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Trade Facilitation in the Commonwealth: An Economic Analysis

Badri Narayanan
Sachin Sharma
Mohammad A Razzaque

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By Badri Narayanan, Sachin Sharma and Mohammad A Razzaque

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Abstract

This paper examines the economic impact of trade facilitation between Commonwealth members, using a global computable general equilibrium framework. We document enormous economic impact, much higher than a complete tariff liberalisation amongst these countries. Economic impact is quite visible in terms of welfare, Gross Domestic Product, employment and trade in several sectors. We abstract from the costs involved in such trade facilitation – accounting for them is beyond the scope of this study.

JEL Classification: F13, F62, F68

Keywords: trade facilitation, GTAP, CGE, Commonwealth

Contents

1. Introduction

Trade facilitation refers to all measures towards the simplification of procedures and reduction in costs in the course of international trade. Trade facilitation aims to ensure the movement and clearance of goods across borders within the shortest time at the minimum cost. It involves a reduction in trade costs associated with regulations, enforcement and unnecessary administrative burdens on cross-border movement of goods and services for every party involved (Staples 2002). In broad terms, trade facilitation can be regarded as dealing with the efficiency of border procedures in international trade. The potential benefits of trade facilitation are afforded through firms obtaining inputs more quickly and at a lower overall price. Consumers can gain from lower prices and reduced delays in the receipt of goods (AGPA 2010). As trade costs associated with these regulations are very high, reductions in these costs will play an important role in international trade and economic development.

Although there have been no formal trade agreements among the Commonwealth members, it is worth examining the benefits of such agreements. Given that further tariff reductions in many sectors are not realistic, trade facilitation is one area that has been widely discussed as a relevant trade policy tool to be considered by developing countries in general. Against this background, the objective of this study is to examine the impact of trade facilitation in Commonwealth countries on various macroeconomic indicators under different scenarios by using computable general equilibrium (CGE) modelling. This study focuses on trade facilitation as a policy tool and its impact on gross domestic product (GDP), employment, welfare and trade itself.

This paper is organised as follows: section 2 reviews the literature; section 3 explains the methodology employed; section 4 gives the results; and section 5 concludes the study.

2. Trade facilitation – a brief review of the literature

Various studies have examined the impact of trade facilitation on various macro-economic indicators. Hufbauer and Schott (2013) estimated that, as a result of trade facilitation agreements, global exports would increase by US$1043 billion, global jobs supported by export expansion could total 20 million and global GDP would increase by US$960 billion. The OECD (2014) estimated the potential impact of the trade facilitation agreement under two scenarios: (1) World Trade Organization (WTO) members would implement all the options in the agreement, and (2) WTO members would implement only the mandatory provisions in the agreement, leaving aside discretionary provisions. The results show that, under the first scenario, there would be a reduction in trade cost of 14.1 per cent for low-income countries, 15.1 per cent for lower-middle-income countries and 12.9 per cent for upper-middle-income countries. Under the second scenario, the reduction in trade cost would be 11.7 per cent, 12.6 per cent and 12.1 per cent for low-income countries, lower-middle-income countries and upper-middle-income countries, respectively.

Spence and Karingi (2011) estimated the impact of trade facilitation mechanism on export competitiveness in Africa. This study confirms the hypothesis that trade facilitation can bolster productivity levels in Africa and trade facilitation indicators are positively associated with total-factor productivity in Africa.

Wilson *et al.* (2003) examined the relationship between trade facilitation and trade flows in the Asia-Pacific region. Country-specific data for port efficiency, customs environment, regulatory environment and e-business usage are used to construct indicators to measure trade facilitation. The benefits of specific trade

facilitation efforts are estimated by quantifying differential improvements in these four areas among members of the Asia-Pacific Economic Cooperation (APEC). The results show that intra-APEC trade could increase by US$254 billion, or 21 per cent of intra-APEC trade flows, as a result of improved trade facilitation.

Hillberry and Zhang (2015) estimated the impact of the various trade facilitation indicators on the time necessary to clear customs and the associated cost. The results show that improved trade facilitation would reduce the predicted time spent in customs by an average of 1.6 days for imports and 2 days for exports. Using a conservative estimate of the value of time in trade, such comprehensive reforms imply a mean tariff equivalent reduction of 0.9 percentage points on imports and 1.2 percentage points on exports.

The study by APEC (2009) examined the options of a Free Trade Area of the Asia-Pacific (FTAAP) and provides a more concrete rationale for APEC member economies discussing a possible FTAAP by addressing both the possible advantages and challenges through the use of gravity and CGE modelling. It found that, in terms of welfare, improved trade facilitation through a 5 per cent reduction in trade cost would lead to an increase in welfare from US$256 billion to US$505billion.

Cheewatrakoolpong and Ariyasajjakorn (2012) examined the impact of trade facilitation improvement in the Association of Southeast Asian Nations (ASEAN+6) on various macro-economic variables, trade flows and the welfare gains that member countries can obtain from preferential trade agreements in the region through the use of augmented gravity and Global Trade Analysis Project (GTAP) modelling. As the proportion of costs related to trade facilitation in total trade costs is high, the reduction in such costs plays an important role in the promotion of international trade, improvement in competitiveness, increase in foreign direct investment, increase in the utilisation of preferential trade agreements and the promotion of real outputs and economic growth. The results show that a reduction in logistics costs will increase output and trade growth in ASEAN+6 regions. Of all factorable sectors, the agricultural sector seems to benefit most.

APEC (2000) found that the elimination of trade facilitation costs has a more favourable impact on countries' GDP than tariff reduction. Using CGE modelling, many studies, such as that by Minor and Tsigas (2008), have examined the economic impact of trade facilitation. In broad terms, trade facilitation can be regarded as dealing with the efficiency of border procedures in international trade. The potential benefits of trade facilitation are afforded through firms obtaining inputs more quickly and at a lower overall price. Consumers can gain from lower prices and reduced delays in the receipt of goods. Hufbauer and Schott (2013), AGPA (2010), Mirza (2009), Zaki (2010), Park *et al.* (2010), Stone and Strutt (2009) and Walkenhorst and Yasui (2003) have shown that improved trade facilitation has a significant positive impact on welfare and other macro-economic indicators. We found very little discussion on the investments needed for trade facilitation, apart from a somewhat ad-hoc assumption by Mirza (2009) on the initial level of investment needed in this regard. Overall, all the studies have shown a positive impact on various macro-economic indicators as a result of trade facilitation.

3. Methodology

This study was conducted with a multi-country, multi-sector general equilibrium model. WTO (2012) states that the purpose of CGE simulations is to determine the effects of an improvement in trade facilitation on several variables of the model: GDP, employment, exports, imports and welfare. The simulation represents what the economy would look like if the policy change or shock had occurred. The difference in the values of the endogenous variables in the baseline and the simulation represents the effect of the policy change. All the policy simulations, as well as the results reported in the paper, as in other major models

of this type, may be thought of as occurring in one shot over a time period that is needed for equilibrium to be achieved. This time period is akin to what is widely thought of by economists as 'medium run', possibly 3–5 years in one go. Therefore, the model should be able to foretell the effect on trade and production patterns if the trade policy was changed. Furthermore, based on the change in welfare, the policy-maker would be able to judge whether or not the country benefited from the change in policy. Similarly, Gilbert and Tower (2013) mentions that the idea behind CGE is to programme a large-scale mathematical system representing the global economy and to combine that theoretical system with a benchmark set of real-world data representing the status quo. The equilibrium is then perturbed to generate insights into the direction and magnitude of the economic effects of policy intervention and/or other changes in the economic system. The impact of regional integration on different regions is estimated using the GTAP static model. The model assumes perfect competition, constant returns to scale and profit- and utility-maximising behaviour of firms and households, respectively. Hertel (1997) provides detailed information about the structure and overview of the GTAP model. The data used in this study are from version 9 of the GTAP database (the most recent version available, currently in beta form, documented in Narayanan, Aguiar and McDougall (2015). The reference year for this database is 2011.

3.1 Aggregation strategy

The GTAP database is compiled for 140 countries/regions across the world and for 57 tradeable commodities of the world. In this study, 140 countries/regions given in the GTAP database are mapped to 38 regions. The analysis is done for 18 sectors given in the GTAP database. The 57 sectors of the GTAP database are mapped onto 18 sectors (Table 1).

3.2 Experimental design

Given the unstable economic environment, unemployment is a general phenomenon around the world. Therefore, to make this study more realistic, standard closure of the GTAP is altered by changing the assumption of full employment for skilled and unskilled labour. This study begins with the GTAP 9 database (Narayanan et al 2015) with a base

Table 1. Regional and sector aggregation

Region		Sector
1 Australia	20 New Zealand	Paddy
2 Bangladesh	21 Pakistan	Wheat
3 Botswana	22 Rwanda	Plant fiber
4 Brunei	23 Singapore	Oilseed
5 Cameroon	24 Sri Lanka	Sugar
6 Canada	25 South Africa	Vegetable
7 Cyprus	26 Tanzania	Other Grains
8 Dominica	27 Trinidad	Dairy
9 Ghana	28 UK	ProcFood
10 India	29 Uganda	MeatLstk
11 Jamaica	30 Zambia	Fish
12 Kenya	31 Brazil	Extraction
13 Malawi	32 Russia	TextWapp
14 Malaysia	33 USA	Leather
15 Malta	34 China	MotorVech
16 Mauritius	35 Japan	LightMnfc
17 Mozambique	36 Korea	HeavyMnfc
18 Namibia	37 EU25	OthServices
19 Nigeria	38 Rest of World	

Source: GTAP database.

year of 2011, aggregated to the set of regions and sectors specified in this paper. ITC MacMAP dataset, which is the source of tariff data used in the GTAP, accounts for all the tariff preferences, free trade agreements and preferential trade agreements that were in effect across the world in 2011.

To examine the impact of improved trade facilitation on Commonwealth countries, this study used the Logistics Performance Index (LPI) published by the World Bank for 2014. The LPI helps countries identify the challenges and opportunities in trade logistics. The LPI includes overall trade logistics performance – both 'soft' and 'hard' infrastructural issues. While one could argue that the LPI is not the perfect proxy for trade facilitation, which encompasses 'soft' infrastructural issues, we assume that the percentage change in LPI would reflect changes as a result of the 'soft infrastructure' part. This is because of the possibility of strong correlation between the two types of infrastructure. We have some evidence to support this assumption. The World Bank has not developed recent datasets pertaining to hard and soft infrastructure, but Portugal-Perez and Wilson (2010) estimate this for 2004–2007. We estimated the correlation between the LPIs of hard and soft infrastructure to be 0.88. We also found that the LPI was almost the same, even in an absolute sense, for most of the Commonwealth countries, for both hard and soft infrastructures. This means that all measures of LPI, when evaluated in a relative sense across countries, will be similar. We arrive at our shock by using this relative difference (with respect to South Africa and Singapore), and hence we strongly believe in the validity of our assumption that our LPI shocks capture the changes to soft infrastructure.

The LPI 2014 provided data for 160 countries, which are extracted on the basis of a worldwide survey of operators on the ground (global freight forwarders and express carriers), providing feedback on the logistics 'friendliness' of the countries in which they operate and those with which they trade. Feedback from operators is supplemented by quantitative data on the performance of key components of the logistics chain in the country of work. The LPI consists therefore of both qualitative and quantitative measures and helps build profiles of logistics friendliness for these countries (World Bank, 2014). It should be noted that LPIs for some Commonwealth countries are not available. Therefore, we used LPIs for other countries as an alternative measure of the performance of a country whose LPI is not available (Table 2).

In order to analyse the reduction in trade infrastructure barriers, it is useful to have a comparative perspective of different scenarios. Table 3 shows the scenarios examined in this study.

Table 2. Logistic performance index (LPI) score in Commonwealth countries

GTAP region	Score	Assumption	GTAP region	Score	Assumption
1 Australia	3.81		16 Mauritius	2.51	
2 Bangladesh	2.56		17 Mozambique	2.23	
3 Botswana	2.49		18 Namibia	2.66	
4 Brunei	4.00	Same as Singapore	19 Nigeria	2.81	
5 Cameroon	2.30		20 New Zealand	3.64	
6 Canada	3.86		21 Pakistan	2.83	
7 Cyprus	3.00		22 Rwanda	2.76	
8 Dominica	2.86		23 Singapore	4.00	
9 Ghana	2.63		24 Sri Lanka	2.70	
10 India	3.08		25 South Africa	3.43	
11 Jamaica	2.84		26 Tanzania	2.33	
12 Kenya	2.81		27 Trinidad	2.84	Same as Jamaica
13 Malawi	2.81		28 UK	4.01	
14 Malaysia	3.59		29 Uganda	2.33	Same as Tanzania
15 Malta	3.00	Same as Cyprus	30 Zambia	2.46	

Source: World Bank (http://lpi.worldbank.org/about), accessed on 20 January 2015.

Table 3. Experimental design

Scenario 1	LPI for Singapore used as a benchmark
Scenario 2	LPI for South Africa used as a benchmark
Scenario 3	Total elimination of tariffs among Commonwealth countries

1. Improvement in LPI, defined by the World Bank as a trade policy intervention, could raise GDP, employment and exports from a Commonwealth country. We examine this in two different ways/degrees of policy reforms. The first target LPI is Singapore, which is the highest amongst all the Commonwealth countries.
2. The second LPI target is South Africa, which has a relatively 'above-average' infrastructure.
3. All intra-Commonwealth tariffs in all sectors are removed.

The implication of improving trade facilitation and reduction in tariffs across various sectors would vary among regions, as each region has a comparative advantage in certain commodities. Similarly, the effect of regional integration on welfare and macro-economic indicators would be varied because of the different socio-economic conditions prevailing in these regions.

