



Munich Personal RePEc Archive

CGE analysis of trade liberalization in Thailand

durongkaverroj, wannaphong

chiang mai university

8 April 2014

Online at <https://mpra.ub.uni-muenchen.de/55191/>
MPRA Paper No. 55191, posted 12 Apr 2014 10:49 UTC

CGE analysis of trade liberalization in Thailand

Wannaphong Durongkaveroj*

April 8, 2014

Abstract

As the world becomes interdependent in economic dimension, external sector today is widely accepted as a national economic motivator. Trade policies yield the various effects on economy. The purpose of this paper is to estimate the effects of free trade policy in Thailand to its top 5 trading partners on economic performance and the level of household income through CGE model using GTAP. The study reveals that the most worthy trading policy for Thailand, aimed at raising its national prosperity, is to remove tariff to trading partners, primarily with the E.U., followed by China and the U.S.

JEL classification: C68;F13

Keywords: Computable General Equilibrium; Trade Liberalization; Economy of Thailand

* Master's degree of Economics, Chiang Mai University, Thailand
E-mail address: wannaphongd@gmail.com (W. Durongkaveroj).

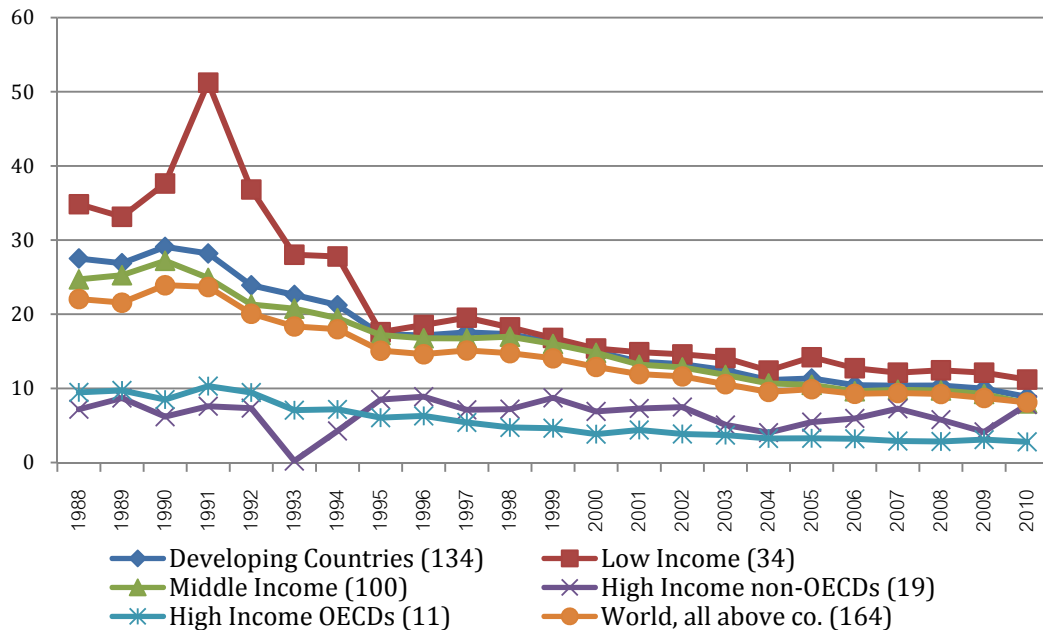
Introduction

Since the 8th round of multilateral trade negotiation (Uruguay Round), the world became more interdependent. Autarky situation is gradually replaced by a huge amount of monetary flow not only in goods and services but also financial market. As mentioned by Yarbrough & Yarbrough (2006), many closed countries opened their country to join the world market, especially developing countries. However, global market is not simple as domestic market. Exporter in most of emerging country becomes price taker. To export one commodity is restricted to not only its price but also trading partner's regulation and transportation cost. Fortunately, according to UNDP (1999), transportation cost has dramatically declined. Thus, its pressure of trade was turned to each national trade regulation called trade barrier.

As mentioned by Carbaugh (2011), domestic producer or worker who get worse off from free trade can put a pressure on their own government to issue the policies aimed at protecting them. One of the most popular policy in all commodity is Tariff. Tariff is tax on imported commodity which can be specific, ad valorem, or compound. However, the most popular type of tariff is in the form of ad valorem (percentage). The severe impact of Tariff is the under-desired amount of total welfare. Consumer faced the higher price in Tariff issuing countries. Moreover, for large nation, foreign exporter can be shared this effect by accepted the lower price. Additionally, the presence of Tariff can reduce social welfare through the concept of offer term and term of trade. However, besides Tariff barrier, there is another trading resistance called Non-Tariff Barrier (NTB), for example, quota and technology regulation (Appleyard, Field & Cobb, 2010).

