

---

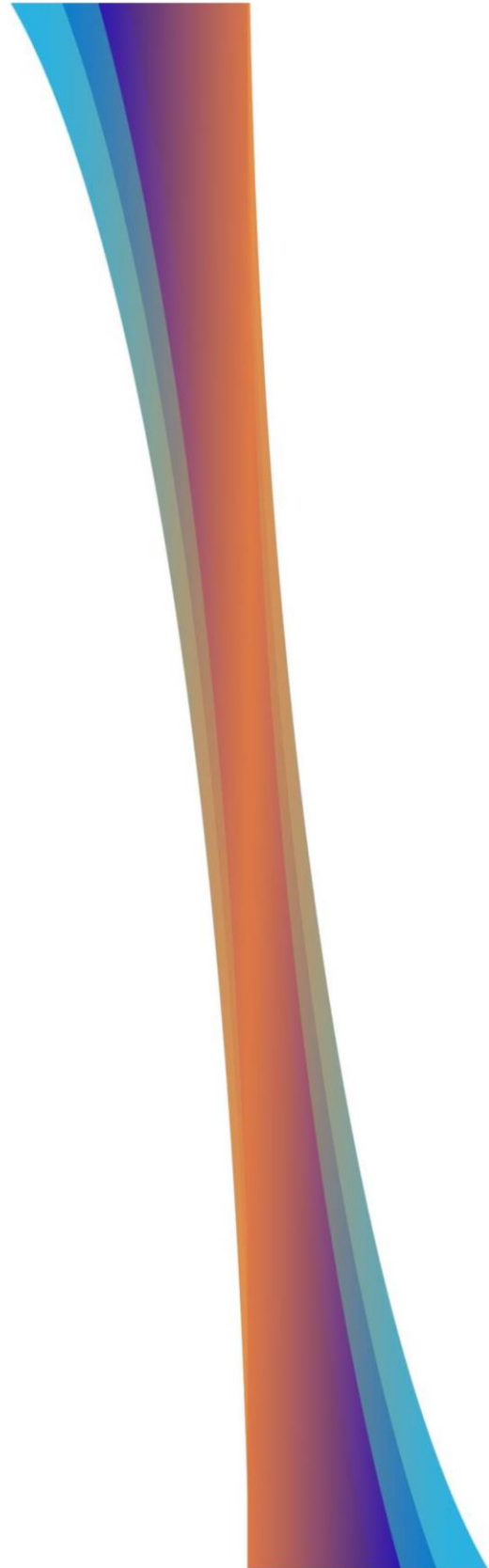
Report to the Canadian Agri-Food Alliance  
(CAFTA)

Caught in the Cross-Fire: Canadian  
Agricultural Outcomes under  
Alternative Asia-Pacific Trade  
Scenarios



6 April 2018

---



---

# Caught in the Cross-Fire: Canadian Agricultural Outcomes under Alternative Asia-Pacific Trade Scenarios

---

This study examines the implications for Canadian agriculture of alternative trade scenarios that might shape up in the near future. It is motivated in the first instance by the uncertainty raised about Canadian participation in the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP) by Canada's hold-up on signing the draft agreement on the margins of the Asia Pacific Economic Cooperation (APEC) summit in Da Nang in November 2017. This raises the possibility of the CPTPP going ahead as a 10-member agreement without Canada. Compounding this risk, the United States and Japan have discussed a bilateral free trade agreement, which would have significant implications for Canada in competing for the major Japanese market. And third, North American trade relations are at risk of disruption, should the United States walk away from the North American Free Trade Agreement (NAFTA).

The study was developed by Ciuriak Consulting Inc. Funding from the Canadian Agri-Food Alliance (CAFTA) is gratefully acknowledged.

## Executive Summary

---

This study quantifies the downside risks to Canada's agricultural sector exports to the Asia Pacific region under three scenarios:

- The Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP) proceeding without Canada;
- The United States and Japan concluding a bilateral free trade agreement (JUSFTA); and
- The United States withdrawing from the North American Free Trade Agreement (NAFTA) without an alternative free trade arrangement being put in place for Canada-US and US-Mexico trade.

The impacts of these scenarios are evaluated against the baseline of the CPTPP including Canada. The estimates are generated on the basis of simulations on a dynamic computable general equilibrium (CGE) model. These simulations reflect not only changes in tariffs but also to non-tariff measures affecting services and investment, which impact indirectly on trade in agricultural products. All figures reported are for the impact on Canada once all the effects of the agreements have been fully reflected in the economy; these estimates may be interpreted as the permanent changes in the level of trade and economic activity in 2035 under the alternative scenarios.

The CPTPP parties include Australia, Brunei Darussalam, Chile, Japan, Malaysia, Mexico, New Zealand, Peru, Singapore and Vietnam. These economies account for a disproportionately important share of Canada's global agri-food exports (16.58%) in the baseline compared to total exports of goods and services (4.64% in the baseline).

At the macroeconomic level, the CPTPP (including Canada) generates a gain in real GDP of 0.08% for Canada and welfare gains of \$2.9 billion. If Canada abstains and the CPTPP goes ahead as a regional grouping of the ten remaining countries, this becomes a decline of -0.002% in real GDP and a welfare loss of \$34 million. The opportunity cost amounts to welfare losses of \$2.934 billion. The impact on Canada of a JUSFTA is significant as bilateral trade expansion between Japan and the US would erode Canada's market position in both countries, resulting in a decline in real GDP of about -0.02%, and a welfare loss of \$812 million. These figures pale in comparison the real GDP loss for Canada in 2035 of the US exiting from the NAFTA and no new bilateral deal being put in place. In this instance, the real GDP loss would amount to -0.64% and the welfare loss to \$20.44 billion. Nonetheless, a CPTPP would represent part of a Canadian trade policy response in defraying those costs.

Macroeconomic Impacts on Canada	CPTPP	CPTPP-10	JUSFTA	USexit	Total vs. CPTPP
Economic Welfare (C\$ millions)	2,900	-34	-812	-20,444	-21,289
Economic Welfare (% change)	0.099	-0.001	-0.028	-0.700	-0.729
GDP Value (C\$ millions)	3,517	-321	-1,811	-33,055	-35,187
GDP Volume (% change)	0.082	-0.002	-0.019	-0.635	-0.655

As regards Canada's agri-food export impacts, the CPTPP outcomes for Canada are dominated by the agri-food export gains. Total agri-food exports to the CPTPP region rise by \$1.5 billion or by 12.45% over and above what they would have been without the CPTPP; this compares to a gain of \$1.3 billion for other goods and \$556 million for services. In total agri-food export gains account for about 46% of Canada's total export gains in the region.

	CPTPP		CPTPP-ex Canada		JUSFTA		US NAFTA Exit		Total vs. CPTPP	
	Exports to TPP10	Total Sales	Exports to TPP10	Total Sales	Exports to TPP10	Total Sales	Exports to TPP10	Total Sales	Exports to TPP10	Total Sales
Rice	0.0	0.3	0.0	0.0	0.0	0.1	0.0	-0.9	0.0	-0.8
Wheat and Cereals	28.6	-16.2	-1.4	-2.8	-20.0	6.7	33.0	83.7	11.6	87.6
Fruit and Vegetables	344.7	249.4	-0.7	0.0	-1.3	6.3	3.5	-114.0	1.6	-107.7
Oilseeds and Vegetable Oils	17.7	-29.9	0.9	5.1	-83.6	-48.8	82.8	-394.8	0.0	-438.5
Sugar	-0.1	2.0	0.0	-0.3	0.0	-0.4	-0.6	-23.1	-0.6	-23.9
Other Agriculture	40.8	226.3	0.3	-9.5	-0.8	-30.0	8.2	-257.3	7.8	-296.9
Beef	567.7	762.1	-63.1	-52.6	-166.7	-215.0	8.5	-231.1	-221.3	-498.6
Pork	203.9	250.0	1.3	0.4	-32.4	-10.2	34.7	-42.1	3.7	-51.9
Food Products	237.0	256.8	-9.1	-17.3	-22.0	-21.8	3.4	-948.3	-27.7	-987.4
Beverages and Tobacco	100.8	136.2	0.0	-2.8	-1.3	-13.0	0.9	-188.8	-0.3	-204.6
<b>Total Agri-Food</b>	<b>1,541</b>	<b>1,837</b>	<b>-72</b>	<b>-80</b>	<b>-328</b>	<b>-326</b>	<b>174</b>	<b>-2,117</b>	<b>-225</b>	<b>-2,523</b>
Other Goods	1,227	-663	-92	-154	20	-407	675	-24,351	602	-24,912
Total Services	556	4,322	5	-350	-37	-2,120	247	-39,846	215	-42,317
Total Goods & Services	3,324	5,495	-159	-584	-345	-2,853	1,096	-66,315	592	-69,752

Within the CPTPP, Japan stands out, as it accounts for 56% of Canada's export gains in the region; for agri-food, Japan accounts for 93% of the gains. This reflects a combination of a significant established baseline presence of Canada in Japan's agricultural markets and the height of the barriers to agriculture trade in Japan, which induce both increased imports and capture of market share from third parties, including importantly the United States, which abstains from the CPTPP. Apart from Japan, Canada makes important gains in the Vietnamese agri-food market and more modest gains in Australia and Malaysia.

