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An Economic Assessment of a Free Trade Agreement between Japan and the EU

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Abstract

The purpose of this paper is to provide an economic assessment of the potential impact of a Free Trade Agreement between Japan and the EU. The standard static Global Trade Analysis Project (GTAP) model is used to measure the effects of full trade liberalization. Preliminary results suggest that Japan-EU FTA would not only have a huge impact on the international food and agricultural trade between Japan and the EU but also an adverse effect on the international food and agricultural trade with other trading parties.

I. Introduction

A rapid surge in Free Trade Agreements (FTAs) has been occurring world-wide¹⁾. A number of FTAs involving Japan were signed and are currently being negotiated²⁾. Japan Business Federation (JBF) issued its first proposal in June 2007 entitled “Call for the Start of a Joint Study for a Japan-EU Economic Partnership Agreement³⁾”. Thereafter, JBF has continued to work towards the realization of an economic partnership agreement with the EU.

The purpose of this paper is to provide an economic assessment of the potential impact of a possible Free Trade Agreement between Japan and the EU (JEUFTA). The standard static Global Trade Analysis Project (GTAP) model⁴⁾ is used to measure the effects of full trade liberalization.

Regarding the previous studies on economic assessments of the impact of a JEUFTA, the European Commission⁵⁾ provided assessments of JEUFTA using a computable general equilibrium model. However, it did not provide the commodity level impact on the farm and food sectors caused by JEUFTA. This study focuses on the commodity level impact on the farm and food sectors caused by JEUFTA.

II. Methodology

In this study, a standard static version of the GTAP model (version 5.4) was used to estimate the potential impact of JEUF¹TA. The GTAP database was aggregated into thirty-two regions and twenty-four sectors (Tables 1 and 2). While the EU is made up of 27 members as of 2010, the EU is defined as the EU 15 in this study in order to match the definition of the EU with the benchmark of the GTAP database version 5.4*¹. The benchmark of the GTAP database version 5.4 is the year 1997. In Table 2, the agricultural sector is defined as commodities from No. 1 (paddy rice) to No. 12 (wool, silk-worm cocoons), and the food sector is defined as commodities from No. 13 (meat) to No. 19 (other food products).

Tariffs on manufacturing commodities in Japan and the EU are already low (Table 3). Higher tariffs remain on agricultural and food sectoral commodities in Japan and the EU.

The simulation scenario in this study assumes the complete removal of all import tariffs between Japan and the EU, not only in the agricultural sector but in non-agricultural sectors, as well. Tariffs imposed on imports sourced from other trading partners to Japan and the EU were assumed to remain unchanged. The simulations also focused on the impact on the international food and agricultural trade with other trading parties.

It is unlikely that the JEUF¹TA would remove all import tariffs in all sectors between Japan and the EU. However, this scenario provides an upper bound of the economic impact caused by the possible JEUF¹TA.

III. Results

A. Impacts on Real GDP and Agricultural and Food Sectoral Outputs

As shown in Table 4, the real GDP in the EU would decrease by 0.01%, whereas the real GDP in Japan would increase by 0.02%. Agricultural and food sectoral outputs in the EU would increase by 1.5% and 1.7% respectively, whereas agricultural and food sectoral outputs in Japan would decrease by 2.2% and 1.3% respectively. The results suggest that under full trade liberalization, the EU is likely to experience a loss in real GDP and a larger gain in agricultural and food sectoral outputs than Japan. The results also suggest that the impact of full trade liberalization is more observable at the sectoral output level than at real GDP level.

The impact on agricultural and food sectoral outputs at the commodity level

*¹ In this study, the EU 15 is defined as Austria, Belgium, Denmark, Finland, France, Germany, United Kingdom, Greece, Ireland, Italy, Netherlands, Portugal, Spain, Sweden and Luxembourg.