For the first two scenarios, we compute the shock as the percentage change required in LPI for a given country to reach the LPI levels in Singapore and South Africa, respectively. Modelling LPI in any trade model is not straightforward. We employ the following strategy. To explain our procedure, it is essential to provide background information on how trade is determined in the GTAP model. In particular, percentage changes in bilateral trade flows in the GTAP model are determined by the percentage changes of three factors:

1. Prices of bilateral imports (driven by the market prices in the exporting country, export taxes/subsidies, transportation margins and import tariffs).
2. Aggregate imports in the domestic market.
3. All other factors unobserved in the model, called 'import-augmented technological change' (let us call it A), which captures effects other than prices and domestic demand for imports. Increases in this variable would lead to increased demand for imports as well as their reduced 'effective' prices, as seen in the equation below, wherein all variables are in percentage changes:

*Bilateral imports = Domestic demand for imports + A – Armington-CES * (Bilateral import price – A – Aggregate import prices)*

Thus, for example, when no other prices and quantities change, and 'A' increases by 1%, bilateral imports increase by (1 + *Armington-CES*) %. This is the channel in which we implement LPI shocks in this model.

It is important to understand the policy modelling implications of the choice of this variable to represent trade facilitation. A positive import-augmented technological change leads to higher effective demand and lower effective prices; thus, its effects are much more pronounced than a commensurate degree of tariff shock. Therefore, even small changes in this can result in large economic changes. Most papers in the literature capture non-tariff barriers through this variable and, typically, the shocks are quite small. For example, Francois *et al*. (2012) employed a 2 per cent increase in this variable to model the reduction on non-tariff barriers by the EU on Colombian and Peruvian exports. Thus, we do capture a reasonable extent of real-world features when we identify the shock needed to move Bangladesh to the level of Singapore to the tune of 60 per cent (based on calculations from Table 2).

An alternative way of modelling trade facilitation could be estimating trade costs associated with soft infrastructure, in ad valorem tariff equivalent form and then removing them as if they were tariffs – to the extent that they are similar to the tariffs in the GTAP database, such a simulation that might have resulted in numbers similar to Scenario 3. This approach appears to be more direct and logical, but has several serious problems. Firstly, treating trade costs as tariff equivalents leads to biased welfare results, since they include the 'imaginary' tariff revenue gains and losses associated with trade

facilitation. In this context, we should remember that welfare changes are associated with regional income, which is partly an aggregation of various tariff and tax revenues. Secondly, estimation of trade costs attributable to a lack of soft infrastructure is extremely challenging, if not impossible, given the lack of data and difficulties in estimation. Thirdly, the tariff-equivalent mechanism grossly ignores the fact that trade facilitation reduces prices and increases demand simultaneously, in addition to the elasticity-induced demand responses to prices. Thus, from theoretical, practical and computational viewpoints, our choice of the technology variable to proxy trade facilitation is more reasonable than the tariff-equivalent way of representing trade costs associated with trade facilitation.

4. Results

In this section, we discuss the results of our analysis in the following sequence. Firstly, we look into the macro-economic and more aggregate sectoral results in section 3.1. Then we focus on India's bilateral exports and imports as specific important sectors in section 3.2, distinguishing between intra-Commonwealth and other trade.

4.1 Aggregate global results

In the GTAP model, tariff elimination or reduction leads to a reduction in the domestic market prices of imports. This results in increased demand for imports by firms for intermediate inputs, private households and government. Cheaper imported intermediate inputs for firms may also reduce the cost of production across the spectrum of commodities. Further, reduced demand for domestic production may result in an excess supply situation, which can be rectified by the reduction in market prices to reach the equilibrium. In bilateral terms, when an importer reduces tariffs on many or all of its partners, the degree of increase or decrease of imports from each of them would depend on two opposite effects – trade creation enabled by overall expansion in demand for cheaper imports, and trade diversion created by the expansion of exports by partners facing higher tariff reduction at the cost of others, accomplished in terms of response to price differentials. This is similar to income and substitution effects in the standard micro-economic theory. This is the major mechanism that affects bilateral trade, which adds up to the sectoral consumption, which, in total, equals the output. Our shocks on trade facilitation act in a similar fashion, by reducing effective prices of imports and also raising the demand for imports.

All these sector-specific results add up to the macro-economic results. Table 4 focuses on the welfare results of several countries, while Table 5 shows the GDP results. In the GTAP model, welfare changes are measured in equivalent variations. This is the amount of money consumers in any region would pay instead of facing the changes in prices and quantities resulting from the simulations. In other words, it is the implicit economic value of the policy changes for the whole economy. This is entirely different from GDP, which measures the total value added in the economy.

Every Commonwealth country gains from trade facilitation, as modelled in this paper. Of course, the higher the extent of trade facilitation, the more pronounced are the welfare and GDP results. We observe a combined welfare gain of US$397 billion by the Commonwealth when every country belonging to it enhances its LPI to Singapore's level; if the target LPI is that of South Africa, the gain is US$138 billion. Comparing this with the Commonwealth gain of a paltry US$78 billion with complete tariff reduction, we get an impression that trade facilitation is not only a less political (than tariff elimination) and low-hanging fruit as compared with tariff reduction, but also a much more welfare-enhancing policy option.

While the numbers we show here appear enormously high, a comparison with those identified in the literature suggests that they are not. Hufbauer and Schott (2013) show a US$960 billion gain in global GDP due to trade facilitation, while Wilson *et al.* (2003) suggest a export gain of US$254 billion within APEC

Table 4. Impact on welfare under different scenarios (million US$)

Region	Scenario 1	Scenario 2	Scenario 3
1 Australia	24,858	5,268	5,281
2 Bangladesh	20,091	10,365	578
3 Botswana	2,542	1,374	21
4 Brunei	326	91	117
5 Cameroon	4,669	2,616	105
6 Canada	15,279	3,778	12,267
7 Cyprus	3,005	992	102
8 Dominica	2,062	745	48
9 Ghana	9,547	4,570	771
10 India	107,478	34,150	17,929
11 Jamaica	3,349	1,290	98
12 Kenya	8,754	4,273	266
13 Malawi	1,595	799	714
14 Malaysia	17,909	2,593	5,369
15 Malta	1,377	438	29
16 Mauritius	4,662	2,334	–8
17 Mozambique	6,263	3,738	160
18 Namibia	1,855	874	17
19 Nigeria	21,136	7,929	149
20 New Zealand	5,519	553	4,620
21 Pakistan	9,912	4,195	732
22 Rwanda	819	379	36
23 Singapore	12,656	2,861	1,905
24 Sri Lanka	12,054	5,729	796
25 South Africa	22,975	6,398	3,863
26 Tanzania	9,755	5,684	250
27 Trinidad	2,563	999	190
28 UK	53,127	17,041	22,208
29 Uganda	4,099	2,459	136
30 Zambia	7,194	4,119	41
Commonwealth	397,430	138,634	78,790
31 Brazil	–1,431	–645	–302
32 Russia	–1,474	–438	169
33 USA	–24,163	–9,993	–4,678
34 China	–18,051	–7,667	–6,918
35 Japan	–6,521	–2,371	–3,011
36 Korea	–2,880	–1,181	–1,307
37 EU25	–13,399	–5,524	–5,726
38 Rest of World	–26,715	–10,215	–5,983
Total	302,795	100,600	51,041

Source: Simulation results.

members; in addition, OECD (2014) suggests US$40 billion income gains for every 1 per cent decline in trade costs.

Welfare gains appear to be bigger for larger economies in general, indicating that economic size effects matter more than the extent to which each country improves trade facilitation. In other words, although Australia would hardly improve its trade facilitation in this simulation, it has much to gain when other Commonwealth countries pursue trade facilitation. Major non-Commonwealth countries lose, pulling down the global welfare effects, but this is still a positive outcome for the whole world.

In GDP terms, as seen in Table 5, the effects are even more conspicuous. The Commonwealth

Table 5. Impact on gross domestic product under different scenarios

	US$ million			%		
Region	Scenario 1	Scenario 2	Scenario 3	Scenario 1	Scenario 2	Scenario 3
1 Australia	47,694	12,646	11,613	1.45	0.27	0.31
2 Bangladesh	22,284	10,817	203	19.15	9.93	0.8
3 Botswana	1,312	645	37	16.08	8.63	0.1
4 Brunei	687	193	–78	0.43	0.12	0.66
5 Cameroon	3,177	1,808	–165	19.89	11.17	0.68
6 Canada	19,456	5,401	4,047	0.72	0.16	0.73
7 Cyprus	2,668	891	41	12.39	4.02	0.49
8 Dominica	2,531	908	0	3.44	1.24	0.1
9 Ghana	7,257	3,289	395	26.12	12.7	2.2
10 India	144,795	51,641	9,553	5.66	1.69	1.03
11 Jamaica	3,552	1,319	71	22.77	8.85	0.71
12 Kenya	11,705	5,780	–198	21.96	10.52	1.37
13 Malawi	1,694	825	1,367	25.69	13.06	6.77
14 Malaysia	19,345	3,982	6,631	5.18	0.39	1.16
15 Malta	909	278	13	19.86	6.2	0.33
16 Mauritius	3,252	1,551	–17	47.51	24.1	0.04
17 Mozambique	4,454	2,346	269	54.69	34.13	0.91
18 Namibia	1,322	557	–17	14.69	7	0.16
19 Nigeria	12,581	4,173	–2,691	7.48	2.88	0.09
20 New Zealand	7,780	1,347	10,138	3.05	0.21	1.9
21 Pakistan	10,314	4,709	1,786	4.75	1.94	0.26
22 Rwanda	396	131	–37	12.96	6.2	0.59
23 Singapore	18,592	4,122	2,979	2.43	0.58	0.37
24 Sri Lanka	12,970	5,654	–253	20.74	10.12	1.75
25 South Africa	37,913	14,758	6,623	4.68	1.02	0.76
26 Tanzania	5,597	3,149	–457	45.95	27.14	1.92
27 Trinidad	2,437	957	–130	9.64	3.69	0.63
28 UK	84,021	26,687	28,574	1.68	0.54	0.8
29 Uganda	3,615	2,015	–110	24.69	15.07	0.92
30 Zambia	7,584	4,048	9	40.57	23.11	0.34
Commonwealth	501,894	176,627	80,196			
31 Brazil	–11,830	–4,447	–2,026	–0.04	–0.02	–0.01
32 Russia	–9,277	–3,163	–48	–0.03	–0.01	0
33 USA	–86,987	–31,813	–12,325	–0.13	–0.05	–0.03
34 China	–60,022	–22,924	–12,207	–0.18	–0.08	–0.07
35 Japan	–35,509	–12,214	–8,178	–0.08	–0.03	–0.04
36 Korea	–8,253	–3,109	–2,119	–0.17	–0.07	–0.08
37 EU25	–59,115	–22,739	–10,837	–0.06	–0.03	–0.03
38 Rest of World	–83,697	–30,350	–13,651	–0.09	–0.04	–0.04
Total	147,202	45,867	18,806			

Source: Simulation results.

as a whole gains over US$500 billion in GDP when its members enhance their LPI to Singapore's level, for instance, when compared with a small gain in GDP of US$80 million by tariff removal. GDP increases in these countries mainly stem from two factors: effectively cheaper and larger amounts of imports and exports. Cheaper imports benefit consumers as well as producers, who end up producing commodities cheaper than can be exported. All the values in this report are in current prices.

The extent of the reduction in poverty due to an increase in growth has been estimated at between 2 and 3 per cent for every 1 per cent

increase in income (Ravallion and Chen, 1997; World Bank, 2001). Even at a conservative assumption of a one-to-one reduction in poverty when GDP grows, the poverty reduction effects of trade facilitation are phenomenally high, mainly for the poorer countries. This is even more striking when compared with those of tariff elimination, as seen in Table 6. For example, for Mozambique and Mauritius, the reduction in poverty is about 50 per cent in the 'best-case' scenario for trade facilitation, and almost a zero per cent reduction in the scenario of tariff removal. Even a large economy like India is expected to see a sixfold

Table 6. Estimated impact on reduction in poverty rates under different scenarios

	% Reduction in poverty		
Region	Scenario1	Scenario 2	Scenario 3
1 Australia	1.45	0.27	0.31
2 Bangladesh	19.15	9.93	0.8
3 Botswana	16.08	8.63	0.1
4 Brunei	0.43	0.12	0.66
5 Cameroon	19.89	11.17	0.68
6 Canada	0.72	0.16	0.73
7 Cyprus	12.39	4.02	0.49
8 Dominica	3.44	1.24	0.1
9 Ghana	26.12	12.7	2.2
10 India	5.66	1.69	1.03
11 Jamaica	22.77	8.85	0.71
12 Kenya	21.96	10.52	1.37
13 Malawi	25.69	13.06	6.77
14 Malaysia	5.18	0.39	1.16
15 Malta	19.86	6.2	0.33
16 Mauritius	47.51	24.1	0.04
17 Mozambique	54.69	34.13	0.91
18 Namibia	14.69	7	0.16
19 Nigeria	7.48	2.88	0.09
20 New Zealand	3.05	0.21	1.9
21 Pakistan	4.75	1.94	0.26
22 Rwanda	12.96	6.2	0.59
23 Singapore	2.43	0.58	0.37
24 Sri Lanka	20.74	10.12	1.75
25 South Africa	4.68	1.02	0.76
26 Tanzania	45.95	27.14	1.92
27 Trinidad	9.64	3.69	0.63
28 UK	1.68	0.54	0.8
29 Uganda	24.69	15.07	0.92
30 Zambia	40.57	23.11	0.34
Commonwealth			
31 Brazil	–0.04	–0.02	–0.01
32 Russia	–0.03	–0.01	0
33 USA	–0.13	–0.05	–0.03
34 China	–0.18	–0.08	–0.07
35 Japan	–0.08	–0.03	–0.04
36 Korea	–0.17	–0.07	–0.08
37 EU25	–0.06	–0.03	–0.03
38 Rest of World	–0.09	–0.04	–0.04

Source: Simulation results on GDP and assumption that 1% growth in GDP reduces poverty by 1%.

better performance in poverty reduction with trade facilitation as opposed to tariff elimination.

Employment gain is another huge benefit of trade facilitation. Over 52 million jobs may be created in the Commonwealth if its members upgrade their LPI to Singapore's level; if the LPI of South Africa is the target, the gain is over 24 million, much higher than what can be achieved by tariff elimination – about 9 million, as seen in Table 7. Table 10 breaks down the employment effects across two skill levels – given the way labour categories are treated (alike) in the model, we do not observe much deviation from the aggregate labour changes among the skill types.

