Canola Market Impacts under Alternative TPP Scenarios

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CONTENTS

EXECUTIVE SUMMARY

The Canola Council of Canada has requested an analysis of the market access implications of a successful Trans-Pacific Partnership (TPP) Agreement under three alternative scenarios:

1. Canada is part of the TPP and obtains immediate tariff elimination on canola products
2. Canada is part of the TPP and obtains tariff elimination on canola products under a 10-year phase-out schedule comparable to that achieved by Australia in its agreement with Japan, but with a 3-year delay.
3. Canada is excluded from the TPP.

The results are based on a general equilibrium analysis of the trade flows for oilseeds, vegetable oil and meal. The overall analysis is conducted using the GTAP general equilibrium framework, which represents the oilseed sector as a whole; we disaggregate the results into canola and "other" oilseed sector products. The impacts on the oilseed sector take into account the overall economic effects of the TPP, including on production of other agricultural and industrial products, and thus the competition within Canada for land, capital and labour across sectors, as well as competition between Canada and other TPP suppliers in TPP markets.

The results suggest that the main impact on the canola sector will be on processing. The aggregate results suggest that oilseed production in total (GTAP sector 5) will be marginally negatively impacted if Canada participates in the TPP, with a decline in 2035 of US$56.9 million in total value of production. Processed oilseed products, however, would increase in value by US$594.4 million in 2035, including both vegetable oil and meal from all oilseeds.

If Canada stays out of the TPP, the impact on oilseed production is still negative but smaller, with a decline of US$30.6 million in 2035, again including both vegetable oil and meal from all oilseeds. Processed oilseed products, meanwhile, would register a small gain of US$ 7.9 million, driven largely by income effects. Accordingly the main result of this study is that participation in the TPP is important for the Canadian oilseed processing sector, rather than the growing sector.

Breaking down the results into canola and "other" oilseed products, most of the gains accrue to the canola sector, with total oil shipments to all destinations (including the Canadian domestic market) rising by about US$ 490 million in 2035, and total meal shipments by about US$ 160 million. If Canada stays out of the TPP, canola oil shipments in total fall marginally, while meal shipments rise marginally. The different directions of movement of oil and meal in value may be understood as primarily reflecting price effects as meal faces strengthening demand from rising US feed demand as it gains improved access to the TPP meat markets.

The comparative value of obtaining immediate elimination of the oil tariff in Japan versus a phase-out of the tariff, can be determined by comparing the present value of the stream of shipments of oil and meal under the two scenarios. Under immediate tariff elimination, the present value of the stream of oil shipments worldwide (including to the Canadian domestic market) is US$ 5.143 billion over the 20-year period; for meal it is US$ 1.275 billion. With the phase-out scenario, these figures fall to US$ 3.12 billion and US$ 872 million respectively.

Summary Table (in 2011 US Dollars)

Scenario 1	Seeds			Oil			Meal		
	2035	Cumulative	Present Value	2035	Cumulative	Present Value	2035	Cumulative	Present Value
Japan	-129.3	-2,636.1	-1,627.6	432.7	7,912.8	4,778.9	4.5	55.8	28.5
Vietnam	0.0	0.0	0.0	37.5	288.8	142.3	51.7	397.6	196.0
Other TPP	106.9	1,852.5	1,109.2	67.9	994.1	568.6	110.2	1,851.9	1,099.9
Total TPP	-22.4	-783.6	-518.4	538.1	9,195.7	5,489.8	166.4	2,305.4	1,324.5
World	-35.6	-997.6	-648.3	491.2	8,579.9	5,143.4	159.7	2,218.0	1,275.3
Scenario 2	**Seeds**			**Oil**			**Meal**		
	2035	Cumulative	Present Value	2035	Cumulative	Present Value	2035	Cumulative	Present Value
Japan	-127.5	-2,001.8	-1,098.3	429.0	5,556.4	2,887.5	4.5	55.8	28.5
Vietnam	0.0	0.0	0.0	37.6	289.0	142.5	51.7	397.9	196.2
Other TPP	105.0	1,455.1	782.9	67.2	805.7	416.0	109.2	1,346.3	693.2
Total TPP	-22.4	-546.8	-315.4	533.8	6,651.2	3,446.0	165.4	1,800.0	917.9
World	-35.8	-729.2	-419.9	487.1	6,061.5	3,119.6	158.8	1,716.3	871.6
Scenario 3	Seeds			Oil			Meal		
	2035	Cumulative	Present Value	2035	Cumulative	Present Value	2035	Cumulative	Present Value
Japan	-82.7	-1,754.3	-1,093.8	-24.5	-312.4	-162.2	4.5	55.8	28.5
Vietnam	0.0	0.0	0.0	0.5	5.6	2.9	0.6	7.7	4.0
Other TPP	17.9	274.4	159.1	16.3	203.8	108.2	7.2	92.9	50.1
Total TPP	-64.8	-1,479.9	-934.8	-7.8	-103.1	-51.1	12.3	156.3	82.7
World	-45.3	-1,184.9	-765.3	-26.3	-369.7	-205.0	9.7	118.4	60.8

- The data for 2035 show the difference between the outcome under the policy shock and the projected baseline.
- The data for "cumulative|" show the sum of the change in shipments over the period 2015-2035
- The data for "present value" show the present value of the cumulative total, discounted at a rate of 5%.

Summary Table (in 2014 Canadian Dollars)

Scenario 1	Seeds			Oil			Meal		
	2035	Cumulative	Present Value	2035	Cumulative	Present Value	2035	Cumulative	Present Value
Japan	-150.5	-3,067.5	-1,894.0	503.5	9,207.7	5,561.0	5.2	64.9	33.2
Vietnam	0.0	0.0	0.0	43.6	336.1	165.6	60.2	462.7	228.1
Other TPP	124.4	2,155.7	1,290.7	79.0	1,156.8	661.7	128.2	2,155.0	1,279.9
Total TPP	-26.1	-911.8	-603.2	626.2	10,700.6	6,388.2	193.6	2,682.7	1,541.3
World	-41.4	-1,160.9	-754.4	571.6	9,984.0	5,985.1	185.8	2,581.0	1,484.0
Scenario 2	**Seeds**			**Oil**			**Meal**		
	2035	Cumulative	Present Value	2035	Cumulative	Present Value	2035	Cumulative	Present Value
Japan	-148.4	-2,329.4	-1,278.0	499.2	6,465.7	3,360.0	5.2	64.9	33.2
Vietnam	0.0	0.0	0.0	43.8	336.3	165.8	60.2	463.0	228.3
Other TPP	122.2	1,693.2	911.0	78.2	937.6	484.1	127.1	1,566.6	806.6
Total TPP	-26.1	-636.3	-367.0	621.2	7,739.7	4,009.9	192.5	2,094.6	1,068.1
World	-41.7	-848.5	-488.6	566.8	7,053.5	3,630.1	184.8	1,997.2	1,014.2
Scenario 3	Seeds			Oil			Meal		
	2035	Cumulative	Present Value	2035	Cumulative	Present Value	2035	Cumulative	Present Value
Japan	-96.2	-2,041.4	-1,272.8	-28.5	-363.5	-188.7	5.2	64.9	33.2
Vietnam	0.0	0.0	0.0	0.6	6.5	3.4	0.7	9.0	4.7
Other TPP	20.8	319.3	185.1	19.0	237.2	125.9	8.4	108.1	58.3
Total TPP	-75.4	-1,722.1	-1,087.8	-9.1	-120.0	-59.5	14.3	181.9	96.2
World	-52.7	-1,378.8	-890.5	-30.6	-430.2	-238.5	11.3	137.8	70.8

- The data for 2035 show the difference between the outcome under the policy shock and the projected baseline.
- The data for "cumulative|" show the sum of the change in shipments over the period 2015-2035
- The data for "present value" show the present value of the cumulative total, discounted at a rate of 5%.
- All figures are in US$ at 2011 prices. To translate these figures in 2014 Canadian dollars, they can be multiplied by a factor of 1.1637 (i.e., Canadian prices in 2014 were about 16.37% higher than US prices in 2011). Source: this figure is based on the IMF World Economic Outlook database, October 2015; it is updated from the original version of this report submitted to the Canola Council of Canada in February 2015.

1. Introduction

The Canola Council of Canada has requested an analysis of the market access implications of a successful Trans-Pacific Partnership (TPP) Agreement under three alternative scenarios:

1. Canada is part of the TPP and obtains immediate tariff elimination on canola products
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3. Canada is excluded from the TPP.

For the purposes of this study, the Australia-Japan FTA, which entered into force on 15 January 2015,[1] is simulated simultaneously with the TPP but with a one-year head-start: the TPP is assumed to be implemented starting in 2016. Accordingly, we report the combined effects of the TPP and the JAEPA.

This report builds on two previous analyses of Canadian canola export potential in the Asia-Pacific, namely the impacts of canola oil tariff elimination under a Canada-Japan FTA[2] and market potential for canola export growth to Vietnam.[3]

— The Japan study found that tariff elimination in Japan on canola oil boosted Canadian exports by about US$25 million in the central scenario from a base of about US$22 million (based on the average level of exports over the period 2010-2012, a period which has witnessed severe fluctuations in market conditions due to variability of crop outcomes), or by 113%; the assumption of high crushing capacity in Canada allowed an assumption of limited diversion of Canadian exports, which meant that the export gain in Japan was not cannibalized from shipments to the domestic market and third country export markets. Taking into account the elimination of "tariff escalation" – the practice of having zero tariffs on seed imports but high tariffs on the processed products – the gain in oil sales to Japan however would be much greater, reflecting a switch in mode of canola sales to Japan from seeds to oil. This additional gain was estimated to be an order of magnitude larger, at about US$290 million in additional oil sales, albeit at the expense of a commensurate reduction in canola seed sales to Japan as these seed sales would now flow to the Canadian crushing industry.