In terms of sectors, the largest gains are in beef, where Canada stands to gain an additional \$568 million; fruit and vegetables (\$345 million); processed foods (\$237 million); pork (over \$200); and beverages and tobacco (\$100 million). Oil seeds and vegetable oils make only modest gains in total value of shipments but this understates the gains for this sector under the CPTPP as the value-added component in Canada's canola sector promises to rise steeply. Taking into account the elimination of Japan's tariff escalation on canola products (which involves setting tariffs on seeds at zero but higher tariffs on crude and refined oil), Canada's exports of seeds to Japan would likely fall, but exports of oil would rise by substantially more, with the net increase in exports of Canadian canola products to Japan rising by an amount on the order of C\$400 million. Thus, taking into account the impact of the CPTPP on the structure of Japan's tariffs facing Canada's canola sector leads to the conclusion that canola would actually see the second strongest sectoral gains after beef.

For most agri-food sectors, imports are minimally impacted by the CPTPP, while domestic demand expansion further supports agri-food sales, which rise by a total of \$1.84 billion under the agreement.

Canada staying out of the CPTPP has significant opportunity costs. For the agri-food sector as a whole, these costs, which reflect the foregone gains from the CPTPP plus the direct losses from Canada staying out, amount to \$1.92 billion. The most affected sector is beef the opportunity cost amounts to about \$800 million.

If the United States and Japan strike a bilateral deal, Canadian agri-food sales to Japan would fall by \$345 million, about half of this stemming from loss of beef sales as the United States claws back market share lost under a CPTPP. Overall, Canada's agri-food shipments fall by \$326 million under the JUSFTA.

The withdrawal by the United States from NAFTA – and in Canada's case from the Canada-US FTA as well – disrupts trade very substantially for Canada's agri-food sector. Total sales of the industry fall by \$2.1 billion, notwithstanding a rise in domestic sales of over \$880 million as Canadian sales displace US imports. Canada's agri-food sales to Mexico also rise (by about \$59 million), as Canada takes some advantage of US losses in market access in Mexico, but this is a weak offset.

To summarize, the CPTPP is a deal that is of particular interest to Canada's export-oriented agri-food sector. Indeed, the gains from this deal (an increase in total sales, including both exports and domestic sales) – an increase of \$1.8 billion, go a long way to defraying the costs the sector would incur in terms of lost sales should the CPTPP go ahead without Canada, Japan and the United States reach a JUSFTA, and the United States withdraws from the NAFTA without reaching a deal with Canada (over \$2.5 billion in lost sales from these outcomes combined).

# 1 Introduction

---

Canada's agricultural sector is an important pillar of the Canadian economy. It is highly trade-oriented and depends on market access globally. The sectors are varied and include beef, pork, cereal grains, oilseeds, pulses, and processed foods. While Canada has recently secured an historic Comprehensive Economic and Trade Agreement (CETA) with the European Union, new uncertainties have emerged in the key Asia Pacific and North American markets.

Following the withdrawal of the United States from the Trans-Pacific Partnership (TPP) by the Trump Administration in January 2017, discussions continued among the remaining eleven members. While agreement on core provisions of a revised Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP) was reached on the margins of the Asia Pacific Economic Cooperation (APEC) summit in Da Nang in November 2017, Canada's hold-up on signing the agreement pending resolution of a number of outstanding issues raises the possibility of the CPTPP going ahead as a 10-member agreement without Canada.

Compounding this risk, the United States has broached the possibility of a bilateral free trade agreement with Japan, in line with the Trump Administration's preference for bilateral negotiations. While progress on such a bilateral deal appears to have been limited, the basis for a deal has been established by the years of negotiation of the TPP. A Japan-US FTA (JUSFTA) going ahead would have significant implications for Canada in competing for the major Japanese market.

Meanwhile, North American trade relations are at risk of disruption. The Trump Administration has expressed its dissatisfaction with the way that trade has evolved for the United States under the North American Free Trade Agreement (NAFTA). While initially the main target of US unhappiness was Mexico, over the course of 2017, the rhetoric against Canada was ratcheted up, and a number of requests that were characterized by observers as "poison pills" were put on the table. Moreover, in addition to requesting the renegotiation of the NAFTA, the United States has not hesitated to put in place restrictive trade measures, including anti-dumping and countervailing measures covering some 10% of Canada's exports to the United States, including on steel, aluminum, solar cells, softwood lumber, and aerospace. Accordingly, notwithstanding powerful trade interests in the United States in favour of retaining free trade in North America, the risk of a breakdown in Canada's trade arrangements with the United States cannot be entirely excluded.

This study quantifies the downside risks to Canada's agricultural sector of three scenarios:

- The CPTPP proceeding without Canada;
- The United States and Japan concluding a JUSFTA; and
- NAFTA being rescinded.

The impacts of these scenarios are evaluated against the baseline of the CPTPP including Canada using computable general equilibrium (CGE) model simulations. The simulations reflect not only

changes in tariffs but also to non-tariff measures affecting services and investment, which impact indirectly on trade in agricultural products.

For the **CPTPP**, the impacts are based on Ciuriak, Xiao and Dadkhah (2017) with the projections taking into account:

- tariff reductions;
- the effect of rules of origin (ROOs) on preference utilization (for agri-food, we assume 100% preference utilization)
- the impact of CPTPP provisions on non-tariff barriers (NTBs) to services trade; and
- the impact of CPTPP provisions on non-tariff barriers (NTBs) to foreign direct investment.

For the **CPTPP10**, the modelling assumptions follow those of the CPTPP, but exclude the bilateral commitments involving Canada.

For the **JUSFTA**, the modelling assumptions take the bilateral shocks between Japan and the United States in the TPP12 simulation in Ciuriak, Xiao and Dadkhah (2017) as the basis for the JUSFTA, this time treated as a standalone agreement.

For the **NAFTA USexit** scenario, the modelling assumptions are based on the C.D. Howe study, “NAFTA Renegotiation: What if the United States Walks Away”. The impacts are based on the default scenario for US withdrawal from NAFTA and of a failure to reach agreement on continuation of the underlying Canada-US Free Trade Agreement (CUSFTA). In this case, Canada-US and US-Mexico trade would revert to World Trade Organization (WTO) rules, but Canada and Mexico trade would remain under the NAFTA.

The rest of this study is organized as follows. Section 2 sets out a baseline for Canadian agricultural trade in the context of the CPTPP going forward, no JUSFTA and no US withdrawal from NAFTA. Section 3 sets out the macroeconomic impacts of the three scenarios. Section 4 analyzes the agricultural sector outcomes. Section 5 discusses the implications for Canadian trade policy. Annex 1 provides a non-technical description of the methodology.

## 2 Baseline for Canadian Agricultural Exports

Table 1 presents the sector definitions reported in this study, based on the Global Trade Analysis Project (GTAP) framework.

**Table 1: Agri-Food Sector Definitions**

Study Sector	GTAP Sectors	Description
Rice	1. PDR and 23. PCR	Paddy rice and processed rice
Wheat and Cereals	2. WHT and 3. GRO	Wheat and cereal grains n.e.c.
Fruit and Vegetables	4. V_F	Fruits, vegetables and nuts
Oilseeds and Vegetable Oil	5. OSD and 21. VOL	Oilseeds and vegetable oils and fats
Sugar	6. C_B and 24. SGR	Cane and beet sugar and processed sugar
Other Farm Products	7. PFB, 8. OCR, 10, OAP, and 12. WOL	Plant-based fibers, other crops, other animal products and wool and silk
Beef	9. CTL and 19. CMT	Bovine cattle, sheep and goats, horses; and bovine meat products
Pork	20. OMT	Pork and miscellaneous meat products*
Processed Foods	25. OFD	Food products, n.e.c.
Beverages and Tobacco	26. B_T	Beverages and tobacco products

Source: GTAP Sector Definitions. \* this sector also includes the supply-managed poultry sector, which is excluded from Canada's trade offers, and miscellaneous meat products. The main traded items are various pork products.

Table 2 provides the baseline Canadian exports for the study sectors by region in the original GTAP database, converted to Canadian dollars at 2017 prices. This conversion takes into account US inflation over the period 2011-2017 (9.7%) and the annual average Canada-US dollar exchange rate in 2017 (1.2986).

Table 3 provides the projected baseline Canadian exports for 2035, in Canadian dollars at 2017 prices. This projection is developed by simulating a dynamic computable general equilibrium (CGE) model, drawing on IMF World Economic Outlook projections for the near term and long-term projections from Fouré et al., 2012, for the out years).

In the projected baseline for Canadian exports, NAFTA is intact, there is no bilateral FTA between Japan and the United States, and the CPTPP has not been implemented.

The baseline levels reflect the structure of trade in the underlying GTAP database. These projections do not track the annual fluctuations in the historical data but rather represent long-term trend projections.

The main observation is that the CPTPP region accounts for a disproportionately important share of Canada's agri-food exports (16.58%) in the baseline compared to total goods services (4.64% in the baseline). The CPTPP region continues to be disproportionately important for agri-food in the projection horizon to 2035.