Table 7. Absolute change in employment

Member	Scenario 1	Scenario 2	Scenario 3
Australia	187,424	39,122	46,766
Bangladesh	10,217,827	5,321,773	1,031,795
Botswana	120,574	63,337	1,284
Brunei	1,771	462	2,081
Cameroon	926,239	533,867	57,036
Canada	134,003	33,027	119,281
Cyprus	32,536	10,658	1,196
Dominica[1]	<3,090	<1,109	<187
Ghana	1,166,621	570,215	167,177
India	14,326,146	4,486,246	4,471,614
Jamaica	117,841	45,180	5,438
Kenya	1,866,358	912,116	194,873
Malawi	1,079,781	550,294	542,819
Malaysia	454,112	56,038	144,903
Malta	27,408	8,417	554
Mauritius	148,064	73,232	215
Mozambique	3,604,143	2,186,674	133,352
Namibia	46,969	22,063	758
Nigeria	2,054,854	760,476	91,376
New Zealand	56,424	5,089	50,132
Pakistan	2,247,202	961,676	475,607
Rwanda	511,620	247,431	34,115
Singapore	72,050	17,038	10,974
Sri Lanka	985,837	465,011	162,399
South Africa	282,043	78,453	64,342
Tanzania	7,642,409	4,489,779	630,618
Trinidad	56,067	22,126	10,367
UK	486,891	157,162	223,816
Uganda	2,570,879	1,540,413	167,305
Zambia	1,420,517	823,011	18,929
Commonwealth	52,844,610	24,480,386	8,861,122
Brazil	−40,334	−21,886	−14,590
Russia	−10,271	−6,847	−6,534
USA	−157,300	−65,390	−35,359
China	−1,423,576	−603,837	−603,837
Japan	−40,517	−15,584	−18,700
Korea	−30,744	−12,490	−14,411
EU25	−96,881	−37,481	−48,441

Source: Simulation results and World Development Indicators for base employment level.

1 There are no data available for employment or labour force in Dominica. Therefore, we assumed 14 per cent unemployment (which is the average between 1989 and 2001) over a population of 75,000 in 2011. In reality, labour force is lower than population, but there is no way to capture it realistically, other than assuming that the entire population forms the labour force. Hence, we take our estimates as upper bound.

Trade balance shows a mixed picture across different countries, but many in the Commonwealth do gain in terms of trade balance as compared with non-Commonwealth members (Table 8). However, it is surprising to see that the UK's trade balance decreases greatly in all scenarios. This is mainly because, to begin with, the UK imports a great deal from the Commonwealth and these imports get further expanded in every scenario owing to reduced effective import price in the United Kingdom. On the other hand, exports from the United Kingdom to the Commonwealth do not expand as much, and hence result in a decline in trade balance.

Table 8. Impact on trade balance under different scenarios (million US$)

Region	Scenario 1	Scenario 2	Scenario 3
Australia	1,683	409	298
Bangladesh	150	11	–183
Botswana	393	188	6
Brunei	125	35	–10
Cameroon	–112	–94	–21
Canada	–458	–47	31
Cyprus	–586	–200	–9
Dominica	–288	–103	–8
Ghana	494	245	–22
India	5,375	1,202	–279
Jamaica	–1,575	–638	–64
Kenya	–2,128	–1,101	–31
Malawi	–113	–59	–88
Malaysia	3,128	629	1,127
Malta	–595	–187	–10
Mauritius	–241	–138	0
Mozambique	209	97	–9
Namibia	179	69	–3
Nigeria	1,132	406	–98
New Zealand	–301	1	–51
Pakistan	–1,574	–685	–345
Rwanda	67	32	3
Singapore	5,660	1,274	917
Sri Lanka	–188	–77	–81
South Africa	78	–44	–212
Tanzania	511	265	–26
Trinidad	803	304	–54
UK	–13,760	–4,356	–4,959
Uganda	53	17	1
Zambia	1,658	840	–7
Brazil	–126	–24	75
Russia	–420	–88	157
USA	8,602	3,723	2,475
China	–7,475	–2,940	–2,054
Japan	1,160	641	1,058
Korea	14	50	156
EU25	854	875	1,809
Rest of World	–2,387	–532	511

Source: Simulation results.

As Table 9 shows, exports rise more than imports in many Commonwealth countries in the scenarios involving trade facilitation. Smaller countries expand their exports much more sharply than larger countries, mainly on account of lower initial values. Later in this paper, we shall delve into greater detail at the commodity and bilateral levels.

4.2 Bilateral commodity-level changes in exports

The appendices show the results at commodity level for different Commonwealth countries for trade both within and beyond the Commonwealth under the first scenario, which involves improvements in trade facilitation to the tune

Table 9. Change in demand for export and import (%)

	Export			Import		
Region	Scenario 1	Scenario 2	Scenario 3	Scenario 1	Scenario 2	Scenario 3
Australia	4.44	0.93	1.34	5.94	1.43	1.67
Bangladesh	35.69	17.93	10.41	25.23	12.74	8.42
Botswana	16.51	8.59	0.21	13.5	7.43	0.47
Brunei	0.06	0	0.94	3.77	1.02	1.19
Cameroon	32.83	18.97	5.43	24.29	14.31	3.83
Canada	1.1	0.25	2.02	1.74	0.47	1.86
Cyprus	7.84	2.7	1.36	9.44	3.32	0.99
Dominica	1.32	0.59	0.81	3.41	1.32	0.62
Ghana	40.39	19.96	10.05	18.79	9.06	5.69
India	13.86	4.57	6.45	9.41	3.58	4.61
Jamaica	–1.07	–0.47	1.68	22.93	9.17	1.93
Kenya	5.16	4.07	9.33	20.76	11.76	4.67
Malawi	7.64	3.98	5.38	16.24	8.16	20.93
Malaysia	6.07	0.78	2.23	6.77	1.35	3.02
Malta	13.36	4.33	0.62	11.39	3.66	0.44
Mauritius	52.57	25.87	0.4	35.78	17.41	0.11
Mozambique	34.57	22.91	2.9	21.4	12.81	3.17
Namibia	19.3	9.73	0.62	20.76	10.63	0.77
Nigeria	3.44	1.41	1.05	5.72	2.1	1.1
New Zealand	4.34	0.37	2.11	7.5	1.03	6.97
Pakistan	20.37	8.64	8.31	15.34	6.69	5.89
Rwanda	18	10.13	2.49	10.68	5.64	1.84
Singapore	4.62	0.88	0.84	7	1.32	1.21
Sri Lanka	21.11	9.21	13.95	13.63	5.53	7.93
South Africa	12.82	3.66	4.47	16.24	5.67	5.23
Tanzania	38.23	23.62	8.85	14.71	9.15	4.4
Trinidad	14.98	6.03	1.39	22.6	9.63	3.3
UK	2.42	0.77	1.5	5.05	1.59	2.14
Uganda	18.29	12.5	4.93	13.49	8.81	3.75
Zambia	37.39	21.14	0.99	25.82	15.41	1.09
Brazil	–0.31	–0.13	–0.03	–0.48	–0.22	–0.09
Russia	–0.1	–0.03	0	–0.33	–0.11	0.01
USA	–0.3	–0.07	0.06	–0.63	–0.23	–0.07
China	–0.85	–0.33	–0.26	–1.02	–0.4	–0.32
Japan	–0.15	–0.02	0.03	–0.56	–0.19	–0.21
Korea	–0.41	–0.13	–0.07	–0.72	–0.25	–0.2
EU25	–0.24	–0.07	–0.03	–0.34	–0.12	–0.09
Rest of World	–0.37	–0.15	–0.13	–0.75	–0.28	–0.19

Source: Simulation results.

Table 10. Change in demand for skilled and unskilled labour (%)

	Skilled labour			Unskilled labour		
Region	Scenario 1	Scenario 2	Scenario 3	Scenario 1	Scenario 2	Scenario 3
Australia	2.06	0.43	0.51	2.06	0.43	0.52
Bangladesh	20.47	10.66	1.83	18.45	9.61	1.97
Botswana	24.27	12.93	0.25	24.05	12.55	0.26
Brunei	1.57	0.41	1.8	1.42	0.37	1.73
Cameroon	19.81	11.47	1.32	16.48	9.46	0.94
Canada	1.03	0.25	0.94	1.03	0.26	0.88
Cyprus	14.92	4.84	0.69	13.25	4.4	0.31
Dominica	4.8	1.72	0.29	4.26	1.53	0.25
Ghana	25.55	12.41	4.08	18.72	9.24	2.2
India	6.43	1.98	1.98	5.03	1.6	1.59
Jamaica	29.56	11.32	1.37	27.2	10.44	1.25
Kenya	30.23	14.72	2.62	21.13	10.35	2.44
Malawi	30.42	15.36	10.96	21.03	10.85	14.58
Malaysia	6.46	0.75	1.7	6.31	0.82	2.33
Malta	22.09	6.77	0.49	21.36	6.58	0.37
Mauritius	52.8	26.37	0.09	47.58	23.36	0.06
Mozambique	60.17	36.1	0.8	43.97	26.88	2.34
Namibia	18.3	8.72	0.39	16.3	7.6	0.22
Nigeria	8.41	3.09	0.51	6.23	2.32	0.19
New Zealand	3.98	0.36	3.47	3.79	0.34	3.49
Pakistan	6.11	2.57	1.15	3.6	1.59	0.92
Rwanda	12.77	6.22	0.89	10.87	5.24	0.71
Singapore	5.46	1.28	0.85	5.08	1.24	0.71
Sri Lanka	27.81	13.14	4.41	20.34	9.58	3.46
South Africa	6.83	1.9	1.55	6.4	1.78	1.47
Tanzania	46.21	27.08	3.75	37.74	22.21	3.15
Trinidad	13.13	5.18	2.49	14.06	5.55	2.54
UK	2.54	0.82	1.17	2.51	0.81	1.15
Uganda	34.68	20.69	1.77	21.82	13.12	1.67
Zambia	42.17	24.26	0.54	37.93	22.09	0.52
Brazil	–0.06	–0.03	–0.02	–0.05	–0.03	–0.02
Russia	–0.03	–0.02	–0.01	–0.03	–0.02	–0.03
USA	–0.17	–0.07	–0.04	–0.19	–0.08	–0.04
China	–0.29	–0.12	–0.12	–0.28	–0.12	–0.12
Japan	–0.13	–0.05	–0.06	–0.13	–0.05	–0.06
Korea	–0.32	–0.13	–0.15	–0.32	–0.13	–0.15
EU25	–0.08	–0.03	–0.04	–0.1	–0.04	–0.05
Rest of World	–0.17	–0.08	–0.06	–0.15	–0.07	–0.09

Source: Simulation results.

of Singapore. In most cases, trade within the Commonwealth has greatly improved, while trade beyond the Commonwealth has improved slightly or, in many cases, deteriorated.

In this section, we take a detailed look at trade in an aggregated group of commodities. In general, agricultural exports to and imports from non-Commonwealth countries decline, while both expand for Commonwealth countries, as shown in Table 11. All Commonwealth countries see a rise in imports of agricultural products, while we observe a huge reduction in non-Commonwealth agricultural imports. Despite a reduction in Commonwealth nations'

Table 11. Impact on bilateral trade of agriculture sector[2] under Scenario 1 (million US$)

	Exports to			Imports from		
Region	Total	Commonwealth	Non-commonwealth	Total	Commonwealth	Non Commonwealth
Australia	–336	2,659	–2,995	680	460	220
Bangladesh	403	329	74	1,932	3,430	–1,497
Botswana	30	17	13	90	106	–15
Brunei	0	0	0	5	–4	9
Cameroon	129	78	51	100	530	–431
Canada	836	2,355	–1,520	496	112	385
Cyprus	42	65	–23	121	240	–119
Dominica	–79	32	–111	160	305	–145
Ghana	265	376	–110	472	1,004	–532
India	–638	4,132	–4,770	2,708	3,681	–973
Jamaica	–22	11	–34	283	402	–118
Kenya	–478	192	–670	652	1,001	–349
Malawi	–21	153	–174	60	115	–55
Malaysia	1,831	4,041	–2,210	1,128	1,164	–36
Malta	58	19	38	59	141	–82
Mauritius	201	122	79	234	438	–205
Mozambique	101	100	1	490	891	–401
Namibia	155	219	–63	106	170	–65
Nigeria	183	165	18	576	2,816	–2,240
New Zealand	485	2,097	–1,612	257	352	–94
Pakistan	1,076	1,366	–290	1,473	2,429	–956
Rwanda	65	61	4	49	83	–34
Singapore	20	263	–243	309	–94	403
Sri Lanka	–205	168	–373	453	796	–342
South Africa	597	1,588	–991	975	1,145	–170
Tanzania	238	293	–56	376	805	–429
Trinidad	76	116	–40	132	254	–122
UK	–346	1,529	–1,875	2,467	–379	2,846
Uganda	165	258	–93	95	209	–113
Zambia	19	111	–91	295	316	–22
Brazil	289	–633	922	–47	–66	18
Russia	23	–260	284	–157	–356	200
USA	800	–1,261	2,062	–1,202	–2,100	898
China	459	–332	791	–1,511	–2,316	806
Japan	10	–39	49	–502	–1,239	736
Korea	–9	–20	11	–134	–493	360
EU25	2,772	696	2,076	–901	–3,392	2,491
Rest of World	–412	–3,834	3,422	–3,995	–8,103	4,108

Source: Simulation results.

agricultural imports from non-Commonwealth countries, the imports within the Commonwealth increase so much, owing to enhanced trade facilitation, that the net changes in imports are positive, and quite high (>US$1 billion) for countries such as Bangladesh, India, Ghana, Kenya, Malaysia, Nigeria, Pakistan and South Africa. Barring Australia, Dominica, India, Jamaica and Kenya, Sri Lanka and the United Kingdom, all Commonwealth countries increase their exports, mainly due to the expansion of intra-Commonwealth trade. In short, we observe enormous expansion in intra-Commonwealth agricultural trade and considerable reduction in agricultural trade between the Commonwealth as a group with other

2 This includes paddy, wheat, fibre, oilseed, sugar, vegetable, other grains, dairy, processed food, meat and fish.

countries. On the other hand, trade between non-Commonwealth countries also expands quite notably.

