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CARICOM and Canada

Good Trading Partners?

Amrita Deonarine
Roger Hosein
Jeetendra Khadan

Country Department Caribbean Group

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Amrita Deonarine*
Roger Hosein**
Jeetendra Khadan*

Inter-American Development Bank*
The University of the West Indies**

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http://www.iadb.org

CET@iadb.org

Amrita Deonarine: amritad@iadb.org; Roger Hosein: roger.hosein@sta.uwi.edu; Jeetendra Khadan: jeetendrak@iadb.org

Abstract

Despite seven rounds of negotiations since 2007, the Caribbean Community (CARICOM) and Canada were unable to concur on the establishment of a free trade agreement (FTA) to replace the existing Caribbean Canada Trade Agreement (CARIBCAN). Instead, the CARIBCAN waiver has been extended until 2023. At this stage, it is unclear when or if both parties will return to negotiations under the extended CARIBCAN waiver. Despite this uncertainty, it is important to determine whether Canada is a good trading partner for the CARICOM region. To undertake this exercise, we examine issues relating to export competitiveness, comparative advantage, and trade complementarity for trade in goods and services between CARICOM countries and Canada. We also conduct an experiment which assumes that a FTA is formed between CARICOM and Canada in order to estimate the impact of tariff liberalization on trade, revenue, and welfare on CARICOM countries. Our results indicate an unfavorable outlook for CARICOM countries on welfare grounds as well as on improving exports from CARICOM countries to Canada.

JEL classification codes: F13, F14, F17
Keywords: CARICOM, Canada, trade, welfare effects, comparative advantage

1. CARICOM–Canada Trade Relations

The Caribbean Canada Trade Agreement (CARIBCAN) was established between Canada and the Commonwealth Caribbean countries in 1986 to provide one-way duty-free access into the Canadian market for commodities that satisfy certain rules of origin requirements. The CARIBCAN is nonreciprocal in nature, which means that Caribbean Community (CARICOM) countries can export to Canada duty free, but a tariff is imposed on Canadian goods entering the Caribbean. The agreement covers all goods except those classified under the Harmonized System (HS) 50–65 (inclusive) range and some agricultural products that carry high tariff duties (World Trade Organization 2013). For commodities from Caribbean countries to obtain duty-free access into the Canadian market, the rules of origin require that no less than 60 percent of the ex-factory price of a commodity must originate from the Commonwealth Caribbean (one or more countries) or Canada (World Trade Organization 2008).

As a nonreciprocal arrangement, however, the CARIBCAN is not consistent with the World Trade Organization's principles and commitments and requires a World Trade Organization Most Favoured Nation waiver. Canada had initially indicated that it will not seek to renew the CARIBCAN waiver after 2013, but to negotiate a free trade agreement (FTA) with the CARICOM in its place. It is against this backdrop that Canada and the CARICOM explored the prospects of forming an FTA. However, after seven rounds of negotiations since 2007, CARICOM and Canada were unable to reach an agreement to replace the existing CARIBCAN. As a result, and on Canada's request, the World Trade Organization extended the CARIBCAN waiver until 2023 (World Trade Organization 2015). At this stage, it is unclear when or whether both parties will return to negotiations under the extended CARIBCAN waiver. In this regard, we proceed to examine the effect on CARICOM countries should both parties decide to form an FTA.

An FTA between CARICOM and Canada would secure market access to goods trade and would expand duty-free market access to trade in services, not previously considered under the CARIBCAN. The proposed trade agreement will have implications for CARICOM countries because the removal of tariffs can lead to adverse implications in terms of tariff revenues, regional imports, and intra-CARICOM trade as a result of increased competition from Canadian goods and services. In addition, the competitiveness of CARICOM's exports to Canada will also influence the region's ability to effectively use the agreement.

In this policy brief, we assess the competitiveness of CARICOM countries' exports to Canada using a revealed comparative advantage index and a trade complementarity index. We also use a partial equilibrium model to estimate the trade, revenue, and welfare impact of

liberalizing tariffs on CARICOM countries' imports from Canada. The results from the competitiveness analysis show that room for increasing exports from CARICOM countries to Canada is weak, and trade complementarity between the two trading partners is also low and has been on a downward trend over the past two decades. When we examine the effect of removing tariffs on revenue and welfare, we also observe a negative effect for all CARICOM countries.

