A Model to Estimate the Effects of Tariff Reduction by Chile on Thai Exports and Imports

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ABSTRACT

The objective of this study is to evaluate the economic impact of the Chile-Thailand bilateral trade agreement quantitatively if both partners reduce their tariff rates to zero.

The model used in this study is a set of partial equilibrium models: one for exports and another for imports. On the basis of current trade relations, the result of the study shows that bilateral economic cooperation will definitely increase trade between the two countries and that their export and import composition are complementary.

The impact is underestimated since the partial equilibrium models do not capture the effect of tariff elimination on goods that were not previously imported because of the tariff barriers. It is expected that price reduction due to the elimination of tariffs and closer trade relations between private enterprises from the two countries can lead to importation of these non-traded products. The probable impact, both directly and indirectly, from the non-trade export items that might also benefit from tariff reduction should also be taken into account in trade negotiation.

Keywords: *International Trade; Export and Import; Trade Agreement; Tariff Reduction; Model*

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บทคัดย่อ

บทความนี้มีวัตถุประสงค์เพื่อประเมินว่า การทำความตกลงทางการค้าระหว่างไทยและชิลี จะส่งผลต่อมูลค่าการค้าระหว่างไทยและชิลีมากน้อยเพียงใด โดยใช้ Partial Equilibrium Models และข้อมูลปี 2004 และ 2005 เป็นปีฐานในการคำนวณ ผลการศึกษาพบว่า หากมีการลดอัตราภาษีศุลกากรเป็นศูนย์ภายหลังจากมีการทำความตกลงทางการค้าเสรี มูลค่าการค้าของทั้งสองประเทศจะเพิ่มขึ้น โดยไทยและชิลีไม่ได้เป็นประเทศคู่แข่งทางการค้าในเวทีโลก ผลจากการยกเลิกภาษีนำเข้า จะส่งผลให้ไทยส่งออกไปชิลีเพิ่มขึ้นร้อยละ 16.7 ของมูลค่าการส่งออกในช่วงปี 2004 - 2005 และมูลค่าสินค้านำเข้าจากชิลีจะเพิ่มขึ้นร้อยละ 73.09 แบ่งเป็นมูลค่าที่ไทยนำเข้าเพิ่มขึ้นจริงร้อยละ 63.14 และมูลค่านำเข้าที่เพิ่มขึ้นอันเนื่องจากการทดแทนสินค้านำเข้าจากประเทศอื่นร้อยละ 9.85

ข้อจำกัดของแบบจำลองนี้คือ การใช้ข้อมูลการค้าของประเทศคู่ค้าระหว่างกันในอดีต เมื่อข้อมูลในอดีตมีปริมาณและมูลค่าระหว่างกันไม่มากดังเช่นกรณีไทยกับชิลี ผลที่ได้จากการคำนวณจะต่ำกว่าความเป็นจริง ทำให้ไม่สามารถประเมินได้ว่า ผลจากการทำความตกลงการค้าเสรีจะทำให้ไทยขาดดุลการค้ากับชิลีหรือไม่ เพราะยังมีรายการสินค้าอีกจำนวนมากที่แบบจำลองไม่สามารถแสดงผลกระทบได้เมื่อมีการลดอัตราภาษีศุลกากรเป็นศูนย์ การประเมินผลทั้งหมดในภาพรวมจำเป็นต้องนำผลกระทบจากสินค้าที่ไม่เคยทำการค้ากับชิลีมาร่วมประเมินด้วย

คำสำคัญ: *การค้าระหว่างประเทศ การส่งออก-นำเข้า ข้อตกลงทางการค้า การลดภาษีศุลกากร แบบจำลอง*

I. Introduction

Chile and Thailand have similar trade policy with a relatively high degree of openness. Although the trade volume between Thailand and Chile during the past ten years was not high, it has increased from US$ 144 million in 1994 to a figure of US$ 292 million in 2004, a 102% increase. The trade participation level between the two countries was also low; exports to Chile represent only 0.11% of Thailand's total exports and imports from Chile, 0.14% of the total Thailand's imports in 2005. Direct investment levels have not been significant, according to the Thai Trade Office. No Thai enterprise has been established in Chile or a Chilean one in Thailand. It is expected that a bilateral trade agreement and economic cooperation between Thailand and Chile would bring the peoples of both countries closer together. The

private sectors of both countries would see greater potential to expand business and this would help to further boost trade relations.

In an effort to explore the feasibility of initiating a free trade area between the two countries, a model to estimate the impact of bilateral trade is constructed. The objective of this study is to evaluate the economic impact of the Chile-Thailand bilateral trade agreement quantitatively if both partners reduce their tariff rates to zero.

II. Bilateral Trade in Goods

During the past ten years, the level of trade between Chile and Thailand has not been large. Thailand's exports to Chile in 1996 were US$ 42.90 million, while imports from Chile were US$ 173.90 million. Exports increased to the level of US$ 123.00 million in 2005 and imports declined to the level of US$ 160.10 million in the same year. In most of these years, Thailand's balance of trade with Chile was on the deficit side; Thailand's imports from Chile were greater than its exports to Chile.

Participation in trade between the two countries was rather low. In 1996, Thailand's exports to Chile were 0.077 percent of Thailand's total exports. The participation rate improved in 2005 as it reached the level of 0.111 percent. The same situation occurred on the import side. Thailand's imports from Chile were 0.241 percent of Thailand's total imports in 1996. The rate decreased to the level of 0.124 percent in 2005.