Table 12 shows the results for trade in primary sectors (agriculture, minerals, extraction and forestry). Intra-Commonwealth trade expansion is clear in this table, but unlike agricultural products, primary sector exports and imports within non-Commonwealth countries do not increase much in these sectors. Trade gains among the Commonwealth countries at the cost of other countries are much more visible and clear in the case of manufacturing exports and imports, shown in Table 13. Table 14 shows the story of the services sector trade. Given that Commonwealth countries such as India trade

Table 12. Impact on bilateral trade of primary sector under Scenario 1 (million US$)

	Exports			Imports		
Regions	Total	Commonwealth	Non-commonwealth	Total	Commonwealth	Non Commonwealth
Australia	–934	23,493	–24,426	2,143	949	1,194
Bangladesh	403	338	65	2,453	4,620	–2,167
Botswana	–173	–138	–35	132	249	–117
Brunei	87	1,585	–1,497	8	–3	11
Cameroon	633	703	–70	398	847	–449
Canada	936	5,608	–4,673	1,063	262	802
Cyprus	40	68	–28	129	253	–124
Dominica	–67	36	–103	123	753	–631
Ghana	447	761	–314	721	1,291	–570
India	3,043	6,303	–3,260	–504	57,436	–57,940
Jamaica	102	24	78	253	432	–180
Kenya	–480	267	–746	513	1,342	–829
Malawi	23	448	–425	75	132	–57
Malaysia	2,765	7,874	–5,109	2,480	2,438	42
Malta	59	20	38	61	146	–86
Mauritius	210	131	79	289	547	–258
Mozambique	–29	194	–223	579	986	–407
Namibia	360	425	–65	197	577	–380
Nigeria	1,129	21,348	–20,219	750	3,109	–2,359
New Zealand	796	2,965	–2,168	434	588	–154
Pakistan	1,223	1,463	–241	1,333	4,107	–2,774
Rwanda	112	277	–165	53	93	–40
Singapore	37	301	–263	1,772	–469	2,241
Sri Lanka	–257	203	–460	351	1,335	–983
South Africa	930	7,193	–6,263	1,603	4,516	–2,912
Tanzania	131	398	–267	523	956	–433
Trinidad	742	1,033	–291	1,067	2,569	–1,503
UK	1,134	7,126	–5,991	5,438	–1,164	6,602
Uganda	189	579	–390	146	267	–120
Zambia	96	219	–123	1,072	2,078	–1,007
Brazil	–473	–1,774	1,302	–691	–1,417	727
Russia	–260	–685	425	–154	–391	237
USA	72	–1,691	1,763	–3,371	–16,969	13,598
China	129	–590	719	–4,364	–16,939	12,575
Japan	–9	–49	40	–612	–9,091	8,479
Korea	–17	–33	17	–398	–4,627	4,229
EU25	–814	–3,812	2,999	–4,021	–14,426	10,406
Rest of World	–7,439	–56,953	49,514	–7,166	–13,694	6,528

Source: Simulation results.
Note: Primary sectors include agriculture and extraction.

Table 13. Impact on bilateral trade of manufacturing sector under Scenario 1 (million US$)

	Exports			Imports		
Region	Total	Commonwealth	Non-Common-wealth	Total	Commonwealth	Non-Common-wealth
Australia	11,757	17,619	–5,862	9,383	6,430	2,953
Bangladesh	9,948	3,737	6,211	4,278	15,767	–11,489
Botswana	1,037	473	564	94	1,259	–1,165
Brunei	–47	16	–63	94	–32	126
Cameroon	837	225	613	735	2,830	–2,094
Canada	2,258	10,213	–7,956	5,108	3,064	2,044
Cyprus	620	358	262	840	3,004	–2,164
Dominica	321	339	–18	255	2,608	–2,353
Ghana	3,084	2,184	900	1,623	7,131	–5,508
India	44,781	45,231	–450	27,549	80,435	–52,887
Jamaica	89	130	–42	724	1,947	–1,223
Kenya	1,535	1,620	–85	1,508	6,110	–4,602
Malawi	147	152	–4	123	570	–447
Malaysia	11,892	21,365	–9,473	8,570	19,804	–11,234
Malta	354	354	0	1,052	2,256	–1,203
Mauritius	1,779	1,072	708	1,068	2,648	–1,580
Mozambique	999	388	611	245	2,288	–2,043
Namibia	619	244	376	382	1,355	–974
Nigeria	1,040	1,018	23	1,152	17,729	–16,577
New Zealand	1,433	2,170	–737	1,781	3,419	–1,638
Pakistan	4,931	5,373	–442	4,473	13,939	–9,466
Rwanda	44	20	24	14	420	–406
Singapore	15,871	37,476	–21,605	10,218	417	9,801
Sri Lanka	3,202	2,852	350	820	7,188	–6,368
South Africa	13,707	23,451	–9,745	12,691	15,514	–2,823
Tanzania	1,403	955	448	234	4,077	–3,843
Trinidad	1,802	2,239	–437	430	1,570	–1,139
UK	17,613	44,689	–27,076	24,021	507	23,514
Uganda	485	412	73	41	1,788	–1,748
Zambia	4291	1,878	2,414	525	2,209	–1,684
Brazil	–640	–704	63	–270	–546	276
Russia	–565	–1,224	659	–586	–632	46
USA	–10,456	–10,312	–144	–7,565	–16,100	8,535
China	–18,210	–31,848	13,638	–8,631	–7,975	–656
Japan	–3,735	–5,916	2,181	–2,574	–4,547	1,973
Korea	–4,039	–6,140	2,102	–2,188	–2,415	227
EU25	–26,523	–15,660	–10,863	–8,138	–17,441	9,303
Rest of World	–19,502	–36,415	16,914	–15,917	–20,762	4,845

Source: Simulation results.
Note: Manufacturing sector includes textile, leather, motor vehicle, light and heavy manufacturing.

many services with non-Commonwealth countries, improved intra-Commonwealth trade facilitation has little, no or negative effects on exports. In terms of overall trade, we observe that the Commonwealth expands hugely in terms of both exports and imports in total, mostly coming from expansion of intra-Commonwealth trade. Table 15 shows the results in changes of total trade, summing up the observations noted above in different broad sectors.

Table 14. Impact on bilateral trade of service sector under Scenario 1 (million US$)

	Exports to			Imports from		
Regions	Total	Commonwealth	Non-commonwealth	Total	Commonwealth	Non-Commonwealth
Australia	71	2,060	–1,988	1,910	662	1,248
Bangladesh	–201	55	–256	474	444	30
Botswana	157	69	88	153	290	–137
Brunei	–34	22	–55	64	–4	68
Cameroon	159	76	83	286	504	–218
Canada	1,685	2,751	–1,067	1,334	274	1,060
Cyprus	290	361	–71	469	553	–85
Dominica	–119	159	–279	127	177	–51
Ghana	224	122	102	377	476	–98
India	–5,280	706	–5,987	8,485	9,846	–1,361
Jamaica	–226	54	–280	536	479	57
Kenya	–624	–28	–596	516	358	158
Malawi	–16	9	–25	92	59	33
Malaysia	–596	876	–1,473	1,857	1,188	670
Malta	592	339	252	288	494	–205
Mauritius	368	179	190	535	561	–26
Mozambique	892	808	84	296	462	–166
Namibia	25	28	–3	71	105	–34
Nigeria	218	82	136	1,389	2,935	–1,545
New Zealand	–258	288	–546	614	335	279
Pakistan	–62	174	–236	973	1,536	–562
Rwanda	43	17	26	6	40	–34
Singapore	–1,424	4,538	–5,962	3,561	–12	3,574
Sri Lanka	–278	4	–282	811	668	143
South Africa	–1,145	455	–1,600	2,195	1,599	596
Tanzania	447	147	300	294	408	–114
Trinidad	–110	21	–131	78	72	6
UK	–3,213	9,817	–13,030	9,341	–727	10,068
Uganda	–55	16	–71	168	225	–57
Zambia	–10	7	–18	264	208	57
Brazil	275	120	154	–328	–569	242
Russia	386	135	251	–373	–628	255
USA	4,573	2,818	1,755	–3,901	–6,223	2,322
China	1,485	408	1,077	–1,357	–1,676	318
Japan	1,216	607	608	–1,110	–1,658	547
Korea	647	238	409	–699	–992	292
EU25	8,930	5,363	3,567	–6,518	–14,058	7,540
Rest of World	9,210	3,662	5,549	–5,036	–6,889	1,854

Source: Simulation results.

5. Conclusions

This study aimed to assess the impact of changes in trade facilitation on Commonwealth member countries. We compared three scenarios: one in which all Commonwealth members are assumed to enhance their trade facilitation to the level of Singapore; another in which they

Table 15. Impact on bilateral trade of total trade under Scenario 1 (million US$)

	Exports to			Imports from		
Regions	Total	Common-wealth	Non-common-wealth	Total	Common-wealth	Non-Common-wealth
Australia	10,895	43,171	–32,276	13,435	8,041	5,394
Bangladesh	10,151	4,130	6,020	7,205	20,831	–13,625
Botswana	1,021	404	617	379	1,798	–1,419
Brunei	6	1,622	–1,616	166	–38	205
Cameroon	1,629	1004	626	1,419	4,180	–2,761
Canada	4,878	18,573	–13,695	7,506	3,600	3,906
Cyprus	951	787	163	1,437	3,809	–2,372
Dominica	134	534	–400	504	3,539	–3,034
Ghana	3,755	3,068	688	2,722	8,898	–6,176
India	42,543	52,240	–9,697	35,530	147,717	–112,188
Jamaica	–36	208	–244	1,512	2,858	–1,346
Kenya	432	1,859	–1,428	2,537	7,810	–5,273
Malawi	154	608	–454	290	762	–472
Malaysia	14,061	30,115	–16,054	12,908	23,430	–10,522
Malta	1,004	714	290	1,401	2,896	–1,495
Mauritius	2,358	1,382	976	1,892	3,756	–1,864
Mozambique	1,862	1,390	472	1,119	3,736	–2,617
Namibia	1,005	697	308	650	2,037	–1,388
Nigeria	2,387	22,448	–20,060	3,291	23,773	–20,482
New Zealand	1,971	5,422	–3,451	2,830	4,342	–1,513
Pakistan	6,091	7,010	–919	6,780	19,582	–12,802
Rwanda	200	314	–114	73	553	–481
Singapore	14,484	42,315	–27,831	15,552	–64	15,616
Sri Lanka	2,666	3,058	–392	1,983	9,191	–7,208
South Africa	13,492	31,100	–17,608	16,489	21,628	–5,139
Tanzania	1,981	1,500	482	1,051	5,441	–4,390
Trinidad	2,435	3,293	–859	1575	4,211	–2,636
UK	15,535	61,632	–46,097	38,800	–1,384	40,184
Uganda	620	1,007	–388	355	2,280	–1,925
Zambia	4,377	2,104	2,273	1,861	4,495	–2,634
Brazil	–838	–2,358	1,520	–1,288	–2,533	1,244
Russia	–438	–1,774	1,335	–1,112	–1,651	539
USA	–5,812	–9,185	3,374	–14,838	–39,293	24,455
China	–16,595	–32,030	15,435	–14,352	–26,590	12,238
Japan	–2,529	–5,358	2,829	–4,296	–15,295	10,999
Korea	–3,408	–5,936	2,528	–3,286	–8,034	4,748
EU25	–18,407	–14,109	–4,298	–18,677	–45,926	27,249
Rest of World	–17,730	–89,706	71,976	–28,118	–41,345	13,227

Source: Simulation results.

enhance it to the level of South Africa; and a third in which every member eliminates tariffs on all imports within the Commonwealth. This first scenario is the most optimistic, while the second one is not very unrealistic, since the trade facilitation level of South Africa could serve as a reasonable target for most of the developing countries.

We find that the results for the first scenario are the biggest and most positive among all three scenarios, in terms of welfare, GDP, employment and trade, mainly within the Commonwealth and, to an extent, beyond the Commonwealth, and mainly in the agricultural sector. Extending the results to infer the poverty-reduction effects, we observe that, even in the

most conservative case, poverty reduction could be immense if all member countries strive to attain the trade facilitation level of Singapore. Trade facilitation improves trade balance in most of the poorer Commonwealth countries. A huge reduction in trade balance for the United Kingdom arises because of increased reliance on imports from the now- easier-to-trade Commonwealth countries, which already trade substantially with the United Kingdom.

In the most optimistic scenario of trade facilitation, agricultural exports and imports greatly expand within the Commonwealth, but they also expand among the non-Commonwealth countries. However, intra-Commonwealth trade expands in all merchandise sectors at the cost of trade between the Commonwealth and beyond. In non-agricultural sectors, trade does not even expand among the non-Commonwealth countries. In the services sector, countries such as India, which relies greatly on exports to non-Commonwealth countries, actually suffer in terms of exports, since trade facilitation is focused on the Commonwealth alone.

Overall, we find quite positive results for trade facilitation among the Commonwealth countries. In the past, several studies have shown that the trade costs among these countries are quite low, and our paper's findings are in line with such observations. Therefore, the members of the Commonwealth may work together towards a common objective of trade facilitation.

