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The Economic Impact of the Thailand-Australia Free Trade Agreement (TAFTA) and the Thailand-New Zealand Closer Economic Partnership (TNZCEP)[1]

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Abstract

This paper studies the effects of the Thailand-Australia Free Trade Agreement (TAFTA) and the Thailand-New Zealand Closer Economic Partnership (TNZCEP) on the Thai economy. Despite a number of studies on this issue, the literature tends to focus on the effects of reduction in duty but ignore those of reduction in trade-in-services barriers. This paper adds to the literature by including the reduction in service barriers into the analysis. The following key results emerge. Both TAFTA and TNZCEP benefit Thailand as a whole regardless of the degree of openness to trade in services. As regards change in sectoral output, sectors negatively affected by the agreements include milk and dairy products and agriculture. Thai exporters in business service and transportation tend to benefit the most as they gain highest percentage changes in exports to the two trading partners. By contrast, producers in communication, utilities, and meat and poultry, will experience the greatest pressure arising from higher import from the trading partners.

Keywords: Free Trade Agreement, Closer Economic Partnership, Thailand, Australia, New Zealand, Trade in Services

1. Introduction

On 1 January 2005, Thailand implemented the Thailand-Australia Free Trade Agreement (TAFTA), its first FTA with an advanced economy. Later the year, the Thailand-New Zealand Closer Economic Partnership (TNZCEP) came into force on 1 July 2005. Such two agreements have gained a lot of attention from both scholars and general public, not only because they are Thailand's first two agreements with developed countries, but also because they are most comprehensive in coverage as far as Thailand's bilateral trade agreements are concerned. TAFTA and TNZCEP have also raised controversies among different stakeholders in Thailand. On the one hand, some skeptics argue that the agreements would wipe out such sensitive sectors as milk and dairy products, while, on the other, advocates believe they benefit such major sectors as automobiles and auto parts.

While the agreements on trade in goods have been in place for years and almost all commodities are now traded freely between the trading partners, further negotiation on trade in services is yet to come. The direction to which agreements regarding trade in services will lead, and their future effects, remain to be uncertain. Given the emergence of TAFTA and TNZCEP, their media attention, and their future negotiation which is likely to be subject to debate, we are motivated to investigate the long-run economic impact of TAFTA and TNZCEP on the Thai economy. Despite the existing research on this issue such as Centre for International Economics (2004) and Bootsumran (2005), the literature tends to focus on the effects of reduction in duty but ignore those of reduction in trade-in-services barriers. To fill this gap, this paper adds to the literature by including the reduction in service barriers into the analysis.

A computable general equilibrium model, GTAP, is employed. In our simulation, there are three countries, and 21 sectors (10 of which are goods and 11 of which are services). All duties are set at zero as a consequence of the agreements as virtually all goods moving between the three countries will incur no import levy. Two main complications related to services trade arise. First, barriers to trade in services are not expressed in absolute or percentage terms as trade in goods, and it is subject to discretion as to how to quantify them. Second, final conclusions on trade in service under TAFTA and TNZCEP have not yet existed. To overcome the first problem, we utilize the Trade Restrictiveness Index, developed by the Productivity Commission and the Australian National University. Such database measures trade barriers for a number of economies in Europe, Asia, North America and South America, with the scale from zero to one. Upon our data manipulation, barriers to trade in services are expressed in percentage term here. As for the latter problem, we set four scenarios to address the fact that the future conclusion of TAFTA and TNZCEP is uncertain. These are (1) 0% reduction in barriers to service trade, (2) 20% reduction in barriers to service trade, (3) 40% reduction in barriers to services trade, and (4) 100% reduction

in barriers to services trade.

The following key results emerge. Both TAFTA and TNZCEP benefit Thailand as a whole, both in terms of social utility and GDP, regardless of the degree of openness to trade in services. Yet Thailand gains the most when all barriers are removed. Australia's and New Zealand's social welfare and GDP also increase, but such rises relative to the baseline GDP are smaller than those of Thailand.

As regards change in sectoral output, the sector most negatively affected by the agreements is milk and dairy products. For exports and imports, we concern only trade between Thailand-Australia and Thailand-New Zealand; trade with the world is out of scope here. Thai exporters in business service and transportation tend to benefit the most as they gain highest percentage changes in exports to the two countries. By contrast, producers in communication, utilities, and meat and poultry, will experience the greatest pressure arising from higher import from the trading partners.

The remaining of this paper is structured as follows. Section 2 gives an overview of TAFTA and TNZCEP agreement. Section 3 describes the model used in estimating the effects of the two agreements on the Thai economy, and how we manipulate data and set up the model. In section 4, we present the results arising from our simulation. Finally, Section 5 concludes.