**Table 2: Baseline Canadian Exports by Region, 2011, millions of CAD at 2017 Prices and Shares (%)**

	AUS	BRU	CHL	JAP	MLY	MEX	NZ	PER	SGP	VN	USA	EU28	ROW	Total	Memo: CPTPP
<b>Export Levels (\$ millions)</b>															
Rice	0.2	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	6	0	2	8	0
Wheat and Cereals	0.0	0.0	73.0	925.5	31.9	532.7	0.7	277.2	26.4	10.4	1,887	1,101	5,409	10,276	1,878
Fruit and Vegetables	11.2	0.7	22.7	42.0	12.3	68.9	4.0	44.5	0.6	2.2	1,969	378	2,662	5,217	209
Oilseeds and Vegetable Oil	2.8	0.2	48.3	2,585.7	123.0	1,453.1	5.2	3.5	8.9	44.2	5,138	1,278	4,642	15,334	4,275
Sugar	9.8	0.0	0.0	44.9	0.0	18.5	1.4	0.0	0.2	0.0	287	65	22	448	75
Other Farm Products	10.4	0.0	5.6	192.0	8.0	84.0	1.5	1.6	1.8	12.1	2,956	237	1,103	4,613	317
Beef	6.3	0.0	2.4	274.2	1.5	302.3	2.3	0.0	2.7	1.6	1,517	76	558	2,745	593
Pork	153.6	0.0	13.3	1,257.5	1.1	106.1	41.1	0.6	10.2	9.7	1,719	25	1,420	4,756	1,593
Processed Foods	109.5	0.3	8.3	691.6	79.3	224.8	55.6	5.0	13.3	47.4	13,017	1,098	1,750	17,100	1,235
Beverages and Tobacco	7.3	0.2	0.3	173.4	1.7	11.3	0.7	14.5	4.6	1.5	1,593	95	281	2,184	216
Total Agri-Food	311	2	174	6,187	259	2,802	112	347	69	129	30,088	4,353	17,850	62,682	10,391
Other Goods	2,359	39	1,007	9,142	1,006	7,820	426	473	1,140	318	364,366	54,438	69,238	511,773	23,731
Services	979	58	284	2,571	891	174	74	111	5,170	202	32,718	25,849	28,292	97,372	10,513
Total Goods and Services	3,650	99	1,464	17,899	2,156	10,796	612	931	6,378	649	427,172	84,640	115,380	671,827	44,635
<b>Share of Agri-Food Exports (%)</b>															
Rice	0.07	0.04	0.00	0.00	0.00	0.00	0.07	0.00	0.03	0.00	0.02	0.01	0.01	0.01	4.38
Wheat and Cereals	0.00	0.02	41.95	14.96	12.32	19.01	0.61	79.90	38.41	8.08	6.27	25.30	30.31	16.39	18.27
Fruit and Vegetables	3.59	45.34	13.07	0.68	4.76	2.46	3.55	12.84	0.86	1.67	6.54	8.68	14.91	8.32	4.01
Oilseeds and Vegetable Oil	0.90	14.10	27.78	41.79	47.51	51.87	4.64	1.02	12.98	34.22	17.08	29.37	26.01	24.46	27.88
Sugar	3.14	0.07	0.00	0.73	0.00	0.66	1.20	0.00	0.32	0.00	0.95	1.49	0.12	0.72	16.68
Other Farm Products	3.36	2.29	3.23	3.10	3.09	3.00	1.31	0.45	2.55	9.36	9.82	5.44	6.18	7.36	6.87
Beef	2.04	1.48	1.35	4.43	0.57	10.79	2.01	0.01	3.93	1.24	5.04	1.75	3.13	4.38	21.61
Pork	49.37	0.73	7.65	20.33	0.42	3.79	36.55	0.16	14.87	7.51	5.71	0.57	7.95	7.59	33.50
Processed Foods	35.20	21.80	4.77	11.18	30.65	8.02	49.44	1.43	19.39	36.74	43.26	25.22	9.80	27.28	7.22
Beverages and Tobacco	2.33	14.12	0.18	2.80	0.66	0.40	0.60	4.18	6.65	1.17	5.29	2.18	1.58	3.48	9.87
Total Agri-Food	100	100	100	100	100	100	100	100	100	100	100	100	100	100	16.58
Agri-Food Share of Total Exports	8.52	1.56	11.87	34.56	12.00	25.95	18.36	37.26	1.08	19.89	7.04	5.14	15.47	9.33	4.64

Source: Calculations by the study team. Conversion factor from 2011 USD valuations in the GTAP V9 database = 1.424876346.

**Table 3: Baseline Canadian Exports by Region, 2035, millions of CAD at 2017 Prices and Shares (%)**

	AUS	BRU	CHL	JAP	MLY	MEX	NZ	PER	SGP	VN	USA	EU28	ROW	Total	Memo: CPTPP
<b>Export Levels (\$ millions)</b>															
Rice	0.3	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	5.6	0.3	2.4	8.7	0.5
Wheat and Cereals	0.0	0.0	93.0	938.4	53.4	694.7	0.9	410.1	26.9	19.5	2,005	1,033	8,238	13,513	2,237
Fruit and Vegetables	11.9	1.6	25.1	35.1	14.5	88.2	4.7	56.6	0.6	4.4	1,915	307	4,682	7,146	243
Oilseeds and Vegetable Oil	3.7	0.6	64.3	2,598.2	198.0	1,899.3	7.2	6.0	13.7	84.8	5,652	1,270	9,228	21,026	4,876
Sugar	13.3	0.0	0.0	44.6	0.0	24.2	1.9	0.0	0.3	0.0	301	65	34	484	84
Other Farm Products	13.6	0.1	7.7	192.6	15.0	117.9	1.9	2.6	2.4	31.0	3,125	233	1,844	5,587	385
Beef	11.8	0.1	3.1	437.3	1.9	496.9	4.2	0.1	4.7	2.4	1,905	98	917	3,883	962
Pork	311.1	0.0	12.8	1,098.8	1.6	114.9	70.4	0.5	11.5	14.5	1,739	24	1,784	5,183	1,636
Processed Foods	216.6	0.7	11.6	856.5	127.2	256.2	98.9	10.5	20.3	88.0	14,384	1,392	2,802	20,264	1,686
Beverages and Tobacco	12.4	0.5	0.5	203.5	2.8	14.7	1.1	23.3	7.6	2.7	1,854	116	454	2,693	269
Total Agri-Food	595	3	218	6,405	414	3,707	191	510	88	247	32,884	4,540	29,986	79,789	12,379
Other Goods	4,180	112	1,755	10,909	2,199	14,069	780	971	2,004	905	426,873	73,975	153,522	692,253	37,883
Services	1,754	118	503	3,162	2,005	248	117	236	8,418	469	36,783	31,150	54,257	139,220	17,029
Total Goods and Services	6,528	233	2,476	20,476	4,619	18,024	1,088	1,717	10,510	1,621	496,541	109,666	237,764	911,262	67,291
<b>Share of Agri-Food Exports (%)</b>															
Rice	0.04	0.04	0.01	0.00	0.00	0.00	0.06	0.00	0.03	0.00	0.02	0.01	0.01	0.01	5.18
Wheat and Cereals	0.00	0.02	42.68	14.65	12.89	18.74	0.45	80.47	30.61	7.88	6.10	22.75	27.47	16.94	16.55
Fruit and Vegetables	2.01	45.32	11.53	0.55	3.50	2.38	2.46	11.10	0.68	1.79	5.82	6.77	15.61	8.96	3.40
Oilseeds and Vegetable Oil	0.63	15.91	29.50	40.56	47.79	51.24	3.74	1.17	15.52	34.28	17.19	27.98	30.77	26.35	23.19
Sugar	2.23	0.07	0.00	0.70	0.00	0.65	0.98	0.00	0.36	0.00	0.91	1.44	0.11	0.61	17.41
Other Farm Products	2.28	2.75	3.51	3.01	3.63	3.18	0.99	0.51	2.68	12.52	9.50	5.14	6.15	7.00	6.89
Beef	1.98	1.59	1.41	6.83	0.45	13.40	2.18	0.01	5.37	0.97	5.79	2.17	3.06	4.87	24.78
Pork	52.31	0.47	5.85	17.16	0.37	3.10	36.82	0.10	13.09	5.86	5.29	0.53	5.95	6.50	31.56
Processed Foods	36.43	19.89	5.30	13.37	30.69	6.91	51.75	2.06	23.06	35.59	43.74	30.65	9.34	25.40	8.32
Beverages and Tobacco	2.09	13.94	0.21	3.18	0.68	0.40	0.56	4.57	8.59	1.10	5.64	2.56	1.51	3.38	9.99
Total Agri-Food	100	100	100	100	100	100	100	100	100	100	100	100	100	100	15.51
Agri-Food Share of Total Exports	9.11	1.50	8.80	31.28	8.97	20.57	17.57	29.68	0.84	15.26	6.62	4.14	12.61	8.76	5.47

Source: Calculations by the study team. Conversion factor from 2011 USD valuations in the GTAP V9 database = 1.424876346.

### 3 Macroeconomic Impacts

---

This section reports the overall macroeconomic impacts of the three scenarios against the backdrop of the impact of the CPTPP in order to provide context for the discussion of the implications for Canada’s agri-food exports. The difference between the CPTPP and the CPTPP-10 represents the opportunity cost to Canada of not participating in the CPTPP.

**Table 4: Macroeconomic summary, alternative scenarios, Canada, 2035**

	CPTPP	CPTPP-10	JUSFTA	USexit	Total vs. CPTPP
Economic Welfare (C\$ millions)	2,900	-34	-812	-20,444	-21,289
Economic Welfare (% change)	0.099	-0.001	-0.028	-0.700	-0.729
GDP Value (C\$ millions)	3,517	-321	-1,811	-33,055	-35,187
GDP Volume (% change)	0.082	-0.002	-0.019	-0.635	-0.655

Source: Calculations by the study team. Reported figures are in Canadian dollar millions at 2017 prices. Conversion factor from 2011 USD valuations in the GTAP V9 database = 1.424876346.

