous linear causality $\alpha = 0.01$

4.2. Response Patterns of Pure Shocks

This section used to investigate the impacts of pure shock in government budget on tourism purpose, foreign tourism revenue and GDP on themselves. The impulse response function for each variables are estimated following shocks transmission channel as

$$e_{TB,t} = \varepsilon_{TB,t}$$

$$e_{TR,t} = a_{11}\varepsilon_{TB,t} + \varepsilon_{TR,t}$$

$$e_{TR,t} = a_{12}\varepsilon_{TB,t} + a_{22}\varepsilon_{TR,t} + \varepsilon_{GDP,t}$$

For the aggregate level, the response of foreign tourism revenue (TR) to pure shock of government budget for tourism purpose (TB) is positive and consistent for 12 quarters as shown in Figure 4.1(a). The increasing in government budget induces an increasing in foreign tourism revenue even not in a large number but the response is consistent over 12 quarters. The result indicate that the policy of promote foreign tourism can shift the level of foreign tourism revenue.

For the response pattern of pure shock in foreign tourism revenue to its own shock, figure 4.1(b) exhibit that GDP will be increased rapidly after one quarter after the existing of positive pure shock in tourism promoting policy. However, its response decline rapidly. Any unexpected shocks involving tourism will be disappear only in one quarter.

In Figure 4.1(c), the pure shock in GDP generate a slice impact on foreign tourism revenue. The result implies the economic recession and political instability

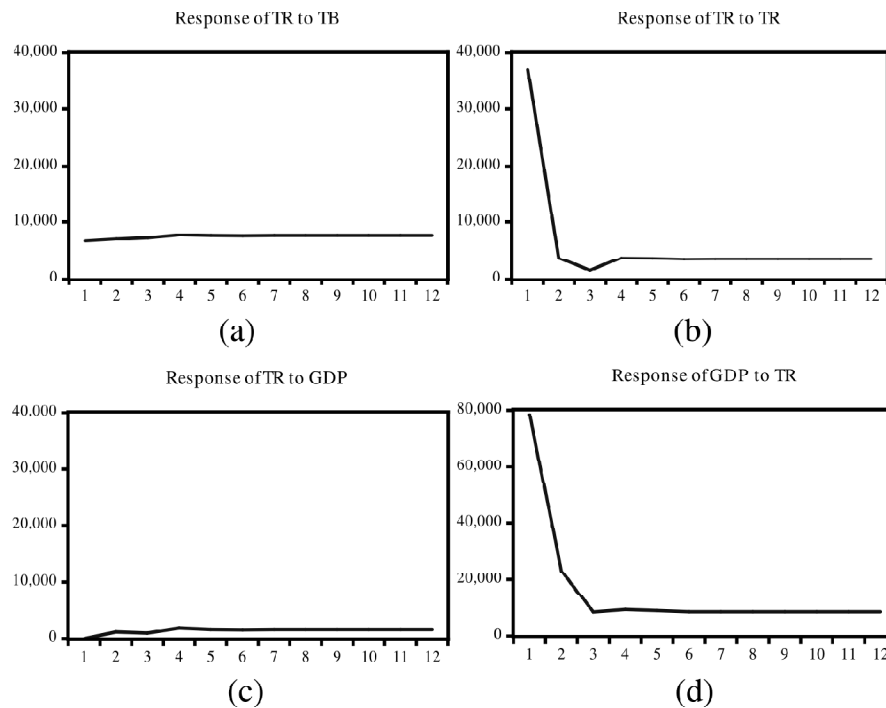


Figure 4.1: Response Pattern to one S.D. Pure Shock (Aggregate GDP)

Note: The full version of response pattern shows in Appendix

generate a less impact on tourism revenue. The response of GDP to foreign tourism revenue absorbed rapidly after 1 quarter as in figure 4.1(d). Three quarters after setup the positive pure shock in foreign tourism revenue, GDP will increase not in the high level.

The impulse response function of the sub-sector of GDP were listed in Figure 4.2 to Figure 4.5. Figure 4.2 is the response of foreign tourism revenue to positive shock in government budget in tourism promoting purpose. The pure shock in government budget initiates the positive response in all sub-sector GDP. Response of GDP in hotels and restaurants, health and social work, transportation and communication, and wholesale and retail trade on shock in tourism promoting policy are constant over 12 quarters. The responses of sub-sector GDP to tourism promoting policy are the same pattern which is represented in the case of aggregate GDP. Figure 4.3 represents the response of foreign tourism revenue to its own shock. The immediate adjustments of foreign tourism revenue were found in all sub-sector cases. One quarter after the existing of pure shock, foreign tourism revenue declined rapidly.