— The Vietnam study evaluated the potential market expansion in Vietnam for oil and meal in a context where the direct effect of TPP-induced liberalization was small but commitment by Canadian exporters to the Vietnamese market with the greater certainty provided by TPP market access commitments could lead to large gains in oil and meal imports if canola were to capture its global market share in Vietnamese incremental demand.

[1] See, Joint Statement on the entry into force of the agreement between Japan and Australia for an economic partnership, 15 January 2015.
[2] Ciuriak Consulting Research Report, "Liberalization of Japan's Oilseeds Markets under a Canada-Japan EPA," submitted to the Canola Council of Canada, 27 March 2013.
[3] Ciuriak Consulting Research Report, "Canada's Canola Exports to Vietnam: Market Potential under Liberalization," submitted to the Canola Council of Canada, 26 December 2013.

This research report develops this analysis. It differs from the previous studies in a number of ways. First, it is based on a general equilibrium analysis rather than a partial equilibrium analysis; the model used is a dynamic version of the Global Trade Analysis Project (GTAP) model that is commonly used to study the effects of major trade agreements such as the TPP. By the same token, the impacts on canola from the TPP that we report take into account the impact on Canada's economy of export gains in areas such as beef and pork as well as income gains from the liberalization of trade under the TPP by all the TPP members. Second, the shift to a general equilibrium analysis entails the need to incorporate the structural analysis in the Japan and Vietnam studies into the general equilibrium modelling framework. The key structural changes that we need to factor in are (a) tariff de-escalation in Japan and (b) the evolution of canola's role in Vietnam's demand for vegetable oil and meal. These structural changes must be imposed on the Global Trade Analysis Project (GTAP) framework as the GTAP model itself does not incorporate these structural features.

This report is structured as follows. Section 2 provides the technical background. It describes the formulation of the assumptions for the canola sector under the TPP under the three scenarios mandated above and the structural shocks imposed on the model to capture the effects analyzed in the Japan and Vietnam studies. Section 3 provides the results.

2. Technical Background

2.1. Canola Liberalization under the TPP

The TPP negotiations include twelve participants: Australia, Brunei, Canada,[4] Chile, Japan, Malaysia, Mexico, New Zealand, Peru, Singapore, the United States, and Vietnam. The TPP economies are all members of APEC. The TPP12 have a combined population of about 805 million people, a combined GDP of US$28.4 trillion,[5] imports of goods of US$5.1 trillion[6] and imports of commercial services of approximately US$1.0 trillion.[7]

However, under the TPP, not all parties will liberalize goods trade with Canada. This reflects the fact that many of the individual trading relationships have been liberalized under previous free trade agreements (FTAs), which will not be re-opened under the TPP. The parties liberalizing vis-à-vis Canada and the liberalization scenarios for canola are set out in Table 1. Red-lined cells indicate those that are likely to be liberalized under the TPP for Canada. As can be seen, the markets where liberalization under the TPP will particularly benefit Canada's canola sector are limited to Japan and Vietnam.

[4] Canada joined the Trans-Pacific Partnership (TPP) negotiation on 8 October 2012 and commenced its participation in the 15th round of TPP talks in Auckland, New Zealand in December 2012.
[5] Estimated 2014 population and GDP from the IMF World Economic Outlook, April 2014.
[6] Merchandise imports, 2013. Source: International Trade Centre Trade Map.
[7] Services imports, 2012, WTO services trade database.

Table 1: TPP Parties' Liberalization of Canola under the TPP vis-à-vis Canada

Party	Liberalizing vis-à-vis Canada?	Seed	Meal	Oil
Australia	**Yes**	**MFN Free**	**MFN Free**	**MFN Free**
Brunei	**Yes**	**MFN Free**	**MFN Free**	**MFN Free**
Chile	No	Free	Free	6%
Japan	**Yes**	**MFN Free**	**MFN Free**	**9.4% (crude) & 7.1% (refined)**
Malaysia	**Yes**	**MFN Free**	**MFN Free**	**MFN Free**
Mexico	No	Free (NAFTA)	Free (NAFTA)	Free (NAFTA)
New Zealand	**Yes**	**MFN Free**	**MFN Free**	**MFN Free**
Peru	No	Free	Free	6%
Singapore	**Yes**	**MFN Free**	**MFN Free**	**MFN Free**
United States	No	Free	Free	Free
Vietnam	**Yes**	**5%**	**MFN Free**	**5% (crude) & 15% (refined)**

Source: International Trade Centre Trade Map.

That being said, the TPP will "regionalize" the rules of origin, meaning that value-added generated in each of the parties counts as "originating" for purposes of access to TPP preferences. Thus vegetable oil produced with Canadian canola seed in any TPP party will qualify for TPP preferences in that country's export trade. Thus, US exports of crude and refined canola oil produced with Canadian seeds will qualify for TPP preferences.

2.2. Japan's TPP Tariff Elimination Commitments for Canola

Japan's tariff elimination commitments for canola products under the JAEPA serve as the model for Japan's tariff elimination commitments for Canadian canola products under the TPP. Japan's JAEPA commitments are set out in Table 2:

Table 2: Japan's Liberalization Schedule for Canola Products under JAEPA

120510000	Low erucic acid rape or colza seeds	Free	A
230641000	Meal Cake - Of low erucic acid rape or colza seeds	Free	A
	Low erucic acid rape or colza oil and its fractions		
151411	Crude oil		
151411100	1 Of an acid value exceeding 0.6	10.90 yen/kg	B10
151411200	2 Other	13.20 yen/kg	B10
151419000	Other	13.20 yen/kg	B10
	Other		
151491	Crude oil		
151491100	1 Of an acid value exceeding 0.6	10.90 yen/kg	X
151491200	2 Other	13.20 yen/kg	X
151499000	Other	13.20 yen/kg	X
Customs duties on originating goods classified under the tariff lines indicated with "A" shall be eliminated entirely, and such goods shall be duty free on the date of entry into force of this Agreement			
Customs duties on originating goods classified under the tariff lines indicated with "B10" shall be eliminated, from the Base Rate to free, in 11 equal annual instalments beginning on the date of entry into force of this Agreement, and such goods shall be duty free, effective on 1 April of the 11th year;			
The originating goods classified under the tariff lines indicated with "X" shall be excluded from any tariff commitment referred to in subparagraphs (a) through (u).			

This results in the tariff elimination schedule for Australian canola oil in Japan in yen/kg shown in Table 3. For the purposes of this study, the same tariff elimination applies under Scenario 2 to Canada-sourced canola oil, but for the years 2018-2028. Note that the Australia elimination schedule kicks in April of each year, meaning that 2015 gets effectively a double cut. For Canada, we assume 11 equal installments, one per year.

Table 3: Japan's Tariff Elimination Schedule for Australian Canola Oil under JAEPA

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Crude Canola Oil	10.90	8.92	7.93	6.94	5.95	4.95	3.96	2.97	1.98	0.99	0.00
Refined Canola Oil	13.20	10.80	9.60	8.40	7.20	6.00	4.80	3.60	2.40	1.20	0.00

2.3. Adjustments for TPP-driven Tariff De-Escalation in Japan

Japan practices tariff escalation, meaning that it charges no tariff on canola seed imports but does charge a tariff on processed canola products, namely oil. This results in almost all of Canada's canola sector's exports to Japan consisting of seed rather than oil. This tariff pattern protects Japan's oilseed crushing sector. A detailed discussion of the implications of tariff de-escalation under a trade liberalization agreement is provided in Ciuriak Consulting Research Report, "Liberalization of Japan's Oilseeds Markets under a Canada-Japan EPA" (27 March 2013).

That study analyzed various factors bearing on the quantification of the mode switch from selling canola seed to Japan, to selling canola oil, including the implications of the Japanese vegetable oil market structure and the logistical issues surrounding the shipping of bulk vegetable oil. It concluded that:

> "Trade theory predicts that the reduction of prohibitive tariffs on canola oil for the main commodity markets will lead to a reallocation of market share from the weakest Japanese firms in part to Canadian exporters but also in part to other, more-productive Japanese firms that improve their performance through, for example, increased scale and capacity utilization. Importantly, the extent of the reallocation within Japan would depend on how many plants have sufficiently low productivity levels to be driven out of the canola crushing business altogether.
>
> Based on the size of Canadian monthly shipments of canola seed to Japanese ports, this study identifies the crushing capacity clustered around the three smallest ports by annual intake, which account for 28% of Japan's shipments, as the most vulnerable in the event of tariff elimination. Simulating the implications of Canada capturing this market share, the new level of Canadian shipments of oil to Japan would be on the order of 24,000 MT/month or about 12,000 MT/month each of crude and refined oils, well within the planned increase in Canadian crush capacity, and would enable the shipping of Canadian oil at reasonable scale from a cost perspective."

The present study also makes adjustments to Canada's oilseed exports to Japan to reflect the mode switch from canola seeds to oil. This is not a factor in other TPP markets.

We do not make any specific adjustments to trade in meal as a result of the mode switch. This reflects the following considerations. Japan's import demand for meal will rise to reflect the loss of the meal associated with crushing canola seed domestically. Meanwhile Canadian supply of canola meal will rise. Since these market linkages are already reflected in the input-output and trade data in the GTAP dataset which we employ, we allow the model to determine exactly how the market will reshuffle as Japan imports more meal from its suppliers and Canada exports more meal to meet demand created in third markets by the diversion of meal to Japan.

Accordingly, the main benefit for Canada's canola sector in Japan is the value added from crushing and selling canola as oil and meal rather than as seed, along with a modest additional boost to the canola sector from liberalization of market access and the income gains in the TPP.

