HOKKAIDO UNIVERSITY

Title	Potential Impact of a Free Trade Agreement between Japan and New Zealand
Author(s)	SAWAUCHI, Daisuke; YAMAMOTO, Yasutaka
Citation	Journal of the Graduate School of Agriculture, Hokkaido University, 72(1), 1-10
Issue Date	2006-02
Doc URL	http://hdl.handle.net/2115/8287
Type	bulletin (article)
File Information	72(1)_1.pdf

Instructions for use

Potential Impact of a Free Trade Agreement between Japan and New Zealand

Daisuke Sawauchi and Yasutaka Yamamoto

Laboratory of Comparative Agricultural Policy, Graduate School of Agriculture,
Hokkaido University

Abstract

This paper provides a quantitative assessment of the potential impacts of a Free Trade Agreement between Japan and New Zealand. Simulations were undertaken using the Global Trade Analysis Project model to estimate the effects of trade policy changes. Preliminary results indicate that under a scenario of full trade liberalization, a Japan-New Zealand FTA would tend to have a greater economic impact on New Zealand than on Japan. A notable feature of results at the commodity level under full trade liberalization is that New Zealand exports of dairy products to Japan drastically increased, while other regions exports of dairy products to Japan drastically decreased.

I. Introduction

Recently, Japan has been making flexible use of free trade agreements (FTA) as a complement to WTO, while still maintaining a focus on WTO efforts. The Japan-Singapore Economic Partnership Agreement, the first FTA for Japan, was signed in 2002. Japan and the United Mexican States concluded FTA negotiations in September 2004[1].

Concerning relations between Japan and Australia, the Japan-Australia Trade and Economic Framework was signed by Prime Ministers Koizumi and Howard in July 2003. In accordance with this framework, Japan and Australia undertook a joint study on the liberalization of trade and investment to further strengthen their close relations.

On 20 April 2005, Prime Ministers Koizumi and Howard announced that both countries had agreed to commence an FTA feasibility study. The study will examine the pros and cons of a bilateral FTA as part of measures to advance the economic relations between the two countries[2].

The bilateral FTA between New Zealand and Australia, Closer Economic

Relations (CER), signed in 1983, is one of the longest operational and most comprehensive bilateral FTAs in the world.   Even though Japan and Australia have finished a joint study on a bilateral FTA and are now progressing toward an FTA feasibility study, as far as the authors know, Japan and New Zealand have not done so.

To fill the gap caused by the lack of joint and feasibility studies on bilateral FTA between Japan and New Zealand, this paper provides a quantitative assessment of the potential impacts of an FTA between Japan and New Zealand. Simulations were undertaken using the simplest Global Trade Analysis Project (GTAP) model[3] to estimate the effects of trade policy changes.

This paper is organized as follows. In the next section, we briefly outline the methodology used in this paper.   In Section 3, simulation results are followed by some brief concluding comments.

II. Methodology

A standard static version of the GTAP model was used to estimate the potential impacts of an FTA between Japan and New Zealand.   This model measures the static impact of trade policy changes without incorporating dynamic effects[4].

Version 5.4 of the GTAP database was used in this analysis.   It divides the world into seventy-eight regions, each containing fifty-seven sectors (or commodities).   Since this study focuses on a bilateral FTA between Japan and New

Table 1. Regional Aggregation

No.	Aggregated region	GTAP region
1	Australia	Australia.
2	New Zealand	New Zealand.
3	Japan	Japan.
4	China	China.
5	Rest of Asia	Hong Kong; Korea; Taiwan; Indonesia; Malaysia; Philippines; Singapore; Thailand; Vietnam; Bangladesh; India; Sri Lanka; Rest of South Asia.
6	USA	United States.
7	Rest of the American continent	Canada; Mexico; Central America, Caribbean; Colombia; Peru; Venezuela; Rest of Andean Pact; Argentina; Brazil; Chile; Uruguay; Rest of South America.
8	EU	Austria; Belgium; Denmark; Finland; France; Germany; United Kingdom; Greece; Ireland; Italy; Luxembourg; Netherlands; Portugal; Spain; Sweden.
9	Rest of the World	Switzerland; Rest of Eur Free Trade Area; Albania; Bulgaria; Croatia; Czech Republic; Hungary; Malta; Poland; Romania; Slovakia; Slovenia; Estonia; Latvia; Lithuania; Russian Federation; Rest of Former Soviet Union; Cyprus; Turkey; Rest of Middle East; Morocco; Rest of North Africa; Botswana; Rest of South Afr C Union; Malawi; Mozambique; Tanzania; Zambia; Zimbabwe; Other Southern Africa; Uganda; Rest of Sub-Saharan Africa; Rest of World.

