International Trade Pattern between Thailand and Greater Mekong Sub-region Countries

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Abstract

Background: *The present paper tries to explain the international trade pattern; both export value and import value, between Thailand and countries in the GMS (the Greater Mekong Sub-region) during the period of 1981 to 2010. The gravity model theory that explains the trade pattern by using the geographical –economic variables is employed in this paper.*

Objective: *To study the cooperation framework, including the trade and investment cooperation between Thailand and the Laos People's Democratic Republic. To study the trend of trade and investment pattern between Thailand and the Laos People's Democratic Republic. And to provide the policy suggestion for the sustainable development in cooperation between Thailand and the Laos People's Democratic Republic.*

Result : *This paper explains the relation between trade pattern and geographic-economic variables by the method of Generalizes Least Square with panel data set. It is found that the geographic-economic variables that affect the trade pattern are real GDP, import tariff rates, trade policies of trading partners, and the distance between two trading partners. In this paper, the distance is used as a proxy variable of transaction costs.*

Discussion and Conclusion: *Finally, this paper provides the policy recommendation in order to enhance trade among the GMS countries. It is found that trade-cooperative policies may generate more benefit to Members than trade policies that focusing on completing each others. Re-structuring on production process, the improvement in productivity, and the reduction in transaction –cost are the necessary conditions in order to promote interregional trade as well.*

Keywords: International Trade, Greater Mekong Sub-region

Statement of the Problem

The GMS members consist of the Laos PDR, Cambodia, Vietnam, Myanmar, the southern China (Yunnan and Kwangsi provinces) and Thailand. For the past three decades, the interregional trade pattern among Members has been changing both in terms of trade structure and trade volume.

Figure 1 Value of export between Thailand and trading partner countries in GMS region

Unit: 1 million USD

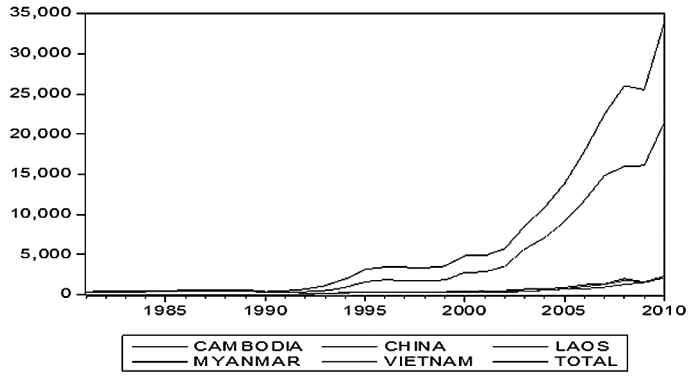
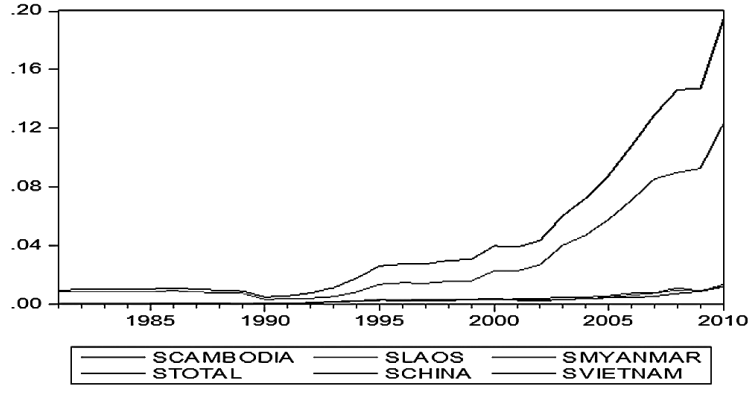


Figure 2 Share of value export between Thailand and trading partner countries in GMS per real GDP

Unit: Percentage



According to Figure 1 and 2, the trade value between Thailand and member countries has been increasing dramatically since 1997. Currently, the Thailand interregional trade value is accounted to 20 per cent of Thailand real GDP. This change can be explained by

the increasing in the trade and investment cooperation in this region and the geographic advantages that all Members are mutually sharing the Mekong River.