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Appendix: Bilateral trade at commodity level

Appendix 1. Impact on bilateral trade of paddy under Scenario 1 (million US$)

	Export			Import		
Region	Total	Common-wealth	Non-Common-wealth	Total	Common-wealth	Non-Common-wealth
Australia	–14.57	3.26	–17.83	5.94	3.93	2.01
Bangladesh	–0.68	0.00	–0.68	606.63	599.63	7
Botswana	0.91	0.76	0.15	–2.64	–2.32	–0.32
Brunei	0.03	0	0.03	0.23	–0.14	0.37
Cameroon	0	0	0	4.27	91.45	–87.18
Canada	0.64	0.63	0.01	–1.01	–0.62	–0.39
Cyprus	0	0	0	–0.69	2.13	–2.82
Dominica	0.25	0.39	–0.14	0.44	0.16	0.28
Ghana	0.96	0.6	0.36	68.87	138.64	–69.77
India	342.77	949.27	–606.5	2.99	2.26	0.73
Jamaica	0	0	0	4.96	2.23	2.73
Kenya	1.97	2	–0.03	–14.96	30.8	–45.76
Malawi	1.03	1.21	–0.18	0.3	0.33	–0.03
Malaysia	1.78	2.99	–1.21	41.89	49.3	–7.41
Malta	0.02	0	0.02	–0.19	0.88	–1.07
Mauritius	8.21	1.03	7.18	–14.28	–9.46	–4.82
Mozambique	1.63	0.63	1	73.78	139.16	–65.38
Namibia	0.16	0	0.16	–2.43	0.69	–3.12
Nigeria	0.74	0.41	0.33	268.13	507.24	–239.11
New Zealand	0	0.02	–0.02	–1.31	3.13	–4.44
Pakistan	610.88	744.31	–133.43	8.39	3.13	5.26
Rwanda	0.09	0.03	0.06	5.25	5.63	–0.38
Singapore	–0.09	0.18	–0.27	2.32	–3.51	5.83
Sri Lanka	–2.02	–0.36	–1.66	48.21	48.56	–0.35
South Africa	1.54	2.01	–0.47	–7.77	45.02	–52.79
Tanzania	11.42	10.58	0.84	60.73	75.46	–14.73
Trinidad	0.19	0.17	0.02	–0.02	1.41	–1.43
UK	0.37	1.99	–1.62	5.83	–21.88	27.71
Uganda	–0.09	0.19	–0.28	4.58	6.13	–1.55
Zambia	0	0	0	2.12	2.93	–0.81
Brazil	–33.04	–45.85	12.81	–1.68	–0.15	–1.53
Russia	2.61	0.04	2.57	–0.54	–2.13	1.59
USA	21.9	–19.08	40.98	–15.2	–28.71	13.51
China	5.69	–4.18	9.87	–5.36	–0.81	–4.55
Japan	–6.91	–7.65	0.74	–6.25	–5.09	–1.16
Korea	0.13	–0.04	0.17	0.01	–0.75	0.76
EU25	32.7	12.28	20.42	–4.32	–37.33	33.01
Rest of World	–300.57	–487.26	186.69	–446.57	–679.19	232.62

Source: Authors' simulation.

Appendix 2. Impact on bilateral trade of wheat under Scenario 1 (million US$)

Region	Export			Import		
	Total	Common-wealth	Non-Common-wealth	Total	Common-wealth	Non-Common-wealth
Australia	–225.55	456.67	–682.22	0.65	0.54	0.11
Bangladesh	0.04	0	0.04	–104.04	68.88	–172.92
Botswana	0	0	0	0.04	0.11	–0.07
Brunei	0	0	0	0	–0.01	0.01
Cameroon	0.01	0	0.01	–27.96	102.51	–130.47
Canada	304.71	829.03	–524.32	1.97	0.21	1.76
Cyprus	–2.46	0.01	–2.47	1.69	0.28	1.41
Dominica	0.04	0	0.04	–5.71	27.01	–32.72
Ghana	0.67	0	0.67	–29.66	20.5	–50.16
India	15.09	25.89	–10.8	0.77	0.81	–0.04
Jamaica	–0.03	0	–0.03	–2.88	31.32	–34.2
Kenya	14.5	14.47	0.03	–2.31	235.27	–237.58
Malawi	2	0.17	1.83	6.6	48.14	–41.54
Malaysia	4.54	4.63	–0.09	–24.76	50.51	–75.27
Malta	0.06	0.05	0.01	–0.08	0.14	–0.22
Mauritius	0	0	0	–5.5	19.62	–25.12
Mozambique	34.09	0	34.09	–11.94	112.81	–124.75
Namibia	0.11	0.1	0.01	–2.14	11.21	–13.35
Nigeria	0.01	0	0.01	88.84	522.22	–433.38
New Zealand	0.37	0.38	–0.01	3.97	4.32	–0.35
Pakistan	232.82	277.62	–44.8	52.87	56.36	–3.49
Rwanda	0.05	0.02	0.03	2.26	13.16	–10.9
Singapore	0	0	0	0.47	–2.56	3.03
Sri Lanka	0.05	0	0.05	–146.66	–71.12	–75.54
South Africa	0.31	7.53	–7.22	72.74	159.41	–86.67
Tanzania	15.23	12.12	3.11	11.38	184.18	–172.8
Trinidad	0	0	0	0.75	0.1	0.65
UK	–46.92	0.97	–47.89	17.35	–5.1	22.45
Uganda	0.03	0	0.03	–25.12	32.24	–57.36
Zambia	0	0	0	4.71	6.59	–1.88
Brazil	–64.19	–98	33.81	–11.73	–2.23	–9.5
Russia	–63.59	–255.73	192.14	–0.3	0.06	–0.36
USA	–306.54	–842.9	536.36	–38.61	–41.89	3.28
China	0.44	–0.62	1.06	–21.36	–32.78	11.42
Japan	0.04	0.02	0.02	–0.66	–111.5	110.84
Korea	–0.05	0	–0.05	–2.16	–69.95	67.79
EU25	–137.13	–230.46	93.33	–32.1	–124.58	92.48
Rest of World	–262.74	–323.67	60.93	–255.37	–897.02	641.65

Source: Authors' simulation.

Appendix 3. Impact on bilateral trade of plant fibre under Scenario 1 (million US$)

	Export			Import		
Region	Total	Common-wealth	Non-Common-wealth	Total	Commonwealth	Non-Commonwealth
Australia	156.45	296.26	–139.81	0.47	0.26	0.21
Bangladesh	176.25	187.8	–11.55	574.08	800.39	–226.31
Botswana	0.01	0	0.01	0.03	0.07	–0.04
Brunei	0	0	0	0	0	0
Cameroon	69.17	48.47	20.7	0.06	0.21	–0.15
Canada	1.83	2.08	–0.25	0.1	0.03	0.07
Cyprus	0.01	0.01	0	0.12	0.12	0
Dominica	0.02	0.02	0	0.02	0.05	–0.03
Ghana	2.57	2.35	0.22	1.35	1.69	–0.34
India	86.55	649.84	–563.29	107.11	132.41	–25.3
Jamaica	–0.04	0	–0.04	0.03	0.05	–0.02
Kenya	14	5.63	8.37	–0.22	–0.13	–0.09
Malawi	2.98	11.86	–8.88	3.05	3.07	–0.02
Malaysia	29.71	33.05	–3.34	15.73	38.24	–22.51
Malta	0.02	0.01	0.01	0.02	0.04	–0.02
Mauritius	0	0	0	15.86	27.92	–12.06
Mozambique	2.37	3.03	–0.66	0	0.04	–0.04
Namibia	0.01	0	0.01	–0.01	0.02	–0.03
Nigeria	60.71	58.12	2.59	1.13	3.07	–1.94
New Zealand	–0.11	0.2	–0.31	0.02	0.05	–0.03
Pakistan	102.26	112.24	–9.98	275.37	447.47	–172.1
Rwanda	0	0	0	–0.01	0	–0.01
Singapore	0.2	0.26	–0.06	0.51	1.73472E–17	0.51
Sri Lanka	10.24	9.86	0.38	–0.61	0.94	–1.55
South Africa	–0.4	6.06	–6.46	8.68	9.52	–0.84
Tanzania	42.81	15.41	27.4	0.27	0.28	–0.01
Trinidad	0	0	0	0	0.01	–0.01
UK	1.24	3.02	–1.78	3.1	–0.63	3.73
Uganda	3.78	10.42	–6.64	0	0.04	–0.04
Zambia	–19.49	9.31	–28.8	0.06	0.08	–0.02
Brazil	3.8	–41.01	44.81	–0.21	–1.14	0.93
Russia	–0.05	–0.1	0.05	–0.1	–0.57	0.47
USA	–31.43	–280.87	249.44	–0.69	–0.93	0.24
China	–7.27	–7.62	0.35	–238.02	–554.22	316.2
Japan	–0.16	–0.2	0.04	–2.14	–7.12	4.98
Korea	–0.08	–0.18	0.1	–4.54	–13.07	8.53
EU25	–3.65	–10.33	6.68	–2.98	–6.8	3.82
Rest of World	–12.81	–118.68	105.87	–66.14	–138.31	72.17

Source: Authors' simulation.

Appendix 4. Impact on bilateral trade of oilseed under Scenario 1 (million US$)

	Export			Import		
Region	Total	Common-wealth	Non-Common-wealth	Total	Common-wealth	Non-Common-wealth
Australia	–45.15	13.85	–59	1.03	0.32	0.71
Bangladesh	0.48	0.01	0.47	47.08	86.76	–39.68
Botswana	0.01	0	0.01	0.46	0.49	–0.03
Brunei	0	0	0	0	–0.02	0.02
Cameroon	–0.01	0.03	–0.04	0.42	0.67	–0.25
Canada	115.13	327.49	–212.36	10.56	–0.98	11.54
Cyprus	–0.02	0	–0.02	0.57	1.31	–0.74
Dominica	0	0	0	–0.01	0.3	–0.31
Ghana	10.42	11.59	–1.17	0.66	0.64	0.02
India	–231	51.18	–282.18	16.88	16.27	0.61
Jamaica	0	0	0	0.26	0.41	–0.15
Kenya	–5.74	–0.18	–5.56	21.2	21.9	–0.7
Malawi	17.93	20.03	–2.1	2.22	2	0.22
Malaysia	–26.39	–0.46	–25.93	119.76	81.95	37.81
Malta	0.01	0.01	0	0.04	0.18	–0.14
Mauritius	0.34	0.22	0.12	–0.18	0.67	–0.85
Mozambique	–15.55	0.85	–16.4	–0.05	2.94	–2.99
Namibia	0.01	0.01	0	–0.05	–0.05	0
Nigeria	3.07	3.5	–0.43	1.1	1.1	0
New Zealand	0.27	0.4	–0.13	–0.4	0.37	–0.77
Pakistan	2.04	1.02	1.02	142.99	231.46	–88.47
Rwanda	0.11	0.08	0.03	1.99	2.02	–0.03
Singapore	0.02	0.05	–0.03	0.09	–0.71	0.8
Sri Lanka	1.05	1.14	–0.09	1.35	1.81	–0.46
South Africa	9.65	12.62	–2.97	1.38	2.08	–0.7
Tanzania	–17.72	2.27	–19.99	13.91	13.99	–0.08
Trinidad	0	0	0	0.12	0.92	–0.8
UK	–22.07	0.51	–22.58	23.86	–8.13	31.99
Uganda	12.53	18.13	–5.6	1.03	1.12	–0.09
Zambia	0.42	1.3	–0.88	3.82	3.86	–0.04
Brazil	85.58	–1.73	87.31	–0.79	–1.22	0.43
Russia	2.08	–1.02	3.1	–2.01	–4.35	2.34
USA	143.96	39.7	104.26	–24.67	–31.6	6.93
China	22.57	2.93	19.64	–126.65	–111.41	–15.24
Japan	0.04	0	0.04	–9.71	–57.58	47.87
Korea	–0.02	–0.03	0.01	0.16	–13.56	13.72
EU25	–27.53	–76.69	49.16	–19.75	–124.76	105.01
Rest of World	56.78	–16.72	73.5	–135.37	–311.33	175.96

Source: Authors' simulation.

Appendix 5. Impact on bilateral trade of sugar under Scenario 1 (million US$)

	Export			Import		
Region	Total	Common-wealth	Non-Common-wealth	Total	Common-wealth	Non-Common-wealth
Australia	–3.79	45.23	–49.02	10.62	3.58	7.04
Bangladesh	0.12	0.11	0.01	148.38	430.49	–282.11
Botswana	0.05	0.03	0.02	0.16	0.23	–0.07
Brunei	0	0	0	0.09	–0.03	0.12
Cameroon	0.27	0.01	0.26	13.32	32.62	–19.3
Canada	2.89	11.04	–8.15	12.07	–0.03	12.1
Cyprus	–0.22	0	–0.22	1.36	5.38	–4.02
Dominica	–10.48	0.2	–10.68	2.58	0.8	1.78
Ghana	0.07	0.06	0.01	30.34	97.65	–67.31
India	390.38	643.39	–253.01	24.95	4.29	20.66
Jamaica	–6.8	–3.16	–3.64	5.6	5.77	–0.17
Kenya	–4.72	0.19	–4.91	28.34	96.96	–68.62
Malawi	15.16	30.75	–15.59	0.31	0.31	0
Malaysia	3.76	26.39	–22.63	52.48	37.11	15.37
Malta	0	0	0	7.87	15.04	–7.17
Mauritius	35.87	20.88	14.99	12.43	11.75	0.68
Mozambique	–11.3	8.54	–19.84	32.37	36.39	–4.02
Namibia	0.76	0.31	0.45	–0.6	1.12	–1.72
Nigeria	3.8	3.77	0.03	13.24	3.51	9.73
New Zealand	–1.6	0.59	–2.19	2.29	2.73	–0.44
Pakistan	–1.6	0.69	–2.29	43.73	58.72	–14.99
Rwanda	0.02	0	0.02	0.64	2.93	–2.29
Singapore	–2.6	1.35	–3.95	5.58	–2.7	8.28
Sri Lanka	0.15	0.09	0.06	–62.84	–2.05	–60.79
South Africa	63.05	95.37	–32.32	28.48	13.32	15.16
Tanzania	12.64	12.59	0.05	8.91	68.54	–59.63
Trinidad	–0.17	0.08	–0.25	8.86	0.68	8.18
UK	–32.41	25.52	–57.93	34.58	–3.57	38.15
Uganda	6.51	5.78	0.73	6.92	26.59	–19.67
Zambia	30.9	18.82	12.08	0.47	0.49	–0.02
Brazil	–220.27	–325.48	105.21	–2.19	–2.63	0.44
Russia	0.66	0.03	0.63	0.87	–0.11	0.98
USA	2.88	0.96	1.92	–11.09	–35.03	23.94
China	1.7	0.92	0.78	–9.37	–3.05	–6.32
Japan	0.12	0.06	0.06	–2.48	–8.38	5.9
Korea	–2.28	–1.01	–1.27	–1.47	–6.07	4.6
EU25	21.03	–5.36	26.39	–27.94	–66.61	38.67
Rest of World	–49.13	–145.21	96.08	–174.44	–336.03	161.59

Source: Authors' simulation.