Table 1. Regional Aggregation

No.	Aggregated region	GTAP region
1	Japan	Japan.
2	Austria	Austria.
3	Belgium	Belgium.
4	Denmark	Denmark.
5	Finland	Finland.
6	France	France.
7	Germany	Germany.
8	United Kingdom	United Kingdom.
9	Greece	Greece.
10	Ireland	Ireland.
11	Italy	Italy.
12	Netherlands	Netherlands.
13	Portugal	Portugal.
14	Spain	Spain.
15	Sweden	Sweden.
16	Luxembourg	Luxembourg.
17	Korea	Korea.
18	United States	United States.
19	Australia	Australia.
20	Canada	Canada.
21	Czech Republic	Czech Republic.
22	Hungary	Hungary.
23	Mexico	Mexico.
24	New Zealand	New Zealand.
25	Poland	Poland.
26	Switzerland	Switzerland.
27	Turkey	Turkey.
28	Russian Federation	Russian Federation.
29	Rest of Europe	Rest of Eur Free Trade Area; Albania; Bulgaria; Croatia; Malta; Romania; Slovakia; Slovenia; Estonia; Latvia; Lithuania; Rest of Former Soviet Union; Cyprus.
30	Rest of Asia	China; Hong Kong; Taiwan; Indonesia; Malaysia; Philippines; Singapore; Thailand; Vietnam; Bangladesh; India; Sri Lanka; Rest of South Asia.
31	Rest of America	Central America, Caribbean; Colombia; Peru; Venezuela; Rest of Andean Pact; Argentina; Brazil; Chile; Uruguay; Rest of South America.
32	Rest of the World	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	Paddy rice	Paddy rice.
2	Wheat	Wheat.
3	Cereal grains n.e.c.	Cereal grains n.e.c.
4	Vegetables, fruit, nuts	Vegetables, fruit, nuts.
5	Oil seeds	Oil seeds.
6	Sugar cane, sugar beet	Sugar cane, sugar beet.
7	Plant-based fibers	Plant-based fibers.
8	Crops n.e.c.	Crops n.e.c.
9	Cattle, sheep, goats, horses	Cattle, sheep, goats, horses.
10	Raw milk	Raw milk.
11	Animal products n.e.c.	Animal products n.e.c.
12	Wool, silk-worm cocoons	Wool, silk-worm cocoons.
13	Meat: cattle, sheep, goats, horse	Meat: cattle, sheep, goats, horse.
14	Meat products n.e.c.	Meat products n.e.c.
15	Vegetable oils and fats	Vegetable oils and fats.
16	Dairy products	Dairy products.
17	Processed rice	Processed rice.
18	Sugar	Sugar.
19	Other food products	Food products n.e.c.; Beverages and tobacco products.
20	Forestry	Forestry.
21	Fishing	Fishing.
22	Mining	Coal; Oil; Gas; Minerals n.e.c.; Petroleum, coal products; Mineral products n.e.c.
23	Manufactures	Textiles; Wearing apparel; Leather products; Wood products; Paper products, publishing; Chemical, rubber, plastic prods; Ferrous metals; Metals n.e.c.; Metal products; Motor vehicles and parts; Transport equipment n.e.c.; Electronic equipment; Machinery and equipment n.e.c.
24	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/Educ; Dwellings.

Source: Derived from Version 5.4 of GTAP Database.

Note: N.e.c. stands for not elsewhere classified.

is shown in Table 5. In percentage terms, the decline in dairy product output would be the highest (16.2%) within the agricultural and food sectoral commodities in Japan. Raw milk production in Japan would also decline by 13.2%. On the other hand, the increase in dairy product and raw milk production in the EU would be 3.7% and 3.2%, respectively. Regarding the impact on agricultural and food sectoral outputs, the results suggest that full trade liberalization would have a significant impact on the dairy industry in both Japan and the EU.

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

Commodity	The EU(15)'s tariffs on imports from Japan (%)	Japanese tariffs on imports from the EU(15)(%)
Paddy rice	64.9	409.0
Wheat	61.4	249.2
Cereal grains n.e.c.	38.6	20.2
Vegetables, fruit, nuts	14.5	44.9
Oil seeds	0.0	76.4
Sugar cane, sugar beet	251.4	0.0
Plant-based fibers	0.0	0.0
Crops n.e.c.	3.1	22.1
Cattle, sheep, goats, horses	36.6	149.1
Raw milk	0.0	0.0
Animal products n.e.c.	6.7	5.0
Wool, silk-worm cocoons	0.0	54.7
Meat: cattle, sheep, goats, horse	88.9	36.4
Meat products n.e.c.	30.9	58.2
Vegitable oils and fats	11.4	6.6
Dairy products	87.7	287.0
Processed rice	87.4	409.0
Sugar	76.4	116.1
Other food products	23.1	26.0
Forestry	0.1	0.5
Fishing	1.4	4.1
Mining	3.6	1.9
Manufactures	5.2	2.1
Services	0.0	0.0

Source: Derived from Version 5.4 of GTAP Database.