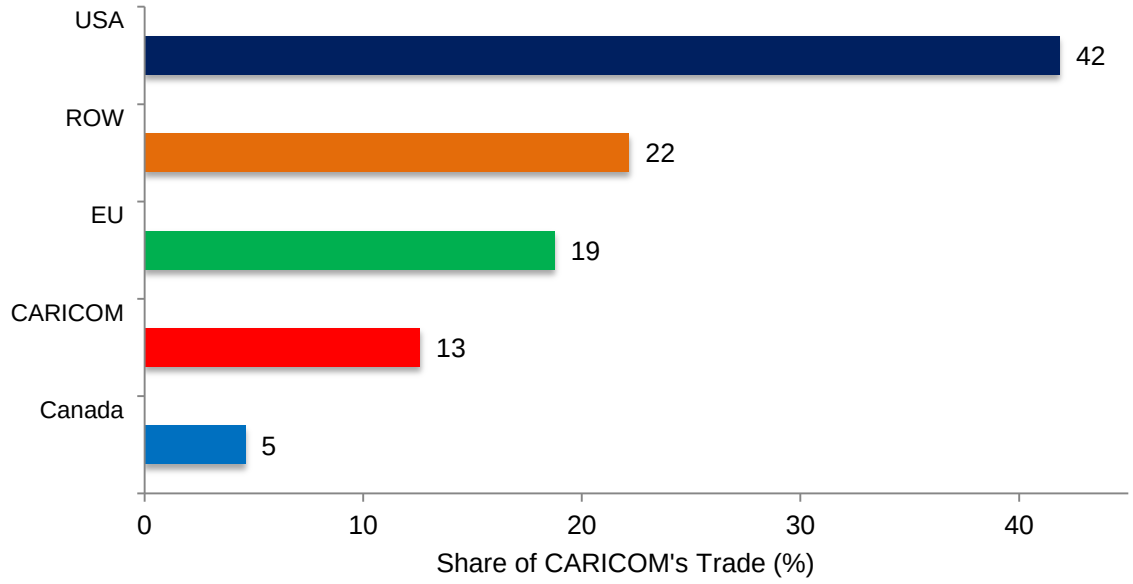
Table 1. CARICOM Countries Trade Balance with Canada

Country	2000	2012
Antigua and Barbuda	–12.6	–7.2
The Bahamas	–15.3	3.7
Belize	–6.6	–5.4
Barbados	–43.3	–36.7
Dominica	–6.2	–4.8
Grenada	–5.6	–9.2[a]
Guyana	–1.4	–26.7
Jamaica	35.4	18.1
St. Kitts and Nevis	–15.0	–5.5[b]
St. Lucia	–13.4	–11.5[a]
Suriname	30.1	442.1[b]
Trinidad and Tobago	–29.7	–8.2[c]
St. Vincent and the Grenadines	–4.5	–6.1
CARICOM	–88.7	–65.7

Source: World Integrated Trade Solution Database 2014.
Notes: [a]2008. [b]2011. [c]2010.

At present, trade between CARICOM countries and Canada is relatively low as the share of CARICOM's exports to and imports from Canada is roughly 3 percent and 2 percent, respectively (see Figure 1). Imports by CARICOM countries from Canada are dominated by Trinidad and Tobago and Jamaica, while exports from the CARICOM region to Canada originate mainly from Jamaica, Suriname, and Trinidad and Tobago (see Table A1). The trade deficit for the CARICOM region with Canada stood at US$65 million in 2012 (see Table 1).

Figure 1. The Share of CARICOM Trade (%)



Notes: CARICOM = Caribbean Community; EU = European Union; ROW = rest of the world; USA = United States.
Source: Calculations based on UN Comtrade 2013.

The main commodities exported from the CARICOM to Canada include aluminum ores, gold, alcoholic beverages, organic-inorganic compounds, and vegetables, which account for more than 90 percent of CARICOM total exports to Canada (see Table 2). Those imported from Canada by CARICOM countries are wheat, medicaments, fish, meat, paper products, vegetables, and plastics, which make up 48 percent of CARICOM's total imports from Canada (see Table 3). The majority of CARICOM's trade is concentrated in the United States and the European Union, where similar nonreciprocal trade agreements are in effect.[1] The rest of this policy brief is outlined as follows: In the next section, we examine the competitiveness of CARICOM's exports to Canada. Sections 3, 4, and 5 discuss the results from the partial equilibrium model as it relates to the effects of a potential FTA on trade, revenue, and welfare for CARICOM countries. Section 6 concludes the article.

[1] In 2008, the CARIFORUM (CARICOM and the Dominican Republic) and the European Union signed an Economic Partnership Agreement, which replaced the long-standing nonreciprocal Lomé Conventions (for an assessment of this arrangement, see Khadan and Hosein 2014). It is expected that a free trade agreement will also replace the Caribbean Basin Initiative, which at present covers trade between Caribbean countries and the United States.

Table 2. Top 10 Import Commodities of CARICOM from Canada, by SITC Code, 2012

SITC	Commodities	(US$mn)	Percentage of total exports	Share in CARICOM's imports
041	Wheat and meslin	23.0	9.7	19.9
542	Medicaments	17.4	7.4	5.8
035	Fish (dried, salted, and smoked)	13.9	5.9	32.7
012	Meat (fresh, chilled, and frozen)	13.7	5.8	8.3
037	Fish and shellfish (prepared or preserved)	11.5	4.9	17.3
641	Paper and paperboard	8.9	3.8	10.3
054	Vegetables (fresh, chilled, and frozen)	7.2	3.0	6.8
056	Vegetables (root and tubers)	6.5	2.8	11.0
893	Articles of plastics	6.0	2.5	2.6
098	Edible products not elsewhere specified	5.5	2.3	2.1

Note: SITC = Standard International Trade Classification.
Source: Calculations based on UN Comtrade 2013.

Table 3. Top 10 Export Commodities of CARICOM to Canada, by SITC Code, 2012

SITC	Commodities	(US$mn)	Percentage of total exports	Share in CARICOM's exports
285	Aluminum ores	91.0	38.1	11.5
971	Gold	68.5	28.6	26.2
112	Alcoholic beverages	31.6	13.2	17.1
515	Organic-inorganic compounds	21.1	8.8	27.9
054	Vegetables	6.0	2.5	15.0
036	Crustaceans mollusks	3.0	1.3	1.8
058	Fruit preserved and fruit prepared	2.6	1.1	11.4
057	Fruit and nuts (fresh and dried)	2.4	1.0	3.3
048	Cereal flour and starch	2.1	0.9	9.2
098	Edible products not elsewhere specified	2.1	0.9	5.3

Note: SITC = Standard International Trade Classification.
Source: Calculations based on UN Comtrade 2013.

