UNITED NATIONS CONFERENCE ON TRADE AND DEVELOPMENT

February 2018

UNCTAD Research Paper No. 14
UNCTAD/SER.RP/2017/14/Rev.1

Non-tariff measures: lifting CFTA and ACP trade to the next level

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Abstract

The African, Caribbean and Pacific Group of States (ACP) are exploring the opportunities of a free trade agreement. Most ACP members are African countries which are currently negotiating the Continental Free Trade Area (CFTA). With the exception of North Africa, an ACP agreement would extend an African CFTA to include the Caribbean and Pacific members of the ACP group of countries. In this analysis we show that while trade can be significantly improved by removing all remaining tariffs, this can be undermined if five to ten per cent of tariff lines are chosen to be exempt. Furthermore, the gains from addressing non-tariff measures offer greater scope to increase trade. Both an African free trade agreement and extending it to include the Caribbean and Pacific countries will generate positive gains. Negotiators should focus on reducing non-tariff barriers and harmonizing regulatory measures that outweigh the impact of tariffs.

Key words: Trade, ACP, CFTA, Non-tariff measures, Welfare

Contents

Acknowledgements

This note was prepared by David Vanzetti (lead author, Australian National University), Ralf Peters and Christian Knebel (UNCTAD). Bonapas Onguglo, Head, Trade Analysis Branch, Division on International Trade in Goods and Services, and Commodities, UNCTAD, provided overall guidance. The authors thank Lien Huong Do of Australian National University for assistance with data analysis. Financial assistance by the ACP Secretariat is gratefully acknowledged.

1. Introduction

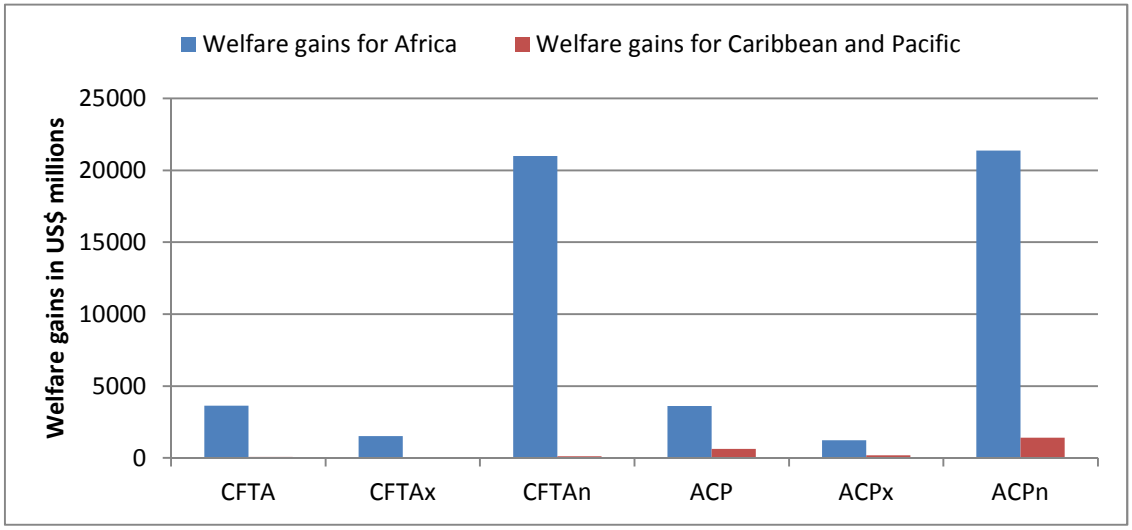
The African, Caribbean and Pacific Group of States (ACP) are exploring the opportunities of a free trade agreement. The group of 79 developing countries was established to negotiate and implement cooperation treaties with the European Union but formed its own political identity in 1975. The EU has been negotiating Economic Partnership Agreements (EPAs) with five regions in Africa, the Caribbean and the Pacific to replace the existing preferential rules to make the ACP-EU relations compatible with WTO rules. Many ACP countries also have free trade agreements with other ACP countries as well as with third parties such as PACER in the case of Pacific countries. The 54 member States of the African Union have agreed to establish the Continental Free Trade Area (CFTA) with the aim of substantially reducing the barriers to trade between the member countries. The 48 African ACP members account for 85 per cent of ACP trade. Negotiations have focused on the speed at which tariffs are removed and the extent to which various products may be regarded as sensitive and exempt from reductions. Ten to fifteen per cent of tariff lines have been suggested as an appropriate proportion of sensitive products, depending on the development status of the country. However, negotiators are unlikely to agree to this because for some countries ten per cent of tariff lines cover all imports. At the other extreme, exemption of one per cent of tariff lines would seem to be overly ambitious, and is also unlikely to be the basis for agreement.