2. Background

To begin with, this section briefly gives an overview of conclusion made so far under TAFTA and TNZCEP. While both agreements are comprehensive in scope, not all aspects of negotiation have reached the conclusion as yet. For instance, further negotiation on trade in services is yet to come. Therefore, the materials here are related mainly to trade in goods on which negotiation outcome has been reached.

2.1 TAFTA[4]

TAFTA was signed on 5 July 2004 and came into effect on January 1, 2005. The Agreement calls for liberalization of trade in goods, services, and investment, as well as for cooperation in working out obstacles to trade caused by non-tariff measures, such as restrictive sanitary and phytosanitary regulations and anti-dumping measures. The cooperation extends also to facilitation of trade in certain categories, such as customs procedures, electronic commerce, intellectual property, government procurement, and competition policy.

[4] The material in this subsection is an excerpt of the article "Thailand-Australia Free Trade Agreement: TAFTA", which is made available by Department of Trade Negotiations, Thailand. The full article can be accessed at http://www.thaifta.com/engfta/Home/FTAbyCountry/tabid/53/ctl/detail/id/64/mid/480/usemastercontainer/true/Default.aspx

On the date of entry into force of the Agreement (TAFTA), Australia eliminated tariffs on more than 83% of all goods imported from Thailand, including fresh fruit and vegetables, canned pineapple and pineapple juice, processed foods, small passenger vehicles and pick-up trucks, gems and jewelry. Tariffs on the remaining 17% of imports, comprising plastic products, rubber and rubber products, and textiles and apparel, are to be eliminated between 2010 and 2015.

The Agreement calls for Thailand to eliminate tariffs on nearly 50% of all goods imported from Australia as of January 1 2005, most of which is needed raw materials such as mineral ore, fuel, and chemicals, as well as raw and tanned hides. Tariffs on another 45% of Australian imports would be dropped by 2010, with the remaining 5%, comprising dairy and meat products (beef, pork, milk and cheese), tea, and coffee being gradually removed between 2010 and 2015.

At the same time, Thailand removed tariff quotas committed under WTO obligations on 15 of 23 categories of agricultural goods, and offered specific quotas of 10% more than the volume obligated in 2004 under WTO commitments for 6 of the remaining 8 products, including potatoes, coffee, tea, maize, and sugar. In addition, Thailand has also agreed to increase quotas each year by 5% to 10%.

To ensure that domestic industries will have time to adjust to the impacts of the Agreement, Australia and Thailand have agreed to apply Safeguard Measures (SG) in accordance with WTO regulations. Furthermore, in dealing with sensitive agricultural products such as beef, pork, and animal offals, as well as milk and dairy products, the special safeguard measure may be applied, if the volume of imports of such products exceeds the specified trigger volume level for that year, by increasing the rate of customs duty applicable for that product to the level equal to the current customs duty or to the current "Most Favored Nation" (MFN) rate, whichever is lower. Thailand will be able to apply this special safeguard measure for specific products through 2015 and 2020.

Thailand and Australia have agreed to work together closely to ensure that trade between the two countries is conducted transparently and efficaciously. Export Group on Sanitary and Phytosanitary Measures and Food Standards has been established to enhance regular and comprehensive consultation and cooperation on agriculture and related matters to facilitate trade between the parties. To this end, work programs have been set out, initially to review and assess progress of each party's priority market access interest within two years of the signature of the Agreement. Among Thailand's priority products of interest are mangosteen, longan, lychee, and durian, as well as chicken, shrimp, and decorative fish.

Other matters under consideration are customs procedures, anti-dumping measures, electronic commerce, intellectual property, and competition policy. Efforts being made to resolve these and other issues among the two countries include the

exchange of information and the sharing of knowledge through training and seminars. The Free Trade Agreement Joint Commission (TAFTA Joint Commission: TAFTA JC) has been established to oversee the implementation of TAFTA and to review the economic relationship and partnership between the Parties. TAFTA JC will meet annually or as mutually determined by both sides.

2.2 TNZCEP[5]

TNZCEP was signed on April 19, 2005, and came into effect on July 1, 2005. The Agreement covers the liberalization of market access for goods, services, and investment, as well as cooperation in trade-related such as customs procedures, electronic commerce, intellectual property, government procurement, and competition policy.

In general, since the TNZCEP came into effect, Thailand has benefited from the elimination of duties on 79% of all goods imported into New Zealand, equivalent to 85% of the value of Thai products entering the country, covering such items as pick-up trucks, canned tuna, plastic pellets, preparations from cereals, gems and jewelry, frozen shrimp, electrical appliances, as well as glass and glass products. Tariffs on the remaining categories of imports will be eliminated in 2015.