Table 1 Trade between Chile and Thailand

Unit: Millions of US Dollars

Indicators	1996	1997	1998	2003	2004	2005
Export to Chile	42.9	44.4	57.2	108.6	104.2	123.0
Import from Chile	173.9	179.2	64.1	78.7	172.3	160.1
Trade Volume	216.8	223.6	121.3	187.3	276.5	283.1
Balance with Chile	-131.0	-134.8	-6.9	29.9	-68.1	-37.1
Export to world	55,941	58,329	54,490	80,040	96,531	110,883
Import from world	72,248	63,181	42,435	75,034	94,037	118,223
Trade Volume	128,189	121,509	96,925	155,074	190,568	229,106
Participation (trade with Chile as a percentage of the trade with the world)						
Export to Chile	0.077	0.076	0.105	0.136	0.108	0.111
Import from Chile	0.241	0.284	0.151	0.105	0.183	0.135
Trade Volume	0.169	0.184	0.125	0.121	0.145	0.124

Source: Department of Customs

2.1 Exports

Thailand has exported a variety of products to Chile. Table 2 shows the first 15 highest values of exports. The most important exports during the past 10 years were trucks. In 2005, the export of trucks to Chile reached US$ 31.77 dollars, an increase of more than 600 percent from 1998. Other items included: cement, washing machines, motor vehicle parts, tuna, natural rubber, prepared pineapple, footwear, microwave ovens, and air conditioners.

Table 2 Thailand's Exports to Chile: Selected Important Items

Unit: Millions of US Dollars

HS	Description	1998	2000	2002	2004	2005
	Total Exports to Chile	**57.09**	**76.61**	**95.76**	**103.81**	**122.66**
870421	Trucks, Nesoi, Diesel Eng, Gvw 5 Metric Tons & Und	4.11	26.14	40.27	28.47	31.77
252329	Portland Cement Except White Portland Cement	1.26	1.16	4.55	5.37	8.05
845012	Wash Mac With Blt-In Cent Dry, Cap Not Exc 10 Kg	0.00	0.01	3.05	5.15	6.78
870899	Parts And Accessories Of Motor Vehicles, Nesoi	0.03	0.08	0.17	1.98	6.64
160414	Tunas/Skipjack/Bonito Prep/Pres Not Minced	2.66	0.97	2.90	4.45	6.27
870829	Pts & Access Of Bodies Of Motor Vehicles, Nesoi	0.27	0.85	0.43	2.46	5.82
842810	Pass Or Freight Elevator Exc Cont Act; Skip Hoists	0.00	0.04	0.82	1.00	3.16
400129	Natural Rubber In Primary Forms etc.. Nesoi	0.00	0.86	0.27	1.45	1.96
200820	Pineapples, Prepared Or Preserved Nesoi	0.63	1.22	1.81	2.65	1.70
640319	Footwear Lea Upper, Sports Footwear Exc Ski-Boots	1.98	0.56	1.05	0.95	1.66
870894	Steering Wheels, Columns&Boxes F Motor Vehicles	0.00	0.00	0.00	0.36	1.22
870860	Non-Driving Axles & Pts Thereof for Motor Vehicles	0.00	0.00	0.00	0.31	1.15
842139	Filter/Purify Machine & Apparatus For Gases Nesoi	0.01	0.00	0.00	0.33	1.11
392321	Sacks & Bags (Incl Cones) of Polymers Of Ethylene	0.00	0.16	0.40	0.58	1.11
581092	Embroid In Pc, Strip or Motifs Of Mmf	0.58	0.68	1.26	2.53	1.02
	Total value of 15 items	11.53	32.73	56.98	58.04	79.42
	Percentage of 15 items to total exports to Chile	20.20	42.72	59.50	55.91	64.75

Source: Department of Customs

2.2 Imports

Table 3 shows the first 15 most important imports from Chile. The main import items from Chile in 2005 were refined copper cathodes, trout and other fish, copper ore and concentrates, wood pulp, and preserved fruits. Note that most import items from Chile are raw materials for the production process. Thailand's import of refined copper cathodes from Chile was US$ 35.63 million in 2005, and copper ore and concentrates have become an important import item recently, amounting to US$ 23.88 million in the same year and will presumably continue to be an important item in the future.