2.4. Vietnam's canola liberalization schedule

We assume that Vietnam will phase out medium-level tariffs completely under the TPP. Vegetable oil and meal do not appear to be sensitive sectors for Vietnam and accordingly we phase out tariffs in these sectors in two steps – a 50% cut immediately to the average crude and refined oil tariff, and the remainder eliminated after 5 years, in 2021.

The structural changes in Vietnam's demand for canola are not incorporated in the scenario where Canada stays out of the TP on grounds that the tariff on canola will favour the evolution of the market for meal and oil in favour of other tariff-free oilseed products. The structural changes are imposed in the scenarios where Canada participates in the TPP. They follow the assumptions developing Ciuriak Consulting Research Report, "Canada's Canola Exports to Vietnam: Market Potential under Liberalization," (26 December 2013).

2.5. Canola liberalization scenarios under the TPP

To summarize, the canola liberalization scenarios are accordingly as follows.

Under **Scenario 1**, the canola oil tariff in Japan and Vietnam is eliminated immediately and fully in 2016, the assumed date for implementation of the TPP. Other TPP parties that have positive tariffs on canola products from Canada already have FTAs with Canada that are not being re-opened in the TPP negotiations.

Under **Scenario 2** – which is the most likely and thus the "Best Guess" scenario – the same tariff elimination obtained by Australia under JAEPA for implementation over 2015-2025 applies to Japan's Canada-sourced canola oil, but for the years 2018-2028. In Vietnam, the canola oil tariff is cut by 50% immediately and eliminated in year 5 (2021), as per the assumptions in Ciuriak and Xiao (2014).

Under **Scenario 3**, Canada *does not implement* the TPP and the parallel FTA negotiations with Japan are assumed *not to be concluded*, thus leaving the Japanese and Vietnamese canola oil tariffs facing Canadian product unchanged.

2.6. Modelling Framework: GTAP

The impacts reported are based on simulations on a dynamic version of the GTAP model of the TPP under "best guess" assumptions concerning the outcomes of the negotiation developed in Ciuriak and Xiao (2014). The GTAP dataset used is the version 9.0 with a base year of 2011.

In the GTAP dataset, canola products are found within two aggregated GTAP sectors: GTAP Sector 5 "oilseeds"; and GTAP Sector 21 "Vegetable Oils and Fats". GTAP 5 includes canola seeds along with all other oilseeds such as soybeans etc.; GTAP 21 includes both canola oil and canola meal along with all other vegetable oils and meals.

To break out impacts on canola from the GTAP aggregated oilseed-related sectors, we build a trade dataset that breaks down GTAP 5 into "canola seed" and "other oil seeds"; and that breaks down GTAP 21 into "canola oil", "canola meal" and "other vegetable oils and meals". We then run simulations of the tariff effects on each of the canola sectors and the "other" sectors using a computable partial equilibrium (CPE) model – the Global Simulation (GSIM) model. These simulations are used to "unpack" the aggregate GTAP 5 and GTAP 21 sectors. The technique is demonstrated in Ciuriak, Lysenko and Xiao (2014); this study breaks down the impact of the Canada-Korea FTA on the GTAP "meat" sector into impacts on poultry, pork and "other" meat products within that GTAP category.

Since GSIM has the same basic trade framework as GTAP model (i.e., it has the same "Armington" specification and uses the same GTAP elasticity of substitution that drives the trade impacts), the "first round" impacts of a tariff cut – which are essentially price effects – are implicitly the same in the GSIM model as in the GTAP model. Accordingly, the differences between the "first round" GSIM impacts and the GTAP results reflect the general equilibrium effects that GTAP takes into account over and above the "first round" trade impacts but that GSIM does not.

The results in this report are thus more comprehensive than the GSIM-based results in the previous Japan and Vietnam reports. The general equilibrium effects can be positive or negative for canola products. For example, the general income gains from the TPP drive demand for canola products, an effect that is not captured in the partial equilibrium analysis. However, large positive impacts on particular Canadian exports such as on beef or pork to TPP markets can have the effect of driving up costs of inputs to the canola sector and thus partially or wholly offsetting the benefits of expected tariff reductions on canola products. This "comparative advantage" effect is not captured in partial equilibrium analysis that focuses on one sector at a time.

Finally, note that the GTAP framework takes into account the input-output relationship between oilseed production and trade and vegetable oil production and trade. Thus the reported impacts on oilseeds automatically take into account the effect of expanded vegetable oil sales to Japan under tariff de-escalation.

Box 1 provides a brief description of the GTAP modelling framework employed in this study.

Box 1: The GTAP Modelling Framework

The GTAP model integrates a number of accounts to provide a complete description of an economy.

- The standard national income and expenditure accounts.
- A breakdown of industry by sector that reflects inter-sectoral input-output links. In all, GTAP allows representation of up to 57 sectors, 43 of which are goods.
- A production function for each sector that determines the quantity of capital, skilled and unskilled labour, and intermediate inputs, required to produce a unit of output in that sector.
- A trade account that models the international linkages for each sector of the economy.

The model generates impact results for national accounts aggregates, industry output and prices, factor inputs and prices, and trade flows. For a technical description of the GTAP model, see Hertel (1997); for a discussion of the degree of confidence in CGE estimates, see Hertel et al. (2003).

On the production side, the model evaluates efficiency gains from the reallocation of the factors of production across sectors. Land, labour (skilled and unskilled), and capital substitute for one another to generate domestic value-added by sector in the first stage ("nest"). Composite intermediate inputs substitute for domestic value-added at the next stage. For canola processed products such as oil and meal, the input-output relationships between the "oilseed" and "vegetable oils and fats" sectors generate demand for oilseeds when vegetable oil demand goes up by a fixed proportion of the increased demand for vegetable oil. Labour and capital supply responds to changes in the rate of return on capital and the wage rate. The investment response is based on the Monash capital model (Dixon and Rimmer 1998). Both factors are assumed to be mobile across all sectors within a country but immobile internationally.

On the demand side of the model, an aggregate utility function[8] allocates expenditures across private consumption, government spending, and savings so as to maximize per capita aggregate utility. Following a shock, such as TPP liberalization, the changes in consumption are allocated across these three aggregates based on their income shares in each region.

Private household demand responds to price changes and to changes in income. This latter effect reflects the fact that consumption of particular types of goods such as luxury goods increases more with higher income than does consumption of other goods such as staple food products.[9] Notably, cuts in protection not only result in a decline in the prices of intermediate goods for production, but also in the prices of consumer goods, which induces demand responses.

The trade module is based on the assumption of imperfect substitution based on product differentiation across regions. The key parameter determining the scale of impacts on trade from a tariff shock is the elasticity of substitution – a high substitution elasticity generates relatively large trade impacts for a given size of tariff shock. Note that the GTAP sectors reflect relatively large aggregates of individual products – e.g., GTAP 21 contains both vegetable oil and meal – accordingly, substitution elasticities are lower than they would be for narrower product categories such as vegetable oil alone.

Economic welfare is based on "equivalent variation", the lump sum payment at pre-shock prices that would have to be made to households to leave them as well off as in the post-shock economy.[10]

Note that the GTAP database includes all TPP parties except Brunei, which is part of a broader "Other Southeast Asia" grouping. Our TPP results do not reflect any impacts in Brunei.

[8] This takes a Cobb-Douglas functional form.

[9] Household demand is modelled using a Constant Difference of Elasticities (CDE) function. This captures the fact that he structure of household demand does not remain uniform as income increases (i.e., it is "non-homothetic").

[10] Technically, equivalent variation is the Hicksian income-compensated variant of Marshallian consumer surplus.

The latest version of the GTAP database, version 9.0, has a base year of 2011. We first simulate the entire database forward to 2035 using GTAP dynamic database tools, which draw on available macroeconomic data (Fouré et al, 2012). The baseline projections for GDP are shown in Table 4.

Table 4: Baseline Projections for TPP Member GDP, US$ at 2011 Prices

	2015	2020	2025	2035
Australia	1,709,707	2,193,171	2,496,226	3,320,328
Canada	**2,113,264**	**2,524,178**	**2,732,328**	**3,115,610**
Chile	322,460	408,105	487,458	679,354
Japan	6,960,444	8,165,121	8,807,528	9,459,518
Malaysia	377,402	493,962	612,393	862,517
Mexico	1,433,181	1,769,604	1,995,613	2,395,820
New Zealand	192,687	229,077	257,005	332,338
Peru	236,314	316,015	398,337	588,891
Singapore	311,875	399,362	480,476	608,019
United States	17,580,514	20,007,830	20,880,044	23,075,340
Vietnam	165,519	220,478	271,174	393,878
TPP Total	**31,403,365**	**36,726,903**	**39,418,582**	**44,831,613**
World Total	86,597,728	105,153,546	123,107,114	161,196,363
TPP12 Share of World	36%	35%	32%	28%

Source: Calculations by the authors. Note: these calculations exclude Brunei which is not part of the GTAP data set.

According to the macroeconomic projections for the world economy, global growth averages about 3.2% per annum over the period 2015-2035, slowing from 3.6% over the period to 2025 to 2.7% over the following 10-year period to 2035. The TPP region grows at about 1.8% over the whole period, slowing from 2.3% in the first half of the period to only 1.3% in the second half. The major mature economies grow slowly (Japan at 1.5% and the United States at 1.4% for the whole period), while the developing economies grow more rapidly (led by Vietnam at 4.4% and Malaysia at 4.2%). Canada's growth averages 2.0% for the whole period, slowing from 2.6% in the first half to 1.3% in the second half of the period.

We assume the TPP is implemented as of 1 January 2016; this would be consistent with a conclusion to negotiations in the spring of 2015 as currently targeted, allowing the ratification process to take place through 2015. The JAEPA was implemented at the beginning of 2015; accordingly, our impacts start in 2015.