There are many reasons in imposing import tariff, argued by Yarbrough & Yarbrough (2006), including reducing the level of consumption in particular commodity, creating government revenue, maintaining balance of trade, and protecting domestic producer from foreign seller. To the extent, Bhagwati (2002), tariff can distort consumer from imported product to domestically produced product which creates an expansion in domestic product. Firm enjoys a higher sales and hires more labor. It is likely to be beneficial to economy in imposing tariff. Nevertheless, the concept of free trade or trade liberalization is widely accepted for the prescript for emerging countries to implement. Free trade is referred to the concept of non-incremental cost attached to the commodity through trading procedure. Consumer can enjoy a variety of goods with the cheaper price and promising social welfare is considered to be the target among economist. Since 1986 (Eight GATT rounds), many countries are expected to reduce or eliminate of their tariff (tax of trade). Table 1 displays the average tariff rate among various group of countries from around the world.

Figure 1 Tariff rate in various groups of country



Source: Francis (2011) (World Bank data)

According to figure 1, tariff rate in the majority of country group was dramatically declined expect high income non-OECD countries whose tariff seems to be higher between 1993 - 1996, for example, Brunei and Saudi Arabia. Also, tariff rate among low income countries between 1989 - 1991 was higher, for example, Tanzania, Rwanda, Congo, and Malawi. After 1995, tariff rate in every region has been declined. For example, Tariff rate in Botswana is reduced from 30 in 1995 to only 8.5 in 2010. In Norway, tariff rate is declined from 7.8 percent in 1995 to only 0.6 in 2010. Zero tariff is occurred now in Switzerland, Singapore, Macao, and Hong Kong. However, the average tariff rate in developing countries and low income countries is relatively high compared to other group of country.

Thailand is one of the developing countries which enjoys the benefit from global market. According to World Bank (2012), the revenue from export is counted as 75% of its GDP. Main exported commodities are electronics, computer part, and automobile. According to Trading Economics (2014), its top 5 trading partners include China, Japan, the United States, the European Union, and Malaysia. However, tariff levied by Thailand to this trading partner is not zero and high tariff is the obstacle of Thailand to gain the positive effect of trade. USTR (2013) reported that Thailand's average applied most favored nation (MFN) tariff was 10.4% in 2011. MFN tariff on processed food is also high (30% to 50%) which excludes foreign export to access the market. High tariff rate is bound to domestically produced product, for example, automobile, processed food, and textile.

Effects of economy as a whole can be implemented through Computable General Equilibrium (CGE) model. Burfisher (2011) clearly stated that CGE model can depict supply, demand, factors, saving and investment, trade, and tax revenue in economy as a whole. As explained by Lofgren, Harris & Robinson (2002), CGE model is able to use to present the effects of experiments or shocks under various assumption (closure).

There are many studies which focus on the effect of removing trade barriers. Kiyota & Stern (2007) studied the FTA between Korea and the U.S. through GTAP ver. 6 and they found the positive effects on both economies. GDP in Korea is increased by 1.26% (\$9.28 billion) and GDP in the U.S. is increased by 0.14 % (\$25.12 billion). Also, Kitwiwattanachai, Nelson, & Reed (2009) analyzed the impact of East Asia Free Trade using CGE model through GTAP ver. 6 and they found that East Asia FTA yielded the desirable impact to member economy as a whole. Moreover, non-tariff barriers was studied by Fugazza & Maur (2007) and Hayakawa & Chang (2008) which found that the removal of NTBs yielded the great positive effect to GDP to all countries. Recently, Cheong (2013) used GTAP to solve the effect of Trans-Pacific Partnership Agreement. Thus, the research question for this study lines on the impacts of zero tariff levied to main trading partner.

Objectives

- To estimate the economic effects of completed trade liberalization to main trading partners on the economy of Thailand.
- To design the most worthy trading strategy for Thailand in making FTA contract

Methodology

Computable General Equilibrium (CGE) model is implemented to consider the economic effects on Thailand's economy. The data for CGE model was collected from the global trade analysis project (GTAP) database version 8. For a standard model of GTAP, variable "TMS" in Run GTAP software is used to investigate the effect of zero tariff target rate. There are five simulations (FTA contract) for this study between Thailand to top 5 trading partners including China, Japan, the U.S., EU-25, and Malaysia.

This study does not display the effect of FTA on other country (for example, the effect of FTA between Thailand and China on Japan). It focuses on the possible effect on Thailand's economy to each FTA contract. There are two kinds of effects in consideration including a percentage change in Gross Domestic Product (GDP) and a percentage change in household income.

Results

There are two main results from CGE model including a change in GDP and household income. The effects of FTA (trade liberalization) on Thailand's economy are shown by table 1.

Table 1 A change in Thailand's gross domestic product

FTA's Contract	Change in GDP (%)
China	0.850991
Japan	0.436682
U.S.	0.480209
EU-25	0.89531
Malaysia	0.09956

Source: Author's own calculation

Notes: Effects on Thai economy occurred when Thailand targets tariff to zero percent

Table 1 presents the effects of 5 FTA contracts on Thailand's GDP. Completed trade liberalization between Thailand and China generates a change in Thailand's GDP by 0.850991 percent. Trade liberalization between Thailand and Japan increases Thai's GDP by 0.436682 percent. Zero tariff policy between Thailand and the U.S. is able to make Thai economy expanded by 0.480209 percent. FTA contract between Thailand and Eu-25 causes 0.89531 percent growth in Thailand's GDP. Also, a removal of tariff to Malaysia encourages economy of Thailand to grow by 0.09956 percent. Then, it reveals that FTA between Thailand and the E.U. 25 can create the highest benefit to Thailand's economy, followed by China and the U.S. The effects on household income is shown in table 2.