By this fact, it is interesting to understand the factors that affect this new trend of interregional trade, in order to be able to foreseen the future of this trade. Moreover, the results of this study may be benefit for Thailand for setting up the suitable interregional trade policies for this GMS region in the near future. This is the main purpose of this paper.

Formally, this paper presents the trade pattern and the trend of import and export value under the GMS cooperation. The gravity model is employed to find the affecting factors of this pattern.

The second section of this paper is literature review section, while the methodology is presented in the third section. The result of the study is shown in the fourth section. The last section is the part of policy recommendation.

Literature Review

1. General Equilibrium Model

General equilibrium model is used to explain the relations among economic sectors by setting up several equations. The main assumption of this model is that all economic agents would select the value of control variables that maximize his or her objectives simultaneously. The economists call this behavior as the optimizing behavior. Several economists have employed this model to explain trend of international trade and investment, such as Qui, Yang, Huang and Chen (2007). However the weak point of the model is the value of several variables were set up from assumptions by researchers, not from the facts. Therefore the results may be different from the reality.

2. Gravity Model

This model is earning more popularity among economists because of its ability to explain and forecast the trend of trade and investment by using the real data set. Fujimura and Edmonds (2006) use this model to explain the effects of telecommunication infrastructure development on interregional trade and investment in the GMS.

However, the model received some comments on the lack of theoretical support. Bergstrad (1985; 475) mentioned that “Despite the (gravity) model’s consistently high statistical explanatory power, its use for predictive purposes has been inhibited owing to an absence of strong theoretical foundation”.

Methodology

The methodology used in this paper is adjusted from the model used by Fujimura and Edmonds (2006). The model assumes that the real value of imports and exports can be explained in form of Cobb-Douglas function as;

$$lnEX_{ijt} = ln\beta_0 + \beta_1 lnY_{it} + \beta_2 lnY_{jt} + \beta_3 ln\left(\frac{y}{n}\right)_{it} + \beta_4 ln\left(\frac{y}{n}\right)_{jt} + \beta_5 lnB_{jt} + \beta_6 lnT_{jt} + \beta_7 lnD_{ij} + ln\varepsilon_{ij} \quad \ldots(1)$$

$$lnIM_{ijt} = ln\alpha_0 + \alpha_1 lnY_{it} + \alpha_2 lnY_{jt} + \alpha_3 ln\left(\frac{y}{n}\right)_{it} + \alpha_4 ln\left(\frac{y}{n}\right)_{jt} + \alpha_5 lnB_{it} + \alpha_6 lnT_{it} + \alpha_7 lnD_{ij} + ln\mu_{ij} \quad \ldots(2)$$

The symbols of equation (1) and (2) have the meaning as t is period, i is Thailand and j is Thailand's trading partner in GMS sub region. So the variable as,

lnEX$_{ijt}$ is a real value of export trading from Thailand to country j in t year.

lnIM$_{ijt}$ is a real value of import trading of Thailand from country j in t year.

For both variables are the real of export and import these are explained by the explanatory variables

The first variables is the size of country that defines Y_it^ , Y_jt^ are the real GDP of i and j countries in t year (unit: 1 million USD) and (y/n)_it^ , (y/n)_jt^ is the growth rate of GDP per capita of i and j countries in t year (unit: Percentage).

The second variables is the international trading policy that are defined by B_it^ B_jt^ is the burden of customs procedure index of i and j countries in t year. The unit is the index no.1 to 7 by the value is lower than one which means many obstructions. Including, T_it^ T_jt^ is the average tariff rate of i and j countries in t year (unit: Percentage).