Source: Derived from Version 5.4 of GTAP Database.

Table 2. Commodity Aggregation

No.	Aggregated commodity	GTAP commodity
1	Rice	Paddy rice; processed rice.
2	Wheat	Wheat.
3	Cereal grains n.e.c.	Cereal grains n.e.c.
4	Vegetables, fruit and nuts	Vegetables, fruit, nuts.
5	Sugar cane and sugar beets	Sugar cane, sugar beet.
6	Other crops	Oil seeds; crops n.e.c.
7	Cattle, sheep, goats and horses	Cattle, sheep, goats, horses; animal products n.e.c.
8	Raw milk	Raw milk.
9	Natural fibers	Plant-based fibers; wool, silk-worm cocoons.
10	Meat and meat products	Meat: cattle, sheep, goats, horse; meat products n.e.c.
11	Dairy products	Dairy products.
12	Sugar	Sugar.
13	Other food products	Vegetable oils and fats; food products n.e.c. ; beverages and tobacco products.
14	Forestry	Forestry.
15	Fishing	Fishing.
16	Minerals	Coal; oil; gas; minerals n.e.c. ; petroleum, coal products; mineral products n.e.c.
17	Wearing apparel	Textiles; wearing apparel.
18	Chemical, rubber and plastic products	Chemical, rubber, plastic prods.
19	Metal products	Ferrous metals; metals n.e.c. ; metal products.
20	Machinery and equipments n.e.c.	Motor vehicles and parts; transport equipment n.e.c. ; electronic equipment; machinery and equipment n.e.c.
21	Manufactures n.e.c.	Leather products; wood products; paper products, publishing; manufactures n.e.c.
22	Services	Electricity; gas manufacture, distribution; water; construction; trade; transport n.e.c. ; sea transport; air transport; communication; financial services n.e.c. ; insurance; business services n.e.c. ; recreation and other services; pubadmin/defence/health/educat; dwellings.

Source: Derived from Version 5.4 of GTAP Database.
Note: N.e.c. stands for not elsewhere classified.

Zealand, the database was aggregated into nine regions and twenty-two sectors, as shown in Tables 1 and 2. This regional aggregation highlights the importance of Japan's and New Zealand's major trade partners in the agricultural and food sectors. The commodity aggregation framework was designed to distinguish agricultural commodities (or sectors) important for the present analysis. In terms of the aggregated commodities in Table 2, the agricultural sector is defined as commodities from No. 1 (rice) to No. 9 (natural fibers), and the food sector is defined as commodities from No. 10 (meat and meat products) to No. 13 (other food products).

As seen in Table 3, Japanese tariffs on manufacturing commodities are already low. However, higher tariffs remain on Japanese agricultural and food sectoral commodities. Japan's highest tariffs on New Zealand imports are levied on rice (409%). Commodities in Japan whose tariffs are higher than 100% are rice, wheat, dairy products, and sugar. These commodities can be considered politically sensitive commodities in Japan.

The bilateral FTA simulations focus on the economic impacts not only on

economic welfare but also agricultural and food sectoral outputs and trade by sectoral and commodity level.   Although economic welfare effects can often be measured by equivalent variation, in the present simulations changes in real GDP were used as economic welfare.   Changes in real GDP are commonly used measurements of economic welfare changes because they are easy to understand.

Since a bilateral FTA would not only have different impacts for various sectors or commodities of each economy but also implications for the trading relationships with other countries, the simulations also focused on the impact on third countries of such trade liberalization.

To simulate the effects of a Japan-New Zealand FTA, three experimental scenarios were carried out using a GTAP model and its database aggregation. The liberalization scenarios reflected three broad options available to a Japan-New Zealand FTA.   Tariffs imposed on imports sourced from other trading partners to Japan and New Zealand were assumed to remain unchanged.   With the elimination of tariffs on a bilateral basis, the price of both Japanese goods sold in New Zealand and New Zealand's goods sold in Japan will fall by the amount of these import duties[5].

Scenario 1: All bilateral tariffs are removed between Japan and New Zealand.   All ad valorem tariff rates that appear in Table 3 are reduced to zero.