Canada realizes a gain in real GDP of 0.08% from the CPTPP, compared to a decline of -0.002% if the CPTPP goes ahead as a regional grouping of the ten remaining countries while Canada abstains. The opportunity cost amounts to welfare losses of \$2.934 billion. The impact on Canada of a JUSFTA is significant as bilateral trade expansion between Japan and the US would erode Canada’s market position in both countries, resulting in a decline in real GDP of about -0.02%, and a welfare loss of \$812 million. These figures pale in comparison the real GDP loss for Canada in 2035 of the US exiting from the NAFTA and no new deal being put in place. In this instance, the real GDP loss would amount to -0.66% and the welfare loss to \$20.4 billion. Nonetheless, a CPTPP would represent part of a Canadian trade policy response.

### 4 Agri-Food Trade Impacts

---

This section reports the agricultural trade implications of the scenarios discussed above. Tables 5 through 8 provide the exports by region for each of the four scenarios. Tables 9 through 12 provide the overall impacts on each agri-food sector, including the impact of changes in imports and changes in domestic shipments.

#### 4.1 The CPTPP Impacts

Focussing first on the export impacts, the CPTPP outcomes for Canada are dominated by the agri-food export gains (Table 5). Total agri-food exports to the CPTPP region rise by 12.45% over and above what they would have been without the CPTPP; this compares to a gain of only 3.24% for other goods and 3.27% for services. In total agri-food export gains account for about 46% of Canada’s total export gains in the region.

Within the CPTPP, Japan stands out, as it accounts for 56% of Canada’s measured export gains in the region; for agri-food, Japan accounts for 93% of the gains. This reflects a combination of a significant established baseline presence of Canada in Japan’s agricultural markets and the height

of the barriers to agriculture trade in Japan. Liberalization vis-à-vis Canada in the presence of sustained high levels of protection against third parties results in increased Japanese imports not only induced by lower consumer prices and displacement of some domestic production, but also due to capture of market share from third parties, including importantly from the United States, which abstains from the CPTPP. One specific feature of Japan's agricultural policies that the CPTPP removes for Canada is tariff escalation on oilseed products. This allows Canada to move up the value chain in exports of oilseed products to Japan, especially in canola.

Apart from Japan, Canada makes important gains in the Vietnamese agri-food market and more modest gains in Australia and Malaysia. The modelling suggests that Canada would experience some export deflection as part of the export gains to the CPTPP region would come from redirected exports that otherwise would go to the third countries, in particular to NAFTA destinations. In total, the reduction of exports to third parties reduces Canada's overall agri-food export gains under the CPTPP from \$1.5 billion to \$1.2 billion.

In terms of sectors, the largest gains identified in the CGE simulations are in beef, where Canada stands to gain an additional \$568 million in exports to the CPTPP region (entirely to Japan, as the strength of heightened demand in that market attracts shipments that otherwise would have targeted other CPTPP markets). Taking into account export redirection to Japan, total exports of beef for Canada still rise by \$532 million.

The second largest measured sectoral gain is in fruit and vegetables, also to Japan. Canada's export gains in the CPTPP region amount to \$345 million this sector, and to the world (taking into account export deflection) by about \$250 million.

Processed foods (which experience a rise in exports to the CPTPP region of \$237 million and \$210 million to the whole world) and pork (a little over \$200 to CPTPP and \$170 million to the world) also do well from the CPTPP.

The beverages and tobacco sectors also stand to gain a substantial boost in export sales, with an increase in shipments to the CPTPP zone of about \$100 million, with very little of that coming at the cost of exports to third countries.

Oil seeds and vegetable oils make only modest gains in exports to the CPTPP region in this simulation but this result understates the likely impact. This is because the value-added component in Canada's canola sector promises to rise steeply as Japan ends its practice of tariff escalation on canola products under the CPTPP. Under this practice, Japan applies zero tariffs to canola seed but progressively higher tariffs on crude and refined canola oil. This results in Canada shipping primarily canola seed to Japan rather than value-added products. Indeed, over the period 2008-2017, 99% of Canada's canola products shipped to Japan were seeds, which face a zero tariff. By the same token, the average weighted tariff facing Canadian oilseed sector exports in the CGE dataset is biased downwards, resulting in understated overall gains from liberalization.

The likely impact on canola exports is likely to be large and positive. In markets where Canada does not face tariff escalation, such as the United States, a much larger proportion of Canada's canola export sales are in the form of crude and refined oil. A study of the TPP that took account of the elimination of Japan's tariff escalation, found that Canada's exports of seeds to Japan would likely fall by about C\$184 million, but exports of oil would rise by C\$616 million, and meal exports by C\$6.4 million, for a total net increase of C\$438 million.<sup>1</sup> Thus, taking into account the impact of the CPTPP on the structure of Japan's tariffs facing Canada's canola sector leads to the conclusion that canola would actually see the second strongest sectoral gains after beef.<sup>2</sup>

A more complete picture of the impact of the CPTPP on Canada's agri-food sector is provided by Table 9, which also shows the impact on imports and on domestic shipments, which both respond to the income effects of the TPP. For most agri-food sectors, imports are minimally impacted by the agreement, while domestic demand expands upon the demand pick-up in the CPTPP zone. Thus, the beef sector expands its total sales by \$762 million as additional domestic sales of about \$230 million add onto the total exports of \$530 million. The "other agriculture" sector, which benefits only modestly from the CPTPP directly, makes solid gains from increased domestic sales.

#### **4.2 CPTPP-10**

Canada staying out of the CPTPP results in significant opportunity costs for Canada, led by lost sales in Japan's beef sector due to the liberalization by Japan under the CPTPP with respect to other beef exporters in the deal. The foregone gains for the beef sector amount to about \$800 million. For the agri-food sector as a whole, instead of an increase in total shipments (including domestic sales) of \$1.84 billion, the sector incurs a loss of total shipments of \$80 million – a swing of \$1.92 billion.

#### **4.3 JUSFTA**

Whether or not Japan and the United States conclude a deal is out of Canada's hands. The risks to Canada's agri-food sector are fairly substantial. Overall Canadian agri-food sales to Japan would fall by \$345 million, about half of this stemming from loss of beef sales as the United States claws back market share lost under a CPTPP. Canada's losses under a JUSFTA in the Japanese market would, however, be partially offset by gains in the US market as Canadian exporters backfill US demand as US production shifts towards Asian markets.

---

<sup>1</sup> See Summary Table, in Ciuriak and Xiao (2015; p.3). The figures from that table which are reported in US dollars at 2011 prices are converted to Canadian dollars at 2017 prices by taking into account the inflation in the US dollar between 2011 and 2017 and the actual Canada-US exchange rate in 2017. This conversion factor is about 1.425 – in other words, the values reported here are 1.425 times the levels reported in the 2015 study.

<sup>2</sup> This estimate cannot be directly substituted for the model estimates of the impact on the oilseeds sector since the lift to canola exports to Japan from the 2015 was stronger due to stronger income gains realized by Japan from the TPP including the United States. In addition, including a stronger canola export impact would tend to reduce somewhat the exports of other Canadian sectors due to general equilibrium effects.

Nonetheless, the dominant factor would be a net reduction of exports, which would be compounded by lower domestic sales due to the negative income effects. Overall, Canada's agri-food shipments fall by \$229 million under the JUSFTA (Table 11).

#### **4.4 NAFTA – US exit**

The withdrawal by the United States from NAFTA – and in Canada's case from the Canada-US FTA as well – disrupts trade very substantially for Canada's agri-food sector. Total shipments fall by \$2.1 billion as the refocussing of the industry on domestic sales (which rise by \$880 million, capitalizing in part on reduced imports from the United States) and redirection of exports to third parties fall well short of offsetting the loss of \$3.7 billion worth of agri-food exports to the United States. In good measure, the weak compensatory increase in domestic shipments reflects the income losses that Canada experiences from the loss of free trade with the United States.

Canada's agri-food sales to Mexico rise (by about \$59 million), as Canada takes advantage of US losses in market access in Mexico, but this is a weak offset. Of particular note, Canada does not offset the declines in shipments domestically and to the United States through its Asia-Pacific markets, as total sales to the CPTPP region rise by about \$175 million, led by oilseeds and vegetable oil, pork, and wheat and cereals.