2. Comparative Advantage and Trade Complementarity between CARICOM and Canada?

The literature on trade agreements suggests that countries that have comparative advantage in diverse products are more likely to benefit from an FTA. The natural trading partner hypothesis asserts that an FTA characterized by a strong level of bilateral trade complementarity would lead to enhanced welfare outcomes (see Schiff 2001). To determine the level of comparative advantage and trade complementarity between CARICOM countries and Canada, we use two measures: a revealed comparative advantage (RCA) index and a trade complementarity index (C_{ij}).[2]

Revealed Comparative Advantage Analysis

The RCA index compares the share of exports of a commodity in country *i*'s total exports to the share of exports of that commodity in the world's total exports. By construction, a country is considered to have a comparative advantage in a commodity *j* if the value of the RCA index is greater than 1 and a comparative disadvantage if the index yields a value below 1. The RCA index also known as the Balassa index is outlined as follows:

$$RCA_{ij} = \frac{X_{ij} / X_{it}}{X_{wj} / X_{wt}} \quad (1)$$

where RCA_{ij} is the RCA index for country *i* in commodity *j*, *X* is exports, *w* is world, *i* is country, *j* is commodity, and *t* is a set of countries.

The results from the revealed comparative advantage index showed that the CARICOM as a group has comparative advantage in 15 products for the period 2007–12 with Canada. These products are mainly natural resource–intensive products and light manufacturing goods such as aluminum ores, gold, spices, beverages (alcoholic and nonalcoholic), fish, fertilizers, and fruit and vegetables (see Table 4). The level of comparative advantage, however, declined for one third of the products over the two time periods examined. The CARICOM region showed improvements in comparative advantage for six products, but three products become completely uncompetitive between the two periods. The results of the comparative advantage index for six CARICOM countries and Canada are provided in Khadan and Hosein (2014).[3]

[2] The Standard International Trade Classification three-digit level of data aggregation is used to calculate these trade indices.
[3] The six CARICOM members are Barbados, The Bahamas, Guyana, Jamaica, St. Vincent and the Grenadines, and Trinidad and Tobago.

Moreover, the results indicate that commodities that have a weak comparative advantage had a very low probability of moving into a stronger comparative advantage class. Commodities with a strong comparative advantage displayed a high probability of class persistence, but the probability of moving from a strong comparative advantage class to a weaker comparative advantage class was high.

Table 4. Comparative Advantage between CARICOM and Canada, 2001–12

SITC 3	Description	2001–06 (RCA)	2007–12 (RCA)	Change
285	Aluminum ores	166.41	78.65	–
671	Pig iron and ferrous alloy	99.60	25.71	–
512	Alcohols, phenols, and derivatives	15.17	17.05	+
971	Gold	64.19	12.92	–
515	Organic-inorganic compounds	0.74	8.52	+
112	Alcoholic beverages	4.37	5.99	+
075	Spices	11.01	4.49	–
036	Crustaceans mollusks	4.72	2.29	–
612	Leather manufactures	0.26	2.02	+
282	Ferrous waste and scrap	0.16	1.92	+
058	Fruit preserved and fruit preparations	2.73	1.60	–
054	Vegetables	1.69	1.54	–
035	Fish (dried, salted, and smoked)	0.18	1.42	+
562	Manufactured fertilizers	22.24	1.10	–
034	Fish	2.76	1.02	–
111	Beverage nonalcohol	1.52	0.59	–
334	Heavy petrol and bitumen oils	1.59	0.33	–
676	Iron, steel bars, and rods	4.88	0.00	–

Note: RCA = revealed comparative advantage index; SITC = Standard International Trade Classification.
Source: Calculations based on World Integrated Trade Solution database 2014.

Trade Complementarity Analysis

The trade complementarity index relates the comparative advantage of the exporting country to the comparative disadvantage of the importing partner, weighted against world trade (which accounts for all other supply sources). Drysdale (1967) outlined the trade complementarity index as follows:

$$C_{ij} = \sum_k \left\{ \frac{X_i^k}{X_i} * \frac{M_j^k}{M_j} * \frac{M_w - M_i}{M_w^k - M_i^k} \right\} \quad (2)$$

where k is a commodity, X_i is country i's total exports, M_j is country j's total imports, M_i is country i's total imports, and M_w is world imports. By construction, a value of the trade complementarity index greater than one indicates that bilateral trade complementarity exists; however, if the value of the index is less than 1, then there is a lack of bilateral trade complementarity.[4]