At the same time, 54% of all imports from New Zealand, accounting for 49% of the total value of the goods imported, now enter Thailand duty free. Among these products are infant food preparations, wood and wood products, wool, plastic and plastic products, marine animals, paper and paper products, machinery, sugar and sugar-based foods, preparations for consumption such as vitamins and protein, animal feed, fruit, vegetables, and grains. Tariffs will be eliminated by 2010 on a further 10% of imported goods, while sensitive items such as milk and dairy products, beef, and pork, as well as onions and onion seeds, will be gradually eliminated during 2015-2020.

In addition, Thailand removed tariff quotas committed under WTO obligations on 18 of 23 categories of agricultural goods, and offered specific quotas of 10% more than the volume obligated in 2004 under WTO commitments for 3 of the remaining 5 products, i.e., potatoes, onions and onion seeds. However, Thailand retains its quota for non-fat milk, a sensitive product, and will not open its market for the next 20 years.

Further to Safeguard Measures in accordance with the WTO to enable domestic industries to adjust if a surge in imports resulting from tariff reductions negatively affects local producers and industries, New Zealand and Thailand have

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[5] The material in this subsection is an excerpt of the article "Thailand-New Zealand Closer Economic Partnership: TNZCEP", which is made available by Department of Trade Negotiations, Thailand. The full article can be accessed at http://www.thaifta.com/engfta/Home/FTAbyCountry/tabid/53/ctl/detail/id/65/mid/480/usemastercontainer/true/Default.aspx

agreed to apply Special Safeguard Measures (SSG) in dealing with sensitive agricultural products during the transition, to ensure that Thai domestic industries will have time to adjust to the impacts of the Agreement. A total of 41 products fall under SSG Measures, including beef, pork, edible organ meats, milk and cream, skim milk, butter, butterfat, cheese, buttermilk, natural honey, Mandarin oranges, fresh grapes, and processed potatoes. SSG Measures may be applied if the volume of imports of such products exceeds the specified 'trigger volume' level for a particular year by increasing the rate of customs duty applicable for that product to the level equal to the current customs duty or to the current 'Most Favored Nation' (MFN) rate, whichever is lower. In addition, Thailand will be able to apply this special safeguard measure temporarily through 2015 and 2020.

Thailand and New Zealand will cooperate in facilitating trade between the two countries and ensuring productive and flexible approaches in areas such as customs procedures and cooperation, electronic commerce, intellectual property, and competition policy through the exchange of information and the sharing of knowledge through training and seminars.

With respect to agricultural products, the two countries have set up a Joint SPS Committee to consider matters relating to sanitary and phytosanitary measures, and to explore opportunities for further cooperation. In this effort, New Zealand will undertake the process of pest risk analysis (PRA) and will develop an Import Health Standard (HIS) under its biosecurity regime for Thai agricultural products, namely longan, lychee, mangosteen, ginger and durian, with the aim of completing this process within two years.

A Closer Economic Partnership Joint Commission (CEP Joint Commission) has been established to oversee implementation of the Agreement and to review the economic relationship and partnership between the Parties. The CEP Joint Commission will meet annually or as mutually determined by both sides.

3. Methodology and Data

3.1 Model

In assessing the impact of TAFTA and TNZCEP on the Thai economy, a computable general equilibrium model, Global Trade Analysis Project (GTAP), is employed here. While the features and mechanism of GTAP may be of interest, it is out of the scope of this subsection. Rather this subsection aims to describe how we set up the model to study the effects of TAFTA and TNZCEP. Those interested in how GTAP works may refer to other materials such as Hertel and Tsigas (1997), Narayanan and Wamsley (2008), and GTAP website (http://www.gtap.agecon.purdue.edu).

In this study, we use GTAP 7 database and divide the world economy into four countries/regions. These are (1) Thailand, (2) Australia, (3) New Zealand, and (4) the rest of the world. Production sectors are grouped into 21 sectors; 10 of which are goods and 11 of which are services. The 10 sectors of goods are (1) milk and dairy products, (2) vegetables, fruits and nuts, (3) fishery, (4) meat products, (5) motor vehicles and parts, (6) textile and clothing, (7) agriculture, (8) agricultural manufacture, (9) natural resource, and (10) manufacture. The 11 sectors of services are (1) utilities, (2) construction, (3) trade, (4) transportation, (5) communication, (6) financial services, (7), insurance, (8) business services, (9) recreational and other services, (10) public administration, defense, education and health, and (11) dwellings.

To provide further details, Table 1 shows what each sector of goods is consisted of. The corresponding detail for serviced is shown in Table 2.