Table 3 Thailand's Imports from Chile: Selected Important Items

Unit: Millions of US Dollars

HS	Description	1998	2000	2002	2004	2005
	Total imports	**64.61**	**64.38**	**60.12**	**172.81**	**160.10**
740311	Refined Copper Cathodes And Sections Of Cathodes	40.48	7.37	2.30	53.80	35.63
30321	Trout (Salmo Trutta, etc…,), Frozen, Nesoi	0.48	0.71	8.11	20.24	24.95
260300	Copper Ores And Concentrates	0.00	0.00	0.00	40.55	23.88
470311	Chem Wd pulp Sulfate Ex Disslvng Gr Conif, Unbleach	7.41	36.44	22.66	20.24	15.45
30322	Atlantic And Danube Salmon, With Bones, Frozen	0.00	1.38	0.66	1.24	9.98
30420	Fish Fillets, Frozen	2.24	1.29	3.20	4.46	5.04
410411	Bov/Eq Hide/Skin,Ful Grn, Unsplit; Grn Spl, Wet Sta	0.00	0.00	2.62	2.75	4.68
230120	Flour Meal & Pellet Of Fish Crustaceans etc. Inedib	0.97	2.13	0.42	0.78	4.37
30329	Salmonidae Nesoi, With Bones, Frozen	0.94	1.46	5.58	5.98	4.36
130231	Agar-Agar	2.39	2.95	2.28	4.33	3.74
470620	Pulp Of Fiber Derived From Recovd Paper/ Paperboard	0.00	0.00	0.00	1.72	3.18
440710	Coniferous Wood Sawn, Sliced etc., Over 6 Mm Thick	0.15	0.67	1.01	1.90	3.09
150420	Fish Fats & Oils (Not Liver), Fract, Not Modified	0.00	0.15	2.40	0.94	2.72
283421	Potassium Nitrate	0.43	0.42	1.24	2.08	2.36
480100	Newsprint, In Rolls Or Sheets	0.00	0.00	0.57	0.51	2.09
200840	Pears, Prepared Or Preserved, Nesoi	0.00	0.00	0.53	0.73	1.42
	Total value of 15 items	55.49	54.97	53.58	162.25	146.94
	Percentage of 15 items to total imports from Chile	85.88	85.38	89.12	93.89	91.78

Source: Department of Customs

2.3 Tariffs

In Thailand, the present tariff system is under the HS Nomenclature (6-7 digit level). There are 5,507 tariff lines in this set. The rates used in this study are the applied rates that are enforced by the customs authority, where the duties range from 0% to 80%. The overall simple applied MFN tariff average is 17.09%. The average applied rates for agricultural products (HS 01- 24) is 24.49% and the average applied rates for industrial products (HS 25-97) is 9.70%. The calculation is based on *ad valorem* duties only.

At present Chile has a flat MFN custom tariff of 6% for most products, which makes up over 98% of tariff lines. There are some exceptions for sugar, wheat and wheat flour, which are subject to a price band system (and thus to a specific duty), plus some measures specific to poultry (from heading 0207), which has a tariff of 25%. On the other hand, some products are duty free, including fire-fighting vehicles, helicopters, aircraft, and cargo and fishing vessels. Chile does not apply tariff quotas, save in cases of reciprocity (Article 88 of the Central Bank Law).

III. Model

The model used in this study is a set of partial equilibrium models, one for exports and another for imports. Both models are used to determine the effect of a full tariff reduction on the quantities demanded and supplied of goods for Thai and Chilean markets separately. It does not take into account the relationships between the two markets or the rest of the economy, or any macro restrictions of resources in the economy. The results from the models show the impacts of a bilateral agreement between Chile and Thailand in terms of possible changes in imports and exports of the two countries.

In evaluating the possible impact of a trade agreement between Chile and Thailand, an important assumption in the model is that both trade partners will reduce their tariff rates to zero a year after the agreement.

3.1 A Model for Imports

The measurement of the change in imports as a consequence of a bilateral tariff reduction on Thailand's imports from Chile can be separated into two impacts: trade creation and trade diversion (Cline, 1978). A bilateral trade agreement

would have a positive effect if the benefits derived from trade creation exceed the costs of trade diversion.

❖ ***Trade creation***

By definition, Trade creation is normally referred to as the efficiency gain resulting from the tariff preferential reduction. Theoretically, trade would be created in the Thai market from the goods which Chile offers a lower price on than the international price, as well as the domestic price; if imported goods from Chile become the cheapest ones in Thailand as a result of eliminating the tariff, consumption will increase and quantities offered by domestic producers will decrease when domestic production competes with imports. Therefore, an increase in imports from Chile in the Thai market would be a result of substituting Chile products for imports from the rest of the world and for domestic products which are unable to compete with imports from Chile. A net increase of imports from Chile in the Thai market would imply an increase of the goods available for consumption and hence trade creation has a positive effect that derives from the tariff reductions.

In the model, trade creation is determined by the price elasticity of import-based demand, the price elasticity of export-based supply, and the differences between the present Thai tariffs and the agreed tariffs. As the model assumes the full elimination of *ad valorem* tariffs, an increase of Chilean imports will generate a variation (in foreign currency terms) in the internal price of imported goods; therefore, a change of tariff is equivalent to a change in domestic price. Thus, a change in the value of imports would only arise from changes in imported quantities. The calculation of trade creation for each product is simplified as follows:

$$TC^{TH} = B.\Delta t_{ch.th} \tag{1}$$

where:

$$B = \frac{M_o^{CH}\ \eta_p}{\left(1+t_o\right)\left(1-\frac{\eta_p}{\in_p}\right)} = \text{constant} \tag{2}$$

TC^{TH} = Thailand trade creation due to import from Chile in response to tariff reduction

M_o^{CH} = Value of initial imports from Chile, before tariff reduction

$\in_p$ = Price elasticity of Chilean export-based supply

$\Delta t_{ch.th}$ = Differential of tariff imposed by Thailand before and after Chile-Thailand FTA

η_p = Price elasticity of Thai import-based demand

t_o = Initial ad valorem duty

When the values of the price elasticity for both import-based demand and export-based supply in equation (2) are known, Thailand trade creation due to imports from Chile in equation (1) will depend solely on the differential of tariff reduction before and after the Chile- Thailand trade agreement.

❖ ***Trade diversion***

Trade diversion, on the other hand, represents efficiency loss due to tariff reduction and consequently creates the import of goods at a price higher than that available before the agreement, which translates as an implicit subsidy to Chile and therefore leads to lesser welfare on the Thai economy.