Note: N.e.c. stands for not elsewhere classified.

Table 4. Impacts of the Japan-EU FTA on Real GDP, and Agricultural and Food Sectoral Outputs (% changes)

	Japan	EU(15)
Real GDP	0.02	-0.01
Agricultural sectoral output	-2.2	1.5
Food sectoral output	-1.3	1.7

Source: Authors' GTAP simulation.

Note: All projections are percentage deviations from the base period.

B. Impacts of Japan-EU FTA on Other Trading Parties

As shown in Table 6, Japanese imports on agricultural and food sector items from the EU would increase by 290.0% due to JEUF TA. However, total Japanese imports of agricultural and food sector items as a whole would increase by a smaller amount (16.3%). Japanese imports of agricultural and food sector items from all regions other than the EU would decline. In percentage terms, the

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

Commodity	Japan	EU (15)
Paddy rice	-2.1	49.6
Wheat	-0.1	0.8
Cereal grains n.e.c.	-2.4	1.1
Vegetables, fruit, nuts	-0.1	0.2
Oil seeds	0.0	-0.1
Sugar cane, sugar beet	-2.2	1.3
Plant-based fibers	0.7	-0.5
Crops n.e.c.	-2.2	0.5
Cattle, sheep, goats, horses	-6.9	1.1
Raw milk	-13.2	3.2
Animal products n.e.c.	1.0	1.8
Wool, silk-worm cocoons	0.1	-0.1
Meat: cattle, sheep, goats, horse	1.4	-0.1
Meat products n.e.c.	-5.3	2.7
Vegitable oils and fats	-0.2	0.3
Dairy products	-16.2	3.7
Processed rice	-1.7	42.5
Sugar	-2.3	1.6
Other food products	-0.2	1.1

Source: Authors' GTAP simulation.

Note: N.e.c. stands for not elsewhere classified.

decline for New Zealand would be the highest (30.0%) for all regions other than European countries*². These results suggest that JEUF_{TA} would not only have a huge impact on international food and agricultural trade between Japan and the EU but also have an adverse effect on the international food and agricultural trade with other trading parties due to trade diversion effects.

As shown in Table 7, the EU exports in agricultural and food sector items to Japan would increase by 292.4% due to JEUF_{TA}. However, the EU exports in the agricultural and food sector, as a whole, would increase by a smaller amount (6.5%). The EU exports in the agricultural and food sector to all regions other than Japan would decline.

The impact of full trade liberalization on Japanese imports of dairy products by region is shown in Fig. 1 and 2. The impact of full trade liberalization on the EU exports of dairy products by region is shown in Fig. 3 and 4. Both the EU's share of Japanese imports of dairy products and Japan's share of the EU exports of dairy products would drastically increase under full trade liberalization. As

*² The highest decrease ratio among all regions is Hungary (-41.6%).

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

Region	Base period		Full trade liberalization		
	Japanese imports		Japanese imports		Change of Japanese imports $\{(b)-(a)\}/(a)$
	(a)		(b)		
	(\$US million)		(\$US million)		(%)
EU (15)	4,717	(10.1)	18,394	(33.7)	290.0
Korea	1,431	(3.1)	1,161	(2.1)	-18.9
United States	15,215	(32.4)	13,329	(24.4)	-12.4
Australia	3,046	(6.5)	2,577	(4.7)	-15.4
Canada	2,427	(5.2)	2,145	(3.9)	-11.6
Czech Republic	38	(0.1)	29	(0.1)	-23.8
Hungary	36	(0.1)	21	(0.0)	-41.6
Mexico	348	(0.7)	262	(0.5)	-24.6
New Zealand	886	(1.9)	620	(1.1)	-30.0
Poland	62	(0.1)	48	(0.1)	-23.1
Switzerland	58	(0.1)	46	(0.1)	-20.4
Turkey	60	(0.1)	54	(0.1)	-9.9
Russian Federation	841	(1.8)	733	(1.3)	-12.8
Rest of Europe	668	(1.4)	523	(1.0)	-21.8
Rest of Asia	11,642	(24.8)	9,846	(18.1)	-15.4
Rest of America	3,696	(7.9)	3,227	(5.9)	-12.7
Rest of the World	1,726	(3.7)	1,534	(2.8)	-11.1
Total	46,896	(100)	54,547	(100)	16.3

Source: Authors' GTAP simulation.