Table 1: Sectors of Goods

Milk and Dairy Products (Milk_Dairy)	**Vegetables, Fruit and Nuts (Veg_Fruit)**	**Fishing (Fishing)**	**Meat Products (Meat)**	**Motor Vehicles and Parts (Vehicles)**	**Textiles (Textiles)**	**Agriculture (Agriculture)**	**Agricultural Manufacture (Agri_Manu)**	**Natural Resource (Nat_Res)**	**Manufacture (Manufactures)**
■ Raw Milk ■ Dairy Products	■ Vegetable, Fruit and Nuts, Potatoes, Cassava, Truffles	■ Fishing	■ Cattle Meat[6] ■ Other Meat	■ Motor Vehicle ■ Other Transport Equipment	■ Textile ■ Wearing Apparel ■ Leather	■ Paddy Rice ■ Wheat ■ Other Grains ■ Oil Seeds ■ Cane and Beet ■ Plant Fibers ■ Other Crops ■ Cattle ■ Other Animal Products[7] ■ Wool, Silk and Other Raw Animal Materials used in Textile	■ Vegetable Oils ■ Processed Rice ■ Sugar ■ Other Food[8]	■ Forestry ■ Coal ■ Oil ■ Gas ■ Other Mining	■ Beverages and Tobacco Products ■ Lumber ■ Paper and Paper Products ■ Petroleum and Coke ■ Chemical Rubber Products ■ Non-Metallic Minerals ■ Iron and Steel ■ Non-Ferrous Metals ■ Fabricated Metal Products ■ Electronic Equipment ■ Other Machinery and Equipment ■ Other Manufacturing

[6] Fresh or chilled meat and edible offal of cattle, sheep, goats, horses, asses, mules, and hinnies.

[7] Products from swine, poultry and other live animals such as eggs, in shell (fresh or cooked), natural honey, snails (fresh or preserved) except sea snails, frogs' legs, and etc.

[8] Prepared and preserved fish or vegetables, fruit juices and vegetable juices, prepared and preserved fruit and nuts, all cereal flours, meal and pellets of wheat, and etc.

Table 2: Sectors in Services

Utilities (Utilities)	Construction (Construction)	Trade (Trade)	Transportation (Transport)	Communication (Communication)	Financial Services (Financial)	Insurance (Insurance)	Business Services (Business Service)	Recreational and Other Services (Recreation)	Public Administration, Defense, Education, Health (Health Education)	Dwellings (Dwellings)
■ Electricity ■ Gas Distribution ■ Water	■ Construction	■ Trade	■ Transport ■ Sea Transport ■ Air Transport	■ Communications	■ Other Financial Intermediation[9]	■ Insurance	■ Other Business Services[10]	■ Recreation and Other Services	■ Other Services (Government)[11]	■ Dwellings

[9] Other financial intermediation includes auxiliary activities but not insurance and pension funding.

[10] Other business services such as real estate, renting and business activities.

[11] Services such as public administration and defense, compulsory social security, education, health and social work, sewage and refuse disposal, sanitation and similar activities, and etc.

As far as factors of production are concerned, there are five types of factors. These are (1) land, (2) non-skilled labor (3) skilled labor, (4) capital, and (5) natural resource.

Now that we have described how to set up the model, the next stage is to specify the initial and the end state of moving from the pre-TAFTA and pre-TNZCEP periods to the post-TAFTA and post-TNZCEP ones. The following subsection addresses this issue.

3.2 Scenarios Setting

As pointed out in Section 2, almost all goods flowing between Thailand and Australia, and Thailand and New Zealand are traded freely. Although there are still some goods in the sensitive sectors and others whose tariffs are not yet zero, these goods represent only a minority of goods being trade between the trading partners. In addition, in a longer run, tariffs of almost all goods will, in a longer run, eventually be down to zero. Hence it is reasonable to suggest that TAFTA and TNZCEP eliminate tariffs of (almost) all goods being traded between Thailand and Australia, and Thailand and New Zealand. We then set the initial goods' tariffs as specified in GTAP and set zero tariffs as the end state, as far as trade in goods are concerned.

Concerning trade in services, further negotiation is required under both agreements. This means the outcome is still uncertain. To overcome this matter, various scenarios are set up to capture the fact that a range of negotiation outcome is possible. It may be that, at one extreme, barriers to trade in services are not reduced at all, or, at the other, all barriers are removed. It is also possible, and even more likely, that the actual future outcome lies somewhere between the two extremes. Hence we choose four scenarios to consider.

Scenario A: All goods' tariffs are reduced to zero. Barriers to trade in services are not reduced.

Scenario B: All goods' tariffs are reduced to zero. Barriers to trade in services are reduced by 100% (full elimination).

Scenario C: All goods' tariffs are reduced to zero. Barriers to trade in services are reduced by 20%.

Scenario D: All goods' tariffs are reduced to zero. Barriers to trade in services are reduced by 40%.