The model is simulated forward in a dynamic process whereby changes in the rate of return on capital induce investment while changes in wage rates induce increased labour force participation. The results reported are changes relative to the baseline at 2015, 2020, 2025, 2030, and 2035. The reported gains in 2035 may be interpreted as a permanent change in the level of output of the economy, once full equilibrium has been restored following the policy shocks, including the reallocation of capital and labour across sectors in response to the changed opportunities in the liberalized scenario.

2.7. Modelling Framework: GSIM

The partial equilibrium model used in the present analysis to decompose the aggregate GTAP sectors into canola and other oilseed sector groups is the global simulation model (GSIM) developed by Francois and Hall (2003).[11]

Like the GTAP trade module, GSIM is based on the Armington framework. Under this framework, products are differentiated by country of origin. They are imperfect substitutes, with the degree of substitutability represented by the elasticity of substitution. This model allows the simultaneous evaluation of the impact on export and import flows of reduction of trade barriers amongst multiple trading partners.

The model results are driven by the assumptions about supply, demand and substitution elasticities which describe the response of production and demand in each economy to changes in price caused by the policy change.

The aggregate demand price elasticity for vegetable oil is low: in other words a lowering of the price of vegetable oils results only in a less than proportionate percentage increase in quantity consumed. A recent survey of estimates of this elasticity found 13 estimates with values falling in the range -0.14 to -1.0, with a mean of -0.48 (Andreyeva et al. 2010).[12] The FAPRI database gives -0.28 as the own-price elasticity for rapeseed oil in Japan.[13] Food use demand tends to have a higher own-price elasticity than industrial use. For the simulations, the central scenario adopts -0.5 as the estimate, with the plausible range for sensitivity analysis set from -0.25 to -0.75.

The supply elasticity for vegetable oil ultimately depends on the supply of the primary products, which involves an increase in acreage planted in response to price increases. Generally speaking the response of agricultural supply is found to be inelastic. Li et al. (2012) provide new estimates for cropland use switching across crops in response to changes in prices. They observe that:

> "The variations in net revenue of land for different crops are relatively large, indicating fast changes of net revenues of land dedicated to different crops over the time frame. On the other hand, the harvested acres for the crops are relatively stable. This combination suggests a rather inelastic change of harvested acres due to changes of net return of land."

In the longer-run, however, supply tends to be more elastic for any particular crop, if there is a permanent shift in demand which promises firmer prices. Moreover, given the possibility of importing feedstock for the production of vegetable oil, for any particular country, the supply constraint is less than that implied by land-use considerations. In a similar vein, considered in the

[11] For an example of the application of GSIM to a similar issue, see Holzner (2008).
[12] LMC International (2006) applied a demand elasticity of -0.56 (reported in Broeska, 2007). This study found a 20.8% gain in consumption of vegetable oil in Japan as a result of tariff liberalization despite the low demand elasticity.
[13] Food and Agricultural Policy Institute Research Elasticities Database

context of preferential trade agreements, where supply relationships with a particular trading partner might be made substantially more attractive, different destinations might face differing supply responses in the event of a price change. In a similar vein, the presence of substantial excess capacity implies the ability to increase the production of oil without incurring rising costs, if the supply of oilseed can be secured.

In the normal situation, the supply elasticity is set low at 0.5 (generally inelastic supply). In Canada, there is the unusual feature of a significant expansion of new crushing supply coming on stream in the next few years, evidently predicated on good prospects for expanded supply of feedstock and/or capture of crushing activity from other countries. This suggests that, over the plausible range for expanded shipments of canola oil induced by liberalization in Japan, Canadian supply would be available without needing increases in price to induce the expansion. This situation can be reflected in the model by assuming a nearly perfectly elastic supply response over the relevant range. This effect is incorporated by simulations with a supply elasticity in Canada of 1,000.[14] Note that this is not related to the supply elasticity of canola oilseeds overall; rather, the expansion of Canadian canola oil production in this scenario reflects the diversion of seed sales to Japan.

Estimates of substitution elasticities for vegetable oils in the trade literature are relatively few. The standard GTAP data base applies a 3.3 elasticity of substitution for the vegetable oils sector for substitution between domestic and imported oils, and 6.6 for substitution between alternative sources of imports (Dimaranan et al. 2006). The US International Trade Commission has applied a substitution elasticity of 5.0 for vegetable oils, which is the mid-point for the GTAP estimates (Donnelly et al., 2004). The present study adopts 5.0 as the central estimate for producing countries and 6.6 for Japan which only imports. For strategic markets such as the United States and China, where long-term supply considerations come into play, the substitution elasticity is set at half the normal level or 2.5. In the context of the present study, this means that there will be less impact on deliveries to the United States and China from a tariff change in Japan than there will be on deliveries to third countries. For the EU28 market, where Canadian vegetable is used as a feedstock to produce biofuels, the elasticity is set at levels commensurate with feedstock for energy production.[15]

[14] Note: in applying computable partial equilibrium models to estimate the impact of anti-dumping duties, it is the practice of the USITC to set the import supply elasticity at 1,000,000. This ensures full pass-through of the tariff change to final prices.

[15] The GTAP substitution elasticities for natural gas (34.4) and crude oil (10) reflect the differences in substitutability of feedstock from different sources. Natural gas is very similar from source to source and thus has a higher substitution elasticity than crude oil, which varies more in its properties (e.g., sulphur content). In a similar vein, vegetable oils used for biofuels are not perfect substitutes because they have different properties as fuel additives (e.g., their reaction to low temperatures). For the present simulation, the EU28 substitution elasticity for canola is set at 22.5, the mid-point of the crude oil and natural gas elasticities.

3. Results

3.1. Overall Macroeconomic Impacts of the TPP plus JAEPA

The TPP will have a positive impact on real growth in the parties' economies based on the "best guess" assumptions that drive this scenario. For the TPP as a whole, real GDP will rise by a permanent 0.13% above baseline, generating economic welfare benefits of US$53.5 billion measured at 2011 prices (Table 5). The TPP will have a positive impact on Canada over the longer-run, Canada participates. GDP increases by 0.06%; economic welfare, as measured by household income, rises US$1.7 billion measured at 2011 prices, once the full effects of the liberalization have been absorbed by the economy.

The immediate impacts are smaller but build up over time. This reflects two basic factors. First, a significant portion of the liberalization involves sensitive sectors for which liberalization is phased-in only gradually. Second, investment also takes time to respond to the policy changes implemented at the beginning of 2015 (JAEPA) and 2016 (TPP); this reflects the lead time for corporate investment planning as well as for markets to respond to the new opportunities.

Tables 5a and 5b report the aggregate results under the scenarios where Canada is part of the TPP (5a) and where it abstains (5b). There is no material difference at the national level between immediate and phased out canola liberalization in Japan; accordingly we report the macroeconomic results for scenarios 1 and 2 in Table 5a.

Consistent with other studies of the TPP, the biggest gains are made by the emerging markets of Vietnam and Malaysia. Vietnam's GDP rises by almost 3% over baseline on a permanent basis due to the TPP by 2035. For Malaysia, the comparable figure is 1.32%. Japan and the United States make modest gains in terms of GDP in percentage terms but realize comparatively large gains in economic welfare in dollar terms, reflecting the size of these two economies. Australia, which makes gain in real GDP, suffers a decline in economic welfare in this simulation due to a decline in its terms of trade. Most other economies experience comparatively small impacts. The economies on the Asia side of the Pacific do generally better than the TPP economies in the Americas. This reflects the fact that the bilateral FTAs in the Americas are not being re-opened and further liberalized under the TPP.

Overall, the results of the TPP are smaller when the TPP is modelled on the updated GTAP version 9.0 database with the base year of 2011, compared to the previous dataset with the base year in 2007. The updated dataset reflects the post-economic crisis economic framework whereas the previous dataset did not capture these effects. As well, the results are quite modest when modelled on a cautiously realistic basis.

These gains are reduced if Canada stays out of the TPP (Table 5b), reflecting the withdrawal of Canada's liberalization potential. For most economies, these effects are relatively minor; for Canada, the gains from participation swing into negative impacts due to the effects of preference

erosion in TPP markets. Canada's GDP declines by a permanent 0.02% over baseline by 2035 and economic welfare declines by US$ 1.2 billion.

The above figures are calculated relative to a baseline where the TPP does not take place. If the TPP takes place and Canada stays out, the "swing" is from a gain of 0.06% in GDP to a loss of about -0.02%, or a total swing of -0.08%. The "swing" in economic welfare, evaluated the same way is from a gain of US$ 1.7 billion to loss of US$1.2 billion or a total swing of -US$2.95 billion.

For the TPP group as a whole, the benefit of Canada joining is a welfare gain of US$ 2.8 billion, or an increase in the total gain of 5.8%, compared to the TPP without Canada.