The third variables is a geographic variable by Gravity model. D_ij^ is the distance between the capital city of i and j country. (Unit: Kilometer) (This factor is different among the couple of ij but it is constant always in a consideration).

By β_i and α_i are the parameter which are approximately as i = 1,2,…,7. This value of parameter has elasticity in the study period.

Data sets used in this paper are panel data that are the combination of cross section data and time series data from 1981 to 2010. The econometric method of estimation is General Least Square (GLS) that is suitable for estimating panel data.

The details on data used and estimation methods can be found in Mephokee el al. (2011)

The Results.

1. Data Analysis

Due to the incompletion of data in some members that is the common problem of the approach (see Fujimura and Edmonds, 2006), this paper sets some assumptions as

(1) For the missing trade and investment facility index of each member, the paper assumes that the value of this index is the same as that in previous year.

(2) The value of imports and exports between Thailand and the southern China (Yunnan and Kwangsi province) is accounted

to 10 per cent of total import and export value of Thailand and China.

The statistical characteristics of data and sources of data are presented in Table 1.

Table 1 Statistical Characteristics of Data.

Variable	unit	Average (Standard deviation)	Maximum (Minimum)	Source
Export value from Thailand to				
Cambodia	1 million USD	478.95 (633.91)	2342 (0)	1
PRC (Yunnan and Guangxi.)	1 million USD	422.23 (591.93)	2147 (27)	1
PDR Laos	1 million USD	463.16 (561.38)	213 (29)	1
Myanmar	1 million USD	405.63 (500.67)	2072 (17)	1
Vietnam	1 million USD	1132.10 (1681.08)	5845 (8)	1
Import value of Thailand				
Cambodia	1 million USD	42.93 (51.97)	214 (6)	1
PRC (Yunnan and Guangxi.)	1 million USD	506.53 (668.24)	2424 (57)	1
PDR Laos	1 million USD	146.90 (196.30)	749 (31)	1
Myanmar	1 million USD	721.66 (1014.05)	3376 (59)	1
Vietnam	1 million USD	353.70 (449.38)	1441 (39)	1
Independent variables (x)				
Real GDP	1 million USD	489282.10 (805045.10)	3744997 (736)	4

Table 1 Statistical Characteristics of Data.

Variable	unit	Average (Standard deviation)	Maximum (Minimum)	Source
Growth of GDP per capita	USD	7.27 (394)	15 (-11)	4
Burden Index	Index 's figure (1=many obstruction, 7=non-obstruction)	3.7 (0.65)	5 (3)	2
Average tariff rate	Percentage	11.19 (7.68)	35 (3)	4
Distance	Kilometer	732.00 (320.45)	1280 (521)	3

Source: Collected by the researcher.

Sources: (1) UNCOMTRADE (Canada's trade analyzer database)

(2) World Bank, Doing Business Data base, Global Competitiveness report

(3) www.distance.com

(4) World Bank, World Data Bank.

2. Econometric Results

Since panel data are using for estimation, there exist two statistical problems which are (a) Heteroskedasticity that can be tested by likelihood ratio test, and (b) Autocorrelation that can be tested by Woodridge test. According to these two tests, it is found that the value of P-value is less than 0.05. Therefore, we cannot reject the hypotheses of the existence of these two problems. The paper has to employ the General Least Square approach to solve these two problems.

The results of the estimation on exports can be seen by Table 2.

Table 2 Export Value Estimation
The result of value of export estimation
Estimation method: Generalized Least Square
Variable: The value of export from Thailand to the other countries in GMS sub region

Explanation of variables	Model no. 1	Model no. 2
Constant value	**9.86***	**-12.65****
Thailand 's real GDP	**1.07****	**0.89***
The partner of trade 's real GDP	**0.78****	**0.72***
Growth of GDP per Thais' capita	**-3.85****	(dropped)
Growth of GDP per capita of the partner trade country	3.01	(dropped)
Trading barriers of trading partner country	2.07	(dropped)
Average tariff rate of trading partner country	-1.85	**-0.64****
The distance from Thailand to trading partner country	**-0.09****	**-1.77***
Ward Chi-square (P-value)	491.46 (0.00)	447.82 (0.00)
R square within	0.72	0.61

Source: Estimation by Researchers, Symbol ** (*) is significant of 90 and (95) percent respectively.