One may view Scenario A as a controlled scenario in which only tariffs of trade in goods are eliminated but no further conclusion on trade in services is to be made. If this scenario provides the greatest benefit to the country, the key message will be that further negotiation on trade in services is not desirable. On the other hand, if other scenarios generate higher benefit, the result from each will point out the extent to which services trade should be liberalized.

Before moving on, it is worth emphasizing that the four scenarios are selected only to represent different degrees of services-trade liberalization. This is by no means to anticipate the exact outcome. We however believe that the results from these scenarios will be useful in suggesting the direction of negotiation strategy, e.g. whether it is better for the country to fully open up trade in services or it is more beneficial to open it up only to a minimal extent.

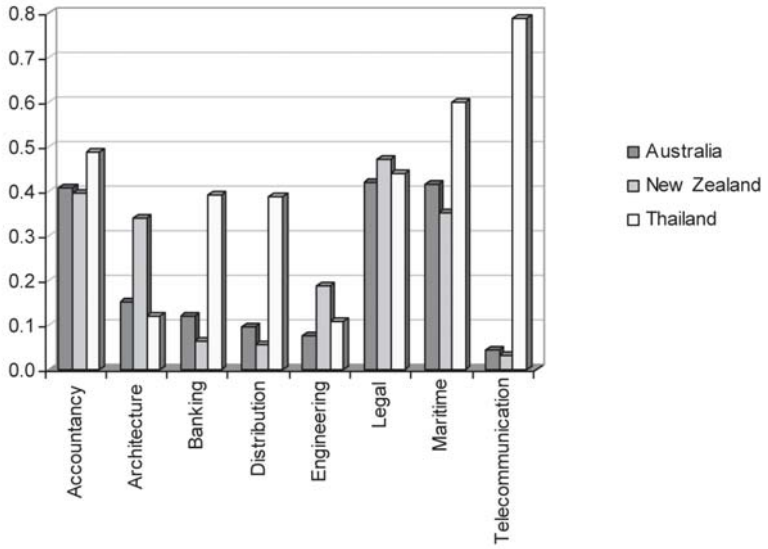
3.3 Data on Barriers to Trade in Services

A major issue arising here is how to measure barriers to services trade as they are not expressed in absolute or percentage terms as trade in goods, and it is subject to discretion as to how to quantify them. To address this matter, we utilize Trade restrictiveness Index[12], developed by the Productivity Commission and the Australian National University. The Index measures trade barriers for a number of countries, including Australia, New Zealand, and Thailand, with the scale from zero to one. The higher the number, the greater the barrier. The corresponding index for each sector of each country is shown in Figure 1[13]. It is seen that Thailand possesses relatively greater indices than Australia and New Zealand, indicating that it imposed greater barriers, especially in telecommunication whose index is nearly 0.8. Architecture is an exception where Thailand has the lowest index.

[12] For those interested in details as to how the Trade Restrictiveness Index is constructed, please visit http://www.pc.gov.au/research/researchmemorandum/servicesrestriction

[13] For the original dataset, please visit http://www.pc.gov.au/_data/excel_doc/0017/72305/TradeRestrictivenessIndexes.xls

Figure 1: Trade Restrictiveness Index for Thailand, Australia and New Zealand



Source: http://www.pc.gov.au/__data/assets/excel_doc/0017/72305/TradeRestrictivenessIndexes.xls

In putting the Index to the GTAP model, we express the Index for each sector of each country in percentage term. For example, if the index for legal service in Australia is 0.4, we express this number as 40% tariff for that sector in GTAP. Another complication is that services sectors as categorized by GTAP are different from those listed in the Trade Restrictiveness Index. Table 3 shows sectors in each. Hence, for each GTAP sector, it is necessary that we select a sector from the Index that should be a fair representative. In some cases, the average of more than one index is calculated to represent the barrier of sector concerned in GTAP. The GTAP sectors and their corresponding Trade Restrictiveness Index are as shown in Table 4.

Table 3: Sectors of Services in GTAP and in Trade Restrictiveness Index

GTAP	Trade Restrictiveness Index
Utilities	Accountancy
Construction	Architecture
Trade	Banking
Transport	Distribution
Communication	Engineering
Financial Services	Legal Services
Insurance	Maritime
Business Services	Telecommunication
Recreation & Other Services	
Public Administration / Defense / Education	
Dwellings	

Table 4: The Corresponding Trade Restrictiveness Index for Each GTAP Sector

GTAP	Corresponding Trade Restrictiveness Index
Utilities	Telecommunication
Construction	Average of Architecture and Engineering
Trade	Distribution
Transport	Maritime
Communication	Telecommunication
Financial Services	Banking
Insurance	Banking
Business Services	Average of Accountancy and Architecture
Recreation & Other Services	Average of All 8 Sectors
Public Administration / Defense / Education	Average of All 8 Sectors
Dwellings	Average of All 8 Sectors