To calculate the increase in imports which arises from trade diversion, the concept of elasticity of substitution of imported goods between Chile and the rest of the world is applied. It is assumed that an increase in Thai imports does not affect the c.i.f. value of imported goods. To capture the negative impact of trade diversion on the Thai economy, the increase of imports arising from trade diversion will be calculated by using the following formula:

$$TD = \frac{\varepsilon P_r . M_o^{CH} . M_o^{ROW}}{M_o^{CH} + M_o^{ROW}} \qquad (3)$$

where:

TD = Thai trade diversion due to tariff reduction on Chile imports that export to Thailand.

$\mathcal{E}$ = Elasticity of substitution between imports from Chile and imports from the rest of the world.

M_0^{ROW} = Value of initial imports from the rest of the world to Thailand.

M_0^{CH} = Value of initial imports from Chile to Thailand

P_r = Proportional variation in relative prices, whereas

$$P_r = \left[\left(1+t_a^{CH}\right)/\left(1+t_a^{ROW}\right)/\left(1+t_b^{CH}\right)/\left(1+t_b^{ROW}\right)\right]-1 \qquad (4)$$

t_a^{CH} and t_b^{CH} are the actual tariffs applied to Chilean imports after and before tariff reduction in the base year, whereas t_a^{ROW} and t_b^{ROW} represent the actual tariffs applied to the rest of the world after and before tariff reduction. It is assumed that before a trade agreement with Chile is reached, the tariff rates that Thailand will impose on imports either from Chile or the rest of the world will be equal, disregarding the impact of the bilateral trade agreements with Australia and New Zealand, which Thailand will already have implemented by the time of the study but are considered a trifle.

The bilateral trade agreement would have a positive effect if the benefits derived from trade creation were to exceed the costs of trade diversion.

3.2 Export Model

In the case of exports, an equation developed by Panagariya (1995) was used. The model allows the estimation of the impact on Thai exports due to the reductions of tariffs in the Chilean market. The model assumes that trade creation from Thai exports in the Chilean market depends on the price elasticity of Thai exports to Chile, where the elasticity reflects the Chilean demand for Thai goods in

response to price (changes). As in the case of imports, the effects will be calculated under the assumption that when ad valorem tariffs reduce to zero, the increase of Thai exports to Chile will generate a variation (in foreign currency terms) in the price of imported goods in Chile, with which the change of tariff is equivalent to the change in domestic price, thus creating an artificial price advantage for Chilean goods. Algebraically, the increase of Thai exports to Chile can be presented as follows:

$$\Delta X^{TH} = X_b . \varpi_p . \Delta t^{CH} / \left(1 + t_a\right) \quad (5)$$

where:

ΔX^{TH} = Increase in Thai exports to Chile

X_b = Export of Thailand to Chile before tariff reduction.

ϖ_p = Price elasticity of Thai export supply to Chile.

Δt^{CH} = Differential of tariff imposed by Chile before and after Chile-Thailand trade agreement.

t_a = Chilean tariff after the trade agreement.

This equation is applied to each tariff line, as long as it satisfies the following conditions: (a) trade before the tariff reduction exists and (b) the tariff is greater than zero. If any of these conditions do not occur, the equation would tend to zero. This is due to the fact that the model takes into account only the existing trade, and it disregards the possibility of trade creation in those products where trade is non - existent. In the case of zero initial tariffs, these products would have no price advantage in light of tariff elimination, and thus have no change in exports to Chile.

3.3 Data and Assumptions

Trade Data for Thai imports and exports as well as tariff rates are from the Department of Customs, Thailand. Chilean trade data, on the other hand, were obtained from the Central Bank of Chile.

Tariff rates before the trade agreement in the model are the actual tariffs applied to imports in 2005. It is assumed that there is no change in the tariff rates for

the rest of the world's imports, therefore t_a^{ROW} and t_b^{ROW} are equal. For commodities that imposed a specific tax, the following formula is used:

$$\text{Specific Tax (\%)} = \frac{\text{Specific Tax rate} \times \text{Quantity of Imports}}{\text{Value of Imports}}$$

3.4 Limitations of the models

The limitations of the models are (1) that they fail to capture the effect of tariff elimination on goods that were not previously imported because of the tariff barriers, (2) that the models are static in nature and thus disregard the dynamic impacts of the bilateral trade agreement on the rate of growth of trade, and (3) that the model does not display the impacts on the factor price increases; in general higher export demand will result in greater demand for factors of production in each economy and this will lead to an increase in the factor prices. However, the models can be used to calculate the effect on trade flows on a one-time basis due to the reallocation of resources driven by changes in relative prices as a result of the tariff reduction, and the product traded can be categorized in accordance with the availability of data.

IV. Results of the Study

4.1 Changes in Thai Exports to Chile due to Tariff Reduction

With regard to tariff liberalization, it is expected that a decline in import price due to the reduction of Chile's tariff rates will result in higher demand for Thai exports and greater competitiveness of Thai products in this market.

In estimating the impact of tariff reduction on changes in Thai exports, the model requires only one set of export items to be used as initial values. Since trade items between Thailand and Chile in the base year and even during the past ten years were rather small in number, to capture the possible impact of Thai exports on the Chilean market, all products that Thailand used to export to the Chilean market in 2004 and 2005 are taken into account and their export values are taken as the initial values in the model.