We use a well-known computable general equilibrium (CGE) model to quantify the impacts on trade and welfare for liberalization scenarios in Africa (CFTA) and the entire ACP group. We begin with full tariff eliminations for all products in the CTFA and then compare the outcome to a CFTA with exemptions for five per cent of products. These exemptions reduce the increase in trade by more than 60 per cent. We then show that the potential benefits of tariffs reductions are by far outweighed by eliminating non-tariff barriers and promoting the convergence of regulatory measures, an area also considered in the CFTA negotiations. This suggests that negotiators should focus on non-tariff measures rather than exemptions for sensitive products. Extending the CFTA to include Caribbean and Pacific countries would lead to relatively small additional gains, although addressing non-tariff measures provides greater scope for increases in trade.

We run six scenarios. Three involve the CFTA alone. The first is complete removal of tariffs (scenario CFTA). The second allows for exemptions for five per cent of sensitive products (scenario CFTAx). The third quantifies the impact of reducing non-tariff barriers without tariff reduction (scenario CFTAn). The remaining three scenarios replicate the first three but extend the analysis to the whole of the ACP region, that is, including the Caribbean and Pacific countries (scenarios ACP, ACPx and ACPn). The results are summarised in figure 1, for both groups of countries. African countries as a group gain $3.6 billion per annum from the complete elimination of applied tariffs but even a modest exemption of five per cent of products reduces these gains to $1.5 billion. Reducing the trade distorting effect of NTMs leads to gains of $20 billion. For the Caribbean and Pacific countries, they gain $620 million from entering a free trade agreement with Africa, but once again the gains are reduced by two thirds if exemptions are permitted.

Removing tariffs and addressing non-tariff measures within Africa makes good sense. Extending the agreement to across the Pacific or Caribbean increases the gainsby a modest amount.

Figure 1. Welfare gains from reducing tariff and addressing non-tariff measures



Source: GTAP simulations.

2. Simulating tariff and non-tariff reductions

Methodology

By examining tariff changes at an industry or tariff line level, it is possible to make a reasonable estimate as to their likely effects on imports and, perhaps, exports.[1] However, looking at tariffs alone is insufficient. Because many firms sell their output to other firms as intermediate inputs, lower prices in one sector are beneficial to downstream sectors. For example, the removal of tariffs on textiles makes a country's apparel sector more competitive. Such interactions should be taken into consideration in assessing a policy change. Where a large number of variables are involved, computational models are necessary to take account of the interactions. Trade models are used to make estimates of the possible effects of changes in trade policy on a number of economic variables, such as production, exports, imports, tariff revenues, wages, employment and welfare. The value of the models is in providing an understanding of the interplay of different economic forces, and in enabling comparisons of the relative impact of different policies. They can often help to highlight unexpected or counter-intuitive outcomes, which can assist policy-makers in their choice of policy options and/or development of support measures.

The standard GTAP model is used here. It is a static, multiregional, multisector, CGE model in which perfect competition and constant returns to scale are assumed.[2] Bilateral trade is handled via the so-called Armington assumption that differentiates imports by source. Input-output tables reflect the links between sectors. GTAP is ideally suited for analysis of free trade agreements, involving the preferential liberalisation of bilateral tariffs, which are likely to have international and intersectoral effects. The input-output tables capture the indirect intersectoral effects, while the bilateral trade flows capture the linkages between countries. A shock or policy change in any sector has effects throughout the whole economy. Tariff support for one sector, such as agriculture, tends to have negative effects on downstream sectors (food) by raising

[1] UNCTAD's SMART model, available in WITS, can be used to calculate changes in imports at the tariff line level. However, the model's authors warn against aggregating the changes in imports because there is no accounting for substitution effects between products.