**Table 5: Marginal Impacts on Canadian Asia-Pacific Exports by Region, 2035 – CPTPP, CAD millions at 2017 prices**

	AUS	BRU	CHL	JAP	MLY	MEX	NZ	PER	SGP	VN	USA	EU28	ROW	Total	Memo: CPTPP
<b>Export Levels (\$ millions)</b>															
Rice	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01	0.00	0.00	-0.01	0.00
Wheat and Cereals	0.00	0.00	-0.55	35.76	0.04	-5.81	0.02	-1.81	-0.09	1.02	-7.32	-5.49	-45.20	-29.43	28.58
Fruit and Vegetables	-0.11	-0.02	-0.37	344.65	0.03	-1.85	-0.02	-0.73	-0.01	3.09	-21.53	-5.25	-66.60	251.30	344.67
Oilseeds and Vegetable Oil	0.09	0.00	-0.18	18.39*	0.15	-5.29	0.17	-0.02	0.01	4.42	-10.94	-3.56	-21.76	-18.54	17.73
Sugar	-0.01	0.00	0.00	-0.01	0.00	-0.05	0.01	0.00	0.00	0.00	-0.61	-0.08	-0.03	-0.78	-0.06
Other Farm Products	0.17	0.00	-0.09	42.11	-0.09	-1.70	0.02	-0.03	-0.01	0.40	-35.16	-3.02	-21.96	-19.37	40.77
Beef	-0.11	0.00	-0.05	586.75	-0.02	-24.60	0.10	0.00	-0.05	5.70	-20.93	-1.41	-12.89	532.48	567.71
Pork	-2.24	0.00	-0.13	157.28	0.20	-2.18	0.75	0.00	-0.09	50.29	-13.85	-0.24	-17.05	172.74	203.89
Processed Foods	25.39	0.00	-0.02	167.08	9.03	-10.23	1.79	-0.02	0.04	43.92	-21.79	-1.84	-2.83	210.50	236.97
Beverages and Tobacco	1.18	0.00	0.00	77.14	13.80	-0.02	0.01	-0.02	0.00	8.73	-2.31	-0.14	-0.43	97.93	100.81
<b>Total Agri-Food</b>	<b>24.36</b>	<b>-0.02</b>	<b>-1.40</b>	<b>1,429.14</b>	<b>23.13</b>	<b>-51.74</b>	<b>2.86</b>	<b>-2.64</b>	<b>-0.19</b>	<b>117.58</b>	<b>-134.45</b>	<b>-21.03</b>	<b>-188.76</b>	<b>1,196.84</b>	<b>1,541.08</b>
Other Goods	580.55	0.24	-1.71	338.65	260.97	-122.87	4.64	-3.15	-0.47	169.95	-318.10	-93.14	-101.28	714.27	1,226.80
Services	51.91	1.76	2.19	112.54	47.28	1.99	4.39	1.30	310.40	22.67	-60.15	-41.16	-72.43	382.69	556.43
<b>Total Goods and Services</b>	<b>656.82</b>	<b>1.97</b>	<b>-0.92</b>	<b>1,880.34</b>	<b>331.38</b>	<b>-172.62</b>	<b>11.88</b>	<b>-4.49</b>	<b>309.75</b>	<b>310.19</b>	<b>-512.70</b>	<b>-155.33</b>	<b>-362.46</b>	<b>2,293.81</b>	<b>3,324.30</b>
<b>Agri-Food Exports (% change)</b>															
Rice	-0.05	0.00	-0.13	-0.04	0.85	-0.39	0.52	0.00	0.39	0.83	-0.12	-0.08	-0.02	-0.07	0.14
Wheat and Cereals	-0.31	-0.46	-0.60	3.81	0.07	-0.84	2.39	-0.44	-0.32	5.23	-0.37	-0.53	-0.55	-0.22	1.28
Fruit and Vegetables	-0.95	-1.38	-1.47	981.00	0.20	-2.09	-0.34	-1.28	-1.17	69.74	-1.12	-1.71	-1.42	3.52	141.97
Oilseeds and Vegetable Oil	2.50	-0.16	-0.29	0.71	0.07	-0.28	2.38	-0.32	0.10	5.21	-0.19	-0.28	-0.24	-0.09	0.36
Sugar	-0.07	-0.12	-0.20	-0.03	0.09	-0.21	0.55	-0.11	0.26	0.93	-0.20	-0.12	-0.10	-0.16	-0.07
Other Farm Products	1.22	-0.85	-1.12	21.87	-0.61	-1.44	1.06	-1.32	-0.49	1.28	-1.13	-1.29	-1.19	-0.35	10.60
Beef	-0.92	-2.11	-1.77	134.17	-1.24	-4.95	2.42	-1.99	-1.05	236.89	-1.10	-1.43	-1.40	13.71	58.99
Pork	-0.72	-1.15	-1.02	14.31	13.16	-1.90	1.07	-0.93	-0.76	346.68	-0.80	-1.01	-0.96	3.33	12.46
Processed Foods	11.72	0.17	-0.18	19.51	7.10	-3.99	1.81	-0.23	0.18	49.89	-0.15	-0.13	-0.10	1.04	14.05
Beverages and Tobacco	9.48	0.32	-0.13	37.91	492.14	-0.16	0.79	-0.09	0.03	322.17	-0.12	-0.12	-0.10	3.64	37.48
<b>Total Agri-Food</b>	<b>4.10</b>	<b>-0.63</b>	<b>-0.64</b>	<b>22.31</b>	<b>5.58</b>	<b>-1.40</b>	<b>1.50</b>	<b>-0.52</b>	<b>-0.21</b>	<b>47.52</b>	<b>-0.41</b>	<b>-0.46</b>	<b>-0.63</b>	<b>1.50</b>	<b>12.45</b>
Memo: Other Goods	13.89	0.21	-0.10	3.10	11.87	-0.87	0.59	-0.32	-0.02	18.79	-0.07	-0.13	-0.07	0.10	3.24
Memo: Services	2.96	1.49	0.44	3.56	2.36	0.80	3.76	0.55	3.69	4.83	-0.16	-0.13	-0.13	0.27	3.27
Memo: Total Goods and Services	10.06	0.85	-0.04	9.18	7.17	-0.96	1.09	-0.26	2.95	19.13	-0.10	-0.14	-0.15	0.25	4.94

Source: Calculations by the study team. \* Figures do not take into account the elimination of tariff escalation on canola products in Japan. See discussion in the text.

**Table 6: Marginal Impacts on Canadian Asia-Pacific Exports by Region, 2035 – CPTPP-10, CAD millions at 2017 prices**

	AUS	BRU	CHL	JAP	MLY	MEX	NZ	PER	SGP	VN	USA	EU28	ROW	Total	Memo: CPTPP
<b>Export Levels (\$ millions)</b>															
Rice	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
Wheat and Cereals	0.00	0.00	-0.05	-0.38	0.34	-1.69	0.03	0.26	0.03	0.05	-1.37	0.50	1.02	-1.27	-1.41
Fruit and Vegetables	0.03	0.00	0.00	-0.35	0.02	-0.47	0.06	0.02	0.00	0.02	-0.67	0.10	1.35	0.11	-0.67
Oilseeds and Vegetable Oil	0.00	0.00	-0.01	0.91	0.23	-0.67	0.05	0.00	0.04	0.32	0.17	0.32	3.58	4.94	0.87
Sugar	0.01	0.00	0.00	0.04	0.00	-0.02	0.01	0.00	0.00	0.00	-0.11	0.01	0.01	-0.04	0.04
Other Farm Products	0.08	0.00	0.01	-0.15	0.10	-0.09	0.04	0.00	0.02	0.30	1.25	0.29	2.02	3.89	0.33
Beef	0.13	0.00	0.00	-47.42	0.01	-16.09	0.18	0.00	0.04	0.01	11.57	0.60	3.59	-47.38	-63.14
Pork	0.67	0.00	0.01	0.50	0.00	-0.94	1.16	0.00	0.03	-0.13	0.03	0.02	1.20	2.55	1.30
Processed Foods	0.30	0.00	0.00	-1.38	0.58	-9.85	0.97	-0.01	0.06	0.26	-2.30	0.44	1.37	-9.55	-9.07
Beverages and Tobacco	0.01	0.00	0.00	0.03	-0.02	-0.01	0.01	0.00	0.01	0.01	-0.27	0.01	0.02	-0.20	0.04
Total Agri-Food	1.24	0.00	-0.03	-48.22	1.28	-29.83	2.51	0.27	0.24	0.84	8.30	2.28	14.17	-46.95	-71.70
Other Goods	-4.16	0.13	0.29	9.94	4.76	-110.93	2.78	-1.71	1.81	4.78	-57.71	19.19	55.93	-74.91	-92.32
Services	-0.07	-0.12	-0.91	1.60	1.59	0.14	0.84	-0.30	0.60	2.07	-4.86	2.65	3.96	7.20	5.45
Total Goods and Services	-2.99	0.01	-0.65	-36.67	7.63	-140.63	6.14	-1.75	2.66	7.69	-54.27	24.12	74.06	-114.66	-158.57
<b>Agri-Food Exports (% change)</b>															
Rice	0.10	0.18	0.01	0.11	0.82	-0.13	0.59	0.09	0.51	0.72	0.02	0.07	0.10	0.06	0.26
Wheat and Cereals	0.32	0.23	-0.05	-0.04	0.63	-0.24	3.16	0.06	0.12	0.26	-0.07	0.05	0.01	-0.01	-0.06
Fruit and Vegetables	0.29	0.16	-0.01	-1.01	0.15	-0.54	1.27	0.04	0.13	0.54	-0.03	0.03	0.03	0.00	-0.27
Oilseeds and Vegetable Oil	0.11	0.12	-0.01	0.04	0.12	-0.04	0.65	-0.06	0.31	0.37	0.00	0.03	0.04	0.02	0.02
Sugar	0.07	0.06	-0.06	0.08	0.21	-0.07	0.62	0.04	0.38	0.76	-0.04	0.02	0.04	-0.01	0.05
Other Farm Products	0.59	0.19	0.17	-0.08	0.68	-0.08	2.33	0.06	0.87	0.98	0.04	0.12	0.11	0.07	0.08
Beef	1.11	0.13	0.05	-10.84	0.59	-3.24	4.45	0.05	0.86	0.28	0.61	0.61	0.39	-1.22	-6.56
Pork	0.22	0.19	0.05	0.05	0.23	-0.81	1.65	0.13	0.27	-0.92	0.00	0.09	0.07	0.05	0.08
Processed Foods	0.14	0.19	-0.02	-0.16	0.46	-3.85	0.98	-0.09	0.31	0.30	-0.02	0.03	0.05	-0.05	-0.54
Beverages and Tobacco	0.05	0.01	0.00	0.02	-0.55	-0.03	0.61	-0.02	0.14	0.41	-0.01	0.01	0.00	-0.01	0.02
<b>Total Agri-Food</b>	0.21	0.14	-0.02	-0.75	0.31	-0.80	1.32	0.05	0.27	0.34	0.03	0.05	0.05	-0.06	-0.58
Memo: Other Goods	-0.10	0.11	0.02	0.09	0.22	-0.79	0.36	-0.18	0.09	0.53	-0.01	0.03	0.04	-0.01	-0.24
Memo: Services	0.00	-0.10	-0.18	0.05	0.08	0.06	0.72	-0.13	0.01	0.44	-0.01	0.01	0.01	0.01	0.03
Memo: Total Goods and Services	-0.05	0.01	-0.03	-0.18	0.17	-0.78	0.56	-0.10	0.03	0.47	-0.01	0.02	0.03	-0.01	-0.24

Source: Calculations by the study team.