Scenario 2: The first Japan-New Zealand FTA scenario is implemented, excluding politically sensitive commodities in Japan whose tariffs are higher than

Table 3. Ad Valorem Tariffs on Different Commodities on Bilateral Basis

Commodity	New Zealand's tariffs on imports from Japan (%)	Japanese tariffs on imports from New Zealand (%)
Rice	0.0	409.0
Wheat	0.0	249.2
Cereal grains n.e.c.	1.3	20.2
Vegetables, fruit and nuts	2.5	44.9
Sugar cane and sugar beets	0.0	0.0
Other crops	3.8	22.4
Cattle, sheep, goats and horses	0.9	7.1
Raw milk	0.0	0.0
Natural fibers	0.0	54.6
Meat and meat products	7.2	39.3
Dairy products	11.2	287.0
Sugar	0.0	116.1
Other food products	12.3	37.1
Forestry	0.0	0.2
Fishing	0.2	4.6
Minerals	4.8	0.1
Wearing apparel	4.1	2.9
Chemical, rubber and plastic products	4.5	1.2
Metal products	4.0	0.3
Machinery and equipments n.e.c.	9.3	0.0
Manufactures n.e.c.	7.8	2.9
Services	0.0	0.0

Source: Derived from Version 5.4 of GTAP Database.
Note: N.e.c. stands for not elsewhere classified.

100% (rice, wheat, dairy products, and sugar).   In Japan these commodities are subject to the usual import tariffs while the remaining commodities are bilaterally free of tariffs*.

Scenario 3: The first Japan-New Zealand FTA scenario is implemented, excluding all agricultural and food sectoral commodities.   This implies that commodities No. 1-13 of the two countries in Table 3 are subject to import tariffs as usual while the remaining commodities are bilaterally imported free of tariffs[5].

III. Simulation Results

A. Impacts of Japan-New Zealand FTA on Real GDP and Agricultural and Food Sectoral Outputs in Japan and New Zealand

Table 4. Impacts of the Three Different FTA Scenarios on Real GDP, and Agricultural and Food Sectoral Outputs (% changes)

	Scenario 1		Scenario 2		Scenario 3	
	Japan	New Zealand	Japan	New Zealand	Japan	New Zealand
Real GDP	0.01	0.24	0.00	0.11	0.00	0.03
Agricultural sectoral output	-0.8	11.1	-0.3	3.0	0.0	-0.1
Food sectoral output	-0.6	19.2	-0.1	5.9	0.0	-0.2

Source: Authors' GTAP simulation.

Note: 1) Scenario 1 is full trade liberalization.
2) Scenario 2 is full trade liberalization excluding politically sensitive commodities (rice, wheat, dairy products, and sugar) in Japan.
3) Scenario 3 is full trade liberalization excluding all agricultural and food sectoral commodities.
4) All projections are percentage deviations from the base period.

The impacts on real GDP and agricultural and food sectoral outputs under the three different scenarios are shown in Table 4.

Under full trade liberalization (Scenario 1), New Zealand is likely to experience a more substantial gain in real GDP and agricultural and food sectoral outputs than Japan.   The impacts of full trade liberalization are more observable at the sectoral output level than at the real GDP level.   As shown in Table 4, real GDP in New Zealand expanded by 0.24%, whereas real GDP in Japan expanded by only 0.01%.   Agricultural and food sectoral outputs in New Zealand expanded by 11% and 19% respectively, whereas agricultural and food sectoral outputs in Japan declined by 0.8% and 0.6% respectively.

As trade policy scenarios become less liberal, changes in real GDP and agricultural and food sectoral outputs of Japan and New Zealand were lowered.

---

* Note that this sort of practice in an FTA is somewhat controversial as it violates GATT/WTO Article 24, Clause 8(b), which states that "within FTA, customs tariffs and other restrictive trade rules and regulations should essentially be abolished for substantially all sectors." However, some FTAs have not adhered strictly to this rule[5].

For example, real GDP in New Zealand expanded by 0.24% under full trade liberalization (Scenario 1), but by 0.11% under trade liberalization excluding politically sensitive commodities in Japan (Scenario 2) and by 0.03% under trade liberalization excluding all agricultural and food sectoral commodities (Scenario 3).

Since the impact of full trade liberalization (Scenario 1) on agricultural and food sectoral outputs is the highest and therefore the easiest to understand among the three different scenarios, we only show the results of the full trade liberalization case (Scenario 1) in the next two subsections.