Table 2 A change in Thailand's household income

FTA's Contract	Change in Household Income (%)
China	0.91735
Japan	0.481296
U.S.	0.518456
EU-25	0.974562
Malaysia	0.11031

Source: Author's own calculation

Notes: effects on Thai economy occurred when Thailand targets tariff to zero percent

Table 2 show how trade liberalization can increase household income in Thailand. Completed trade liberalization between Thailand and China generates a change in Thailand's household income by 0.91735 percent. Trade liberalization between Thailand and Japan increases Thai household income by 0.481296 percent. Zero tariff policy between Thailand and the U.S. is able to make household income among Thais expanded by 0.518456 percent. FTA contract between Thailand and Eu-25 causes 0.974562 percent growth in Thailand's income. Also, a removal of tariff to Malaysia encourages household income of Thailand to

grow by 0.11031 percent. Then, it reveals that FTA between Thailand and the E.U. 25 can create the highest benefit to Thai household income, followed by China and the U.S.

Conclusion and Critique

This paper aims at estimating the effect of trade liberalization, if possible, between Thailand and its top 5 trading partners including China, Japan, U.S., E.U., and Malaysia. Computable General Equilibrium (CGE) model is implemented through a standard GTAP model. CGE model is a very beneficial tool to analyze the effect of exogenous macroeconomic shock using the relationship among agents in economic system. So, to explore the delicate impact on economy as a whole requires the basis of CGE framework.

The study reveals that trade liberalization between Thailand and E.U. 25 is the most proper trade strategy for Thailand so as to increase its GDP and household income. Structural change in trade policy should be happened for Thailand due to the improper existing policy. For current trading partner, Thailand exports most to China, followed by Japan, U.S., E.U., and Malaysia. However, this study suggests that Thailand should remove tariff the most, due to the greatest promising economic growth, to the E.U., followed by China; the U.S., Japan, and Malaysia.

References

- Appleyard, D. R., Field, A. J., & Cobb, S. L. (2010). *International economics*. 7th ed. New York: McGraw-Hill.
- Bhagwati, J. (2002). *Free trade today*. Princeton: Princeton University Press.
- Burfisher, M. E. (2011). *Introduction to Computable General Equilibrium models*. New York: Cambridge University Press.
- Carbaugh, R. (2011). *International economics*. 13th ed. Connecticut: Cengage Learning.
- Cheong, I. (2013). Negotiations for the Trans-Pacific Partnership Agreement: Evaluation and implications for East Asian Regionalism. *ADB Working Paper No. 428*. Tokyo: ADBI.
- Francis, K.T. NG. (2011). *Trends in average MFN applied tariff rates in developing and industrial countries, 1981-2010*. Retrieved April 3, 2014, from <http://siteresources.worldbank.org/INTRES/Resources/469232-1107449512766/tar2010.xls>.
- Fugazza, M., & Maur, J.C. (2007). Non-tariff barriers in CGE models: How useful for policy?. *Journal of Policy Modeling*, 30(2008), 475-490.
- Hayakawa, K., & Chang, K. I. (2008). Border barriers in agricultural trade and the impact of their elimination: Evidence from East Asia. *IDE Discussion Paper. No. 160.2008.6*.
- Kitwiwattanachai, A., Nelson, D., & Reed, G. (2009). Quantitative impacts of alternative East Asia Free Trade Areas: A Computable General Equilibrium (CGE) assessment. *Journal of Policy Modeling*, 32(2010), 286-301.
- Kiyota, K., & Stern, R. M. (2007). Economic effects of a Korea-U.S. free trade agreement. *RSIE Discussion Paper. No. 557*.

- Lofgren, H., Harris, R. L., & Robinson, S. (2002). *A standard Computable General Equilibrium (CGE) model in GAMS*. Washington, D.C.: International Food Policy Research Institute (IFPIR).
- Trading Economics. (2014). *Thailand exports*. Retrieved April 2, 2014, from <http://www.tradingeconomics.com/thailand/exports>.
- USTR (2013). *2013 national trade estimate report on foreign trade barrier*. Retrieved April 2, 2014, from <http://www.ustr.gov/sites/default/files/2013%20NTE%20Thailand%20Final.pdf>.
- World Bank. (2012). *Exports of goods and services (% of GDP)*. Retrieved April 2, 2014, from <http://data.worldbank.org/indicator/NE.EXP.GNFS.ZS>.
- Yarbrough B. V., & Yarbrough R. M. (2006). *The world economy: Trade and Finance*. 7th ed. Ohio: Thomson Higher Education.