4. Results

This section presents results obtained from GTAP simulation of the abovementioned scenarios. There are a wide range of results but presenting all of them will be unnecessarily lengthy. This is because of two main reasons. First, only a subset of economic variables in GTAP is sufficiently useful when examining the effects of the trade agreements[14]. Second, all four scenarios, as will be seen, tend to give results which are of the same direction but of different magnitude. It will be shown shortly that removing all services barriers generate the greatest welfare while retaining the current level of barriers provide the smallest national welfare. Reductions of 20% and 40% give results somewhere in between.

Hence it is reasonable to suggest that only selected variables from Scenario B are sufficient to show the key impact of TAFTA and TNZCEP. Results from other scenarios are in the same direction but of smaller sizes. However, where appropriate, we also show the results from all scenarios for comparison. The variables of consideration here are social welfare, GDP, sectoral outputs, and exports and imports.

As our main interest is the impact of the two agreements on Thailand, only results on the country will be discussed but the results for Australia and New Zealand will also be shown in tables.

4.1 Social Welfare

In examining the impact of TAFTA and TNZCEP on social welfare, we look into two variables. These are percentage change in per capita utility level, and its corresponding equivalent variation. Table 5 shows the former while Table 6 shows the latter.

Table 5: Percentage Change in Per Capita Utility Level

Unit: Percent

Country	Scenario A	Scenario B	Scenario C	Scenario D
Thailand	0.1931	0.3239	0.2193	0.2454
Australia	0.0255	0.0381	0.0280	0.0305
New Zealand	0.0263	0.0403	0.0291	0.0319

[14] This is not to say that other variables are not of interest, but they may be necessary only if one wishes to investigate specific issues rather than to examine the overall impact of the agreement.

Table 6: Change in Economic Welfare Level (Equivalent Variation)

Unit: US$ Million

Country	Scenario A	Scenario B	Scenario C	Scenario D
Thailand	255.31	428.23	289.89	324.48
Australia	156.41	233.96	171.92	187.43
New Zealand	24.49	37.50	27.09	29.70

From Table 5, under Scenario A, in which goods' tariffs are eliminated but barriers to trade in services are not reduced, consumers in Thailand gain higher utility level by 0.19% and, from Table 6, the equivalent variation is 255.31 million US$. Under Scenario B, in which there is full liberalization in both goods and services, the change in per capita utility level and the equivalent variation is greater than those under other scenarios. For Thai consumers, their percentage change in utility level is 0.32% and its equivalent variation is 428.23 million US$.

Results in Tables 5 and 6 reveal that the more trade in services is liberalized, the greater the benefit. Reducing barriers to trade by a lesser extent, say 20% or 40%, as is in Scenarios C and D respectively, also generate positive welfare gain but the size is smaller.

4.2 GDP

Again, as seen from Table 7, Thailand gains the most in term of GDP increase if Scenario B is opted for. With full elimination of services-trade barriers, GDP is to grow by 0.49%. Without reduction in trade-in-services barriers (Scenario A), the rise will be of 0.35%. Not only does the type of result occur with Thailand, it also applies to Australia and New Zealand. Both two countries benefit the most under Scenario B and gain the least under Scenario A. However, the percentage increases in Australia's and New Zealand's GDP are smaller than that of Thailand.

Table 7: Percentage Change in GDP (Scenario B)

Unit: Percent

Country	Scenario A	Scenario B	Scenario C	Scenario D
Thailand	0.3468	0.4894	0.3753	0.4038
Australia	0.1179	0.1389	0.1221	0.1263
New Zealand	0.0948	0.1163	0.0991	0.1034

One may also be interested in GDP decomposition. Table 8 tabulates GDP decomposition by expenditure in monetary term and Table 9 show the corresponding numbers in term of percentage change.

Table 8: GDP by Expenditure Decomposition (Scenario B)

Unit: US$ Million

Country	Consumption	Investment	Government Expenditure	Export	Import	Total (C+I+G+X-M)
Thailand	96,427.21	43,071.08	17,914.87	121,129.77	102,108.97	176,433.96
Australia	410,145.78	166,819.94	123,308.23	109,342.76	124,789.94	684,826.77
New Zealand	61,750.27	22,755.91	18,044.61	27,850.83	26,852.75	103,548.88

Table 9: Percentage Change in GDP by Expenditure Decomposition (Scenario B)

Unit: Percent

Country	Consumption	Investment	Government Expenditure	Export	Import	Total (C+I+G+X-M)
Thailand	0.5645	3.4536	0.6354	-0.2053	0.9729	0.4894
Australia	0.1457	0.2127	0.1467	0.4128	0.5081	0.1389
New Zealand	0.1228	0.1771	0.1246	0.2319	0.3083	0.1163

It can be seen that, for Thailand, the greatest percentage increase belongs to government expenditure. This is followed by investment and consumption respectively.