**Table 7: Marginal Impacts on Canadian Asia-Pacific Exports by Region, 2035 – JUSFTA, CAD millions at 2017 prices**

	AUS	BRU	CHL	JAP	MLY	MEX	NZ	PER	SGP	VN	USA	EU28	ROW	Total	Memo: CPTPP
<b>Export Levels (\$ millions)</b>															
Rice	-0.002	0.000	0.000	-0.002	0.000	0.000	-0.001	0.000	0.000	0.000	0.000	-0.001	-0.010	-0.016	0.00
Wheat and Cereals	0.00	0.00	0.07	-25.37	-0.03	4.52	-0.02	0.81	0.07	-0.06	13.40	0.22	13.59	7.20	-20.01
Fruit and Vegetables	-0.03	0.00	-0.01	-1.68	-0.01	0.39	-0.02	0.05	0.00	0.00	8.40	-0.02	-1.72	5.37	-1.30
Oilseeds and Vegetable Oil	0.00	0.00	0.01	-91.61	0.18	7.73	-0.01	0.01	0.00	0.07	22.11	1.48	16.55	-43.48	-83.62
Sugar	-0.03	0.00	0.00	-0.03	0.00	0.02	0.00	0.00	0.00	0.00	0.70	-0.04	-0.03	0.58	-0.05
Other Farm Products	-0.06	0.00	0.00	-1.83	0.02	0.97	-0.02	0.02	0.00	0.11	22.02	0.23	2.43	23.90	-0.78
Beef	-0.23	0.00	0.00	-169.02	-0.01	2.76	-0.12	0.00	-0.04	0.01	11.80	0.06	-0.27	-155.07	-166.65
Pork	-0.30	0.00	0.01	-32.63	0.00	0.85	-0.33	0.00	-0.01	0.03	12.82	-0.01	1.90	-17.67	-32.38
Processed Foods	-0.35	0.00	-0.01	-21.31	-0.08	0.14	-0.29	0.00	-0.02	-0.11	18.55	-0.54	-1.13	-5.15	-22.03
Beverages and Tobacco	-0.01	0.00	0.00	-1.27	0.00	0.00	0.00	0.00	0.00	0.00	1.28	-0.02	-0.06	-0.09	-1.29
Total Agri-Food	-1.02	0.00	0.07	-344.76	0.07	17.37	-0.80	0.89	0.00	0.05	111.10	1.35	31.25	-184.42	-328.12
Other Goods	0.02	0.02	0.78	7.33	1.05	9.52	-1.14	0.46	1.33	0.18	-322.86	15.42	28.29	-259.58	19.57
Services	-3.20	-0.22	-0.40	-25.77	-6.23	-0.22	-0.75	-0.25	2.33	-2.20	-54.83	7.88	17.54	-66.33	-36.92
Total Goods and Services	-4.20	-0.20	0.45	-363.20	-5.11	26.68	-2.69	1.10	3.67	-1.97	-266.59	24.65	77.08	-510.34	-345.48
<b>Agri-Food Exports (% change)</b>	<b>AUS</b>	<b>BRU</b>	<b>CHL</b>	<b>JAP</b>	<b>MLY</b>	<b>MEX</b>	<b>NZ</b>	<b>PER</b>	<b>SGP</b>	<b>VN</b>	<b>USA</b>	<b>EU28</b>	<b>ROW</b>	<b>Total</b>	
Rice	-0.63	-0.54	-0.44	-7.97	-0.50	0.00	-0.58	-0.36	-0.63	-0.50	0.00	-0.43	-0.43	-0.18	-1.02
Wheat and Cereals	-0.32	-0.46	0.07	-2.70	-0.05	0.65	-1.68	0.20	0.27	-0.32	0.67	0.02	0.16	0.05	-0.90
Fruit and Vegetables	-0.22	-0.12	-0.02	-4.83	-0.07	0.45	-0.33	0.09	-0.06	-0.07	0.44	-0.01	-0.04	0.08	-0.54
Oilseeds and Vegetable Oil	-0.06	0.03	0.01	-3.52	0.09	0.41	-0.12	0.12	-0.03	0.09	0.39	0.12	0.18	-0.21	-1.71
Sugar	-0.25	-0.12	-0.17	-0.07	-0.08	0.08	-0.21	-0.04	-0.22	-0.11	0.23	-0.06	-0.09	0.12	-0.06
Other Farm Products	-0.47	-0.24	0.02	-0.95	0.11	0.83	-0.86	0.86	-0.02	0.37	0.70	0.10	0.13	0.43	-0.20
Beef	-1.94	-0.22	0.10	-43.35	-0.30	0.57	-2.76	0.74	-0.77	0.22	0.62	0.06	-0.03	-4.04	-18.53
Pork	-0.10	-0.41	0.06	-2.97	-0.09	0.74	-0.46	0.07	-0.06	0.19	0.74	-0.03	0.11	-0.34	-1.98
Processed Foods	-0.16	-0.13	-0.10	-2.49	-0.06	0.06	-0.29	-0.02	-0.09	-0.12	0.13	-0.04	-0.04	-0.03	-1.31
Beverages and Tobacco	-0.10	-0.02	0.00	-0.63	0.00	0.01	-0.22	0.00	-0.03	-0.02	0.07	-0.01	-0.01	0.00	-0.48
<b>Total Agri-Food</b>	<b>-0.17</b>	<b>-0.09</b>	<b>0.03</b>	<b>-5.42</b>	<b>0.02</b>	<b>0.47</b>	<b>-0.41</b>	<b>0.17</b>	<b>0.01</b>	<b>0.02</b>	<b>0.34</b>	<b>0.03</b>	<b>0.10</b>	<b>-0.23</b>	<b>-2.67</b>
Memo: Other Goods	0.00	0.02	0.04	0.07	0.05	0.07	-0.15	0.05	0.07	0.02	-0.08	0.02	0.02	-0.04	0.05
Memo: Services	-0.18	-0.19	-0.08	-0.81	-0.31	-0.09	-0.64	-0.11	0.03	-0.47	-0.15	0.03	0.03	-0.05	-0.22
Memo: Total Goods and Services	-0.06	-0.09	0.02	-1.78	-0.11	0.15	-0.25	0.06	0.03	-0.12	-0.05	0.02	0.03	-0.06	-0.51

Source: Calculations by the study team.