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

2) Figures in parenthesis are shares.

shown in Fig. 1 and 2, the EU's share of Japanese imports of dairy products would increase from 25% (base period) to 99% (full trade liberalization). As shown in Fig. 3 and 4, Japan's share of the EU exports of dairy products would increase from 1% (base period) to 16% (full trade liberalization). These results suggest that JEUF TA would not only have a huge impact on the international trade of dairy products between Japan and the EU but also have huge adverse effects on the international trade of dairy products with other trading parties due to trade diversion effects.

IV. Conclusion

The purpose of this paper is to provide an economic assessment of the potential impact of a Free Trade Agreement between Japan and the EU (JEUF TA). The standard static Global Trade Analysis Project model is used to measure the effects of full trade liberalization. Since this model does not incorporate dynamic effects of trade policy changes, the results are preliminary and should be viewed as indications of the direction and relative order of the

Table 7. Impacts of Full Trade Liberalization on the EU (15)'s Exports in Agricultural and Food Sector

Region	Base period		Full trade liberalization		
	the EU(15)'s exports		the EU(15)'s exports		Change of the EU(15)'s exports
	(a)		(b)		$\{(b)-(a)\}/(a)$
	(\$US million)		(\$US million)		(%)
Japan	4,428	(2.4)	17,376	(8.8)	292.4
EU (15)	127,372	(68.9)	127,089	(64.6)	-0.2
Korea	1,022	(0.6)	999	(0.5)	-2.2
United States	8,287	(4.5)	8,168	(4.2)	-1.4
Australia	705	(0.4)	693	(0.4)	-1.7
Canada	1,194	(0.6)	1,178	(0.6)	-1.4
Czech Republic	969	(0.5)	961	(0.5)	-0.7
Hungary	513	(0.3)	510	(0.3)	-0.7
Mexico	562	(0.3)	554	(0.3)	-1.4
New Zealand	112	(0.1)	109	(0.1)	-2.2
Poland	1,659	(0.9)	1,644	(0.8)	-0.9
Switzerland	3,379	(1.8)	3,361	(1.7)	-0.5
Turkey	1,141	(0.6)	1,129	(0.6)	-1.1
Russian Federation	5,667	(3.1)	5,603	(2.8)	-1.1
Rest of Europe	5,784	(3.1)	5,729	(2.9)	-0.9
Rest of Asia	6,510	(3.5)	6,378	(3.2)	-2.0
Rest of America	2,912	(1.6)	2,873	(1.5)	-1.3
Rest of the World	12,600	(6.8)	12,463	(6.3)	-1.1
Total	184,817	(100)	196,819	(100)	6.5

Source: Authors' GTAP simulation.

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

2) Figures in parenthesis are shares.

magnitude of effects. Bearing the above limitations in mind, the simulated results are summarized as follows.

- (1) Under full trade liberalization, the EU is likely to experience a loss in real GDP and a larger gain in agricultural and food sectoral outputs than Japan.
- (2) JEUF TA would not only have a huge impact on the trade of agricultural and food sector items between Japan and the EU but would also have adverse effects on the trade of agricultural and food sector items with other trading parties due to trade diversion effects.
- (3) Regarding the impact on agricultural and food sectoral outputs, full trade liberalization would have a significant impact on the dairy products sector in both Japan and the EU.