Model: Generalized Least Square

Dependent variable: Thai Export Value to GMS Countries.

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Source: Estimated by Researchers

Remarks : * means 95% of significant

** means 90% of significant

When some variables are deleted from the model due to the problem of multicollinearity, the ability of the model to explain trade between Thailand and GMS countries is significantly high. The value of R-square Within are 0.72 and 0.61, respectively. According to the estimation, there are negative relations between trade and growth in Thai GDP per capita, while some variables; such as Members GDP per capita and trade barriers of Members are insignificant. Therefore, the trade pattern would be explained by the second model.

The result from the study can be explained as follow.

The variables that show positive relation to Thai exports are Thai real GDP and GSM Members real GDP. The 1 per cent increases in Thai real GDP would increase Thai exports by 0.89 per cent. Meanwhile, a 1 per cent increase in Member real GDP would increase Thai exports by 0.72 per cent.

The variables that show negative relations to Thai exports are Member average tariff rate and the distance between Thailand and Members. The one per cent increase in these two variables would decrease the value of Thai exports by 0.64 and 1.77 per cent, respectively.

The comparisons on the results of this paper and the previous papers are shown in Table 3.

Table 3 The Comparisons of Study Results

Gravity variables	In this research		Fujimura and Edmonds (2006) (Model 7)	Manisa (2553) Export (Model a)
	Export (Model 1, 2)	Import (Model 3, 4)		
Duration	1981-2010	1981-2010	1981-2003	1997-2008
Thailand 's real GDP	0.89*	0.35*	1.64* (exporter)	0.85*
The partner of trade 's real GDP	0.72*	0.66*	1.61* (importer)	0.62*
Growth of GDP per capita	1.07*	-2.19	N.A.	N.A.
Trading barrier	2.07	-2.27	N.A.	N.A.
Tariff rate	-0.64*	-1.17*	-0.66*	N.A.
Distance	-1.77*	-1.52*	-5.34*	-1.17*
Population	N.A.	N.A	-0.83 (exporter)	-1.10
Exchange rate	N.A.	N.A.	N.A.	1.12*

Source: Researchers
Remarks: * means statistical significant.

From Table 3, all works have found that Distance has negative effect on trade value. The difference in degree of effect may be explained by the difference in period of study.

Conclusion and Policy Recommendation

This paper employs the concept of geography international economics, so called gravity model, to explain the interregional trade and investment structure between Thailand and the GMS countries during the year of 1981 to 2010. The paper finds that geographic international variables, such as real GDP, tariff rates, trade policy implementation, and distance between trading partners, are able to explain this trade and investment pattern significantly.

The results find that the elasticities of Thailand export value to Thailand real GDP and to Members GDP are not significantly different (0.89 to 0.72). On the contrary, these figures are significantly different in case of Thailand import value (0.35 to 0.66). The findings suggest that to promote Thai exports, policies on promoting the production on intermediate products and final products with high value-added and on productivity enhancing should be considered. Moreover, the cooperative policy based on mutual benefit for all should gain more benefit to Members than the policy aiming for competing each others.

The other important finding is the role of distance that is used as the proxy of transaction cost on interregional trade and investment. The study finds that the elasticity of Thai export value and import value to distance is -1.77 and -1.52, respectively. This implies that transaction cost reduction; such as trade and investment barriers reduction, trade and investment facility development, and transparency in information and government regulations, is a necessary condition for promoting interregional trade and investment in this region.

Acknowledgement

This work was supported by the National Research University Project of Thailand office of Higher Education Commission.

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