The responses of foreign tourism revenue to positive shock in sub-sector GDP, as shown in figure 4.4, explore the slice and consistent positive response pattern. The patterns are the same pattern which depicted in the case of aggregate GDP. For the response of sub-sector GDP to pure shock in foreign tourism revenue,



Figure 4.2: Response Patterns to one S.D. Pure Shock in TR to TB in Sub-sector Model

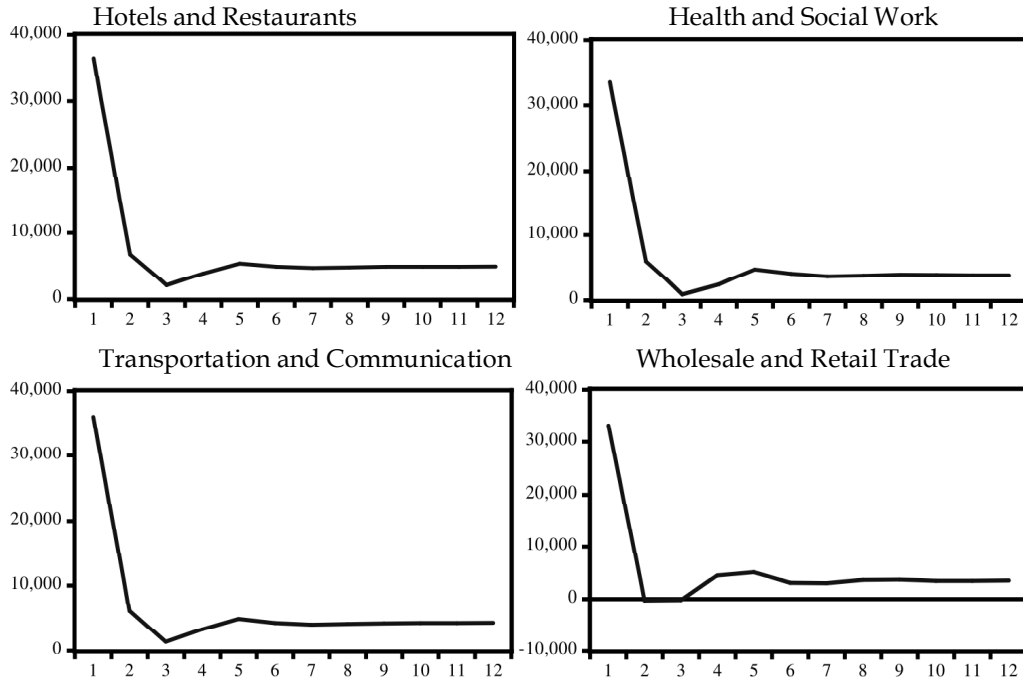


Figure 4.3: Response Patterns to one S.D. Pure Shock in TR to TR in Sub-sector Model