The results of the study show that there were only 884 items out of an average of more than 3,315 different tariff lines of Thai exports to the world market

that were previously exported to Chile during 2004 - 2005, provided that products items of special transaction were excluded. In order to estimate the change in exports when tariff rates for the importation of Thai products to Chile are zero, the model will take into account only the 884 product items, disregarding the probable trade impact, both directly and indirectly, from the other 2,431 export items that might also benefit from tariff reduction.

The estimated results shown in Table 4 indicate that tariff elimination by Chile will increase Thailand's exports to Chile by US$ 21.14 million, an increase of 16.70 percent from the base year. In fact, only 7 product lines could explain 86.26 percent of the estimated increase in exports. They were exports of vehicles, parts and accessories of vehicles (Chapter 87), which accounted for 49.75 percent of the total change in exports, machinery and mechanical appliances (Chapter 84) 20.38 percent, rubber and articles thereof (Chapter 40) 4.10 percent, preparation of sardines, tuna and other aquatic animals (Chapter 16) 3.40 percent, electrical machinery and equipment and parts thereof (Chapter 85) 3.34 percent, preparation of vegetables, fruit, nuts, etc.. (Chapter 20) 3.20 percent, and non - white Portland cement (Chapter 25) 2.09 percent.

Products with remarkable growth rates but where change in export value are moderate are: tanning or dyeing extracts (Chapter 32), with an estimated growth rate of 63.69 percent; coffee, tea, mate and spices (Chapter 9) 41.33 percent; and miscellaneous articles of base metal (Chapter 83), 40.65 percent. It should be emphasized here that the calculated exports are underestimated because the estimates do not include the effect of tariff elimination on goods that were not previously imported by Chile from Thailand.

Table 4 Estimated Changes in Thai Exports to Chile in Response to Tariff Elimination

Unit: Millions of US Dollars

Chapter	Description	Export in 2004 or 2005	Est. Change in Exports	Rate of Change%	Number of Items
3	Fishery products (Chapter 3)	273.00	20.40	7.47	2
4	Live animals and edible products of animal origin (Chapter 4)	33,917.00	10,275.55	30.30	2
6 - 14	Vegetable products:	892,761.00	25,643.57	2.87	20

Table 4 (Continued)

Chapter	Description	Export in 2004 or 2005	Est. Change in Exports	Rate of Change%	Number of Items
16 - 24	Prepared foodstuffs; beverages, spirits, vinegar, tobacco and manufactured tobacco substitute:	9,597,109.00	1,428,941.99	14.89	32
25	Portland Cement except white (Chapter 25)	8,063,867.00	442,812.31	5.49	1
28 - 38	Products from the chemical or allied industries:	1,598,118.00	405,847.84	25.40	30
39 - 40	Plastics and rubber and articles thereof:	11,064,451.00	1,165,962.85	10.54	70
41 - 42	Hides, articles of leather, handbags (Chapters 41 - 42)	49,630.00	3,224.61	6.50	13
44,46	Wood and articles of wood, baskets, wicker work:	120,029.00	4,183.33	3.49	10
48 - 49	Paper and paperboard and articles thereof:	99,738.00	9,012.84	9.04	17
50 - 63	Textiles and Clothing:	8,353,580.00	854,737.69	10.23	165
64 - 67	Footwear, headgear, prepared feathers and articles made therewith:	3,242,446.00	106,670.99	3.29	19
68 - 70	Articles of stone, plaster, cement, ceramic, glass:	623,166.00	74,966.36	12.03	20
71	Pearls, precious or semiprecious stone (Chapter 71)	633,427.00	33,038.99	5.22	7
72 - 83	Base metals and articles thereof:	3,940,525.00	694,434.08	17.62	59
84 - 85	Machinery and mechanical appliances, electrical equipment, parts:	21,620,710.00	5,014,634.95	38.40	149
87,89	Vehicles, vessels and associated transport equipment:	52,102,546.00	10,520,781.19	20.19	30
90 - 92	Optical, photographic, cinematographic, precision, clocks, watches, parts:	781,546.00	175,231.04	22.42	22
94 - 96	Miscellaneous manufactured articles:	3,091,483.00	172,621.64	5.58	52
97	Works of art, collectors' pieces and antiques (Chapter 97)	1,429.00	69.85	4.89	2
	Total	125,910,751.00	21,143,112.07	16.70	722

Sources: Export figures in 2004 or 2005 are from Thailand's Customs Department, Ministry of Finance. Other figures are from the calculation.

4.2 Changes in Thai Imports from Chile due to Tariff Elimination

As with the case of exports, the total imports of Thailand from Chile in 2004 - 2005 were used as a base value, which amounted to US$ 161.09 million. Thailand's total demand for imports from the world covers more than 3,329 different tariff lines, but there were only 199 tariff lines that Thailand imported from Chile during the same period, where special transactions were excluded in the calculation.

The estimated results shown in Table 5 indicate that an increase in imports (CI) from Chile will be US$ 117.67 million, assuming that tariff rates on Thailand's imports from Chile are reduced to zero in all tariff lines after the enforcement of the trade agreement. An increase of 86.37 percent of them is the impact of trade creation and another 13.62 percent is the impact of trade diversion; that is, importing from Chile instead of importing from the rest of the world.