Appendix 6. Impact on bilateral trade of vegetable under Scenario 1 (million US$)

Region	Export			Import		
	Total	Common-wealth	Non-Common-wealth	Total	Common-wealth	Non-Common-wealth
Australia	303.58	371.06	–67.48	38.19	16.39	21.8
Bangladesh	26	28.22	–2.22	188.17	290.09	–101.92
Botswana	0.06	0.05	0.01	2.36	2.56	–0.2
Brunei	–0.21	0	–0.21	0.23	–0.5	0.73
Cameroon	–4.86	0.19	–5.05	5.25	7.48	–2.23
Canada	432.6	599.13	–166.53	30.2	–2.78	32.98
Cyprus	5.16	2.74	2.42	1.42	2.93	–1.51
Dominica	–8.26	–0.08	–8.18	4.49	9.03	–4.54
Ghana	108.99	134.83	–25.84	15.44	15.87	–0.43
India	–35.93	255.14	–291.07	713.52	919.1	–205.58
Jamaica	–1.57	0.07	–1.64	3.14	2.31	0.83
Kenya	–53.04	–11.39	–41.65	34.51	34.74	–0.23
Malawi	–2.62	2.32	–4.94	1.53	1.48	0.05
Malaysia	2.73	9.11	–6.38	–3.53	46.47	–50
Malta	0.8	0.3	0.5	–0.56	2.67	–3.23
Mauritius	0.37	0.2	0.17	16.61	24.09	–7.48
Mozambique	16.12	28.14	–12.02	48.91	51.77	–2.86
Namibia	–3.92	–0.71	–3.21	1.79	1.98	–0.19
Nigeria	15.37	15.29	0.08	22.41	32.81	–10.4
New Zealand	–23.8	35.75	–59.55	11.21	11.26	–0.05
Pakistan	83.62	94.72	–11.1	91.27	209.99	–118.72
Rwanda	1.17	1.06	0.11	1.13	1.95	–0.82
Singapore	0.13	0.87	–0.74	3	–13.91	16.91
Sri Lanka	–12.49	9.59	–22.08	122.4	156.18	–33.78
South Africa	–137.16	98.09	–235.25	3.11	8.7	–5.59
Tanzania	50.31	69.46	–19.15	6.19	6.99	–0.8
Trinidad	0.5	0.64	–0.14	–3.24	9.35	–12.59
UK	–24.8	9.07	–33.87	54.27	–104.17	158.44
Uganda	8.88	11.48	–2.6	2.32	2.9	–0.58
Zambia	–3.5	–2.22	–1.28	14.65	15.39	–0.74
Brazil	9.18	2.11	7.07	–1.86	–4.78	2.92
Russia	–4.93	–6.83	1.9	–12.13	–34.3	22.17
USA	24.52	–29.62	54.14	–93.9	–194.11	100.21
China	–45.4	–140.38	94.98	–47.22	–32.97	–14.25
Japan	0.26	–1.15	1.41	–23.15	–49.21	26.06
Korea	0.13	–1.18	1.31	–5.42	–8.66	3.24
EU25	180.38	66.26	114.12	–25.7	–282.78	257.08
Rest of World	97.37	–221.94	319.31	–215.27	–412.08	196.81

Source: Authors' simulation.

Appendix 7. Impact on bilateral trade of other grains under Scenario 1 (million US$)

	Export			Import		
Region	Total	Common-wealth	Non-Common-wealth	Total	Common-wealth	Non-Common-wealth
Australia	–83.04	42.63	–125.67	–1.03	–1.26	0.23
Bangladesh	3.03	13.21	–10.18	136.64	186.64	–50
Botswana	0.6	0.4	0.2	6.06	7.24	–1.18
Brunei	0	0	0	0.04	–0.14	0.18
Cameroon	37.43	23.47	13.96	11.63	20.02	–8.39
Canada	–40.74	28.99	–69.73	17.29	6.8	10.49
Cyprus	–0.71	0.1	–0.81	9.68	4.64	5.04
Dominica	–3.8	2.73	–6.53	–2.12	14.42	–16.54
Ghana	15.61	108.57	–92.96	10.1	18.73	–8.63
India	–351.47	419.68	–771.15	180.22	215.28	–35.06
Jamaica	–5.64	0.73	–6.37	14.51	9.95	4.56
Kenya	–383.6	13.12	–396.72	150.98	173.27	–22.29
Malawi	–59.91	79.83	–139.74	5.01	5.82	–0.81
Malaysia	–16.91	4.37	–21.28	67.43	176.67	–109.24
Malta	0.41	0.08	0.33	1.7	2.6	–0.9
Mauritius	3.96	4.45	–0.49	3.27	12.77	–9.5
Mozambique	–38.61	2.23	–40.84	69.78	86.25	–16.47
Namibia	0.04	0.2	–0.16	2.74	3.3	–0.56
Nigeria	43.67	37.23	6.44	–4.82	94.92	–99.74
New Zealand	–1.03	8.99	–10.02	5.89	12.19	–6.3
Pakistan	59.2	47.86	11.34	–31.14	122.8	–153.94
Rwanda	23.26	22.42	0.84	3.61	4.76	–1.15
Singapore	0.33	8.74	–8.41	4.8	–8.28	13.08
Sri Lanka	–22.48	94.24	–116.72	77.94	117.3	–39.36
South Africa	–42.56	106.58	–149.14	51.12	82.28	–31.16
Tanzania	–17.58	54.38	–71.96	28.5	31.77	–3.27
Trinidad	0.04	0.1	–0.06	1.17	8.87	–7.7
UK	8.46	40.78	–32.32	75.35	–130.62	205.97
Uganda	–8.1	79.19	–87.29	6.74	9.62	–2.88
Zambia	18.11	62.33	–44.22	17.31	19.02	–1.71
Brazil	204.01	–24.83	228.84	–3.09	–6.72	3.63
Russia	12.45	0.19	12.26	–20.92	–101.16	80.24
USA	267.1	–28.16	295.26	–69.87	–185.17	115.3
China	20.58	–71.06	91.64	–52.46	–74.36	21.9
Japan	–35.34	–39.99	4.65	–32.6	–110.27	77.67
Korea	1.25	–0.93	2.18	–9.62	–66.49	56.87
EU25	376.84	60.91	315.93	–126.31	–637.49	511.18
Rest of World	269.88	–283.36	553.24	–350.79	–988	637.21

Source: Authors' simulation.

Appendix 8. Impact on bilateral trade of dairy under Scenario 1 (million US$)

	Export			Import		
Region	Total	Common-wealth	Non-Common-wealth	Total	Common-wealth	Non-Common-wealth
Australia	90.72	300.12	–209.4	93.68	86.5	7.18
Bangladesh	0.92	0.57	0.35	108.37	200.1	–91.73
Botswana	1.92	1	0.92	34.61	38.42	–3.81
Brunei	0	0	0	0.3	–0.03	0.33
Cameroon	0.98	0.01	0.97	6.37	38.78	–32.41
Canada	20.9	31.03	–10.13	19.98	8.15	11.83
Cyprus	4.87	4.6	0.27	18.24	23.34	–5.1
Dominica	–3.17	1.2	–4.37	41.93	72.2	–30.27
Ghana	3.65	1.95	1.7	64.16	96.63	–32.47
India	–64.21	5.44	–69.65	243.71	288.34	–44.63
Jamaica	1	0.55	0.45	32.43	47.24	–14.81
Kenya	23.03	28.9	–5.87	48.99	51.08	–2.09
Malawi	–1.37	0	–1.37	6.11	8.91	–2.8
Malaysia	28.94	41.96	–13.02	123.87	190.29	–66.42
Malta	3.12	1.35	1.77	5.5	19.5	–14
Mauritius	31.14	15.82	15.32	1.65	27.73	–26.08
Mozambique	0.78	0.78	0	23.52	43.23	–19.71
Namibia	–0.82	0.47	–1.29	7.43	11.32	–3.89
Nigeria	7.1	6.99	0.11	–40	328.65	–368.65
New Zealand	454.11	1,377.74	–923.63	39.3	39.72	–0.42
Pakistan	3.13	7.75	–4.62	94.73	130.42	–35.69
Rwanda	0.17	0.06	0.11	1.99	2.89	–0.9
Singapore	–21.03	16.13	–37.16	33.57	–13.65	47.22
Sri Lanka	–0.14	0.13	–0.27	170.85	181.54	–10.69
South Africa	120.69	139.41	–18.72	61.64	57.86	3.78
Tanzania	6.42	7.57	–1.15	32.49	38.68	–6.19
Trinidad	1.28	0.49	0.79	23.02	52.35	–29.33
UK	–91.49	99.14	–190.63	273.3	–6.34	279.64
Uganda	42.78	43.45	–0.67	21.75	22.97	–1.22
Zambia	–1.18	0.9	–2.08	47.56	48.69	–1.13
Brazil	–3.34	–5.61	2.27	–0.95	–1.45	0.5
Russia	3.91	–0.29	4.2	–15.98	–19.94	3.96
USA	10.94	–79.44	90.38	–68.56	–101.66	33.1
China	–5.86	–11.54	5.68	–147.46	–188.86	41.4
Japan	0.11	–0.52	0.63	–69.41	–98.57	29.16
Korea	0.82	–0.19	1.01	–16.88	–31.97	15.09
EU25	124.73	–141.62	266.35	–101.36	–237.68	136.32
Rest of World	–67.79	–255.25	187.46	–492.69	–791.14	298.45

Source: Authors' simulation.

Appendix 9. Impact on bilateral trade of proc food under Scenario 1 (million US$)

	Export			Import		
Region	Total	Commonwealth	Non-Commonwealth	Total	Commonwealth	Non-Commonwealth
Australia	38.39	345.63	–307.24	440.04	266.24	173.8
Bangladesh	227.29	109.49	117.8	152.22	653.13	–500.91
Botswana	18.98	10.47	8.51	19.7	27.62	–7.92
Brunei	0.1	0.16	–0.06	2.93	–2.89	5.82
Cameroon	25.97	5.64	20.33	78.87	225.29	–146.42
Canada	–48.6	276.2	–324.8	295.5	55.35	240.15
Cyprus	49.66	54.79	–5.13	50.25	121.43	–71.18
Dominica	–47.12	24.74	–71.86	95.38	153.05	–57.67
Ghana	123.62	114.37	9.25	234.5	444.66	–210.16
India	–231.05	963.73	–1,194.78	1,074.76	1,667.11	–592.35
Jamaica	–6.96	11.76	–18.72	157.47	194.24	–36.77
Kenya	–88.97	103.27	–192.24	348.7	316	32.7
Malawi	4.2	5.96	–1.76	31.34	41.47	–10.13
Malaysia	1,852.33	3,936.16	–2,083.83	645.31	346.2	299.11
Malta	50.77	15.8	34.97	33.19	69.05	–35.86
Mauritius	111.92	75.18	36.74	117.46	219.54	–102.08
Mozambique	112.45	55.44	57.01	158.11	303.37	–145.26
Namibia	43.66	86.82	–43.16	48.63	77.11	–28.48
Nigeria	45.69	36.58	9.11	177.79	1,216.11	–1,038.32
New Zealand	263.05	379.56	–116.51	155.28	223.47	–68.19
Pakistan	5.14	74.32	–69.18	693.23	1012.21	–318.98
Rwanda	8.32	5.68	2.64	29.66	46.95	–17.29
Singapore	55.93	231.6	–175.67	164.94	–19.88	184.82
Sri Lanka	–151.77	55.42	–207.19	197.18	313.54	–116.36
South Africa	393.03	773.14	–380.11	478.49	425.95	52.54
Tanzania	122.11	88.28	33.83	167.44	333.56	–166.12
Trinidad	72.41	112	–39.59	70.21	105.76	–35.55
UK	–33.62	1,033.3	–1,066.92	1,369.1	–27.5	1,396.6
Uganda	95.82	83.34	12.48	69.39	96.93	–27.54
Zambia	–5.26	15.01	–20.27	166.24	178.77	–12.53
Brazil	13.09	–92.51	105.6	–23.15	–40.85	17.7
Russia	64.03	5.4	58.63	–51.11	–105.81	54.7
USA	352.79	98.78	254.01	–635.76	–1,089.38	453.62
China	334.55	–63.69	398.24	–508.12	–769.06	260.94
Japan	46.79	10.08	36.71	–242.41	–427.9	185.49
Korea	–12.4	–15.44	3.04	–48.34	–143.81	95.47
EU25	1281.41	664.03	617.38	–381.84	–1,189.4	807.56
Rest ofWorld	–583.87	–1,967.18	1,383.31	–1228.7	–2,210.14	981.44

Source: Authors' simulation.