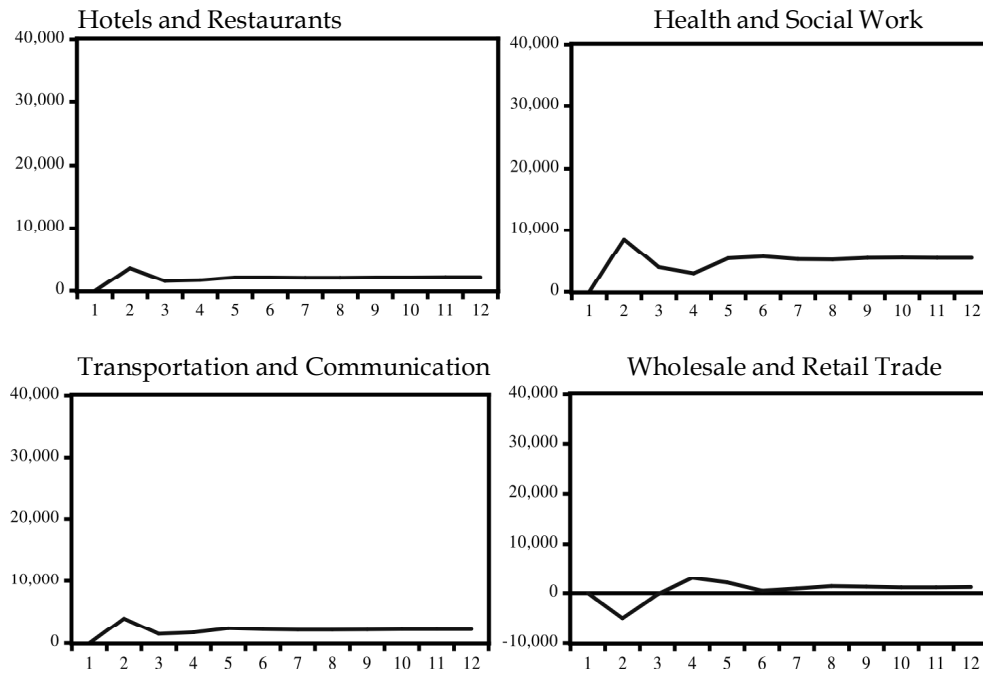


Figure 4.4: Response Patterns to one S.D. Pure Shock in TR to GDP in Sub-sector Model

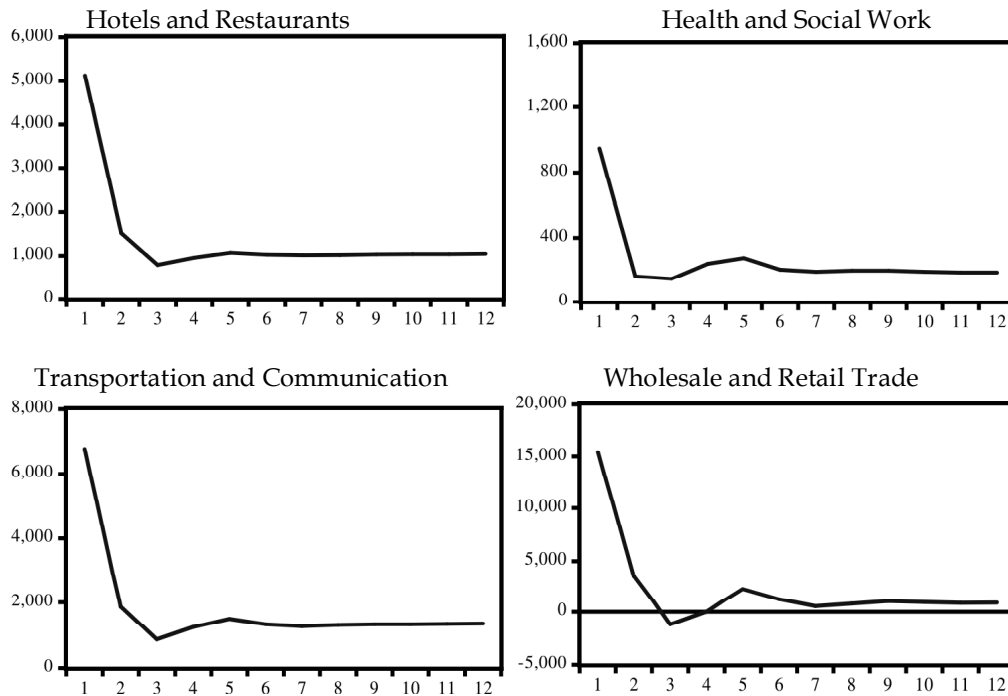


Figure 4.5: Response Patterns to one S.D. Pure Shock in GDP to TR in Sub-sector Model

subsectors of GDP were highly response to positive shock in foreign tourism revenue only for one period after the pure shock occurred. Three periods after the shock, the responses of subsector GDP are small and constants.

5. CONCLUSION

This paper investigate the causality relationship between foreign tourist revenue and domestic output and also evaluate the impacts of the pure shocks of foreign tourism revenue, domestic output and government spending on tourism. The causality test indicates the strong causality relationship in all directions between foreign tourism revenue and domestic output. The conclusion also the same conclusion in the case of the causality between foreign tourism revenue and output in tourism related sectors. The results suggested that not only the policy in which promoting tourism will be followed by an increasing in domestic output but the policy that promoting domestic output also induce foreign tourism revenue as well. The results of impulse response function setup by SVAR explore the response patterns of foreign tourism revenue, domestic output and government budget spending on tourism to pure shock of each variable. Pure shock in foreign tourism revenue generate a significance impact on gross domestic product only for one or