B. Impacts of Japan-New Zealand FTA on Agricultural and Food Sectoral Outputs of Each Respective Country by Commodity Level

The impacts on agricultural and food sectoral outputs by commodity level under full trade liberalization (Scenario 1) are shown in Table 5.

Full trade liberalization had the most significant impacts on dairy sectors in both Japan and New Zealand. In percentage terms, the decline in dairy products was highest (14%) in the agricultural and food sectoral commodities of Japan. Raw milk production in Japan also declined by 11%*. The increase in dairy products was highest (68%) in agricultural and food sectoral commodities of New Zealand. Raw milk production in New Zealand also expanded by 50%**.

Table 5. Impacts of Full Trade Liberalization (Scenario 1) on Agricultural and Food Sectoral Outputs by Commodity Level (% changes)

Commodity	Japan	NZ
Rice	0.1	38.4
Wheat	0.9	0.6
Cereal grains n.e.c.	-0.9	0.3
Vegetables, fruit, and nuts	-0.4	6.9
Sugar canes and sugar beets	-1.0	3.0
Other crops	-1.1	-11.2
Cattle, sheep, goats and horses	0.1	-11.9
Raw milk	-11.4	49.7
Natural fibers	0.1	-8.9
Meat, meat products	-0.1	-7.8
Dairy products	-14.2	68.1
Sugar	-1.1	4.5
Other food products	0.3	9.9

Source: Authors' GTAP simulation.
Note: N.e.c. stands for not elsewhere classified.

C. Impact of Japan-New Zealand FTA on Third Countries

The impacts of full trade liberalization (Scenario 1) on Japanese imports in agricultural and food sector by region are shown in Table 6. The impacts of full trade liberalization (Scenario 1) on New Zealand exports in agricultural and food sector by region are shown in Table 7. A bilateral Japan-New Zealand FTA not only had huge impacts on trading relationships of agricultural and food sector between Japan and New Zealand but also had adverse impacts on the trading relationships of agricultural and food sector with their third countries due to trade diversion effects.

---

*Note that there is no change in raw milk imports from New Zealand to Japan.
**Rice production in New Zealand expanded by 38% while the rice output level in New Zealand is minimal.

Table 6. Impacts of Full Trade Liberalization (Scenario 1) on Japanese Imports in Agricultural and Food Sector

Region	Base period		Full trade liberalization (Scenario 1)		
	Japanese imports (a) ($US million)		Japanese imports (b) ($US million)		Change of Japanese imports {(b)-(a)}/(a) (%)
Australia	3,046	(6.5)	2,753	(5.5)	-9.6
New Zealand	886	(1.9)	5,994	(12.0)	576.8
China	4,058	(8.7)	3,941	(7.9)	-2.9
Rest of Asia	9,014	(19.2)	8,752	(17.5)	-2.9
USA	15,215	(32.4)	14,630	(29.2)	-3.8
Rest of the American continent	6,471	(13.8)	6,322	(12.6)	-2.3
EU	4,717	(10.1)	4,336	(8.7)	-8.1
Rest of the World	3,488	(7.4)	3,302	(6.6)	-5.3
Total	46,896	(100)	50,032	(100)	6.7

Source: Authors' GTAP simulation.

Note: 1) Import values are measured at c.i.f. values.

2) Figures in parethesis are shares.

Table 7. Impacts of Full Trade Liberalization (Scenario 1) on New Zealand Exports in Agricultural and Food Sector

Region	Base period		Full trade liberalization (Scenario 1)		
	New Zealand exports (a) ($US million)		New Zealand exports (b) ($US million)		Change of New Zealand exports {(b)-(a)}/(a) (%)
Australia	399	(5.9)	302	(3.0)	-24.4
Japan	779	(11.5)	5,529	(55.7)	609.9
China	219	(3.2)	159	(1.6)	-27.6
Rest of Asia	1,439	(21.2)	1,053	(10.6)	-26.8
USA	886	(13.0)	670	(6.7)	-24.4
Rest of the American continent	661	(9.7)	472	(4.8)	-28.5
EU	1,558	(23.0)	1,146	(11.5)	-26.5
Rest of the World	848	(12.5)	597	(6.0)	-29.6
Total	6,788	(100)	9,927	(100)	46.2

Source: Authors' GTAP simulation.