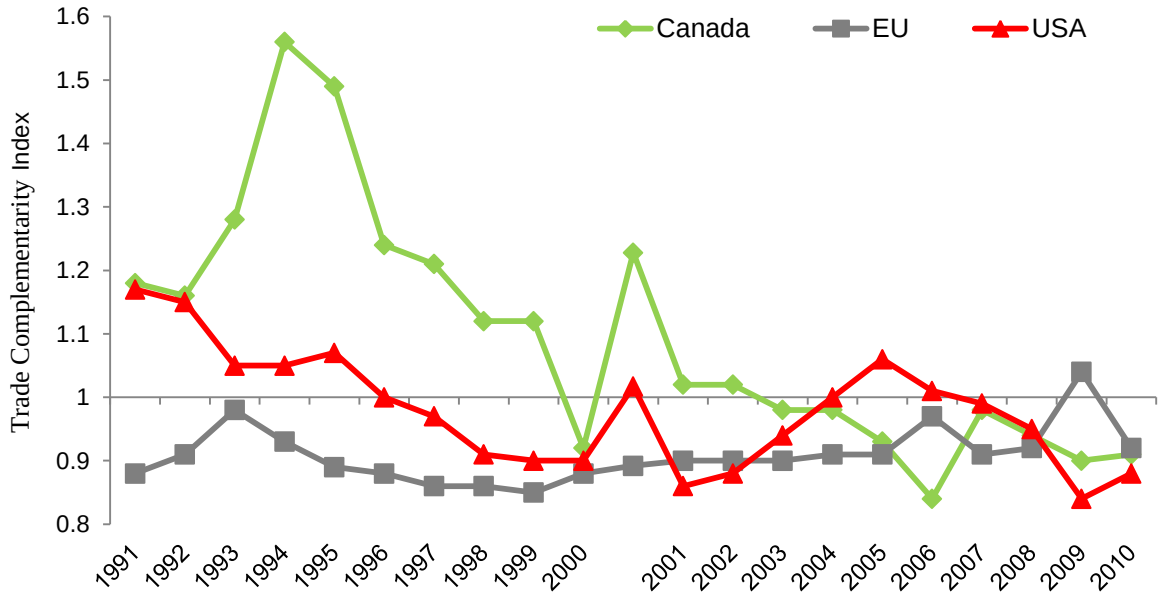
Consistent with the results from the revealed comparative advantage index, trade complementarity between the CARICOM region and Canada (and the United States and the European Union) is also low and has declined over the past two decades. These results indicate a lack of convergence in trade structures, which may be attributed to the inability of CARICOM countries to improve their export competitiveness (comparative advantage) in preferential markets compared with firms from non-CARICOM countries even in the presence of nonreciprocal trade preferences.

When we further examine trade complementarity for the six IDB member states similar results were found, with the exception of Jamaica, Guyana, and—to a lesser extent—Barbados. The trade complementarity index between Jamaica and Canada was above 1 for the period examined, and this was largely influenced by one product (that is, aluminum ores). Guyana also revealed trade complementarity with Canada with an index value averaging 1.29 for the period 2001–10. As in Jamaica, aluminum ores and gold are the two products that influenced Guyana's trade complementarity with Canada (see Table 5).[5]

These findings may cast some doubt about whether the FTA can improve exports from CARICOM countries to Canada, given their present economic structure and lack of export competitiveness.

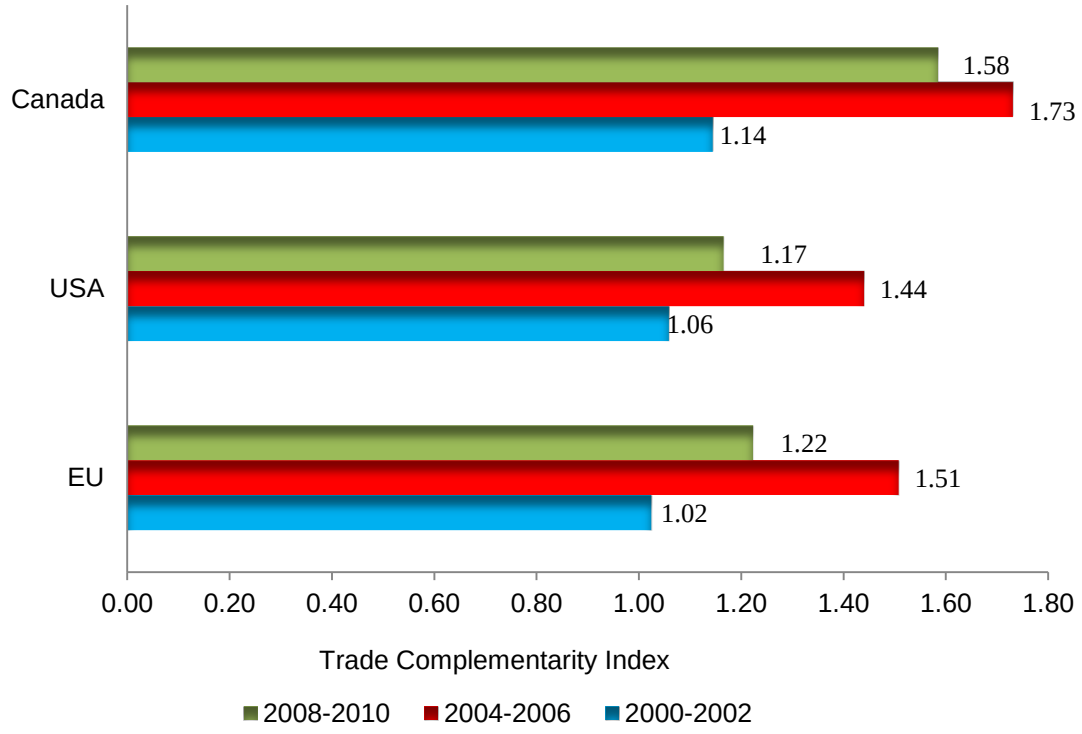
[4] The trade complementarity index was applied to SITC 3-digit level data for each country above and then aggregated across 264 SITC 3-digit commodities to derive the country index for each year.
[5] See also Khadan and Hosein 2013.