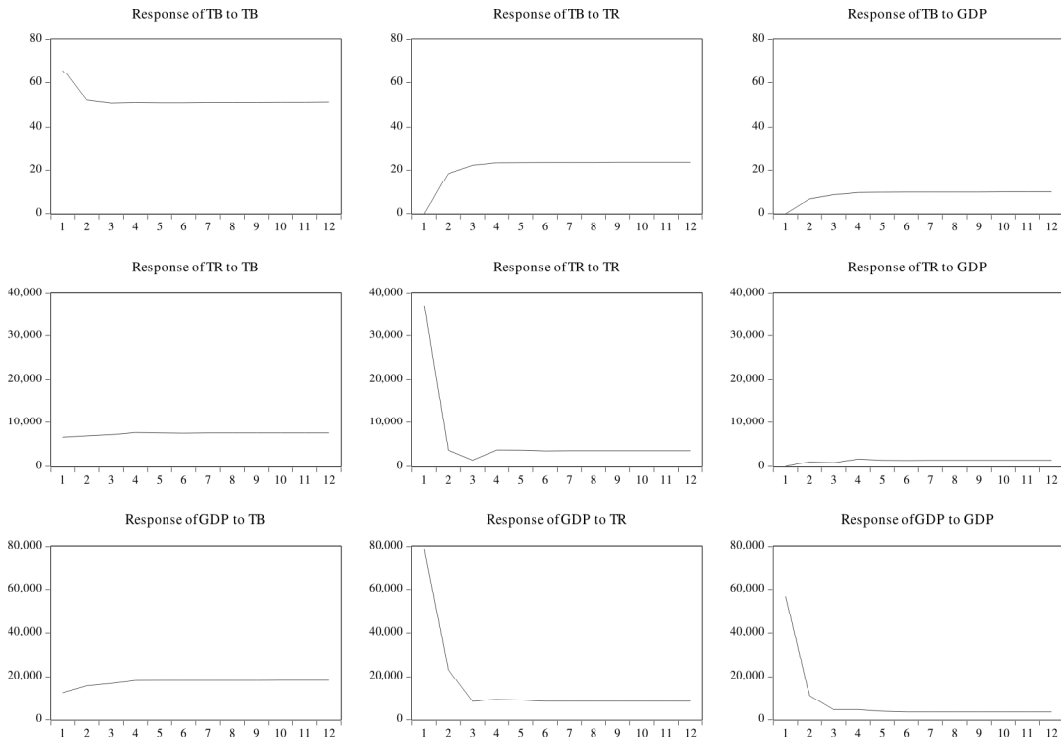
two quarters after the existing of shock. In contrast, pure shock of government budget can stimulate the foreign tourism revenue and gross domestic product even in a small number but for long-term. The results can be applied for policy recommendation that tourism promoting policy should be implemented continuously in order to create a sustain economic growth.