Table 5a: GDP and Economic Welfare Impacts of the TPP, including JAEPA: Scenarios 1&2, where Canada participates in the TPP

	2015	2020	2025	2030	2035
GDP	Cumulated Change over Baseline in percent				
Australia	0.07	0.10	0.13	0.16	0.17
Canada	**0.00**	**0.01**	**0.03**	**0.04**	**0.06**
Chile	0.00	-0.01	-0.02	-0.02	-0.02
Japan	0.02	0.09	0.11	0.13	0.15
Malaysia	0.00	0.78	1.01	1.19	1.32
Mexico	0.00	-0.01	-0.02	-0.02	-0.01
NZ	-0.01	0.25	0.36	0.44	0.50
Peru	0.00	0.00	0.00	0.01	0.01
Singapore	0.00	-0.02	-0.04	-0.03	0.00
USA	0.00	0.01	0.03	0.04	0.04
Vietnam	0.00	0.90	2.04	2.62	2.98
TPP Total	**0.01**	**0.05**	**0.08**	**0.11**	**0.13**
Economic Welfare	Cumulated Change over Baseline in US$ millions				
Australia	727	-278	-441	-831	-2,796
Canada	**-14**	**360**	**1,033**	**1,534**	**1,704**
Chile	-17	-111	-194	-315	-711
Japan	3,456	8,762	12,014	14,275	15,632
Malaysia	-38	3,422	5,439	7,429	9,301
Mexico	-17	-155	-339	-431	-591
NZ	-15	732	1,072	1,358	1,672
Peru	-7	-44	-101	-214	-546
Singapore	0	-173	-225	-142	11
USA	-513	6,212	9,118	12,565	14,658
Vietnam	-16	3,218	9,263	12,221	14,964
TPP Total	**3,546**	**21,945**	**36,639**	**47,449**	**53,298**

Source: Calculations by the authors. Note that the 2015 impacts are for JAEPA only, and thus negative for Canada.

Table 5b: GDP and Economic Welfare Impacts of the TPP, including JAEPA: Scenario 3 where Canada stays out of the TPP

	Cumulated Change over Baseline percent				
	2015	2020	2025	2030	2035
GDP					
Australia	0.07	0.10	0.13	0.16	0.16
Canada	**0.00**	**-0.02**	**-0.02**	**-0.02**	**-0.02**
Chile	0.00	-0.01	-0.02	-0.02	-0.02
Japan	0.02	0.07	0.09	0.11	0.13
Malaysia	0.00	0.77	0.99	1.17	1.30
Mexico	0.00	-0.01	-0.01	-0.01	-0.01
NZ	-0.01	0.25	0.36	0.44	0.49
Peru	0.00	0.00	0.00	0.01	0.01
Singapore	0.00	-0.02	-0.03	-0.02	0.01
USA	0.00	0.02	0.03	0.04	0.05
Vietnam	0.00	0.86	1.93	2.47	2.82
TPP Total	0.01	0.05	0.07	0.10	0.11
Economic Welfare	**Cumulated Change over Baseline US$ millions at 2011 Prices**				
Australia	727	-258	-402	-809	-2,902
Canada	**-14**	**-669**	**-851**	**-923**	**-1,246**
Chile	-17	-104	-182	-305	-729
Japan	3,456	7,604	10,015	11,942	12,994
Malaysia	-38	3,370	5,363	7,318	9,147
Mexico	-17	-147	-276	-313	-474
NZ	-15	732	1,063	1,350	1,667
Peru	-7	-41	-97	-212	-568
Singapore	0	-164	-213	-124	34
USA	-513	6,655	10,051	13,571	15,517
Vietnam	-16	3,044	8,727	11,492	14,056
TPP Total	**3,546**	**20,021**	**33,197**	**42,988**	**47,496**

Source: Calculations by the authors. Note that the 2015 impacts are JAEPA only and thus negative for Canada.

3.2. Impacts of the TPP plus JAEPA on the Canadian Canola Sector

The impacts of the TPP (including JAEPA) on Canada's canola sector are reported here. Section 3.2.1 reports the impacts for Scenario 1 where Canada participates and canola tariffs in Japan are eliminated immediately. Section 3.2.2 reports the impacts for Scenario 2 where Canada participates but Japan phases out canola oil tariffs gradually. Section 3.2.3 reports the impacts for Scenario 3 where Canada stays out of the TPP.

In each section, we first report the aggregate impacts for the GTAP sectors in which canola products are aggregated: GTAP 5 (canola seeds and other oilseeds, including soybeans), and GTAP 21 (canola oil and meal and other oilseed products, including soy oil and meal). We then report separately the breakdown of these sectors into canola and "other".

3.2.1. Impacts of the TPP plus JAEPA on the Canadian Canola Sector: Canada Participates and Obtains Immediate Elimination of Japan's Oil Tariff

As shown in Table 6a, with Canada participating in the TPP and obtaining immediate elimination of the oil tariff in Japan, the Canadian oilseed sector benefits. This takes into account the structural shift in Canadian shipments to Japan from seeds to oil, and the structural shift in Vietnam as canola meal and oil captures a greater share of the Vietnamese market. Canadian oilseed production does not benefit; this reflects the fact that the main impact is on the destination of the seeds, with a shift to domestic crushing facilities and away from other TPP markets. The GTAP results – which take into account Canadian gains in areas such as beef and pork – suggest that oilseed production in total would marginally decline, while processing would increase. By implication, Canadian crushing plants would source modest additional amounts of oilseeds from the United States.

Table 6a: TPP Impacts on Canada's Oilseed-Sector Shipments, GTAP Aggregate Results: Canada Participates and Obtains Immediate Elimination of Japan's Oil Tariff

Destination Country	2015	2020	2025	2030	2035
GTAP 5		**US$ millions at 2011 prices**			
Australia	0.0	0.0	0.0	0.0	0.0
Canada	-0.5	52.5	71.1	82.2	86.4
Chile	0.0	0.0	0.0	0.0	0.0
Japan	-4.3	-125.6	-136.5	-137.5	-129.3
Malaysia	0.0	-0.4	-0.2	0.1	0.4
Mexico	-0.1	2.2	3.4	3.7	3.5
NZ	0.0	0.0	0.0	0.0	0.0
Peru	0.0	0.0	0.0	0.0	0.0
Singapore	0.0	-0.1	0.0	0.0	0.0
USA	-0.1	0.7	1.8	1.8	2.0
Vietnam	0.0	0.4	1.4	1.8	2.1
TPP Total (including Cdn domestic shipments)	-5.1	-70.3	-59.2	-48.0	-35.0
TPP Total, percent over baseline	-0.1%	-1.1%	-0.8%	-0.6%	-0.4%
World Total (including Cdn domestic shipments)	-5.2	-90.3	-78.7	-69.0	-56.9
World Total, percent over baseline	-0.1%	-0.8%	-0.6%	-0.5%	-0.4%
GTAP 21		**US$ millions at 2011 prices**			
Australia	0.0	0.1	0.1	0.1	0.2
Canada	-1.2	56.7	77.7	90.4	94.6
Chile	0.0	-0.3	-0.4	-0.6	-0.7
Japan	0.0	348.4	424.6	463.5	455.9
Malaysia	0.0	0.0	0.6	1.5	2.6
Mexico	0.0	0.0	0.1	0.3	0.4
NZ	0.0	0.1	0.2	0.3	0.3
Peru	0.0	0.0	0.0	0.0	0.0
Singapore	0.0	0.0	0.0	0.0	0.0
USA	-0.7	-7.3	1.5	5.1	7.7
Vietnam	0.0	8.7	25.5	52.7	89.2
TPP Total (including Cdn domestic shipments)	-2.0	406.5	529.9	613.4	650.3
TPP Total, percent over baseline	0.0%	4.2%	4.7%	4.9%	4.9%
World Total (including Cdn domestic shipments)	-2.4	382.6	496.9	564.3	594.4
World Total, percent over baseline	0.0%	3.2%	3.2%	3.0%	2.8%

Source: authors calculations. Except as otherwise noted, the data reported are change in US$ millions (at 2011 prices).
Note: data for Canada are changes in estimated domestic shipments.

Tables 6b and 6c break these impacts down into canola and "other" sectors for GTAP 5 (oilseeds) and GTAP 21 (oil, meal and "other"). In these tables, we add a "cumulative total" over the projection period, as well as the present value of the change, where future increases in shipments are discounted at a 5% annual rate.

Notable features are the decline in oilseed sales to Japan as Japan's canola import mix shifts towards oil and away from seeds. Note that the shift is not one-for-one with the expansion of canola seed sales to the domestic Canadian market. This reflects the fact that Canadian oilseed production in total faces new headwinds as other Canadian sectors that benefit from deeper liberalization abroad do better.

Table 6b: TPP Impacts on Canada's Canola Seed Shipments: Canada Participates and Obtains Immediate Elimination of Japan's Oil Tariff

Country	2015	2020	2025	2030	2035	Cumulative Total(15-35)	Present Value
Canola Seed							
Australia	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Canada	1.3	75.3	92.3	100.9	103.1	1,790.3	1,073.6
Chile	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Japan	-4.3	-125.6	-136.5	-137.5	-129.3	-2,636.1	-1,627.6
Malaysia	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mexico	-0.1	2.0	2.9	3.3	3.1	52.2	30.3
NZ	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Peru	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Singapore	0.0	0.0	0.0	0.0	0.0	0.0	0.0
USA	0.0	0.3	0.7	0.7	0.8	10.0	5.4
Vietnam	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TPP Total (including Cdn domestic shipments)	-3.1	-48.0	-40.6	-32.6	-22.4	-783.6	-518.4
TPP Total, percent over baseline	-0.1%	-1.1%	-0.8%	-0.6%	-0.4%	-0.7%	-0.8%
World Total (including Cdn domestic shipments)	-3.2	-58.0	-50.2	-43.9	-35.6	-997.6	-648.3
World Total, percent over baseline	-0.1%	-0.8%	-0.6%	-0.5%	-0.4%	-0.6%	-0.6%
"Other" GTAP 5 oilseeds							
Australia	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Canada	-1.8	-22.9	-21.2	-18.8	-16.6	-414.6	-266.3
Chile	0.0	0.0	0.0	0.0	0.0	-0.1	0.0
Japan	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Malaysia	0.0	-0.4	-0.2	0.1	0.4	-3.0	-2.9
Mexico	0.0	0.3	0.4	0.5	0.4	7.3	4.2
NZ	0.0	0.0	0.0	0.0	0.0	-0.1	0.0
Peru	0.0	0.0	0.0	0.0	0.0	-0.5	-0.3
Singapore	0.0	-0.1	0.0	0.0	0.0	-1.0	-0.6
USA	-0.1	0.4	1.1	1.1	1.2	15.6	8.3
Vietnam	0.0	0.4	1.4	1.8	2.1	23.9	12.7
TPP Total (including Cdn domestic shipments)	-1.9	-22.3	-18.6	-15.4	-12.6	-372.3	-245.0
TPP Total, percent over baseline	-0.1%	-1.2%	-0.9%	-0.7%	-0.5%	-0.9%	-0.9%
World Total (including Cdn domestic shipments)	-2.0	-32.3	-28.5	-25.0	-21.3	-565.5	-365.8
World Total, percent over baseline	-0.1%	-0.9%	-0.7%	-0.6%	-0.5%	-0.7%	-0.7%

Source: authors calculations. Except as otherwise noted, the data reported are change in US$ millions (at 2011 prices).
Note: data for Canada are changes in estimated domestic shipments

The expansion of oil shipments to Japan results in a diversion of oilseeds from export to Japan to sales to the Canadian crushing industry. In turn, this generates a surge of meal production that enters into trade. By and large, this expansion of meal sales will likely go into the North American market. We assume that the expansion of canola meal puts downward pressure on canola meal

prices and results in a gain in sales that is smaller than the usual ratio of value of oil to value of meal from a given quantity of seeds.