Figure 2. Trade Complementarity between CARICOM and Major Trading Partners for Merchandise Trade



Notes: EU = European Union; USA = United States.
Source: Calculations based on UN Comtrade 2013.

Figure 3. Trade Complementarity between CARICOM and Major Trading Partners for Services Trade



Notes: EU = European Union; USA = United States.
Source: Calculations based on UN Comtrade 2013.

The level of complementarity in services trade improved in the region's three major source markets over the period 2002–10 (see Figure 3). However, although a decline was recorded for the period 2008–10, trade complementarity in services trade improved from its level at 2000–02 with the United States, European Union, and Canada, and was highest with Canada.

Table 5. Trade Complementarity between Selected CARICOM Countries and Canada

	The Bahamas	Barbados	Guyana	Jamaica	Suriname	Trinidad and Tobago
2001	0.9	0.9	1.1	2.4	0.7	0.7
2002	0.8	1.0	0.9	2.6	0.6	0.6
2003	0.9	0.9	1.0	2.6	0.6	0.6
2004	0.9	1.1	0.9	2.3	0.5	0.7
2005	0.9	0.9	1.0	2.5	0.6	0.7
2006	0.9	0.9	1.2	2.5	0.5	0.6
2007	0.9	1.1	1.5	2.5	0.6	0.7
2008	0.9	1.0	1.7	2.6	0.6	0.7
2009	0.9	1.2	1.8	2.1	0.5	0.6
2010	0.9	1.3	1.8	2.1	0.6	0.6

Source: Calculations based on UN Comtrade 2013.

3. The Effects of Tariff Liberalization

This section examines an experiment that assumes that an FTA is signed between CARICOM countries and Canada in 2012. The experiment looks at the effects of reducing tariffs to zero on imports from Canada on trade, tariff revenues, and economic welfare. An imperfect substitution partial equilibrium model is used (see the Appendix for technical details). The model assumes that each CARICOM country imports from Canada, other CARICOM countries, and the rest of the world (ROW). The CARICOM is a regional trade arrangement where no tariffs are in place, but tariffs are imposed on imports from Canada and the ROW. In this environment, the CARICOM then proceeds to form an FTA with Canada but maintain tariffs on imports from the ROW.

When tariffs are removed from Canadian imports, there is likely to be an increase of imports from Canada as a result of the relatively lower prices. This effect results in a welfare-enhancing consumption–induced trade creation effect. The results indicate that Trinidad and Tobago and Jamaica are expected to experience the largest increase in trade creation, at 14 and 16 percent, respectively (see Table 6). The Organization of Eastern Caribbean States (OECS) countries recorded the lowest level of trade creation, which may be in part because of their lower volume of trade with Canada.

The relatively lower import prices from Canada can also induce each CARICOM member to divert trade from the CARICOM market toward Canada, which is referred to as the displacement of regional imports. The displacement of regional imports (that is, the decline in imports by each CARICOM member from the region) is also highest for Jamaica (see Table 6).

As CARICOM countries import most of their goods from other sources such as the United States and the United Kingdom, the relatively lower price of Canadian goods can also lead to a diversion of CARICOM imports from the ROW toward Canada. The scope for this diversion is large as CARICOM countries are presently negligible importers from Canada. This effect is referred to as trade diversion as the model assumes that the ROW is the most efficient supplier on the basis of economies of scale. The total trade diversion for the CARICOM region is estimated to be US$9.131 billion of which Trinidad and Tobago and Jamaica account for more than 50 percent.

The decline in tariff revenues for a CARICOM member state occurs through the direct removal of tariffs on Canadian imports and the associated revenue loss from trade diversion. No revenue loss occurs on account of the displacement of regional imports as we assume that a regional trade agreement is in effect among CARICOM members. Therefore, the change in revenues on account of the FTA results from both Canadian imports and imports diverted from the ROW to Canada.[6]

[6] This experiment is based on various assumptions and parameters (for relevant details, see the Appendix and Khadan and Hosein 2014).

Table 6. Trade Effects Associated with the Proposed CARICOM–Canada Free Trade Agreement, 2012

	Trade Creation on Existing Canada Imports (US$mn)	Percentage Change	Change in CARICOM Imports (US$mn)	Percentage Change	Change in Extraregional Imports (US$mn)	Percentage Change
The Bahamas	2.49	12.65	–29.67	–18.63	–1695.83	–50.86
Belize	0.77	13.68	–7.89	–29.26	–299.69	–47.15
Barbados	4.82	10.52	–110.18	–16.64	–550.61	–52.24
Dominica	0.74	15.19	–15.04	–23.95	–79.42	–55.16
Grenada	1.17	16.26	–21.07	–23.33	–107.37	–58.24
Guyana	3.61	8.38	–81.13	–22.22	–693.47	–47.17
Jamaica	16.98	16.76	–200.63	–22.19	–2519.52	–46.16
St. Kitts and Nevis	0.92	16.80	–7.45	–24.73	–122.85	–58.24
St. Lucia	1.87	15.85	–47.66	–23.78	–285.54	–64.60
St. Vincent and the Grenadines	0.96	15.54	–30.86	–21.50	–136.42	–53.83
Trinidad and Tobago	14.83	8.09	–35.45	–28.52	–2641.23	–42.83