Note: 1) Export values are measured at f.o.b. values.

2) Figures in parethesis are shares.

As shown in Table 6, Japanese imports in agricultural and food sector from New Zealand increased by 577% due to a bilateral Japan-New Zealand FTA. However, total Japanese imports in agricultural and food sector as a whole increased by a smaller amount (7%). Japanese imports in agricultural and food sector from all regions other than New Zealand declined by between 2% (the rest of the American continent) and 10% (Australia).

As shown in Table 7, New Zealand exports in agricultural and food sector to Japan increased by 610% due to a bilateral Japan-New Zealand FTA. However, New Zealand exports in agricultural and food sector as a whole increased by a smaller amount (46%). New Zealand exports in agricultural and food sector to all regions other than Japan declined by between 24% (Australia and USA) and 30% (the rest of the World).
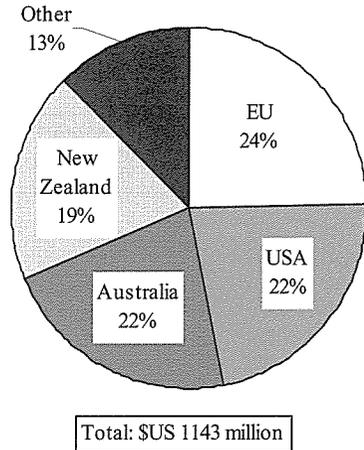
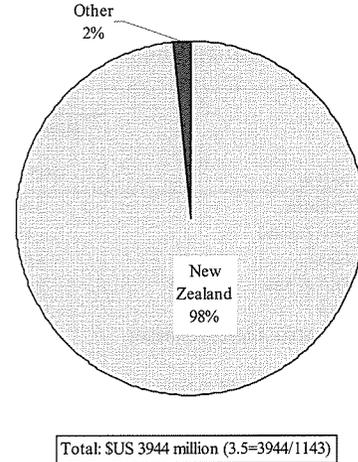**Fig. 1.** Japanese Imports of Dairy Products by Region (Base Period)

Total: $US 1143 million

Fig. 2. Japanese Imports of Dairy Products by Region (Full Trade Liberalization)

Total: $US 3944 million (3.5=3944/1143)
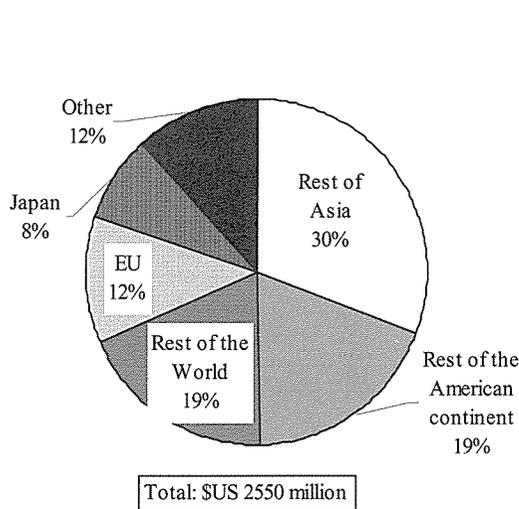
Fig. 3. New Zealand Exports of Dairy Products by Region (Base Period)

Total: $US 2550 million

Fig. 4. New Zealand Exports of Dairy Products by Region (Full Trade Liberalization)

Total: $US 5330 million (2.1=5330/2550)
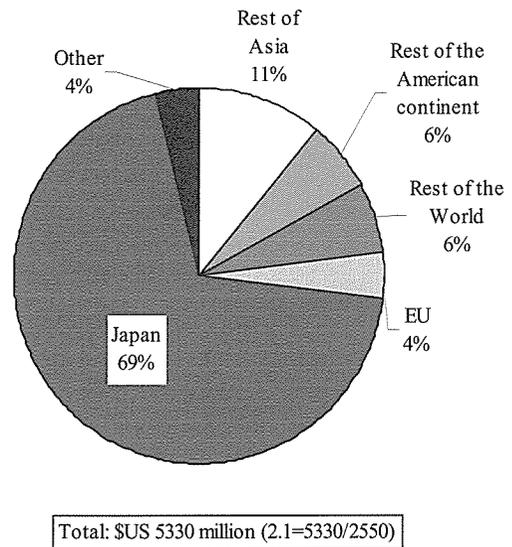
The impact of full trade liberalization (Scenario 1) on Japanese imports of dairy products by region is shown in Fig. 1 and 2. The impact of full trade liberalization (Scenario 1) on New Zealand exports of dairy products by region is shown in Fig. 3 and 4. Bilateral Japan-New Zealand FTA not only had huge impacts on the trading relationships of dairy products between Japan and New Zealand but also huge adverse impacts on the trading relationships of dairy products with their third countries due to trade diversion effects.