4.3 Sectoral Outputs

As for change in sectoral outputs, it is seen that, under Scenario B, motor vehicles and parts expand by the largest percentage. This result is supported by the fact that there have been a surge in Thailand's exports of automobiles to Australia after TAFTA was enacted. The initial tariff on automobiles imposed by Australia was relatively high[15]; hence removing them has enabled Thai exporters to expand their export to a significant extent. Production in this sector then rises accordingly.

While motor vehicles and parts gain the most in term of change in output, the three sectors that face the largest contraction are milk and dairy products, agriculture, and meat respectively. At first glance, this seems contradict the actual data as the production in such sectors has not declined as predicted by the model. Yet, in public, it is widely claimed that producers in such sectors especially milk and dairy products are negatively affected by the agreements and their criticism turns out to be consistent with the GTAP results. This is explicable. Milk and dairy products as well as meat and some other agricultural products are considered sensitive sectors in Thailand, so the reductions in tariffs under TAFTA and TNZCEP did not occur all at once. Rather, they

[15] The pre-TAFTA tariff rates for goods under HS 87 ranged from 0% to 15%.

gradually decline over time subject to specified timeframe. In addition, the Thai authorities, namely Ministry of Commerce and Ministry of Agriculture and Cooperatives, have provided remedy measures to mitigate the effects of the trade agreements on particular producers / sectors. The results pointed out by GTAP, which assumes that all tariffs are eliminated to zero at once, are therefore undermined by the gradual decline in tariffs and remedy measures undertaken by the government.

Table 10: Percentage Change in Sectoral Outputs (Scenario B)

Unit: Percent

	Thailand	**Australia**	**New Zealand**
Milk_Dairy	-2.4148	0.1352	0.3286
Veg_Fruit	-0.3265	0.2712	0.1007
Fishing	0.2474	0.1351	1.0377
Meat	-0.6550	-0.1332	-0.0614
Vehicles	1.6984	-0.1601	-0.1350
Textiles	-0.3130	-0.1432	-0.2398
Agriculture	-0.7416	0.3490	0.0351
Agri_Manu	-0.1109	0.1769	0.8237
Nat_Res	-0.2570	-0.0707	-0.0792
Manufactures	-0.2912	0.1246	-0.0206
Utilities	0.1879	0.1420	0.0976
Construction	3.4190	0.2529	0.1878
Trade	0.7560	0.1578	0.1434
Transport	0.7130	0.0082	-0.0407
Communication	0.2185	0.1286	0.1154
Financial	0.6264	0.1433	0.1287
Insurance	0.0788	0.1674	0.1324
Business Service	0.1641	0.1310	0.0966
Recreation	0.4106	0.1196	0.1156
Health Education	0.5469	0.1459	0.1282
Dwellings	1.0278	0.1613	0.1400
Total	0.2650	0.1252	0.1064

Regarding services, all sectors witness an expansion in production, especially construction and dwellings. Some sectors such as communication and business services expand by a far smaller percentage, but such small expansion, in percentage term, is still greater than those of Australia and New Zealand. It is worth noting however that the services sectors' expansion does not necessarily imply that the increases in production are from Thai producers. This type of result may be due to increased investment from Australia and New Zealand. In such case, the benefits of the agreements on Thailand's sectoral production may be mitigated. It is therefore reasonable to bring into analysis the changes in exports and imports when attempting to identify sectors that benefit and those that face greater pressure from the agreements.

4.4 Exports and Imports

In presenting the effects of TAFTA and TNZCEP on Thailand's exports and imports, we restrict our attention to exports to and imports from Australia / New Zealand, not the rest of the world. Again, only results from Scenario B are shown here as those from others are of the same direction.

Table 11 shows the percentage change in exports from Thailand to the two trading partners. It is seen that all sectors, except natural resource, benefit from TAFTA and TNZCEP in term of export expansion. The percentage increase in total export to Australia and New Zealand are 32.64% and 29.13% respectively. Sectors with greatest increase are textile and clothing, and motor vehicles and parts. As pointed out earlier, the actual data shows that Thailand's automobiles exports have risen significantly after TAFTA and TNZCEP was enacted. Yet we do not see a strong upward trend for textile and clothing[16]. This is because, under TAFTA and TNZCEP, Australia's and New Zealand's tariffs on goods in such sectors are subject to timeframe of tariff reduction. For example, in 2009, tariffs on some types of clothing were up to 10%. The actual impact of TAFTA and TNZCEP on textile and clothing is therefore different from GTAP simulation.