Appendix 10. Impact on bilateral trade of livestock products under Scenario 1 (million US$)

Region	Export			Import		
	Total	Common-wealth	Non-Common-wealth	Total	Common-wealth	Non-Commonwealth
Australia	–534.99	781.99	–1,316.98	88.49	82.31	6.18
Bangladesh	0.97	1.56	–0.59	71.73	110.65	–38.92
Botswana	7.56	4.23	3.33	29.61	31.26	–1.65
Brunei	0.1	0.13	–0.03	0.66	–0.47	1.13
Cameroon	0.38	0.36	0.02	7.33	11.1	–3.77
Canada	52.3	248.86	–196.56	105.84	46.53	59.31
Cyprus	–12.18	2.72	–14.9	36.88	77.73	–40.85
Dominica	–6.04	2.72	–8.76	22.74	27.76	–5.02
Ghana	3.58	2.22	1.36	75.63	168.98	–93.35
India	–566.91	161.51	–728.42	352.99	444.46	–91.47
Jamaica	–0.56	1.52	–2.08	67.08	107.47	–40.39
Kenya	10.52	37.47	–26.95	35.9	40.2	–4.3
Malawi	0.18	0.92	–0.74	2.94	3.27	–0.33
Malaysia	–43.54	–17.57	–25.97	80.01	144.22	–64.21
Malta	3.01	1.85	1.16	9.23	31.06	–21.83
Mauritius	10.87	4.49	6.38	83.61	101.25	–17.64
Mozambique	–0.23	0.24	–0.47	94.8	114.64	–19.84
Namibia	117.01	131.52	–14.51	50.02	63.32	–13.3
Nigeria	2.19	1.48	0.71	47.78	106.24	–58.46
New Zealand	–195.58	292.38	–487.96	40.52	54.29	–13.77
Pakistan	–22.95	4.79	–27.74	101.81	156.63	–54.82
Rwanda	31.65	31.41	0.24	2.45	3.06	–0.61
Singapore	–11.3	2.32	–13.62	81.87	–27.89	109.76
Sri Lanka	–1.72	1.35	–3.07	41.73	47.73	–6
South Africa	196.84	346.67	–149.83	275.81	340.13	–64.32
Tanzania	13.59	20.6	–7.01	46.22	51.56	–5.34
Trinidad	2.57	2.3	0.27	31.03	74.45	–43.42
UK	–57.05	312.63	–369.68	585.22	–67.87	653.09
Uganda	5.14	6.05	–0.91	7.75	10.14	–2.39
Zambia	2.09	5.85	–3.76	37.36	40.36	–3
Brazil	293.9	0.03	293.87	–1.75	–4.15	2.4
Russia	4.95	–2.13	7.08	–54.76	–87.19	32.43
USA	310.42	–125.48	435.9	–238.35	–373.36	135.01
China	131.05	–38.5	169.55	–339.8	–524.07	184.27
Japan	4.72	–0.81	5.53	–106.4	–344.93	238.53
Korea	1.65	–1.36	3.01	–43.56	–137.94	94.38
EU25	854.14	340.61	513.53	–170.14	–616.41	446.27
Rest of World	350.84	–51.89	402.73	–601.11	–1,299.02	697.91

Source: Authors' simulation.

Appendix 11. Impact on bilateral trade of fish under Scenario 1 (million US$)

	Export			Import		
Region	Total	Common-wealth	Non-Common-wealth	Total	Common-wealth	Non-Common-wealth
Australia	–17.98	2.74	–20.72	1.92	0.88	1.04
Bangladesh	–31.92	–12.05	–19.87	3.05	2.86	0.19
Botswana	0	0	0	–0.12	–0.05	–0.07
Brunei	–0.01	0	–0.01	0.07	–0.01	0.08
Cameroon	–0.08	–0.01	–0.07	0.18	0.14	0.04
Canada	–5.94	0.98	–6.92	3.97	–0.91	4.88
Cyprus	–2.51	–0.06	–2.45	1.88	0.94	0.94
Dominica	–0.12	0.01	–0.13	0.19	0.03	0.16
Ghana	–4.73	–0.74	–3.99	0.98	0.1	0.88
India	7.85	7.04	0.81	–10.08	–9.07	–1.01
Jamaica	–1.82	–0.18	–1.64	0.75	0.53	0.22
Kenya	–5.55	–1.06	–4.49	0.68	0.54	0.14
Malawi	–0.46	–0.05	–0.41	0.09	0.06	0.03
Malaysia	–5.98	0.69	–6.67	9.74	2.73	7.01
Malta	–0.49	0	–0.49	2.14	0.18	1.96
Mauritius	–1.6	–0.28	–1.32	2.57	2.41	0.16
Mozambique	–1.08	–0.29	–0.79	0.63	0.36	0.27
Namibia	–1.54	0.01	–1.55	0.14	0.24	–0.1
Nigeria	0.6	1.55	–0.95	0.87	0.34	0.53
New Zealand	–10.82	1.23	–12.05	0.47	0.12	0.35
Pakistan	1.13	0.22	0.91	0.03	0.08	–0.05
Rwanda	–0.02	0	–0.02	0.07	0.07	0
Singapore	–1.17	1.52	–2.69	11.53	–0.96	12.49
Sri Lanka	–26.01	–3.74	–22.27	3.65	1.2	2.45
South Africa	–7.94	0.77	–8.71	1.12	0.77	0.35
Tanzania	–1.24	0.23	–1.47	0.24	0.11	0.13
Trinidad	–0.42	0.34	–0.76	0.03	0.04	–0.01
UK	–47.83	2.18	–50.01	24.6	–3.31	27.91
Uganda	–2.05	0.12	–2.17	0.04	0.03	0.01
Zambia	–2.66	–0.45	–2.21	0.29	0.27	0.02
Brazil	0.16	0.09	0.07	0.11	–0.18	0.29
Russia	1.16	0.04	1.12	0.39	–0.8	1.19
USA	3.78	4.69	–0.91	–5.74	–18.65	12.91
China	1.04	1.42	–0.38	–14.68	–24.59	9.91
Japan	0.54	1.14	–0.6	–7.19	–18.33	11.14
Korea	2.13	0.61	1.52	–1.81	–0.99	–0.82
EU25	68.97	16.12	52.85	–8.71	–68.48	59.77
Rest of World	90.21	36.89	53.32	–28.49	–41.09	12.6

Source: Authors' simulation.

Appendix 12. Impact on bilateral trade of extraction under Scenario 1 (million US$)

	Export			Import		
Region	Total	Common-wealth	Non-Common-wealth	Total	Common-wealth	Non-Common-wealth
Australia	–597.7	20,833.19	–21,430.89	1,462.75	489.35	973.4
Bangladesh	0.68	9.43	–8.75	521.09	1,190.68	–669.59
Botswana	–202.82	–154.8	–48.02	42.03	143.36	–101.33
Brunei	87.42	1,584.54	–1,497.12	3.4	1.47	1.93
Cameroon	503.64	625.13	–121.49	298.27	316.39	–18.12
Canada	99.81	3,252.87	–3,153.06	566.97	150.12	416.85
Cyprus	–1.24	3.27	–4.51	7.63	12.45	–4.82
Dominica	11.61	4.37	7.24	–37.38	448.42	–485.8
Ghana	181.95	385.57	–203.62	248.92	286.72	–37.8
India	3680.48	2,170.57	1,509.91	–3211.78	53,754.81	–56,966.59
Jamaica	124.09	12.87	111.22	–30.85	30.83	–61.68
Kenya	–2.07	74.09	–76.16	–139.25	341.19	–480.44
Malawi	43.62	294.6	–250.98	15.37	17.48	–2.11
Malaysia	934.06	3,832.31	–2,898.25	1,352.33	1,274.48	77.85
Malta	0.83	0.94	–0.11	1.73	5.11	–3.38
Mauritius	8.75	9.1	–0.35	55.67	108.46	–52.79
Mozambique	–129.25	94.71	–223.96	88.77	94.88	–6.11
Namibia	204.92	206.3	–1.38	91.06	406.49	–315.43
Nigeria	946.04	21,182.8	–20,236.76	173.19	292.88	–119.69
New Zealand	311.61	867.51	–555.9	177.2	236.54	–59.34
Pakistan	146.83	97.67	49.16	–140.16	1,678.07	–1,818.23
Rwanda	47.35	216.14	–168.79	3.68	9.74	–6.06
Singapore	17.05	37.52	–20.47	1,463.6	–374.65	1,838.25
Sri Lanka	–52.34	34.79	–87.13	–101.8	539.25	–641.05
South Africa	333.29	5,604.78	–5,271.49	628.53	3,370.47	–2,741.94
Tanzania	–106.9	104.23	–211.13	147.07	151.21	–4.14
Trinidad	665.68	916.52	–250.84	934.76	2315.5	–1380.74
UK	1,480.51	5,596.59	–4,116.08	2,971.58	–784.81	3,756.39
Uganda	24.22	320.99	–296.77	50.95	58.08	–7.13
Zambia	76.41	108.21	–31.8	777.02	1,761.84	–984.82
Brazil	–761.54	–1141.69	380.15	–643.28	–1351.79	708.51
Russia	–283.46	–424.99	141.53	2.86	–34.85	37.71
USA	–728.31	–429.49	–298.82	–2169.05	–14,868.74	12,699.69
China	–329.65	–257.72	–71.93	–2853.47	–14,623.18	11,769.71
Japan	–19.56	–10.34	–9.22	–109.45	–7,852.28	7,742.83
Korea	–7.98	–13.74	5.76	–264.35	–4,133.3	3,868.95
EU25	–3585.76	–4,508.14	922.38	–3119.49	–11,033.86	7,914.37
Rest of World	–7026.8	–53,118.35	46,091.55	–3170.65	–5,590.28	2,419.63

Source: Authors' simulation.

Appendix 13. Impact on bilateral trade of textiles and apparel under Scenario 1 (million US$)

	Export			Import		
Region	Total	Common-wealth	Non-Common-wealth	Total	Common-wealth	Non-Common-wealth
Australia	326.6	413.94	–87.34	526.75	426.9	99.85
Bangladesh	9,132.92	3,049.85	6,083.07	3051.92	6,028.54	–2,976.62
Botswana	65.81	13.45	52.36	33.25	108.05	–74.8
Brunei	–2.64	–1.26	–1.38	4.19	–1.6	5.79
Cameroon	5.79	3.2	2.59	91.09	227.44	–136.35
Canada	14.14	112.12	–97.98	437.72	782.51	–344.79
Cyprus	5.35	9.9	–4.55	113.79	256.12	–142.33
Dominica	16.48	13.93	2.55	16.69	264.55	–247.86
Ghana	177.21	169.6	7.61	159.97	424.58	–264.61
India	2,250.31	6,668.9	–4,418.59	1,827.67	2,255.16	–427.49
Jamaica	0.29	1.52	–1.23	28.66	53.84	–25.18
Kenya	138.69	141.46	–2.77	277.32	569.31	–291.99
Malawi	1.06	8.7	–7.64	44.35	65.67	–21.32
Malaysia	542.08	806.79	–264.71	323.61	358.02	–34.41
Malta	39.84	12.43	27.41	66.45	136.08	–69.63
Mauritius	1,293.38	856.83	436.55	329.46	496.59	–167.13
Mozambique	24.32	19.37	4.95	84.65	155.23	–70.58
Namibia	–2.64	1.79	–4.43	78.8	129.28	–50.48
Nigeria	43.49	37.4	6.09	254.18	1,025.41	–771.23
New Zealand	238.84	293.89	–55.05	136.06	200.73	–64.67
Pakistan	3,838.58	4,014.87	–176.29	657.54	1,200.93	–543.39
Rwanda	3.48	2.84	0.64	10.38	25.97	–15.59
Singapore	224.05	303.69	–79.64	221.59	10.86	210.73
Sri Lanka	236.99	406.61	–169.62	40.28	1,247.79	–1,207.51
South Africa	341.24	484.75	–143.51	1,135.92	1,325.28	–189.36
Tanzania	369.09	334.58	34.51	142.26	418.91	–276.65
Trinidad	0.38	2.33	–1.95	15.59	55.47	–39.88
UK	137.67	1,127.38	–989.71	1,997.27	816.78	1,180.49
Uganda	56.35	49.45	6.9	49.73	107.27	–57.54
Zambia	11.55	8.12	3.43	166.3	196.76	–30.46
Brazil	–20.68	–15.31	–5.37	–22.14	–61.36	39.22
Russia	–5.17	–4.01	–1.16	1.38	47.43	–46.05
USA	–422.02	–380.49	–41.53	19.49	188.76	–169.27
China	–4128.43	–4,848.46	720.03	–367.3	–174.27	–193.03
Japan	–183.47	–161.26	–22.21	–70.7	–16.31	–54.39
Korea	–267.01	–255.59	–11.42	–94.36	–58.3	–36.06
EU25	–1722.85	–269.42	–1,453.43	535.35	1,444.75	–909.4
Rest of World	–1331.17	–1,110.45	–220.72	–875.26	–1,208.43	333.17

Source: Authors' simulation.

Appendix 14. Impact on bilateral trade of leather under Scenario 1 (million US$)

	Export			Import		
Region	Total	Common-wealth	Non-Common-wealth	Total	Common-wealth	Non-Common-wealth
Australia	35.19	83.11	–47.92	56.88	24	32.88
Bangladesh	87.23	41.34	45.89	64.87	140.57	–75.7
Botswana	1.19	1.07	0.12	4.02	12.42	–8.4
Brunei	0.02	0.05	–0.03	2.16	–0.42	2.58
Cameroon	1.32	0.66	0.66	10.64	24.32	–13.68
Canada	16.64	24.35	–7.71	39.79	9.58	30.21
Cyprus	6.12	6.92	–0.8	28.92	53.5	–24.58
Dominica	–7.8	5.85	–13.65	6.55	12.35	–5.8
Ghana	273.93	268.81	5.12	107.43	202.15	–94.72
India	–389.55	232.79	–622.34	207.39	286.89	–79.5
Jamaica	2.96	2.09	0.87	10.8	3.45	7.35
Kenya	130.87	161.51	–30.64	68.35	64.8	3.55
Malawi	0.16	0.27	–0.11	7.14	11.41	–4.27
Malaysia	25.48	43.53	–18.05	72.87	89.09	–16.22
Malta	8.97	3.7	5.27	7.67	20.49	–12.82
Mauritius	34.02	4.35	29.67	15.41	38.79	–23.38
Mozambique	1.27	1.04	0.23	37.44	68.91	–31.47
Namibia	13.48	11.51	1.97	5.26	12.01	–6.75
Nigeria	232.12	205.18	26.94	68.57	292.65	–224.08
New Zealand	54.39	74.21	–19.82	19.16	22.06	–2.9
Pakistan	26.27	126.5	–100.23	79.37	72.81	6.56
Rwanda	16.12	0.18	15.94	0.61	3.74	–3.13
Singapore	23.28	45.99	–22.71	62.89	–3.42	66.31
Sri Lanka	–8.18	0.03	–8.21	10.04	33.33	–23.29
South Africa	108.51	173.06	–64.55	275.72	155.16	120.56
Tanzania	35.66	33.18	2.48	47.65	123.85	–76.2
Trinidad	0	0.14	–0.14	3.27	7.36	–4.09
UK	16.8	224.15	–207.35	307.64	–87.96	395.6
Uganda	13.41	21.94	–8.53	16.85	72.6	–55.75
Zambia	8.77	6.56	2.21	28.45	37.58	–9.13
Brazil	10.44	4.33	6.11	0.32	–4.33	4.65
Russia	1.08	–0.36	1.44	–3.19	–10.07	6.88
USA	–3.95	–6.43	2.48	–56.01	–117.63	61.62
China	482.86	–109.16	592.02	–71.03	–69.82	–1.21
Japan	–73.97	–73.51	–0.46	–14.29	–16.55	2.26
Korea	–20.57	–13.41	–7.16	–11.89	–20.75	8.86
EU25	–104.74	49	–153.74	–145.54	–608.62	463.08
Rest of World	175.71	19.28	156.43	–136.67	–187.65	50.98

Source: Authors' simulation.