Both New Zealand's share of Japanese imports of dairy products and Japan'

s share of New Zealand exports of dairy products drastically increased under full trade liberalization. As shown in Fig. 1 and 2, New Zealand's share of Japanese imports of dairy products increased from 19% (base period) to 98% (full trade liberalization). As shown in Fig. 3 and 4, Japan's share of New Zealand exports of dairy products increased from 8% (base period) to 69% (full trade liberalization).

IV. Conclusion

This paper provided a quantitative assessment of the potential impact of a Free Trade Agreement between Japan and New Zealand. Simulations were undertaken using the standard static Global Trade Analysis Project model to estimate the effects of trade policy changes. This model measures the static impacts of trade policy changes and does not incorporate dynamic effects. The results, therefore, are preliminary and should be viewed as indications of the direction and relative order of the magnitude of effects.

Under full trade liberalization, New Zealand is likely to experience more substantial gain in real GDP and agricultural and food sectoral outputs than Japan. As trade policy scenarios become less liberal, changes in real GDP and agricultural and food sectoral outputs of Japan and New Zealand were lowered. Bilateral Japan-New Zealand FTA not only had huge impacts on the trading relationships of agricultural and food sector between Japan and New Zealand but also adverse impacts on the trading relationships of agricultural and food sector with such third countries as Australia due to trade diversion effects. Full trade liberalization had the most significant impact on the dairy products sector in Japan and New Zealand. Both New Zealand's share of Japanese imports of dairy products and Japan's share of New Zealand exports of dairy products drastically increased under full trade liberalization.

These preliminary results indicate that under a scenario of full trade liberalization the Japan-New Zealand FTA would tend to have a more significant economic impact on New Zealand than on Japan. Japan has the world's second largest economy, and given the relatively small trade with New Zealand, it is natural that bilateral trade liberalization with New Zealand would bring smaller gains for Japan. Similar results were shown in an impact study on bilateral Japan-Australia FTA undertaken by the Joint Study under Trade and Economic Framework[2].

A notable feature of results at the commodity level under full trade liberalization is that New Zealand exports of dairy products to Japan drastically increased, while other regions (such as EU, USA, and Australia) exports of dairy products to Japan drastically decreased. While New Zealand has one of the lowest average cost of raw milk production in the world, Japan has a much higher average cost of raw milk production. While it is natural that bilateral full trade

liberalization with New Zealand would bring drastic larger dairy products exports to Japan, it would cause hardships not only for Japanese dairy farmers but also for EU and United States dairy farmers.

Finally, note again that, even though these results should be treated as preliminary*, we hope they address the lack of joint and feasibility studies on bilateral FTA between Japan and New Zealand, perhaps even serving as a catalyst to enhance mutual understanding about bilateral trade and economic relations between Japan and New Zealand.

References

1) Ministry of Foreign Affairs of Japan. *Diplomatic Blue Book 2003*. 2004. Available in (http://www.mofa.go.jp/policy/other/bluebook/2004/index.html), accessed September 20, 2005.
2) Department of Foreign Affairs and Trade of Australia. *Joint Study into the Costs and Benefits of Trade and Investment Liberalisation between Australia and Japan*. 2005. Available in (http://www.dfat.gov.au/geo/japan/tef-study/index.html), accessed September 20, 2005.
3) Hertel, T. W. ed. *Global Trade Analysis: Modeling and Applications*. New York: Cambridge University Press, 1997.
4) Kawasaki, K. *The Sectoral and Regional Implication of Trade Liberalization*. 2005. Available in (http://www.esri.go.jp/jp/workshop/041130/041130kawasaki.pdf), accessed September 20, 2005.
5) Siriwardana, M. and Dollery, B. "An Empirical Analysis of the Proposed Australia-Japan Free Trade Agreement," *The Journal of Contemporary Issues in Business and Government*, Vol.9 (2), pp.1-21, 2003.

---

*Please note that political and institutional frameworks other than import tariffs have been omitted from this study.