Regarding imports, Table 12 shows the percentage change in imports from Australia and New Zealand under Scenario B. With full liberalization in goods and services, Thailand's overall imports from Australia and New Zealand grow by 36.14% and 58.48% respectively. The good sector that witnesses the strongest increase in imports is meat and products. This is indeed the sector for which both countries are in a competitive position as compared to Thailand.

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[16] Value of exports of goods under HS50-63 from Thailand to Australia was 70.7 million US$ in 2004, and this rose to 94.2 million US$ in 2009. As for exports to New Zealand, the corresponding value in 2004 was 12.5 million US$, and in 2009 the figure was only 12.6 million US$, almost unchanged from pre-TNZCEP level.

It is interesting that changes in imports are stronger in services sectors than those in goods. The sector with the highest import surge is utilities. The corresponding percentage increase for imports from Australia and New Zealand are 339.24% and 339.31% respectively. Imports of communication also see nearly a 200% increase. The reason for this is that, before TAFTA and TNZCEP, Thailand's openness to trade in services is more limited than Australia and New Zealand who view investment from abroad as a core contribution to growth. The result here implies that if the Thai authority is to increase the degree of openness to trade in services in future negotiation so that the country can gain the greatest benefit, those domestic agents that will have to witness pressure from more intense competition from abroad are services providers. Remedy measures and careful regulations will be desirable accordingly.

Table 11: Percentage Change in Exports from Thailand to Australia and New Zealand (Scenario B)

Unit: Percent

Sectors	Australia	New Zealand
Milk_Dairy	7.855	289.358
Veg_Fruit	2.839	0.934
Fishing	0.123	0.898
Meat	2.995	16.974
Vehicles	29.322	23.825
Textiles	81.808	44.318
Agriculture	1.984	4.686
Agri_Manu	7.368	11.127
Nat_Res	-0.906	-1.104
Manufactures	24.994	19.858
Utilities	21.409	16.382
Construction	40.007	92.986
Trade	32.777	18.969
Transport	144.966	124.140
Communication	13.999	10.118
Financial	41.649	20.676
Insurance	41.905	20.835
Business Service	146.937	155.185
Recreation	76.299	84.619
Health Education	75.519	82.852
Dwellings	0.000	0.000
Total	**32.644**	**29.126**

Table 12: Percentage Change in Imports from Australia and New Zealand to Thailand (Scenario B)

Unit: Percent

Sectors	Australia	New Zealand
Milk_Dairy	22.718	21.306
Veg_Fruit	90.737	69.026
Fishing	55.321	52.480
Meat	163.260	174.860
Vehicles	111.103	37.253
Textiles	21.498	34.934
Agriculture	36.357	47.309
Agri_Manu	63.522	78.728
Nat_Res	5.139	59.994
Manufactures	26.579	57.949
Utilities	339.237	339.307
Construction	28.929	29.031
Trade	104.922	105.003
Transport	153.239	153.381
Communication	196.953	197.021
Financial	101.021	101.108
Insurance	100.905	101.047
Business Service	120.809	120.882
Recreation	104.131	104.277
Health Education	104.327	104.423
Dwellings	0.000	0.000
Total	**36.143**	**58.579**

5. Conclusion

This paper employs the GTAP model to study the economic impact of TAFTA and TNZCEP on the Thai economy. The key message emerging from the simulation is that reductions in barriers to trade in services would generate positive effect in term of social welfare level to Thailand. In addition, Thailand should also benefit in terms of other macroeconomic variables such as GDP, outputs, and total exports top the two trading partners. When comparing the country's benefit to those of Australia and New Zealand, we find that the benefit to Thailand is greater in percentage term.

Our results suggest that the gain to the country rises as the degree of openness to trade in services increases. This is seen when comparing the results under Scenario B (100% reduction in barriers to trade in services) with those under Scenarios A, C, and D (0%, 20% and 40% reduction in barriers to trade in services respectively).

Goods that benefit the most from TAFTA and TNZCEP are vehicles and parts and construction whereas those that are negatively affected include milk and dairy products, and agriculture. As for services, none of them are expected to see a decline in production. Yet it is expected that they will face higher competition from abroad. The sector that will see the greatest pressure is communication and utilities.

The results here point out the direction of negotiation on trade in services. As Thailand will benefit more if the degree of liberalization is large, a removal of barriers to trade in services is most desirable for the country at large. This, however, will hurt some sectors. It is therefore necessary for the government to provide remedy measures for sectors hit hardest by the agreements. Although service providers tend to benefit from TAFTA and TNZCEP, the government's attention ought to be given to sectors facing greater competition from abroad.

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