**Table 8: Marginal Impacts on Canadian Asia-Pacific Exports by Region, 2035 – USexit, CAD millions at 2017 prices**

	AUS	BRU	CHL	JAP	MLY	MEX	NZ	PER	SGP	VN	USA	EU28	ROW	Total	Memo: CPTPP
<b>Export Levels (\$ millions)</b>															
Rice	-0.02	0.00	0.00	0.00	0.00	0.00	-0.01	0.00	0.00	0.00	-1.83	-0.02	-0.14	-2.01	-0.03
Wheat and Cereals	0.00	0.00	1.61	11.66	0.99	11.52	0.02	6.50	0.30	0.37	-27.16	19.31	136.88	162.00	32.98
Fruit and Vegetables	0.19	0.03	0.39	0.52	0.24	1.22	0.08	0.79	0.01	0.08	-212.62	5.40	69.38	-134.30	3.55
Oilseeds and Vegetable Oil	0.08	0.01	1.45	39.81	4.25	34.80	0.17	0.12	0.29	1.79	-680.09	30.89	198.58	-367.85	82.77
Sugar	-0.11	0.00	0.00	-0.37	0.00	-0.12	-0.02	0.00	0.00	0.00	-3.16	-0.60	-0.28	-4.66	-0.62
Other Farm Products	0.34	0.00	0.18	3.87	0.39	2.58	0.05	0.06	0.06	0.68	-292.33	5.88	40.28	-237.95	8.22
Beef	0.18	0.00	0.04	2.41	0.03	5.62	0.09	0.00	0.07	0.03	-855.55	1.45	11.30	-834.33	8.47
Pork	6.38	0.00	0.32	23.05	0.04	2.75	1.57	0.01	0.28	0.34	-143.72	0.61	40.15	-68.21	34.75
Processed Foods	0.38	0.00	0.03	1.48	0.24	0.77	0.25	0.02	0.04	0.22	-1,486.21	2.29	4.60	-1,475.90	3.42
Beverages and Tobacco	0.05	0.00	0.00	0.64	0.01	0.08	0.01	0.06	0.04	0.01	-39.79	0.57	1.77	-36.54	0.91
Total Agri-Food	7.48	0.05	4.01	83.06	6.19	59.23	2.21	7.57	1.08	3.53	-3,742.45	65.77	502.52	-2,999.75	174.41
Other Goods	66.85	2.67	34.38	246.27	39.19	186.72	13.28	18.28	50.26	17.34	-28,459.53	1,408.29	2,667.21	-23,708.79	675.24
Services	26.13	1.72	7.18	47.11	28.07	4.24	1.87	3.50	119.88	6.98	-410.39	467.84	817.58	1,121.70	246.68
Total Goods and Services	100.46	4.44	45.58	376.44	73.45	250.18	17.36	29.34	171.22	27.85	-32,612.37	1,941.90	3,987.30	-25,586.84	1,096.32
<b>Agri-Food Exports (% change)</b>															
Rice	-6.04	-5.92	-5.13	-6.12	-5.96	-6.10	-6.01	-5.98	-5.97	-5.89	-32.89	-6.07	-5.80	-23.05	-6.01
Wheat and Cereals	2.04	2.08	1.72	1.28	1.85	1.65	2.62	1.58	1.12	1.92	-1.35	1.87	1.66	1.20	1.49
Fruit and Vegetables	1.56	1.72	1.55	1.58	1.63	1.39	1.64	1.40	1.32	1.78	-11.06	1.76	1.48	-1.88	1.47
Oilseeds and Vegetable Oil	2.17	2.04	2.25	1.59	2.14	1.83	2.37	2.07	2.09	2.10	-11.98	2.43	2.15	-1.75	1.73
Sugar	-0.85	-0.87	-0.76	-0.83	-0.90	-0.50	-0.81	-0.88	-0.82	-0.87	-1.05	-0.92	-0.83	-0.96	-0.74
Other Farm Products	2.54	2.64	2.37	2.03	2.57	2.17	2.72	2.11	2.62	2.17	-9.29	2.51	2.18	-4.24	2.14
Beef	1.58	1.59	1.37	1.09	1.37	1.16	2.04	1.29	1.44	1.36	-44.36	1.46	1.23	-22.67	1.16
Pork	2.05	2.78	2.50	2.16	2.57	2.40	2.20	2.48	2.45	2.35	-8.21	2.52	2.25	-1.32	2.17
Processed Foods	0.18	0.27	0.22	0.18	0.19	0.31	0.25	0.18	0.18	0.25	-10.32	0.16	0.16	-7.29	0.21
Beverages and Tobacco	0.44	0.46	0.51	0.32	0.46	0.54	0.50	0.28	0.50	0.41	-2.14	0.49	0.39	-1.36	0.34
<b>Total Agri-Food</b>	1.26	1.33	1.84	1.38	1.49	1.60	1.15	1.48	1.22	1.42	-11.34	1.45	1.67	-3.77	1.46
Memo: Other Goods	1.60	2.38	1.96	2.25	1.78	1.34	1.70	1.88	2.50	1.91	-6.67	1.90	1.74	-3.43	1.79
Memo: Services	1.49	1.47	1.43	1.50	1.40	1.71	1.60	1.48	1.42	1.49	-1.12	1.50	1.51	0.81	1.45
Memo: Total Goods and Services	1.54	1.90	1.84	1.88	1.59	1.40	1.59	1.71	1.63	1.71	-6.57	1.77	1.68	-2.81	1.64

Source: Calculations by the study team.

**Table 9: Canadian Agri-Food Sectoral Impacts – Canada as part of the CPTPP, CAD millions at 2017 prices**

	Exports to TPP10	Imports from TPP10	Total Exports	Total Imports	Domestic Sales	Total Sales	Exports to TPP10 %	Imports from TPP10 %	Total Exports %	Total Imports %	Domestic Sales %	Total Sales %
Rice	0.00	-0.03	-0.01	1.77	0.28	0.27	0.14	-0.30	-0.07	0.26	0.05	0.05
Wheat and Cereals	28.58	0.01	-29.43	3.04	13.23	-16.20	1.28	0.19	-0.22	0.38	0.15	-0.07
Fruit and Vegetables	344.67	2.75	251.30	9.20	-1.87	249.43	141.97	0.16	3.52	0.10	-0.39	3.27
Oilseeds & Veg. Oils	17.73	24.48	-18.54	13.61	-11.34	-29.87	0.36	27.62	-0.09	0.46	-0.09	-0.09
Sugar	-0.06	0.00	-0.78	1.33	2.74	1.95	-0.07	0.00	-0.16	0.10	0.09	0.05
Other Agriculture	40.77	0.78	-19.37	20.80	245.65	226.28	10.60	0.30	-0.35	0.53	1.27	0.91
Beef	567.71	-10.63	532.48	28.13	229.58	762.07	58.99	-2.14	13.71	1.23	0.70	2.07
Pork	203.89	1.45	172.74	30.10	77.22	249.97	12.46	0.55	3.33	0.90	0.48	1.18
Food Products	236.97	64.57	210.50	65.08	46.30	256.80	14.05	5.13	1.04	0.29	0.07	0.30
Beverages & Tobacco	100.81	8.64	97.93	15.56	38.25	136.19	37.48	0.90	3.64	0.18	0.13	0.42
Total Agri-Food	1,541.08	92.03	1,196.84	188.62	640.04	1,836.88	12.45	1.83	1.50	0.33	0.34	0.69
Other Goods	1,226.80	4,686.74	714.27	1,905.69	-1,377.62	-663.35	3.24	5.91	0.10	-0.21	-0.12	-0.04
Total Services	556.43	358.64	382.69	308.44	3,938.86	4,321.55	3.27	3.92	0.27	0.21	0.10	0.11
Total Sales	3,324.30	5,137.41	2,293.81	2,402.75	3,201.28	5,495.09	4.94	5.50	0.25	0.27	0.06	0.09

Source: Calculations by the study team.

**Table 10: Agri-Food Sectoral Impacts – Canada stays out of the CPTPP, CAD millions at 2017 prices**

	Exports to TPP10	Imports from TPP10	Total Exports	Total Imports	Domestic Sales	Total Sales	Exports to TPP10 %	Imports from TPP10 %	Total Exports %	Total Imports %	Domestic Sales %	Total Sales %
Rice	0.00	-0.04	0.01	-0.06	-0.03	-0.03	0.26	-0.44	0.06	-0.01	-0.01	0.00
Wheat and Cereals	-1.41	-0.01	-1.27	-0.01	-1.56	-2.83	-0.06	-0.15	-0.01	0.00	-0.02	-0.01
Fruit and Vegetables	-0.67	-0.57	0.11	-1.06	-0.08	0.02	-0.27	-0.03	0.00	-0.01	-0.02	0.00
Oilseeds & Veg. Oils	0.87	-0.08	4.94	0.13	0.14	5.07	0.02	-0.09	0.02	0.00	0.00	0.01
Sugar	0.04	0.00	-0.04	-0.15	-0.29	-0.33	0.05	-0.09	-0.01	-0.01	-0.01	-0.01
Other Agriculture	0.33	-1.29	3.89	-1.07	-13.42	-9.53	0.08	-0.49	0.07	-0.03	-0.07	-0.04
Beef	-63.14	-19.22	-47.38	-9.78	-5.24	-52.63	-6.56	-3.87	-1.22	-0.43	-0.02	-0.14
Pork	1.30	-0.84	2.55	-0.40	-2.17	0.39	0.08	-0.32	0.05	-0.01	-0.01	0.00
Food Products	-9.07	-3.19	-9.55	-3.36	-7.71	-17.27	-0.54	-0.25	-0.05	-0.01	-0.01	-0.02
Beverages & Tobacco	0.04	-0.41	-0.20	-0.84	-2.61	-2.81	0.02	-0.04	-0.01	-0.01	-0.01	-0.01
Total Agri-Food	-71.70	-25.66	-46.95	-16.61	-32.98	-79.93	-0.58	-0.51	-0.06	-0.03	-0.02	-0.03
Other Goods	-92.32	-11.32	-74.91	-77.07	-79.15	-154.06	-0.24	-0.01	-0.01	-0.01	-0.01	-0.01
Total Services	5.45	-6.40	7.20	-16.13	-357.41	-350.21	0.03	-0.07	0.01	-0.01	-0.01	-0.01
Total Sales	-158.57	-43.38	-114.66	-109.81	-469.54	-584.20	-0.24	-0.05	-0.01	-0.01	-0.01	-0.01

Source: Calculations by the study team.