In growth terms, an increase in Thailand's imports would be 73.09 percent from the initial value before tariff reduction. The net impact of imports change depends of two main forces: trade creation and trade diversion. Trade creation and trade diversion that would arise from a preferential tariff reduction on Chilean imports from Thailand will be US$ 101.64 and US$ 16.03, respectively. Therefore, a bilateral trade agreement between Chile and Thailand would have a positive effect on the Thai economy since the benefits derived from trade creation exceed the costs of trade diversion. It was found that only 9.96 percent of Thailand's total imports from Chile are a diversion of imports from the rest of the world to Chile.

Trade creation would be mainly from the 5 Chapters which account for 94.47 percent of the total estimated increase in imports. They are in Chapter 3 (fishery products) 77.25 percent, Chapter 20 (preparations of vegetables, fruit, nuts) 6.13 percent, Chapter 74 (copper and articles thereof) 5.16 percent, Chapter 41 (hides and bovine skins) 4.00 percent and Chapter 48 (paper and paperboard, paper pulp) 1.92 percent.

In terms of trade diversion, the products which Thailand would import more from Chile while reducing imports of the same products from the rest of the world are the product items in Chapter 6, representing 85.0 percent of the total trade diversion. Product items in Chapter 74 (copper and articles thereof) account for 27.75 percent of the total trade diversion, Chapter 20 (Preparations of vegetables, fruit, nuts) 16.89 percent, Chapter 3 (fishery products) 15.57 percent, Chapter 26 (copper ore and concentrates) 9.78 percent, Chapter 69 (ceramic products) 8.35 percent, and Chapter 15 (animal or vegetable fats and oils and waxes) 6.63 percent. Even though

the overall impact on trade diversion is rather low (less than 10 percent), some products show remarkably high increasing rates, indicating the possibility that Thai consumers will substitute them for products from the rest of the world. Examples of these products are items in Chapter 39 (plastics and articles thereof), for which the average growth rate is 274.65 percent, Chapter 69 (ceramic products) 166.60 percent, Chapter 96 (misc. manufactured articles) 94.95 percent, Chapter 34 (soap, organic surface-active agents, washing preparations) 89.61 percent, Chapter 19 (preparations of cereals, flour, starch or milk) 72.12 percent, and Chapter 32 (tanning or dyeing extracts) 58.82 percent.

Table 5 Estimated Changes of Thailand's Imports from Chile in Response to Tariff Elimination in Thailand

Unit of imports: US Dollars
Unit of Rate of Growth: Percent

Chapter	Description	Import in 2004/2005	Trade Creation (TC)	Trade Diversion (TD)	Change in Imports (CI)	Rate of Growth/2005		No. of Items
						TC	CI	
2, 4	Live animals and edible products of animal origin:	510	82	132	214	29.81	78.02	2
3	Fishery products (Chapter 3)	49,054,035	78,524,453	2,496,828	81,021,281	160.08	165.17	27
6-13	Vegetable products:	4,661,996	1,176,945	564,221	1,741,166	25.25	37.35	16
15	Animal or vegetable fats and oils and waxes (Chapter 15)	2,787,102	804,999	1,064,179	1,869,178	28.88	67.07	3
16-23	Prepared foodstuffs; beverages, spirits, vinegar, tobacco and manufactured tobacco substitute:	8,306,708	7,681,156	3,373,657	11,054,812	92.47	133.08	18
25-26	Salt, sulfur, earth and stone, plastering material, lime and cement:	23,797,248	271,554	1,568,352	1,839,906	10.93	18.5	2
23-38	Products from the chemical or allied industries:	4,842,789	953,251	497,625	1,450,877	19.68	29.96	35
39-40	Plastics and rubber and articles thereof:	13,725	1,173	29,311	30,483	8.54	222.1	4

Table 5 (Continued)

Chapter	Description	Import in 2004/2005	Trade Creation (TC)	Trade Diversion (TD)	Change in Imports (CI)	Rate of Growth/2005		No. of Items
						TC	CI	
41-42	Hides, articles of leather, handbags:	4,773,749	4,064,705	39,200	4,103,905	108.28	134.07	4
44, 47	Wood and articles of wood, basket, wicker work:	22,395,616	425,738	100,864	526,602	1.9	2.35	11
48-49	Paper, paperboard, articles thereof:	2,088,518	1,956,389	319,789	2,276,179	93.67	108.99	8
51-62	Textiles and Clothing:	23,184	5,731	2,815	8,547	24.72	36.86	11
65	Headgear and parts (Chapter 65)	53	60	12	73	113.21	137.42	2
69-70	Articles of stone, plaster, cement, ceramic, glass:	804,216	424,104	1,339,707	1,763,812	52.74	219.32	5
71	Pearls, precious or semiprecious stone (Chapter 71)	30	8	3	10	25.62	34.71	1
72-83	Base metals and articles thereof:	36,872,588	5,255,513	4,491,395	9,746,909	14.25	26.43	20
84-85	Machinery and mechanical appliances, electrical equipment, parts:	338,114	68,015	23,723	91,738	20.12	27.13	20
87	Vehicles other than railway or tramway locomotives and parts thereof (Chapter 87)	165,656	20,630	86,696	107,326	12.45	64.79	2
90-91	Optical, photographic, cinematographic, precision, clocks, watches, parts:	5,915	1,206	125	1,331	20.38	22.5	2
94-96	Miscellaneous manufactured articles:	51,279	2,410	33,241	35,651	4.7	69.52	6
	Total	160,983,031	101,638,121	16,031,875	117,669,955	63.14	73.09	199

Sources: Export figures in 2004 or 2005 are from Thailand's Customs Department, Ministry of Finance. Other figures are from the calculation.