Table 6c: TPP Impacts on Canada's Canola Oil and Meal Shipments: Canada Participates and Obtains Immediate Elimination of Japan's Oil Tariff

Country	2015	2020	2025	2030	2035	Cumulative Total(15-35)	Present Value
Canola Oil							
Australia	0.0	0.0	0.0	0.0	0.0	0.1	0.1
Canada	-1.2	37.7	51.7	60.1	62.9	998.3	584.3
Chile	0.0	-0.3	-0.4	-0.6	-0.7	-9.6	-5.6
Japan	0.0	344.8	408.8	439.9	432.7	7,912.8	4,778.9
Malaysia	0.0	0.0	0.3	0.7	1.2	8.3	3.8
Mexico	0.0	0.0	0.1	0.1	0.2	1.3	0.6
NZ	0.0	0.0	0.0	0.0	0.0	0.4	0.2
Peru	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Singapore	0.0	0.0	0.0	0.0	0.0	-0.1	-0.1
USA	-0.7	-4.0	0.8	2.8	4.3	-4.7	-14.8
Vietnam	0.0	3.7	10.7	22.2	37.5	288.8	142.3
TPP Total (including Cdn domestic shipments)	-2.0	381.9	471.9	525.3	538.1	9,195.7	5,489.8
TPP Total, percent over baseline	0.0%	6.5%	6.8%	6.8%	6.5%	6.4%	6.2%
World Total (including Cdn domestic shipments)	-2.3	362.6	444.9	484.4	491.2	8,579.9	5,143.4
World Total, percent over baseline	0.0%	4.7%	4.5%	4.0%	3.6%	4.1%	4.1%
Canola Meal							
Australia	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Canada	0.0	25.6	33.2	37.4	38.6	641.0	379.7
Chile	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Japan	0.0	0.7	3.1	4.6	4.5	55.8	28.5
Malaysia	0.0	0.0	0.0	0.0	0.0	0.1	0.0
Mexico	0.0	0.0	0.0	0.1	0.1	1.1	0.5
NZ	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Peru	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Singapore	0.0	0.0	0.0	0.0	0.0	0.0	0.0
USA	0.0	49.3	63.2	69.8	71.4	1,209.7	719.6
Vietnam	0.0	5.0	14.8	30.5	51.7	397.6	196.0
TPP Total (including Cdn domestic shipments)	0.0	80.6	114.3	142.4	166.4	2,305.4	1,324.5
TPP Total, percent over baseline	0.0%	3.5%	4.3%	4.8%	5.3%	4.2%	3.9%
World Total (including Cdn domestic shipments)	0.0	77.8	110.4	136.6	159.7	2,218.0	1,275.3
World Total, percent over baseline	0.0%	3.0%	3.3%	3.4%	3.5%	3.2%	3.0%
"Other" GTAP 21 products							
Australia	0.0	0.1	0.1	0.1	0.2	2.3	1.3
Canada	0.0	-6.5	-7.1	-7.1	-6.9	-137.2	-84.6
Chile	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Japan	0.0	2.9	12.7	19.0	18.7	231.0	118.1
Malaysia	0.0	0.0	0.3	0.8	1.4	9.4	4.3
Mexico	0.0	0.0	0.0	0.1	0.1	1.0	0.5
NZ	0.0	0.1	0.2	0.2	0.3	3.6	2.0
Peru	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Singapore	0.0	0.0	0.0	0.0	0.0	0.0	0.0
USA	0.0	-52.5	-62.5	-67.5	-67.9	-1,212.9	-731.2
Vietnam	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TPP Total (including Cdn domestic shipments)	0.0	-55.9	-56.3	-54.3	-54.2	-1,103.0	-689.5
TPP Total, percent over baseline	0.0%	-4.0%	-3.4%	-2.9%	-2.7%	-3.2%	-3.3%
World Total (including Cdn domestic shipments)	-0.1	-57.8	-58.4	-56.7	-56.6	-1,146.6	-716.0
World Total, percent over baseline	0.0%	-3.5%	-2.7%	-2.2%	-1.9%	-2.5%	-2.6%

Source: authors' calculations. Except as otherwise noted, the data reported are change in US$ millions (at 2011 prices).
Note: data for Canada are changes in estimated domestic shipments

3.2.2. Impacts of the TPP plus JAEPA on the Canadian Canola Sector: Canada Participates and Obtains Phase-out Elimination of Japan's Oil Tariff

We now consider the implications of a slower pace of liberalization in Japan under the TPP, consistent with gradual phase-out of canola tariffs in the JAEPA. In the early years of the phase-out, the effects of tariff de-escalation will not likely kick in – that is, Canada will continue to ship primarily oilseeds to Japan and relatively little oil. The phase-out will give Japan time to restructure its crushing industry by facilitating the closure of uneconomic crushing plants, thereby reducing overall crushing capacity while preserving a smaller but now competitive crushing sector. As shown in Table 7a, the gradual elimination of the oil tariff in Japan reduces the cumulative net benefit for Canadian oilseed sector even though the end point is more or less the same. We assume the mode shift from seed sales to oil sales to Japan kicks in over the period 2021-2024.

Table 7a: TPP Impacts on Canada's Oilseed-Sector Shipments, GTAP Aggregate Results: Canada Participates and Obtains Phase-out Elimination of Japan's Oil Tariff

Destination Country	2015	2020	2025	2030	2035
GTAP 5		US$ millions at 2011 prices			
Australia	0.0	0.0	0.0	0.0	0.0
Canada	1.7	13.1	62.4	81.5	85.7
Chile	0.0	0.0	0.0	0.0	0.0
Japan	-4.3	-32.7	-130.8	-135.6	-127.5
Malaysia	0.0	-0.1	-0.1	0.1	0.4
Mexico	-0.1	3.8	3.6	3.7	3.5
NZ	0.0	0.0	0.0	0.0	0.0
Peru	0.0	0.0	0.0	0.0	0.0
Singapore	0.0	0.0	0.0	0.0	0.0
USA	-0.1	2.2	2.0	1.9	2.0
Vietnam	0.0	0.5	1.4	1.8	2.1
TPP Total (including Cdn domestic shipments)	-2.8	-13.4	-61.5	-46.7	-33.8
TPP Total, percent over baseline	0.0%	-0.2%	-0.9%	-0.6%	-0.4%
World Total (including Cdn domestic shipments)	-2.9	-26.3	-79.9	-67.8	-55.9
World Total, percent over baseline	0.0%	-0.2%	-0.6%	-0.5%	-0.4%
GTAP 21					
Australia	0.0	0.1	0.1	0.1	0.2
Canada	-1.2	14.4	68.5	89.5	93.5
Chile	0.0	-0.3	-0.4	-0.6	-0.7
Japan	0.0	49.1	371.1	459.9	452.3
Malaysia	0.0	0.2	0.7	1.5	2.6
Mexico	0.0	0.1	0.2	0.3	0.4
NZ	0.0	0.1	0.2	0.3	0.3
Peru	0.0	0.0	0.0	0.0	0.0
Singapore	0.0	0.0	0.0	0.0	0.0
USA	-0.7	-2.7	2.1	5.2	7.8
Vietnam	0.0	8.8	25.5	52.7	89.3
TPP Total (including Cdn domestic shipments)	-2.0	69.8	467.9	608.9	645.7
TPP Total, percent over baseline	0.0%	0.7%	4.2%	4.8%	4.8%
World Total (including Cdn domestic shipments)	-2.4	49.8	435.9	560.1	590.1
World Total, percent over baseline	0.0%	0.4%	2.8%	3.0%	2.8%

Source: authors calculations. Except as otherwise noted, the data reported are change in US$ millions (at 2011 prices).
Note: data for Canada are changes in estimated domestic shipments.