Appendix 15. Impact on bilateral trade of motor vehicles under Scenario 1 (million US$)

	Export			Import		
Region	Total	Common-wealth	Non-Common-wealth	Total	Common-wealth	Non-Common-wealth
Australia	377.33	744.68	–367.35	1,223.46	552.81	670.65
Bangladesh	–5.72	4.45	–10.17	174.71	665.55	–490.84
Botswana	134.01	116.21	17.8	–15.42	39.3	–54.72
Brunei	0.27	0.52	–0.25	19.26	–3.98	23.24
Cameroon	8.4	1.4	7	61.55	278.15	–216.6
Canada	57.78	1,743.27	–1,685.49	911.32	301.61	609.71
Cyprus	192.48	116.02	76.46	216.72	461.2	–244.48
Dominica	–0.2	0.99	–1.19	24.79	95.22	–70.43
Ghana	15.5	10.63	4.87	31.47	738	–706.53
India	3,354.42	3,784.47	–430.05	1,898.35	3,478.72	–1,580.37
Jamaica	–0.12	1.47	–1.59	76.99	107.49	–30.5
Kenya	194.8	179.34	15.46	30.85	695.23	–664.38
Malawi	8.17	7.47	0.7	8.5	42.56	–34.06
Malaysia	512.05	671.52	–159.47	623.59	635.9	–12.31
Malta	64.47	8.58	55.89	597.5	581.39	16.11
Mauritius	–4.8	7.98	–12.78	164.53	292.71	–128.18
Mozambique	25.41	15.6	9.81	24.84	301.93	–277.09
Namibia	21.8	8.13	13.67	60.65	146.53	–85.88
Nigeria	37.1	34.05	3.05	489.78	2672.6	–2,182.82
New Zealand	67.4	100.37	–32.97	199.94	358.58	–158.64
Pakistan	17.86	23.91	–6.05	469.65	927.4	–457.75
Rwanda	2.26	0.53	1.73	3.83	37.22	–33.39
Singapore	334.8	827.44	–492.64	754.77	–24.67	779.44
Sri Lanka	700.23	621.02	79.21	–23.64	873.01	–896.65
South Africa	342.09	1,331.79	–989.7	1,508.94	1,878.07	–369.13
Tanzania	35.41	19.98	15.43	–57.72	402.86	–460.58
Trinidad	–23.65	0.91	–24.56	57.26	291.61	–234.35
UK	2,395.26	6,871.69	–4,476.43	4,052.13	–13.71	4,065.84
Uganda	–1.34	5.07	–6.41	42.83	256.74	–213.91
Zambia	2.17	3.38	–1.21	21.7	192.84	–171.14
Brazil	–71.1	–109.09	37.99	–42	–96.61	54.61
Russia	–50.72	–64.14	13.42	–86.85	–201.56	114.71
USA	24.99	–289.74	314.73	–1471.02	–2,664.65	1,193.63
China	–629.11	–1,410.96	781.85	–802.76	–456.26	–346.5
Japan	–317.73	–1,336.22	1,018.49	–224.41	–252.71	28.3
Korea	–32.98	–803.87	770.89	–124.64	–109.67	–14.97
EU25	251.49	1,003.26	–751.77	–842.21	–2,781.39	1,939.18
Rest of World	742	–598.98	1,340.98	–1276.76	–1,834.38	557.62

Source: Authors' simulation.

Appendix 16. Impact on bilateral trade of light manufacturing under Scenario 1 (million US$)

	Export			Import		
Region	Total	Common-wealth	Non-Common-wealth	Total	Common-wealth	Non-Common-wealth
Australia	632.04	1,220.8	–588.76	1,478.86	808.05	670.81
Bangladesh	38.3	35.22	3.08	467.78	957.89	–490.11
Botswana	454.87	185.72	269.15	160.14	315.76	–155.62
Brunei	–7.19	–3.76	–3.43	13.67	–6.67	20.34
Cameroon	72.75	42.25	30.5	231.53	482.94	–251.41
Canada	1095.12	2,603.86	–1,508.74	832.05	186.32	645.73
Cyprus	26.28	28.05	–1.77	132.82	269.29	–136.47
Dominica	33.64	39.77	–6.13	47.55	289.81	–242.26
Ghana	277.26	257.8	19.46	383.24	991.55	–608.31
India	1861.75	3,673.74	–1,811.99	3,158.88	5,824.17	–2,665.29
Jamaica	3.95	6.8	–2.85	151.26	331.34	–180.08
Kenya	153.55	172.15	–18.6	419.87	868.1	–448.23
Malawi	32.86	32.5	0.36	103.47	149.61	–46.14
Malaysia	1210.78	2,307.05	–1,096.27	928.57	986.76	–58.19
Malta	270.63	174.65	95.98	102.6	233.98	–131.38
Mauritius	343.79	83.8	259.99	120.5	344.7	–224.2
Mozambique	144.01	82.25	61.76	121.11	363.77	–242.66
Namibia	50.37	21.61	28.76	64.2	122.8	–58.6
Nigeria	91.49	81.91	9.58	165.95	1,700.11	–1,534.16
New Zealand	368.34	592.1	–223.76	382.07	517.53	–135.46
Pakistan	–17.02	123.17	–140.19	618.02	1,126.71	–508.69
Rwanda	4.13	2.7	1.43	5.46	63.36	–57.9
Singapore	1,127.08	1,656.2	–529.12	752	19.22	732.78
Sri Lanka	854.35	565.06	289.29	208.39	708.8	–500.41
South Africa	932.05	1,972.57	–1,040.52	1,486.46	1,350.48	135.98
Tanzania	172.2	160.96	11.24	73.62	438.58	–364.96
Trinidad	137.2	132.7	4.5	55.04	233.1	–178.06
UK	1,389.55	4,070.22	–2,680.67	3,822.57	28.48	3,794.09
Uganda	101.94	75.47	26.47	39.35	190.89	–151.54
Zambia	23.44	25.29	–1.85	381.72	525.18	–143.46
Brazil	–27.15	–52.95	25.8	–31.16	–49.65	18.49
Russia	–29.92	–60.05	30.13	–62.44	–72.56	10.12
USA	–134.68	–301.64	166.96	–1079.54	–2,292.77	1,213.23
China	1,004.27	–1,482.78	2,487.05	–638.67	–546.33	–92.34
Japan	189.07	24.59	164.48	–292.14	–539.65	247.51
Korea	–148.3	–279.23	130.93	–134.93	–135.77	0.84
EU25	–882.8	–95.4	–787.4	–728.77	–1,706.45	977.68
Rest of World	9.78	–1,266.4	1,276.18	–2081.32	–3,199.92	1,118.6

Source: Authors' simulation.

Appendix 17. Impact on bilateral trade of heavy manufacturing under Scenario 1 (million US$)

	Export			Import		
Region	Total	Common-wealth	Non-Common-wealth	Total	Common-wealth	Non-Common-wealth
Australia	10,386.24	15,156.39	–4,770.15	6,096.64	4,617.86	1,478.78
Bangladesh	695.32	606	89.32	518.46	7,973.95	–7,455.49
Botswana	380.84	156.38	224.46	–87.72	783.92	–871.64
Brunei	–37.8	20.01	–57.81	54.73	–19.14	73.87
Cameroon	748.8	177.05	571.75	340.49	1,816.72	–1,476.23
Canada	1,074.01	5,729.66	–4,655.65	2,887.2	1,784.03	1,103.17
Cyprus	389.81	196.77	193.04	347.51	1,963.39	–1,615.88
Dominica	278.71	278.09	0.62	159.62	1,946.21	–1,786.59
Ghana	2,339.81	1,477.32	862.49	940.61	4,774.59	–3,833.98
India	37,704.04	30,871.08	6,832.96	20,456.51	68,590.55	–48,134.04
Jamaica	81.47	118.18	–36.71	456.19	1,450.98	–994.79
Kenya	917.29	965.87	–48.58	711.68	3,912.55	–3,200.87
Malawi	104.97	102.61	2.36	–40.5	300.76	–341.26
Malaysia	9,601.83	17,536.06	–7,934.23	6,621.67	17,734.1	–11,112.43
Malta	–30.36	154.44	–184.8	278.19	1,283.83	–1,005.64
Mauritius	113.05	118.65	–5.6	438.26	1,475.54	–1,037.28
Mozambique	804.15	269.79	534.36	–23.29	1,398.16	–1,421.45
Namibia	536.31	200.71	335.6	172.71	944.76	–772.05
Nigeria	636.13	659.01	–22.88	173.59	12,037.9	–11,864.31
New Zealand	703.68	1,109.02	–405.34	1,043.83	2,320.55	–1,276.72
Pakistan	1,064.95	1,084.64	–19.69	2,648.8	10,611.34	–7,962.54
Rwanda	18.38	13.86	4.52	–6.4	289.54	–295.94
Singapore	14,161.71	34,642.96	–20,481.25	8,426.77	414.72	8,012.05
Sri Lanka	1,418.55	1259	159.55	585.3	4,325.42	–3,740.12
South Africa	11,982.76	19,489.3	–7,506.54	8,283.95	10,804.67	–2,520.72
Tanzania	790.85	406.31	384.54	27.92	2,692.57	–2,664.65
Trinidad	1,688.55	2,103.11	–414.56	299.27	982.3	–683.03
UK	13,673.37	32,395.09	–18,721.72	13,841.51	–236.93	14,078.44
Uganda	314.69	260.43	54.26	–108.09	1,160.79	–1,268.88
Zambia	4,245.35	1,834.21	2,411.14	–73.04	1,256.37	–1,329.41
Brazil	–531.7	–530.64	–1.06	–175.35	–334.42	159.07
Russia	–479.87	–1,094.96	615.09	–434.56	–394.98	–39.58
USA	–9,920.63	–9,333.72	–586.91	–4,977.76	–11,213.86	6,236.1
China	–14939.39	–23,996.58	9,057.19	–6,750.84	–6,728.1	–22.74
Japan	–3,349.08	–4,369.71	1,020.63	–1,972.16	–3,721.33	1,749.17
Korea	–3,569.81	–4,788.22	1,218.41	–1,822.56	–2,090.91	268.35
EU25	–24063.82	–16,347.03	–7,716.79	–6,956.84	–13,789.52	6,832.68
Rest of World	–19097.82	–33,458.77	14,360.95	–11546.96	–14,331.42	2,784.46

Source: Authors' simulation.

Appendix 18. Impact on bilateral trade of other services under Scenario 1 (million US$)

Region	Export			Import		
	Total	Common-wealth	Non-Common-wealth	Total	Common-wealth	Non-Common-wealth
Australia	71.23	2,059.58	–1,988.35	1,909.86	662.11	1,247.75
Bangladesh	–200.68	55.01	–255.69	474.3	444.13	30.17
Botswana	157.27	69.02	88.25	152.64	289.99	–137.35
Brunei	–33.8	21.61	–55.41	64.41	–3.74	68.15
Cameroon	159.25	75.82	83.43	285.77	503.95	–218.18
Canada	1,684.52	2,751.15	–1,066.63	1,334.11	274.04	1,060.07
Cyprus	290.2	361.27	–71.07	468.58	553.11	–84.53
Dominica	–119.44	159.25	–278.69	126.6	177.25	–50.65
Ghana	224.34	122.32	102.02	377.49	475.82	–98.33
India	–5280.38	706.48	–5,986.86	8,484.88	9,845.9	–1,361.02
Jamaica	–226.2	53.73	–279.93	536.01	478.79	57.22
Kenya	–623.85	–27.53	–596.32	516.25	358.42	157.83
Malawi	–16.31	8.87	–25.18	92.37	59.45	32.92
Malaysia	–596.19	876.35	–1,472.54	1,857.25	1,187.62	669.63
Malta	591.69	339.37	252.32	288.34	493.82	–205.48
Mauritius	368.49	178.86	189.63	534.59	560.83	–26.24
Mozambique	891.68	807.98	83.7	295.57	461.82	–166.25
Namibia	25.2	28.25	–3.05	71.3	105.31	–34.01
Nigeria	217.92	82.37	135.55	1,389.42	2,934.9	–1,545.48
New Zealand	–258.05	287.55	–545.6	614.26	334.82	279.44
Pakistan	–62.1	173.84	–235.94	973.12	1,535.56	–562.44
Rwanda	43.14	16.83	26.31	5.98	40.26	–34.28
Singapore	–1424.11	4538	–5,962.11	3,561.45	–12.49	3,573.94
Sri Lanka	–277.97	3.8	–281.77	811.13	667.8	143.33
South Africa	–1144.57	455.43	–1600	2,195.05	1,599.32	595.73
Tanzania	447.1	147.03	300.07	293.88	408.23	–114.35
Trinidad	–109.87	21.36	–131.23	78.35	71.95	6.4
UK	–3212.54	9,817.46	–13030	9,340.6	–727.2	10,067.8
Uganda	–54.76	15.83	–70.59	167.82	224.86	–57.04
Zambia	–10.44	7.25	–17.69	264.18	207.51	56.67
Brazil	274.58	120.1	154.48	–327.57	–569.28	241.71
Russia	386.49	135.31	251.18	–372.98	–628.39	255.41
USA	4,572.74	2,817.85	1,754.89	–3901.18	–6,223.22	2,322.04
China	1,485.05	407.99	1,077.06	–1357.29	–1,675.65	318.36
Japan	1,215.88	607.46	608.42	–1110.33	–1,657.57	547.24
Korea	647.44	238.28	409.16	–699.43	–991.7	292.27
EU25	8,929.55	5,362.75	3,566.8	–6518.42	–14,058.33	7,539.91
Rest of World	9210.27	3,661.68	5,548.59	–5035.59	–6,889.23	1,853.64

Source: Authors' simulation.