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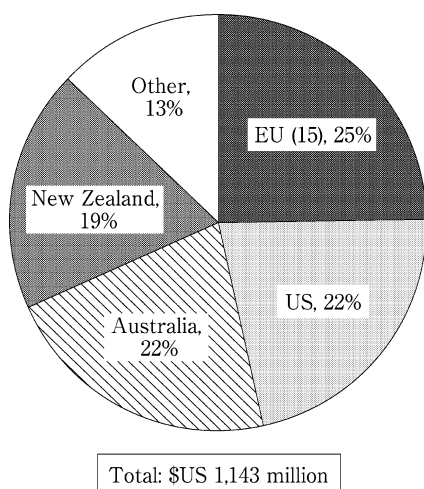


Fig. 1. Japanese Imports of Dairy Products by Region (Base Period)

Source: Authors' GTAP simulation.

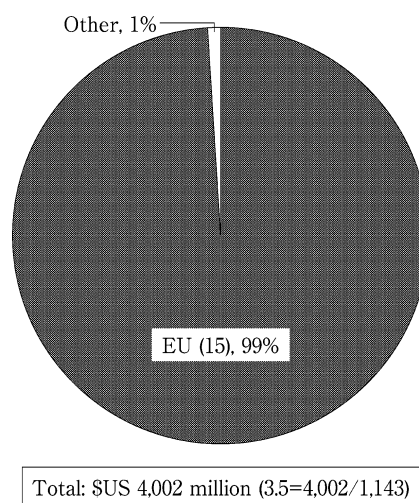


Fig. 2. Japanese Imports of Dairy Products by Region (Full Trade Liberalization)

Source: Authors' GTAP simulation.

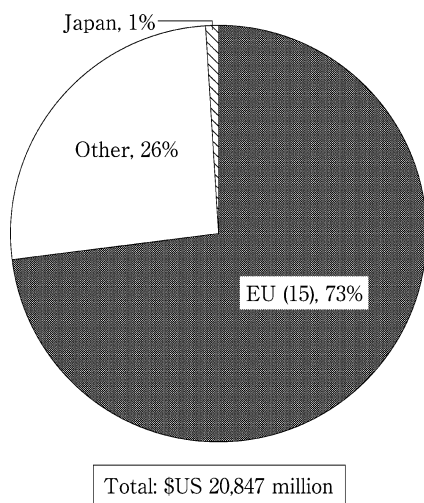


Fig. 3. The EU(15)'s Exports of Dairy Products by Region (Base Period)

Source: Authors' GTAP simulation.

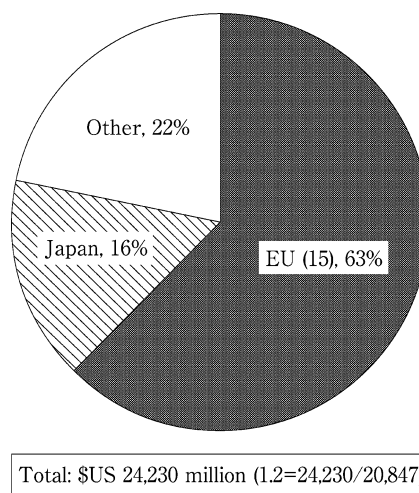


Fig. 4. The EU(15)'s Exports of Dairy Products by Region (Full Trade Liberalization)

Source: Authors' GTAP simulation.

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北海道大学大学院農学研究科紀要投稿に関する基準

(平成 15 年 5 月 29 日紀要編集委員会決定)

原稿の提出

所定の申込用紙に論文標題，著者，所属，原稿の本文，図，表及び写真の枚数を記入して，原稿と共に，正副 2 部を紀要編集委員会委員に提出する。

英文の校閲

欧文紀要，邦文紀要ともに，原稿の英文は投稿する前に校閲を受け，表紙に校閲者の署名を得て提出する。

論文の規模

原稿は，刷り上がり 40 頁以内を原則とする。40 頁（学位論文は 80 頁）を越える分については経費の一部を著者が負担することによって認めることができる。

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北海道大学博士論文（1999）

北海道大学博士論文「学位論文の表題」（1999）の一部

Doctoral thesis submitted to the Graduate School of Agriculture, Hokkaido University (1999)

Part of the doctoral thesis entitled “Title” and submitted to the Graduate School of Agriculture, Hokkaido University (1999)

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校 正

校正刷りの著者校正は一回とする。校正に際しては，印刷の誤り以外の訂正等は避けること。従って原稿は誤りのないように作成する。

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