**Table 11: Agri-Food Sectoral Impacts – JUSFTA, CAD millions at 2017 prices**

	Exports to TPP10	Imports from TPP10	Total Exports	Total Imports	Domestic Sales	Total Sales	Exports to TPP10 %	Imports from TPP10 %	Total Exports %	Total Imports %	Domestic Sales %	Total Sales %
Rice	0.00	0.04	-0.02	0.20	0.15	0.13	-1.02	0.36	-0.18	0.03	0.03	0.02
Wheat and Cereals	-20.01	0.02	7.20	-1.70	-0.48	6.72	-0.90	0.48	0.05	-0.21	-0.01	0.03
Fruit and Vegetables	-1.30	5.46	5.37	8.69	0.90	6.27	-0.54	0.32	0.08	0.09	0.19	0.08
Oilseeds & Veg. Oils	-83.62	0.35	-43.48	-7.34	-5.31	-48.79	-1.71	0.40	-0.21	-0.25	-0.04	-0.14
Sugar	-0.05	0.00	0.58	-0.24	-0.99	-0.41	-0.06	0.00	0.12	-0.02	-0.03	-0.01
Other Agriculture	-0.78	1.19	23.90	-3.25	-53.91	-30.01	-0.20	0.46	0.43	-0.08	-0.28	-0.12
Beef	-166.65	14.00	-155.07	-11.25	-59.89	-214.96	-18.53	2.93	-4.04	-0.50	-0.18	-0.59
Pork	-32.38	1.57	-17.67	-11.63	7.51	-10.16	-1.98	0.59	-0.34	-0.35	0.05	-0.05
Food Products	-22.03	2.08	-5.15	-14.59	-16.66	-21.82	-1.31	0.17	-0.03	-0.06	-0.03	-0.03
Beverages & Tobacco	-1.29	0.19	-0.09	-4.21	-12.90	-12.99	-0.48	0.02	0.00	-0.05	-0.04	-0.04
Total Agri-Food	-328.12	24.91	-184.42	-45.32	-141.59	-326.01	-2.67	0.50	-0.23	-0.08	-0.08	-0.12
Other Goods	19.57	14.13	-259.58	-420.91	-147.05	-406.63	0.05	0.02	-0.04	-0.02	-0.01	-0.02
Total Services	-36.92	-1.81	-66.33	-116.02	-2,053.83	-2,120.16	-0.22	-0.02	-0.05	-0.08	-0.05	-0.05
Total Sales	-345.48	37.22	-510.34	-582.25	-2,342.46	-2,852.80	-0.51	0.04	-0.06	-0.07	-0.05	-0.05

Source: Calculations by the study team.

**Table 12: Agri-Food Sectoral Impacts – USexit from NAFTA, CAD millions at 2017 prices**

	Exports to TPP10	Imports from TPP10	Total Exports	Total Imports	Domestic Sales	Total Sales	Exports to TPP10 %	Imports from TPP10 %	Total Exports %	Total Imports %	Domestic Sales %	Total Sales %
Rice	-0.03	-0.02	-2.01	0.23	1.14	-0.88	-6.01	-0.16	-23.05	0.03	0.21	-0.16
Wheat and Cereals	32.98	-0.09	162.00	-13.68	-78.34	83.66	1.49	-2.22	1.20	-1.73	-0.91	0.38
Fruit and Vegetables	3.55	133.19	-134.30	-47.66	20.31	-113.99	1.47	7.86	-1.88	-0.50	4.17	-1.49
Oilseeds & Veg. Oils	82.77	2.60	-367.85	-146.24	-26.93	-394.78	1.73	2.92	-1.75	-4.96	-0.21	-1.17
Sugar	-0.62	-0.01	-4.66	-11.02	-18.48	-23.14	-0.74	-0.16	-0.96	-0.79	-0.58	-0.63
Other Agriculture	8.22	35.81	-237.95	-148.88	-19.37	-257.33	2.14	13.73	-4.24	-3.77	-0.10	-1.04
Beef	8.47	292.38	-834.33	-843.24	603.27	-231.05	1.16	59.48	-22.67	-37.32	1.84	-0.63
Pork	34.75	2.96	-68.21	-107.02	26.09	-42.11	2.17	1.11	-1.32	-3.21	0.16	-0.20
Food Products	3.42	109.98	-1,475.90	-1,406.31	527.57	-948.33	0.21	8.75	-7.29	-6.18	0.82	-1.12
Beverages & Tobacco	0.91	19.47	-36.54	-268.04	-152.24	-188.79	0.34	2.04	-1.36	-3.04	-0.52	-0.59
Total Agri-Food	174.41	596.27	-2,999.75	-2,991.87	883.02	-2,116.73	1.46	11.84	-3.77	-5.29	0.47	-0.79
Other Goods	675.24	2,532.71	-23,708.79	-22,089.18	-642.59	-24,351.38	1.79	3.19	-3.43	-0.10	-0.06	-1.34
Total Services	246.68	-93.45	1,121.70	-2,589.36	-40,968.18	-39,846.48	1.45	-1.02	0.81	-1.73	-1.09	-1.02
Total Sales	1,096.32	3,035.52	-25,586.84	-27,670.41	-40,727.75	-66,314.59	1.64	3.25	-2.81	-3.16	-0.80	-1.11

Source: Calculations by the study team.

## Selected References

---

- Ciuriak, Dan, Jingliang Xiao, and Ali Dadkhah. 2017. "Quantifying the Comprehensive and Progressive Agreement for Trans-Pacific Partnership," *East Asian Economic Review* 21(4) December: 343-384.
- Ciuriak, Dan, Lucy Ciuriak, Ali Dadkhah, and Jingliang Xiao. 2017. "The NAFTA Renegotiation: What if the US Walks Away?" C.D. Howe Institute *Working Paper*, November.
- Ciuriak, Dan, Ali Dadkhah and Jingliang Xiao. 2016. "Better In than Out? Canada and the Trans-Pacific Partnership," C.D. Howe *E-Brief*, 21 April 2016.
- Ciuriak, Dan and Jingliang Xiao. 2015. "Canola Market Impacts Under Alternative TPP Scenarios," Ciuriak Consulting Research Report for the Canola Council of Canada.
- Dade, Carlo and Dan Ciuriak, with Ali Dadkhah and Jingliang Xiao. 2017. "The Art of the Trade Deal: Quantifying the Benefits of a TPP without the United States," Canada West Foundation, June 2017.
- Dixon, Peter B. and Maureen T. Rimmer. 1998. "Forecasting and Policy Analysis with a Dynamic CGE Model of Australia." Centre of Policy Studies/IMPACT Centre Working Papers op-90.
- Fontagné Lionel, Cristina Mitaritonna & José Signoretet. 2016. "Estimated Tariff Equivalents of Services NTMs," CEPII Working Paper No 2016-20 – August.
- Fouré, Jean, Agnès Bénassy-Quéré, and Lionel Fontagné. 2012. "The Great Shift: Macroeconomic projections for the world economy at the 2050 horizon." CEPII Working Papers 2012-03.
- Hertel, T. (ed.). 1997. *Global Trade Analysis: Modeling and Applications*. Cambridge, UK: Cambridge University Press.
- Hertel, T., D. Hummels, M. Ivanic, and R. Keeney. 2003. "How Confident Can We Be in CGE-Based Assessments of Free Trade Agreements?" GTAP Working Paper 26.
- International Monetary Fund (IMF). October 2017. *World Economic Outlook Database*. <https://www.imf.org/external/pubs/ft/weo/2017/02/weodata/index.aspx>.
- Narayanan, Badri G., Dan Ciuriak, and Harsha Vardhana Singh. 2015. "Quantifying the Mega-regional Trade Agreements: A Review of the Models." *International Institute for Sustainable Development Discussion Paper*.

# Appendix 1

---

## The GTAP-FDI Model

To simulate the various scenarios, we use a recursive dynamic version of the standard GTAP CGE model, adapted to incorporate FDI. Ciuriak, Xiao and Dadkhah (2017) provide a technical description of the way FDI is incorporated in the model.

CGE models integrate 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, which take into account internationally-sourced intermediate goods and services (in all, the GTAP dataset allows for the representation of up to 57 sectors, 43 of which are goods);
- A production function for each sector that combines sector-specific inputs of capital, skilled and unskilled labour, and intermediate inputs; and
- A trade account that models the international linkages for each sector of the economy.

The model generates results for national account 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 factors of production across sectors. In the first stage (“nest”), land, labour (skilled and unskilled), and capital substitute for one another to generate domestic value-added by sector; intermediate inputs, which include imported inputs, substitute for domestic value-added in the second stage.

Given that we use a dynamic model, both labour and capital respond to changes in factor returns. Labour responds to changes in the wage rate according to an estimated long-run elasticity equal to one. Capital supply responds to changes in the rate of return (ROR) on capital; the investment response is based on the Monash capital model (Dixon and Rimmer, 1998). Both labour and capital are mobile across all sectors within a country. Capital is also mobile internationally.

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

Private household demand responds to changes in prices and 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.<sup>3</sup> Notably,

---

<sup>3</sup> Household demand is modelled using a Constant Difference of Elasticities function, which captures the fact that the structure of household demand changes as income increases (i.e., in technical terms, it is “non-homothetic”).

changes in trade protection result in changes not only in the prices of intermediate production goods, but also in the prices of consumer goods, which induces demand responses.

The trade module assumes 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; accordingly, substitution elasticities are lower than they would be for product categories that are defined more narrowly and, thus, are more substitutable for each other.

Economic welfare is based on equivalent variation, the lump sum payment at pre-shock prices without the shock that leaves households as well off as in the post-shock economy.

We use a perfect competition specification of the GTAP model. Some models incorporate imperfect competition for industrial goods sectors, introducing price mark-ups that represent monopolistic pure profits in equilibrium. These price mark-ups are reduced by intensified competition under trade liberalization, generating additional welfare gains. Several recent models incorporate heterogeneous firms features, which generate productivity gains from reallocation of market shares to more productive firms under trade liberalization. As it is problematic to combine all these features in one model while retaining a reasonable degree of product and regional disaggregation, no single modelling exercise can be considered definitive; a suite of studies is required to hone in on the likely impacts. For a review of these issues see Narayanan et al. (2015).

## **Implementation**

We use the recently-updated GTAP V9 database with a base year of 2011; this is projected forward to 2035. and For convenience, we implement the shocks in 2018. The reported gains in 2035 may be interpreted as a permanent increase in the level of trade and economic output, once full equilibrium has been restored following the policy shocks, including the reallocation of capital and labour across sectors and regions in response to the changed opportunities flowing from the various policy shock.