4.3 Complementary Economies

Table 6 shows that the traded goods between Chile and Thailand are complementary. Only 61 out of 860 tariff lines of traded products that Thailand both exports to and imports from Chili during 2004 - 2005. The evidence indicates that the numbers of competing products are less than 10 percent of the products traded between Chile and Thailand. The table also reflects the importance of trade in vehicle parts for Thailand. If tariff rates were bilaterally reduced to zero, the total value of exports which exclude motor vehicle parts would increase by 7.4 percent of the total change in Thai exports to Chile, while the total value of imports would increase by 2.23 percent of the total change in Thai imports from Chile. When the vehicles and parts in Chapter 87 are included in the calculation, the estimated increase in exports will be 26.36 percent of the total increase in Thai exports to Chile.

Table 6 Shares of Complementary Products in Thai and Chilean Trade

No	HS	Description	Exports to Chile in 2004/2005	Estimated Change in Exports	Shares of Change in Exports to Total	Imports from Chile in 2004/2005	Total Change in Imports	Shares of Change in Imports to Total
			US$		%	US$		%
1	30559	fish, dried, whether salted but not smoked nesoi	52	1	0.00	54,708	26,353	0.02
2	30729	scallops incl queen, frozen/dried/salted/ in brine	221	20	0.00	26,964	4,629	0.00
3	160414	tunas/skipjack prep/pres not minced	6,282,572	683,311	3.23	26	114	0.00
4	200820	pineapples, prepared or preserved Nesoi	1,703,170	515,105	2.44	75	31	0.00
5	200899	fruit & edible plant parts nesoi, prep. nesoi, etc.	83,450	7,977	0.04	32	9	0.00
6	200980	juice of any single fruit/vegetable unfermented nesoi	586	16	0.00	14,978	5,031	0.00

Table 6 (Continued)

No	HS	Description	Exports to Chile in 2004/2005	Estimated Change in Exports	Shares of Change in Exports to Total	Imports from Chile in 2004/2005	Total Change in Imports	Shares of Change in Imports to Total
			US$		%	US$		%
7	210690	food preparations nesoi	66,153	13,683	0.06	201	14	0.00
8	300490	medicaments nesoi, measured doses, retail pk neso	156,476	7,082	0.03	21	1	0.00
9	330290	mixtures of odoriferous substances, nesoi, etc.	131	8	0.00	1,074	81	0.00
10	330499	beauty/ skin care preparation, nesoi	31,921	1,007	0.00	97,856	48,096	0.04
11	382490	products and residuals of chemical industry, neso	474,679	32,616	0.15	45,577	3,468	0.00
12	392310	boxes, cases, crates & similar articles of plastic	48,431	42	0.00	10,034	29,567	0.03
13	392690	articles of plastics, nesoi	336,756	7,362	0.03	448	81	0.00
14	400911	pipe, nt reinforced/combine w/material, w/o fitti	45,611	1,140	0.01	1,064	222	0.00
15	420222	handbags, surface of plastic sheet/ text materials	1,768	170	0.00	3,740	1,222	0.00
16	420232	articles for pocket/ handbag, plastic/ text material	119	13	0.00	742	932	0.00
17	441510	cases/ boxes/ crates/ similar packings, cable-drum, wood	11,090	221	0.00	256	47	0.00
18	441900	tableware and kitchenware, of wood	50,513	1,661	0.01	53	29	0.00
19	442190	articles of wood, nesoi	8,570	166	0.00	111	215	0.00

Table 6 (Continued)

No	HS	Description	Exports to Chile in 2004/2005	Estimated Change in Exports	Shares of Change in Exports to Total	Imports from Chile in 2004/2005	Total Change in Imports	Shares of Change in Imports to Total
			US$		%	US$		%
20	480100	newsprint, in rolls or sheets	55	1	0.00	2,085,892	2,275,700	1.93
21	481910	cartons, boxes & cases corrugated paper & paperbd	890	6	0.00	359	155	0.00
22	482090	blotting pads/ book covers/ artcl statnry nesoi, paper	10,539	198	0.00	221	37	0.00
23	491110	trade advertising material, commercial catalog etc.	38	0	0.00	1,650	231	0.00
24	491199	printed matter, nesoi	1,701	173	0.00	237	22	0.00
25	581091	embroid in pc, strip or motifs of cot	21,396	775	0.00	76	74	0.00
26	610590	men's/ boys' shirts of textile material nesoi, knit	20	3	0.00	5	131	0.00
27	610910	t-shirts, singlets, tank-tops, knit, cotton, etc.	19,303	1,204	0.01	1,028	391	0.00
28	610990	t-shirts, singlets, knits, textiles, nesoi, etc.	663,295	16,104	0.08	444	526	0.00
29	620439	women's or girls suit-ty jac, not knit, tex, nesoi	7,255	534	0.00	27	392	0.00
30	620469	women's or girls' trousers etc. not knit, tex, nesoi	31,490	1,083	0.01	5	2	0.00
31	620590	men's or boys shirts ot textile mat nesoi, nt knit	4,404	396	0.00	120	82	0.00
32	650590	hats & headgear, knit etc., lace, felt etc. in pc	9,908	346	0.00	45	70	0.00

Table 6 (Continued)