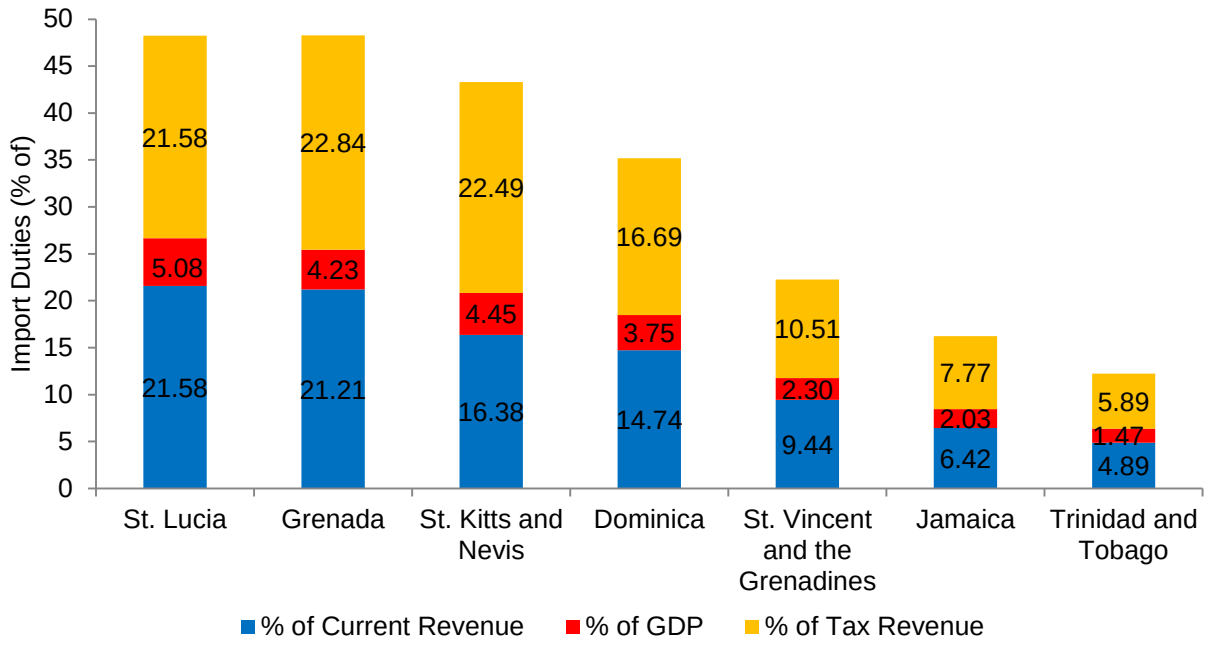
Source: Calculations based on UN Comtrade 2014.

4. Who Loses the Most from Declining Tariff Revenues?

Many CARICOM countries are dependent on tariff revenues to some extent. The level of tariff revenue dependence is key to assess the effect of tariff revenue losses from the CARICOM–Canada FTA. CARICOM countries' dependence on tariff revenues is examined using import duties as a share in current revenues, import duties as a share in tax revenues, and import duties as a share in GDP, for the period 2000–12. The data in Figure 4 report that countries in the OECS have a higher level of tariff-revenue dependence, with tariff revenues as a share in tax revenues and current revenues averaging over 10 percent. More importantly, CARICOM countries have a higher level of tariff revenue dependence than most developing countries.

Figure 4. CARICOM Countries' Dependence on Import Duties, 2000–12

Percentage

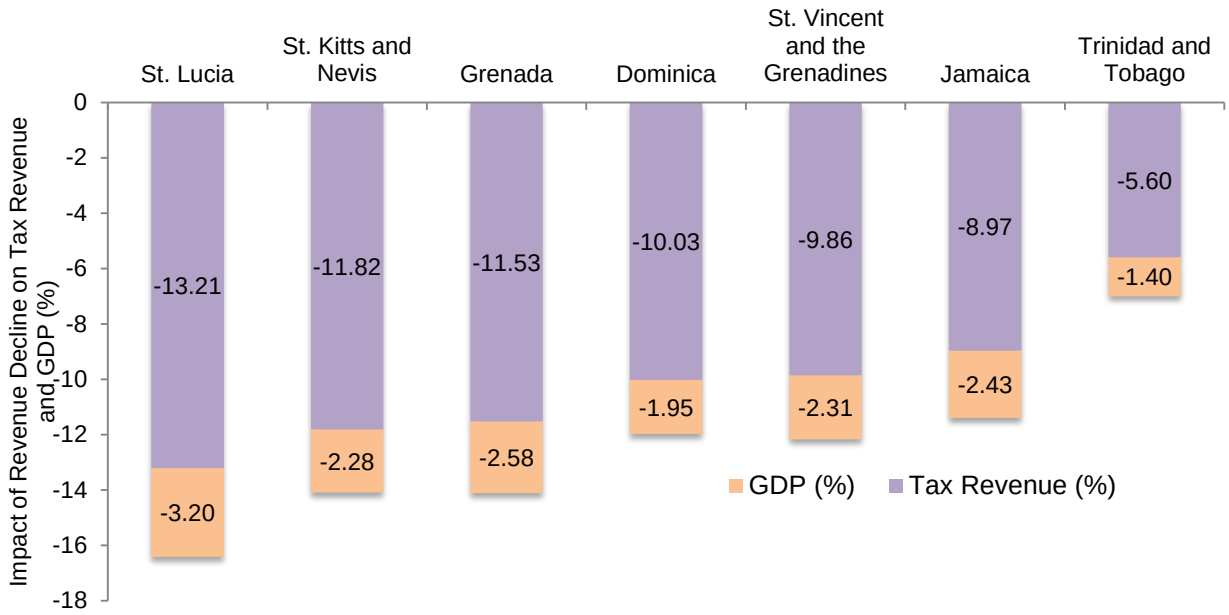


Source: Calculations based on World Development Indicators 2014.