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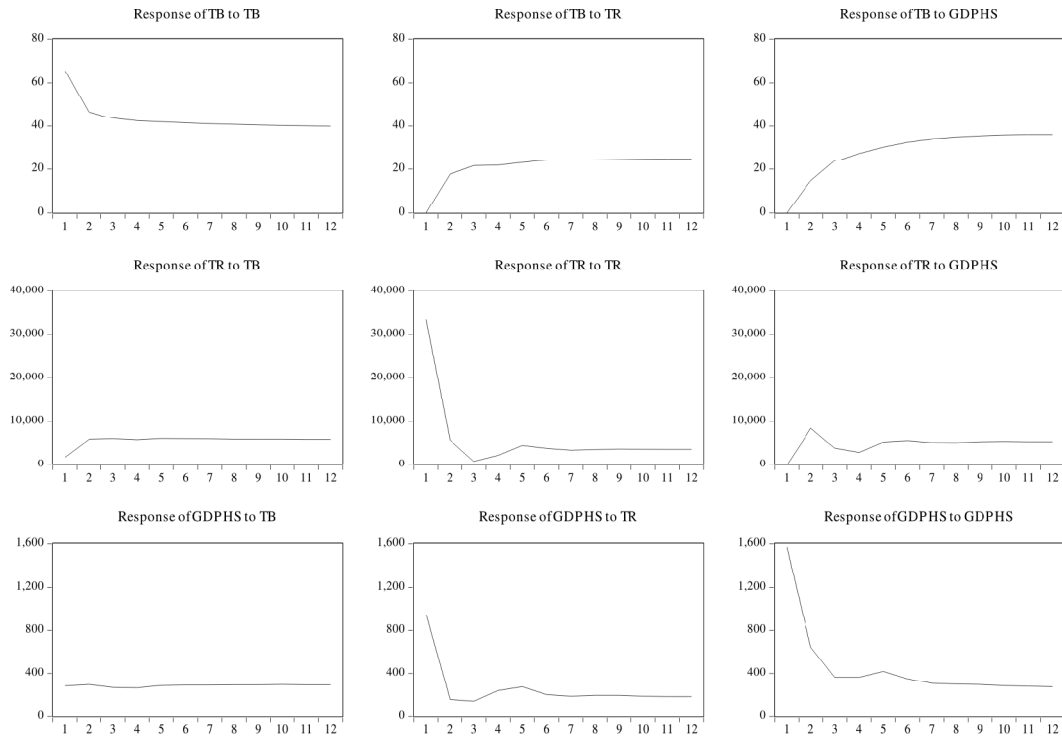
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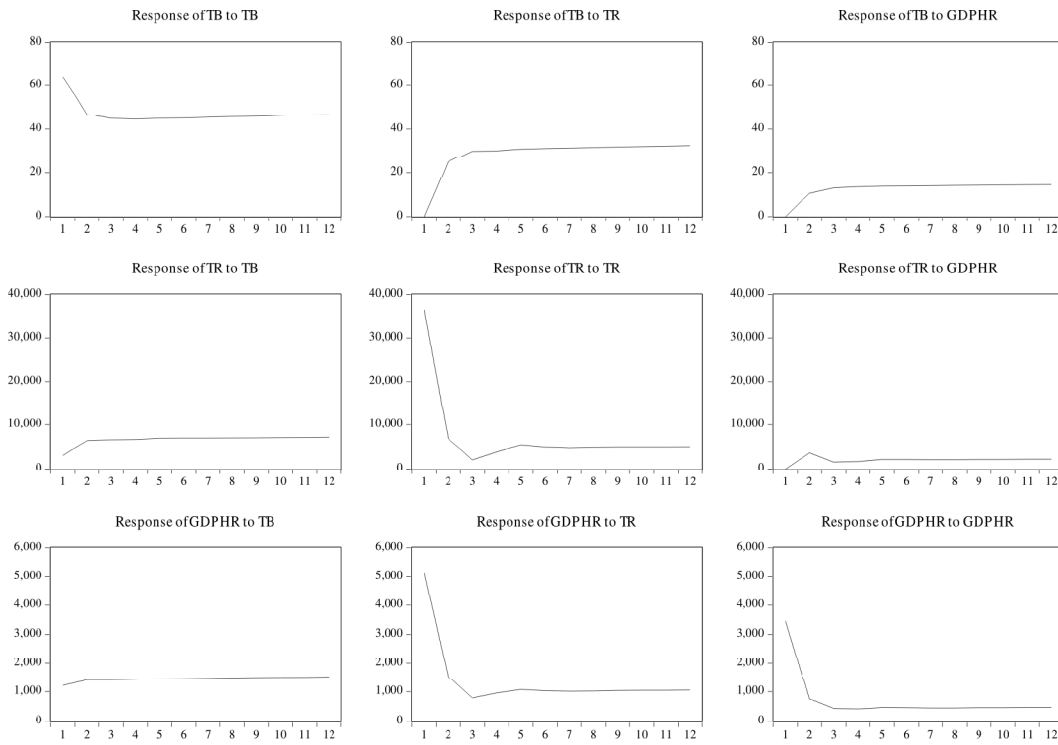
Appendix A
Response Patterns to one S.D. Pure Shock in TB, TR and GDP