Table 7b: TPP Impacts on Canada's Canola Seed Shipments: Canada Participates and Obtains Phase-out Elimination of Japan's Oil Tariff

Country	2015	2020	2025	2030	2035	Cumulative Total(15-35)	Present Value
Canola Seed							
Australia	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Canada	2.7	17.4	84.6	99.6	101.2	1,378.0	735.5
Chile	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Japan	-4.3	-32.7	-130.8	-135.6	-127.5	-2,001.8	-1,098.3
Malaysia	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mexico	-0.1	3.3	3.2	3.3	3.0	62.3	38.4
NZ	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Peru	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Singapore	0.0	0.0	0.0	0.0	0.0	0.0	0.0
USA	0.0	0.8	0.8	0.7	0.8	14.7	9.1
Vietnam	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TPP Total (including Cdn domestic shipments)	-1.8	-11.1	-42.3	-32.0	-22.4	-546.8	-315.4
TPP Total, percent over baseline	0.0%	-0.2%	-0.8%	-0.6%	-0.4%	-0.5%	-0.5%
World Total (including Cdn domestic shipments)	-1.9	-16.8	-51.1	-43.4	-35.8	-729.2	-419.9
World Total, percent over baseline	0.0%	-0.2%	-0.6%	-0.5%	-0.4%	-0.4%	-0.4%
"Other" GTAP 5 oilseeds							
Australia	0.0	0.0	0.0	0.0	0.0	0.1	0.0
Canada	-0.9	-4.3	-22.2	-18.2	-15.5	-292.1	-162.9
Chile	0.0	0.0	0.0	0.0	0.0	-0.1	0.0
Japan	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Malaysia	0.0	-0.1	-0.1	0.1	0.4	-0.4	-0.9
Mexico	0.0	0.5	0.4	0.5	0.4	8.7	5.4
NZ	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Peru	0.0	0.0	0.0	0.0	0.0	-0.4	-0.2
Singapore	0.0	0.0	0.0	0.0	0.0	-0.9	-0.5
USA	-0.1	1.3	1.2	1.2	1.2	22.9	14.1
Vietnam	0.0	0.5	1.4	1.8	2.1	24.5	13.1
TPP Total (including Cdn domestic shipments)	-1.0	-2.3	-19.3	-14.7	-11.4	-237.8	-132.0
TPP Total, percent over baseline	-0.1%	-0.1%	-0.9%	-0.6%	-0.5%	-0.6%	-0.5%
World Total (including Cdn domestic shipments)	-1.1	-9.5	-28.7	-24.4	-20.1	-410.2	-236.2
World Total, percent over baseline	0.0%	-0.3%	-0.7%	-0.6%	-0.5%	-0.5%	-0.5%

Source: authors calculations. Except as otherwise noted, the data reported are change in US$ millions (at 2011 prices).
Note: data for Canada are changes in estimated domestic shipments

Table 7c: TPP Impacts on Canada's Canola Oil and Meal Shipments: Canada Participates and Obtains Phase-out Elimination of Japan's Oil Tariff

Country	2015	2020	2025	2030	2035	Cumulative Total(15-35)	Present Value
Canola Oil							
Australia	0.0	0.0	0.0	0.0	0.0	0.1	0.1
Canada	-1.2	9.6	45.5	59.5	62.2	789.2	415.2
Chile	0.0	-0.3	-0.4	-0.6	-0.7	-9.3	-5.3
Japan	0.0	45.5	355.3	436.3	429.0	5,556.4	2,887.5
Malaysia	0.0	0.1	0.3	0.7	1.2	9.1	4.4
Mexico	0.0	0.0	0.1	0.1	0.2	1.6	0.8
NZ	0.0	0.0	0.0	0.0	0.0	0.4	0.2
Peru	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Singapore	0.0	0.0	0.0	0.0	0.0	-0.1	-0.1
USA	-0.7	-1.5	1.2	2.9	4.3	14.7	0.6
Vietnam	0.0	3.7	10.7	22.2	37.6	289.0	142.5
TPP Total (including Cdn domestic shipments)	-2.0	57.1	412.7	521.1	533.8	6,651.2	3,446.0
TPP Total, percent over baseline	0.0%	1.0%	6.0%	6.7%	6.5%	4.6%	3.9%
World Total (including Cdn domestic shipments)	-2.3	41.0	386.5	480.4	487.1	6,061.5	3,119.6
World Total, percent over baseline	0.0%	0.5%	3.9%	4.0%	3.6%	2.9%	2.5%
Canola Meal							
Australia	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Canada	0.0	4.7	29.0	37.1	38.2	481.4	251.0
Chile	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Japan	0.0	0.7	3.1	4.6	4.5	55.8	28.5
Malaysia	0.0	0.0	0.0	0.0	0.0	0.1	0.0
Mexico	0.0	0.0	0.1	0.1	0.1	1.3	0.7
NZ	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Peru	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Singapore	0.0	0.0	0.0	0.0	0.0	0.0	0.0
USA	0.0	5.1	55.1	69.2	70.8	863.5	441.4
Vietnam	0.0	5.1	14.8	30.5	51.7	397.9	196.2
TPP Total (including Cdn domestic shipments)	0.0	15.6	102.0	141.5	165.4	1,800.0	917.9
TPP Total, percent over baseline	0.0%	0.7%	3.8%	4.7%	5.2%	3.2%	2.7%
World Total (including Cdn domestic shipments)	0.0	13.3	98.3	135.7	158.8	1,716.3	871.6
World Total, percent over baseline	0.0%	0.5%	3.0%	3.3%	3.5%	2.4%	2.1%
"Other" GTAP 21 products							
Australia	0.0	0.1	0.1	0.1	0.2	2.3	1.3
Canada	0.0	0.1	-6.1	-7.1	-6.9	-83.0	-41.2
Chile	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Japan	0.0	2.9	12.7	19.0	18.7	231.0	118.1
Malaysia	0.0	0.1	0.4	0.8	1.4	10.3	5.0
Mexico	0.0	0.0	0.0	0.1	0.1	1.2	0.6
NZ	0.0	0.1	0.2	0.2	0.3	3.7	2.0
Peru	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Singapore	0.0	0.0	0.0	0.0	0.0	0.0	0.0
USA	0.0	-6.3	-54.2	-66.9	-67.3	-851.0	-440.3
Vietnam	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TPP Total (including Cdn domestic shipments)	0.0	-2.9	-46.9	-53.7	-53.5	-685.5	-354.4
TPP Total, percent over baseline	0.0%	-0.2%	-2.8%	-2.9%	-2.7%	-2.0%	-1.7%
World Total (including Cdn domestic shipments)	-0.1	-4.5	-48.9	-56.1	-55.9	-726.9	-379.0
World Total, percent over baseline	0.0%	-0.3%	-2.3%	-2.1%	-1.9%	-1.6%	-1.4%

Source: authors calculations. Except as otherwise noted, the data reported are change in US$ millions (at 2011 prices).
Note: data for Canada are changes in estimated domestic shipments

3.2.3. Impacts of the TPP plus JAEPA on the Canadian Canola Sector: Canada Stays Out of the TPP

Table 8a: TPP Impacts on Canada's Oilseed-Sector, GTAP Aggregate Results: Canada stays out of the TPP

Destination Country	2015	2020	2025	2030	2035
GTAP 5		**US$ millions at 2011 prices**			
Australia	0.0	0.0	0.0	0.0	0.0
Canada	-0.5	0.0	3.0	3.8	4.9
Chile	0.0	0.0	0.0	0.0	0.0
Japan	-4.3	-87.2	-90.5	-88.4	-82.7
Malaysia	0.0	0.2	0.7	1.2	1.6
Mexico	-0.1	9.3	11.5	12.9	13.1
NZ	0.0	0.0	0.0	0.0	0.0
Peru	0.0	0.0	0.0	0.0	0.0
Singapore	0.0	0.0	0.0	0.0	0.0
USA	-0.1	4.9	6.6	7.2	7.5
Vietnam	0.0	-0.1	0.8	1.1	1.3
TPP Total (including Cdn domestic shipments)	-5.1	-72.9	-67.9	-62.1	-54.1
TPP Total, percent over baseline	-0.1%	-1.2%	-0.9%	-0.8%	-0.7%
World Total (including Cdn domestic shipments)	-5.2	-60.6	-48.5	-39.4	-30.6
World Total, percent over baseline	-0.1%	-0.6%	-0.4%	-0.3%	-0.2%
GTAP 21		**US$ millions at 2011 prices**			
Australia	0.0	0.0	0.0	0.0	0.0
Canada	-1.2	1.2	4.2	4.8	3.9
Chile	0.0	-0.2	-0.2	-0.3	-0.4
Japan	0.0	-1.1	-1.4	-1.4	-1.3
Malaysia	0.0	0.1	0.8	1.7	2.7
Mexico	0.0	0.4	0.6	0.8	0.9
NZ	0.0	0.0	0.0	0.1	0.1
Peru	0.0	0.0	0.0	0.0	0.0
Singapore	0.0	0.0	0.0	0.0	0.0
USA	-0.7	6.2	16.1	20.5	22.5
Vietnam	0.0	0.2	0.9	1.0	1.1
TPP Total (including Cdn domestic shipments)	-2.0	6.8	21.0	27.1	29.6
TPP Total, percent over baseline	0.0%	0.1%	0.2%	0.2%	0.2%
World Total (including Cdn domestic shipments)	-2.4	-5.1	8.1	7.4	7.9
World Total, percent over baseline	0.0%	0.0%	0.1%	0.0%	0.0%

Source: authors calculations. Except as otherwise noted, the data reported are change in US$ millions (at 2011 prices).
Note: data for Canada are changes in estimated domestic shipments.

