

CHAPTER 6

CONCLUSION AND LIMITATION

6.1 Summary and Conclusion

The presence of multinational corporations (MNCs) in the host country via the inflow of foreign direct investment (FDI) has the potential to generate considerable and positive impacts on the host economy, i.e. help supporting economic development in the host country. Among developmental benefits from FDI, the role of FDI in international technology spillovers and economic or productivity growth of the host country has long been of interest to academics and policy makers.

In recent years, FDI is considered to be an important vehicle for the dissemination of advanced technology from overseas to the host country economy. This statement is in accordance with the role of MNCs being the principal bearers of technology across international borders. When MNCs become involved in the host economy, their involvement is likely to be associated with advanced technology that can benefit both their affiliates and other firms in the host country. Therefore, the diffusion of technology from MNC affiliates to domestic firms in the host country will result in the increase of productivity of domestic firms. These kinds of benefits generated from FDI are referred to as 'FDI productivity spillovers'.

As a result of the significant role of FDI or MNC involvement in the Thai automotive sector, the diffusion of technological advantages from MNC affiliates to domestic firms in the automotive sector via FDI technology spillovers will result in the increase of productivity of domestic firms in the automotive sector. Therefore, this study is aimed to analyze the economic impacts of FDI productivity spillover or the effects of productivity increase of the automotive sector on Thai economy by considering on the overall effects as well as the sectoral effects.

The automotive sector has some characteristics thought to be conducive to the overall industrial development. One important feature is that the automotive sector is considered as the synthetic industry with strong linkages to other industries, i.e. upstream and downstream industries. Hence, technological progress in the automotive

sector can affect both the automotive sector itself by the increased level of its productivity and any other sectors through the transference of productivity advantages via the potential linkages to its relevant industries. The productivity increase of the automotive sector is more likely to be transferred to other related sectors or the destination sectors since the productivity spillover effects tend to be cross-industry rather than sector-specific. Consequently, the automotive sector is considered to be the 'source' sector transferring the productivity advantages received from FDI spillovers to the 'destination' sectors. In this study, the related sectors or the destination sectors are disaggregated according to the supply chains via the backward linkage channel of the automotive sector (Motor vehicle sector), here they are Metal and metal products, Rubber and plastic products, Components, Engines, Electrical machineries, Agricultural and mining, Other manufacturing and Services.

The research on FDI productivity spillover effects is conducted in the Computable General Equilibrium (CGE) framework, thereby implementing the computer-based simulation of various scenarios in order to evaluate the impacts of FDI productivity spillover on Thai economy. The CGE analysis is performed in order to capture the most important features of the spillover effect, i.e. the spillover effect is a cross-industry phenomenon rather than a sector-specific one, while the conventional econometric analysis tends to underestimate or ignore this feature. As a result, the CGE model is implemented with an attempt to quantify the economic impacts of exogenous productivity increase of the automotive sector (source sector) on any other destination sectors through the transmission mechanism of productivity advantages assumed in the model, thus generating impacts on the overall economy.

General formulations of the CGE model used in this study are as follows. The model is comparative static CGE model for investigating the impacts of FDI productivity spillover on Thai economy. The CGE model includes various economic sectors: input-output aspects of the production sectors disaggregated into nine sectors and nine commodities, the household sector, the government sector, the investment sector and the international trade including exports and imports. There are two types of primary factor which are labor and capital and two sources of commodity which are domestic production and imports. The CGE model in the Johansen class arranged in eleven equation groups in linear equation system comprises of 501 equations

representing the relationship among 571 variables where all variables are classified into 501 endogenous and 70 exogenous variables. The data base required for the CGE simulations consists of two files, i.e. the input-output data file and the elasticity file. For the input-output data file, the main composition is derived from the Input-Output Table of the year 2000 which is the most recent data available provided by National Economic and Social Development Board. The input-output data file provides the information needed to derive the values of miscellaneous share parameters in the equation system of the CGE model. For the elasticity file, this file contains elasticities used to determine the behavioral parameters in the model. The values of behavioral elasticities are based on the estimates of previous studies.

Consequently, the CGE model is constructed in order to quantify the impacts of FDI productivity spillover or the exogenous productivity increase of the automotive sector by considering on the cross-sectional effects to any other destination sectors as well as the overall effects to Thai economy. Furthermore, the two simulation experiments related to the effects of FDI productivity spillover from the automotive sector to the destination sectors are introduced in the computer-based simulations. The two simulation experiments are disaggregated by different assumptions about the destination sectors' capture abilities of the productivity advantages transferred from the automotive sector. The spillover hypothesis suggests that the destination sectors' abilities to harness the productivity advantages transferred from the automotive sector depend on their absorptive capacity and also the similarity of production structure between the source and destination sectors.