The change in tariff revenue indicates that, on average, countries in the OECS would lose a lower level of tariff revenues than other CARICOM members in actual dollars. This result reflects the lower level of imports by OECS countries from Canada and is consistent with the relatively lower level of trade diversion observed for the OECS members in Table 6. Tariff revenue losses, in actual dollars, were highest for Jamaica Trinidad and Tobago, and The Bahamas. Taking into context tariff revenue dependence, Figure 5 shows that members of the OECS, such as Grenada, St. Kitts and Nevis and St. Lucia are likely to be affected the most in terms of tax revenues and GDP.

Figure 5. Impact of Revenue Decline on Tax Revenue and GDP, 2012

Percentage



Source: Calculations based on UN Comtrade and World Development Indicators 2014.

5. What Is the Net Effect on Economic Welfare?

To examine the net impact of the FTA, the final exercise is to calculate its welfare impact on each CARICOM country. The change in welfare is determined by the sum of the changes in tariff revenues and changes in consumer surplus. Table 7 shows a fall in economic welfare for each CARICOM member country. As expected, Jamaica and Trinidad and Tobago are likely to experience the largest fall in welfare in actual dollars. However, to put these results into perspective, we also examine the decline in welfare as a share of GDP for each country. The OECS members are the most affected when this is done, partly because of their higher dependence on trade taxes (see Figure 6).

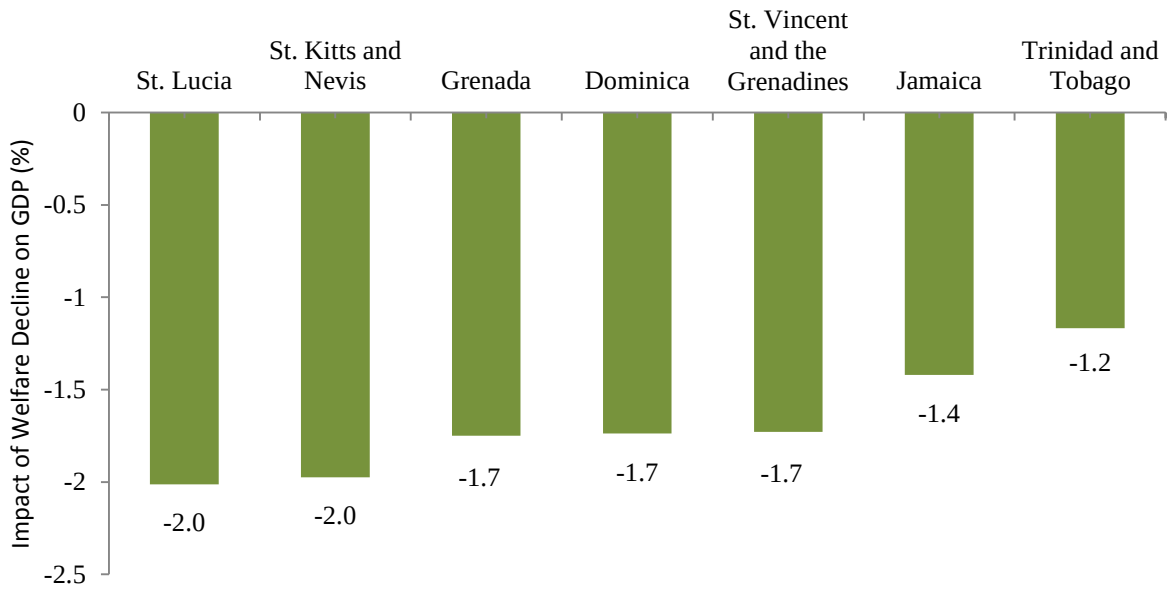
Table 7. Revenue and Welfare Effects, US$mn, 2012

	Change in revenue	Change in welfare
The Bahamas	–224.21	–169.98
Belize	–36.40	–26.24
Barbados	–74.70	–47.27
Dominica	–11.06	–8.33
Grenada	–14.98	–10.88
Guyana	–82.63	–56.99
Jamaica	–358.29	–255.19
St. Kitts and Nevis	–17.47	–13.42
St. Lucia	–39.66	–24.93
St. Vincent and the Grenadines	–18.39	–14.07
Trinidad and Tobago	–326.98	–272.40

Source: Calculations based on UN Comtrade 2014.

Figure 6. Impact of Welfare Decline on GDP

Percentage



Source: Calculations based on UN Comtrade and World Development Indicators 2014.

6. Conclusion

This policy brief examined the possible impacts on CARICOM countries if an FTA were to be signed between CARICOM countries and Canada. The analysis focused on the impacts of full tariff liberalization in favor of Canadian imports and the competitiveness of CARICOM countries' exports to Canada. The results suggest that the level of bilateral trade complementarity between both regions is weak and has declined for the past two decades. Moreover, comparative advantage is concentrated in few natural resource–intensive products but with little evidence of export competitiveness improving over time. These findings imply that the prospect of increasing merchandise exports from CARICOM countries to Canada is dismal. In addition, while the FTA may result in a greater level of imports from Canada, which can be welfare-enhancing for CARICOM consumers, it can have adverse implications on the growth of domestic industries, which may further weaken intra-CARICOM trade and contribute to trade-related labor market effects.