Table 8b: TPP Impacts on Canada's Canola Seed: Canada stays out of the TPP

Country	2015	2020	2025	2030	2035	Cumulative Total(15-35)	Present Value
Canola Seed							
Australia	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Canada	-0.4	0.0	2.1	2.7	3.5	30.7	14.4
Chile	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Japan	-4.3	-87.2	-90.5	-88.4	-82.7	-1,754.3	-1,093.8
Malaysia	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mexico	-0.1	8.1	10.1	11.3	11.5	195.7	116.4
NZ	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Peru	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Singapore	0.0	0.0	0.0	0.0	0.0	0.0	0.0
USA	0.0	1.9	2.6	2.8	2.9	48.0	28.2
Vietnam	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TPP Total (including Cdn domestic shipments)	-4.8	-77.1	-75.7	-71.6	-64.8	-1,479.9	-934.8
TPP Total, percent over baseline	-0.1%	-1.7%	-1.5%	-1.3%	-1.1%	-1.4%	-1.4%
World Total (including Cdn domestic shipments)	-4.9	-67.0	-60.0	-52.9	-45.3	-1,184.9	-765.3
World Total, percent over baseline	-0.1%	-0.9%	-0.7%	-0.6%	-0.5%	-0.7%	-0.7%
"Other" GTAP 5 oilseeds							
Australia	0.0	0.0	0.0	0.0	0.0	0.4	0.2
Canada	-0.1	0.0	0.9	1.1	1.5	13.0	6.1
Chile	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Japan	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Malaysia	0.0	0.2	0.7	1.2	1.6	15.4	7.8
Mexico	0.0	1.1	1.4	1.6	1.6	27.5	16.3
NZ	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Peru	0.0	0.0	0.0	0.0	0.0	0.1	0.1
Singapore	0.0	0.0	0.0	0.0	0.0	-0.1	-0.1
USA	-0.1	3.0	4.0	4.4	4.6	74.4	43.8
Vietnam	0.0	-0.1	0.8	1.1	1.3	11.1	5.0
TPP Total (including Cdn domestic shipments)	-0.3	4.2	7.8	9.4	10.6	141.6	79.1
TPP Total, percent over baseline	0.0%	0.2%	0.4%	0.4%	0.4%	0.3%	0.3%
World Total (including Cdn domestic shipments)	-0.3	6.4	11.4	13.5	14.7	206.8	116.8
World Total, percent over baseline	0.0%	0.2%	0.3%	0.3%	0.3%	0.3%	0.2%

Source: authors calculations. Except as otherwise noted, the data reported are change in US$ millions (at 2011 prices).
Note: data for Canada are changes in estimated domestic shipments

Table 8c: TPP Impacts on Canada's Canola Oil and Meal: Canada stays out of the TPP

Country	2015	2020	2025	2030	2035	Cumulative Total(15-35)	Present Value
Canola Oil							
Australia	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Canada	-0.8	0.8	2.8	3.2	2.6	40.0	21.3
Chile	0.0	-0.2	-0.2	-0.3	-0.4	-4.9	-2.8
Japan	0.0	-4.7	-17.2	-25.1	-24.5	-312.5	-162.2
Malaysia	0.0	0.0	0.4	0.8	1.3	9.4	4.5
Mexico	0.0	0.2	0.2	0.3	0.4	5.1	2.9
NZ	0.0	0.0	0.0	0.0	0.0	0.1	0.0
Peru	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Singapore	0.0	0.0	0.0	0.0	0.0	0.0	0.0
USA	-0.4	3.4	8.9	11.3	12.4	154.9	83.1
Vietnam	0.0	0.1	0.4	0.4	0.5	5.6	2.9
TPP Total (including Cdn domestic shipments)	-1.3	-0.4	-4.7	-9.4	-7.8	-102.4	-50.4
TPP Total, percent over baseline	0.0%	0.0%	-0.1%	-0.1%	-0.1%	-0.1%	-0.1%
World Total (including Cdn domestic shipments)	-1.5	-10.2	-15.5	-26.1	-26.3	-368.9	-204.2
World Total, percent over baseline	0.0%	-0.1%	-0.2%	-0.2%	-0.2%	-0.2%	-0.2%
Canola Meal							
Australia	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Canada	-0.3	0.3	0.9	1.1	0.9	13.5	7.2
Chile	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Japan	0.0	0.7	3.1	4.6	4.5	55.8	28.5
Malaysia	0.0	0.0	0.0	0.0	0.0	0.1	0.0
Mexico	0.0	0.1	0.2	0.3	0.3	4.1	2.3
NZ	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Peru	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Singapore	0.0	0.0	0.0	0.0	0.0	0.0	0.0
USA	-0.2	1.6	4.3	5.4	6.0	74.7	40.1
Vietnam	0.0	0.1	0.5	0.6	0.6	7.7	4.0
TPP Total (including Cdn domestic shipments)	-0.5	2.9	9.0	12.0	12.3	155.9	82.2
TPP Total, percent over baseline	0.0%	0.1%	0.3%	0.4%	0.4%	0.3%	0.2%
World Total (including Cdn domestic shipments)	-0.5	1.5	7.4	9.6	9.7	117.9	60.3
World Total, percent over baseline	0.0%	0.1%	0.2%	0.2%	0.2%	0.2%	0.1%
"Other" GTAP 21 products							
Australia	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Canada	-0.1	0.1	0.5	0.5	0.4	6.6	3.5
Chile	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Japan	0.0	2.9	12.7	19.0	18.7	231.0	118.1
Malaysia	0.0	0.0	0.4	0.9	1.4	10.6	5.0
Mexico	0.0	0.1	0.2	0.2	0.3	3.6	2.0
NZ	0.0	0.0	0.0	0.1	0.1	0.6	0.3
Peru	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Singapore	0.0	0.0	0.0	0.0	0.0	0.0	0.0
USA	-0.1	1.1	3.0	3.8	4.1	51.5	27.7
Vietnam	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TPP Total (including Cdn domestic shipments)	-0.3	4.4	16.7	24.5	25.1	304.0	156.7
TPP Total, percent over baseline	0.0%	0.3%	1.0%	1.3%	1.3%	0.9%	0.7%
World Total (including Cdn domestic shipments)	-0.4	3.7	16.2	23.9	24.5	291.3	148.5
World Total, percent over baseline	0.0%	0.2%	0.8%	0.9%	0.8%	0.6%	0.5%

Source: authors calculations. Except as otherwise noted, the data reported are change in US$ millions (at 2011 prices).
Note: data for Canada are changes in estimated domestic shipments

4. Summary and Conclusions

This study generates estimates of the impact of the TPP on Canada's oilseed sector as a whole and on the canola sector in particular. The results are based on a general equilibrium analysis of the trade flows for oilseeds, vegetable oil and meal. The overall analysis is conducted using the GTAP general equilibrium framework, which represents the oilseed sector as a whole; we disaggregate the results into canola and "other" oilseed sector products. This is accomplished in part using a partial equilibrium model to identify the direct trade impacts, subject to constraints regarding the relationship between changes in seed, oil and meal production. The impacts on the oilseed sector generated by the GTAP model take into account the overall economic effects of the TPP, including on production of other agricultural and industrial products, and thus the competition within Canada for land, capital and labour across sectors, as well as competition between Canada and other TPP suppliers in TPP markets.

Our results suggest that the main impact on the canola sector will be on processing. The aggregate GTAP results suggest that oilseed production in total (GTAP sector 5) will be marginally negatively impacted if Canada participates in the TPP, with a decline in 2035 of US$56.9 million in total value of production. Processed oilseed products, however, would increase in value by US$594.4 million in 2035, including both vegetable oil and meal from all oilseeds.

If Canada stays out of the TPP, the impact on oilseed production is still negative but somewhat smaller, with a decline of US$30.6 million in 2035, again including both vegetable oil and meal from all oilseeds. Processed oilseed products, meanwhile, would register a small gain of US$ 7.9 million, driven largely by income effects. Accordingly the main result of this study is that participation in the TPP is important for the Canadian oilseed processing sector, rather than the growing sector.

In the scenarios where Canada participates in the TPP, the negative impact on oilseed production stems from competition for Canadian production resources from other Canadian sectors. Since a number of Canadian sectors face higher tariffs abroad than do Canadian oilseeds, these other sectors make competitive gains over canola production. Accordingly, even though oilseeds in general and canola in particular face growing secular demand globally, at the margin, liberalization of other sectors will tend to lower growth prospects for the primary oilseed sector/

In the scenario where Canada stays out of the TPP, the negative impact on primary oilseed production comes from another source: loss of competitive position in market access abroad. For Canadian canola seed producers, the improved access to the Japanese oil market for other TPP canola producers such as Australia and the United States, works to reduce seed sales to Japan; canola thus bears the brunt of the reduction in oilseed output in a "Canada stays out of the TPP" scenario.

Breaking down the results into canola and "other" oilseed products, most of the gains in the scenarios where Canada participates in the TPP accrue to the canola sector. In both the immediate

liberalization and the phase-in liberalization, Canadian canola oil sales worldwide rise by about US$490 million, mostly due to the substitution of oil for seed sales to Japan. The expansion of crushing activity in Canada generates a substantial increase in meal production which will go partly to service growth markets abroad such as Vietnam, but will also flow into Canadian domestic and US markets, displacing to some extent other protein meals in these two markets. The impact on total meal sales is about US$ 160 million per year by the end of the period.

If Canada stays out of the TPP, canola oil shipments in total fall marginally, while meal shipments rise marginally. Canola is hurt disproportionately relative to other oil seeds because of its major exposure to the Japanese market, where inroads by other countries obtaining access to the Japanese oil market reduces demand for Canadian canola seed. The different directions of movement of oil and meal in value may be understood as primarily reflecting price effects as meal faces strengthening demand from rising US feed demand as it gains improved access to the TPP meat markets.

The comparative value of obtaining immediate elimination of the oil tariff in Japan versus a phase-out of the tariff, can be determined by comparing the present value of the stream of shipments of oil and meal under the two scenarios. Under immediate tariff elimination, the present value of the stream of oil shipments worldwide (including to the Canadian domestic market) is US$ 5.143 billion over the 20-year period; for meal it is US$ 1.275 billion. With the phase-out scenario, these figures fall to US$ 3.12 billion and US$ 872 million respectively.

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