In the CGE simulations, the values of shock variable or the productivity increase of the automotive sector caused by FDI productivity spillovers assigned for the two experiments are the same at 5%. The first experiment is assigned to be the base case in evaluating the impacts of FDI productivity spillover or the effects of productivity increase of the automotive sector, thus there are no effects of the destination sectors' absorptive capacity and the congruence of production structure between the source and destination sectors. The second experiment is designed not only to evaluate the impacts of FDI productivity spillover but also to investigate the role of destination sectors' specific factors in absorbing the productivity advantages transferred from the automotive sector.

The CGE simulation results show that the spillover effect of productivity advantages from the automotive sector (source sector) via FDI productivity spillovers to the destination sectors causing the increase of productivity of all production sectors will result in the enhancement of output production. When the production sectors become more effective by the increased level of productivity, there will be the lower of primary factor requirement (labor and capital) of most production sectors. Accordingly, the employment of labor and capital stock by most production sectors will be lowered. However, there is an increase of wage rate of labor and rental rate of capital paid by the production sectors. This is due to the fact that as the output production of Services increases, labor and capital will move from other production sectors having lower primary factor demand toward the sector of Services accounted for the largest portions of primary factor usages. Hence, the reallocation of primary factors among the production sectors will cause wage rate of labor and rental rate of capital to increase in both experiments.

As the outputs produced by the production sectors were changed due to the increase of productivity, the prices of domestic commodities will be changed. According to the different effects of productivity spillover on the destination sectors assumed in the two experiments, there exist different effects of changing domestic commodity prices in the two experiments. *In experiment 1*, the prices of most domestic commodities will be increased. *In experiment 2*, as opposed to experiment 1, the prices of most domestic commodities decline.

The different effects of changing domestic prices will cause the different effects on the aggregate variables in the model. For the exports, total export value in experiment 1 will be lowered since there are higher domestic prices of most commodities, thus causing the loss of competitiveness of Thai's exports of most commodities. On the contrary, in experiment 2, total export value increases as a result of decreasing domestic prices of most commodities. For the imports, there exist the same effects of productivity increase on total import value such that total import value will be increased in both experiments since most of imported commodities are intended for the intermediate uses. As a result, the trade balance will be affected differently such that the productivity increase in experiment 1 will decay the balance of trade while that of experiment 2 will favor the trade balance.

For the overall impacts of FDI productivity spillover on Thai economy, the increase of productivity of domestic production sectors in both experiments will generate positive impacts on the overall economy by the increase of nominal gross domestic product (GDP). In conclusion, the overall economy would be affected by the change of output production together with the change of commodity prices in the consequence of changing productivity level.

Finally, it can be conclude that the destination sectors' capture abilities of the productivity advantages transferred from the automotive sectors (source sector), i.e. absorptive capability of the destination sectors and the congruence of production structure between the source and destination sectors, are crucial factors in determining the magnitude of positive effects of FDI productivity spillover or the effects of productivity increase of domestic production sectors on the overall economy as well as the sectoral production. Therefore, by considering the role of destination sectors' specific factors, Thai economy will gain more benefits with the increased output production and lowered commodity prices, thus causing the higher of GDP.

6.2 Limitations of the Study

In this study, the research on FDI productivity spillover effects on Thai economy using the CGE analysis is conducted under a number of assumptions and data manipulation. Hence, the limitations of this study should be notified here. The limitations are as follows.

1. Under the time constraint, the CGE model is constructed using many assumptions so that the model can be simplified. For example, commodity market and primary factor market are assumed to be perfectly competitive. There are fixed supplies and full employment of labor and capital. There is zero change in the balance of payments (BOPs).
2. This study uses the Input-Output Table of the year 2000 which is the most recent data available provided by NESDB. The data applied to this study is therefore not up to date. Accordingly, the data may not reflect the right circumstances of Thai economy. The more up-to-date Input-Output Table would provide more accurate results.

3. The values of behavioral parameters of various economic agents in the model are unknown. As a result, this study relies on the estimates of other previous studies. Therefore, the precision of elasticities of substitution used in this study is not perfect so that the values of substitution elasticities applied in this study provide the rough behavior of various economic agents rather the precise ones.
4. The relationship between the inflow of FDI and the productivity growth of the production sectors are not incorporated into the CGE model directly. The model assumes there is the productivity increase of the automotive sector caused by FDI productivity spillover effects. And then, the effects of changing productivity of the automotive sector will be introduced into the CGE model as the exogenous variable having the potential to be transferred to other destination sectors and affect the overall economy.
5. The productivity spillover variable or the increase of productivity of the automotive sector does not come from the estimate by using econometric approach due to the time constraint. The value of this shock variable is assumed to be equal to 5% as an attempt to examine the transition of productivity spillover effects on the sectoral production as well as the overall economy.
6. Only the backward linkage channel is concerned to be the transferring vehicle of the productivity advantages from the automotive sector to any other destination sectors.
7. For the additional parameters introduced in this study, i.e. Absorptive Capacity Index and Structural Similarity Index, the values of these two coefficients are set arbitrarily under the assumption about the difference between the manufacturing sectors and agricultural and services sectors.