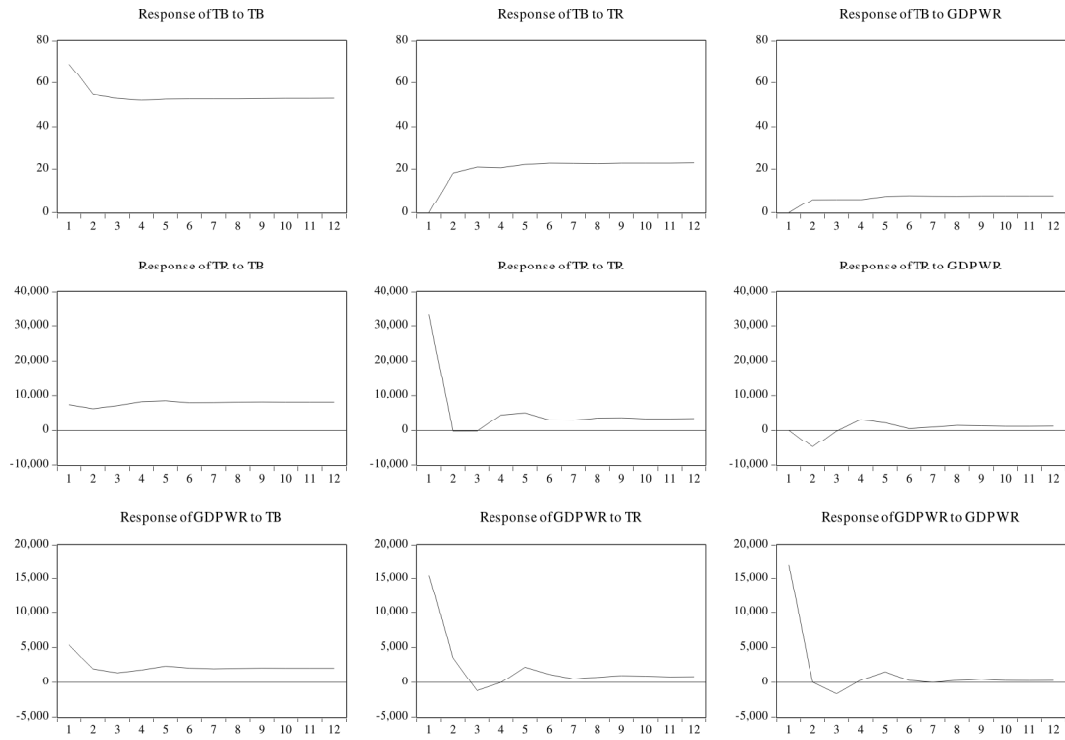
Appendix B Response Patterns to one S.D. Pure Shock in TB, TR and GDPHS



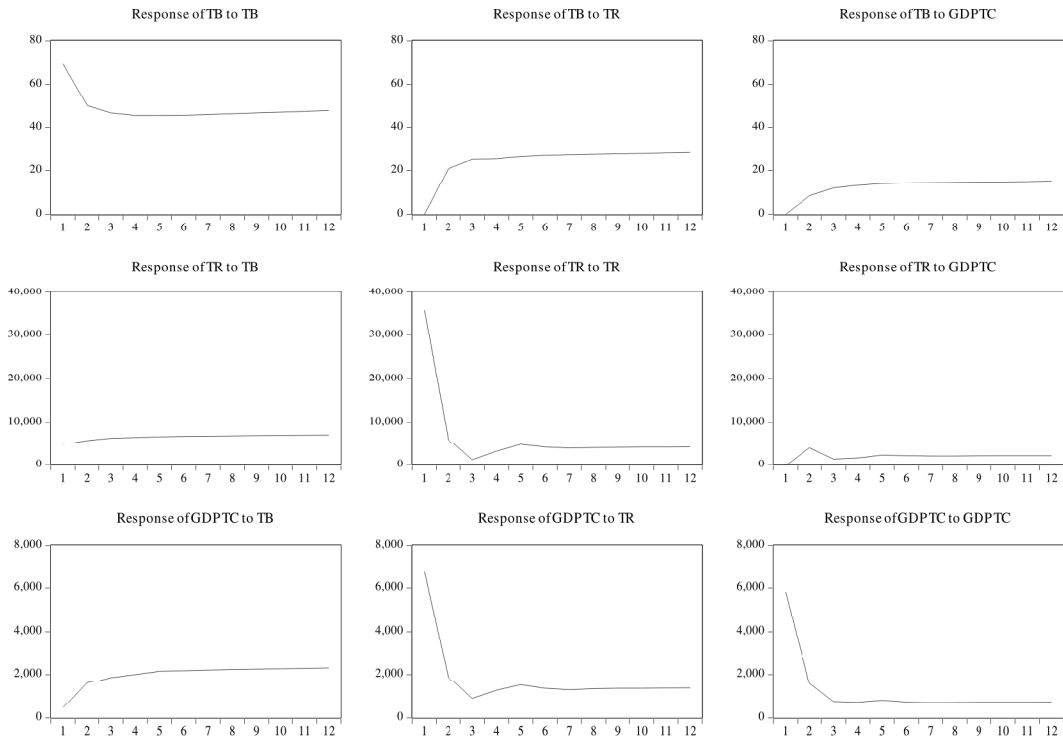
Appendix C Response Patterns to one S.D. Pure Shock in TB, TR and GDPHR



Appendix D Response Patterns to one S.D. Pure Shock in TB, TR and GDPWR



Appendix E
Response Patterns to one S.D. Pure Shock in TB, TR and GDPTC



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