No	HS	Description	Exports to Chile in 2004/2005	Estimated Change in Exports	Shares of Change in Exports to Total	Imports from Chile in 2004/2005	Total Change in Imports	Shares of Change in Imports to Total
			US$		%	US$		%
33	691200	ceramic tableware, kitchenware etc., earthenware etc.	129,379	12,576	0.06	87	75	0.00
34	711319	jewelry and parts thereof, of other precious metal	322,645	26,019	0.12	30	10	0.00
35	731815	threaded screws and bolts nesoi of iron or steel	309,398	6,712	0.03	8,642	2,227	0.00
36	731829	other non-threaded articles (fastnrs) irn/ stl nesoi	34,962	2,699	0.01	1,138	1,773	0.00
37	732690	articles of iron or steel nesoi	375,940	170,092	0.80	68	61	0.00
38	741999	articles of copper nesoi	7,872	552	0.00	3,859	28,401	0.02
39	761699	articles of aluminum, n.e.s.o.i.	30,799	12,311	0.06	8,329	1,193	0.00
40	821599	spns frks ldls etc., bs mtl pts,nt prc mtl plt, nt st	2,263	376	0.00	16	19	0.00
41	830629	statuettes a oth ornmnts a prts, bs metl nt pm plt	503	83	0.00	14	15	0.00
42	831000	sgn plts nos a smbls et bm excpt of hdg 9405	1	0	0.00	411	20	0.00
43	840999	spark-ignition reciprocating int com pistn eng pts	57,624	4,314	0.02	106,806	19,356	0.02
44	842549	jacks, nesoi; hoists for raising vehicles, Nesoi	54	1	0.00	8,906	3,198	0.00
45	848280	oth ball or roll brg, inc combined ball/ roll brgs	651	52	0.00	34,513	825	0.00

Table 6 (Continued)

No	HS	Description	Exports to Chile in 2004/2005	Estimated Change in Exports	Shares of Change in Exports to Total	Imports from Chile in 2004/2005	Total Change in Imports	Shares of Change in Imports to Total
			US$		%	US$		%
46	848360	clutches & shaft couplings	1,264	57	0.00	1,738	239	0.00
47	848390	toothed wheels, chain sprockets & oth trans elem; pts	6,812	1,110	0.01	1,474	170	0.00
48	850440	static converters	4,644	255	0.00	1,736	32,377	0.03
49	851711	line telephone sets with cordless handsets	93,155	7,136	0.03	837	35	0.00
50	852439	discs for laser reading systems	139	11	0.00	2	0	0.00
51	853590	elect appr f prtct to elect circt >1000 v Nesoi	378	0	0.00	226	94	0.00
52	853650	elect switches f voltage not over 1000 v, Nesoi	290,362	7,012	0.03	110,493	21,837	0.02
53	853669	elect plugs & sockets f voltage not over 1000 v	188	24	0.00	66	9	0.00
54	853690	elect appr f prtct to elect circt nov 1000 v Nesoi	7,542	4,361	0.02	1,551	505	0.00
55	854389	electrical mach & appar with indivdul func,Nesoi	35,407	1,715	0.01	1,907	363	0.00
56	870829	pts & access of bodies of motor vehicles, Nesoi	5,834,987	1,985,883	9.39	394	178	0.00
57	870899	parts and accessories of motor vehicles, Nesoi	6,648,072	2,021,857	9.56	165,262	107,148	0.09
58	903180	meas & checking instrument, appliances & mach Nesoi	14,259	1,673	0.01	4,768	88	0.00

Table 6 (Continued)

No	HS	Description	Exports to Chile in 2004/2005	Estimated Change in Exports	Shares of Change in Exports to Total	Imports from Chile in 2004/2005	Total Change in Imports	Shares of Change in Imports to Total
			US$		%	US$		%
59	940161	seats w wooden frames, upholstered, Nesoi	6,603	369	0.00	22	8	0.00
60	940360	wooden furniture, Nesoi	156,952	12,511	0.06	792	1,043	0.00
61	960810	ball point pens	23,746	1,158	0.01	34	6	0.00
competing items (excluding vehicle parts)			11,986,105	1,565,600	7.40	2,646,534	2,511,906	2.13
competing items (including vehicle parts)			24,469,164	5,573,340	26.36	2,812,190	2,619,232	2.226
Total			125,910,751	21,143,112	100.00	160,983,031	117,669,998	100

Source: Export and import figures are from Thailand's Customs Department, Ministry of Finance. Others are from the calculation.

V. Conclusion

The results of the study show that bilateral economic cooperation will definitely increase trade between the two countries and that their exports and imports compositions are complementary. The estimated increase in exports and imports would be about 16.03 percent and 73.09 percent from the base year, respectively. The 63.14 percent change in imports is due to trade creation and another 9.85 percent is a result of the impact of trade diversion: importing from Chile instead of importing from the rest of the world.

Even though the results of the computation show that the growth rate of imports from Chile would be higher than the exports from Thailand to Chile, it should not be concluded that Thailand would have a trade deficit with Chile if the tariff is abolished. The impact on trade after the bilateral trade agreement as captured by the model is underestimated because the partial equilibrium models do

not capture the effect of tariff elimination on goods that were not previously imported because of the tariff barriers. The exports from Thailand on the average covered more than 3,315 of the tariff lines. But there were only 884 items that were previously exported to Chile during 2004-2005. The probable impact both directly and indirectly from the other 2,431 exported items that might also benefit from tariff reduction should also be taken into account in trade negotiation.

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