The OECS subgrouping faces an even greater challenge as they adjust to the highly probable revenue shortfalls associated with tariff liberalization on Canadian imports. These revenue shortfalls would require countries to make adjustments to tax policy and administrative reforms, which can undermine their growth and development objectives. The region signed an economic partnership agreement with the European Union in 2008. A CARICOM-Canada FTA in addition to this would add to the severity of the fiscal impact on the countries with a high dependence on customs duties. To mitigate these effects and enhance the region's ability to effectively use FTAs, the region would need to invest heavily in policy reforms that can reduce infrastructure bottlenecks, improve external competitiveness, and diversify and broaden their tax base.

Nonetheless, the export of services from the CARICOM market is one area that has been identified that can yield some tangible benefits. The results from this policy brief indicate that there is complementarity in trade in services between the two regions. The main areas identified (in previous studies) are health, education, business, and financial services. However, Girvan (2008) cautioned that formal market access may not be sufficient because there are considerable regulatory barriers for CARICOM service providers to meaningfully access the Canadian market.

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APPENDIX

Table A1. CARICOM Countries Exports, Imports, and Trade Balance With Canada

	Exports (US$'000)		Imports (US$'000)		Trade Balance (US$'000)	
	2000	2012	2000	2012	2000	2012
Antigua and Barbuda	14	427	12587	7658	–12573	–7231
The Bahamas	6548	23417	21863	19669	–15315	3748
Belize	2887	1115	9504	6530	–6617	–5416
Barbados	4461	9896	47782	46578	–43321	–36682
Dominica	50	13	6270	4858	–6220	–4844
Grenada	714	890	6276	10058	–5561	–9168[a]
Guyana	7862	16324	9253	43025	–1391	–26701
Jamaica	133591	119388	98230	101309	35361	18079
St. Kitts and Nevis	2	2	14970	5494	–14968	–5492[b]
St. Lucia	198	385	13589	11861	–13391	–11476[a]
St. Vincent and the Grenadines	234	44	4779	6170	–4545	–6126
Suriname	39155	456588	9041	14495	30114	442093[b]
Trinidad and Tobago	56200	175516	85854	183735	–29654	–8219[c]
CARICOM	251915	170624	340630	236365	–88715	–65741

Notes: [a]2008. [b]2011. [c]2010.
Source: World Integrated Trade Solution Database 2014.

APPENDIX

This appendix provides a brief outline of the methodology used to estimate the trade, revenue, and welfare effects of the proposed Caribbean Community (CARICOM)–Canada FTA.[7] The imperfect substitution model defines the trading players in the world as belonging to an intraregional group (say, CARICOM) and an extraregional group. The intraregional trading partners are defined as a home country and a partner country. The extraregional trading partners are Canada and the rest of the world (ROW). The initial trading environment is one that is characterized by a regional trade agreement between the home country and the partner country, while a nondiscriminatory tariff is imposed on products from the extraregional market. CARICOM countries proceed to establish a free trade agreement (FTA) with Canada while maintaining tariffs on goods from the ROW. As CARICOM countries remove import tariffs as a result of the FTA, a lower price for Canadian goods will prevail in the regional market leading to an increase in imports by CARICOM countries from Canada. This change in imports is referred to as the consumption induced trade creation effect (ΔM_3) and is measured by the following:

$$\Delta M_3 = \left(\frac{-t}{1+t}\right) e_m^d M_3 \quad (1)$$

where ΔM_3 is the change in imports from Canada, t is the tariff rate, M_3 is the amount imported from Canada before the formation of the FTA, and e^d_m is the elasticity of demand for imports.

In a similar way, CARICOM countries may divert imports from other sources (that is, from another CARICOM partner and the ROW) toward Canada because of the relatively cheaper price of Canadian products. This is referred to as trade diversion if the change in imports takes place in the extraregional market (that is, from the ROW to Canada) and displacement of regional imports if a CARICOM member diverts imports from the regional market to Canada. These trade effects are measured as follows:

$$\Delta M_i = \left(\frac{-t}{1+t}\right) \sigma_{i3} M_i \quad (2)$$

where i = 1 (CARICOM) or 2 (ROW), ΔM_i is the diversion of imports by a CARICOM member from 1 or 2, t is the tariff rate, σ_{i3} is the elasticity of import substitution between imports from i

[7] For further elaboration on the model, see Greenaway and Milner (2006) and Khadan and Hosein (2014).

and Canada, and M_i is the amount imported by a CARICOM member from 1 or 2 before the formation of the FTA.

Before the FTA, tariff revenues on imports for CARICOM countries originated from Canada and the ROW. However, in the FTA environment CARICOM countries would forgo tariff revenues on all imports from Canada and revenues on imports diverted from the ROW to Canada. This change in tariff revenues is measured as follows:

$$\Delta R = t\Delta M_2 - tM_3 \quad (3)$$

where $t\Delta M_2$ is the tariff revenues associated with a change in imports from the ROW, tM_3 is the initial tariff revenues collected from Canadian imports in the environment before the FTA. The change in welfare is a function of the change in consumer surplus and the change in tariff revenues:

$$\Delta W = \frac{1}{2}t(\Delta M_3) + \Delta R \quad (4)$$

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