[2] The GTAP model is documented in Hertel (1997). See Chapter 2 in particular for a description of the structure of the model. A useful introduction to the use of GTAP can be found in Burfisher (2011).

prices and costs. Changes in policies in sectors such as rice tend to have relatively important economy-wide effects because many workers provide inputs into production and many consumers purchase the product. Support in one market often has an effect on others because each sector competes with the others for factor inputs, capital, labour and land. CGE models attempt to capture these effects.

Assessing effects of tariff reductions is straightforward in CGE models. There are two commonly used ways of introducing NTMs in a CGE model. The first involves treating the measures as a tariff. The estimated ad valorem equivalents are fed into the model database and reduced in a counterfactual simulation. The difference between the baseline and a counterfactual simulation reveals the trade impact of the non-tariff measures. This approach assumes the NTMs generate rents which are captured by the importer and hence the rent is transferred to consumers when the distorting effect of NTMs is removed.[3]

The second approach is a productivity shock. This is applicable where there are no rents captured, such as many SPS, TBT and other regulatory measures which create efficiency losses. Andriamananjara et al. 2003 refer to this as institutional frictions or 'sand in the wheels'. Regulatory cooperation through harmonization or mutual recognition reduces the cost of trade between two countries.

The ad valorem equivalents of the NTMs used here (Cadot et al., 2015) allow to distinguish between technical NTMs such as SPS and TBT and traditional NTMs such as quotas and price measures, often called NTBs. We model regulatory cooperation on technical measures as productivity shocks and removing NTBs similar as tariff changes.

Both types of shocks can be implemented bilaterally or multilaterally depending on whether the barrier affects all countries or can be specified bilaterally.

Scenarios

Six different scenarios are used to analyse the effects of the CFTA and a possible extension to ACP. These are listed in table 1.

Table 1. Alternative scenarios

No.	Label	Description
1	CFTA	Full tariff elimination in the CFTA
2	CFTAx	Tariff elimination with exemptions in the CFTA
3	CFTAn	Addressing non-tariff measures in the CFTA
4	ACP	Full tariff elimination in the ACP
5	ACPx	Tariff elimination with exemptions in the ACP
6	ACPn	Addressing non-tariff measures in the ACP

The simulations in this study assume the standard closure. This implies that quantity of land, capital and labour used within each country is fixed, although these factors may move between sectors at no cost. In other words, the level of unemployment remains unchanged. All the adjustment in the labour market occurs through real wages rather than employment. It has been shown that the labour market assumptions have limited effects on the other variables such as trade.[4] The above scenarios have also been run with the assumption of unemployment resulting in slightly higher welfare gains.

[3] Alternatively, it is be possible to assume that initial rents are captured by exporters.

[4] See e.g. Vanzetti and Peters (2013).

The GTAP database is aggregated into 49 countries and regions of which 36 are countries and regions within Africa. The ACP countries are disaggregated as much as possible. Other regions are aggregated. The 28 members of the European Union are treated as one region. The economy is divided in to 45 sectors, with almost all goods sectors disaggregated as much as the database will allow.[5] There are eight labour types. The aggregation of regions, sectors and labour are listed in Appendix table 1.

The data

The GTAP database used here is Version 10. This has a base year of 2014. It reflects existing applied bilateral tariffs as notified to WTO at the time, including preferential tariffs as agreed in a myriad of free trade agreements. The specified tariff line cuts for each country are fed into a software package, Tariff Analytical and Simulation Tool for Economists (TASTE).[6] TASTE is a tariff database consisting of 5052 bilateral tariffs in each of 236 trading regions. TASTE is used to calculate the shocks that are in turn fed into GTAP.

One problem we have is that the TASTE database is available for Version 9 of GTAP (2011) but not Version 10 (2014). This is not a problem when eliminating all tariffs between CFTA or ACP countries, as this can be done within GTAP, but it is a constraint when calculating exemptions for sensitive products. To work around this problem we use TASTE to calculate the reductions in tariffs for the regions and sectors in Version 9 of GTAP, and we apply the same proportionate cuts to Version 10 of GTAP.

A potential limitation here is there may have been further tariff reductions since 2014. On the other hand, some negotiated and announced tariff reductions may not have been implemented.

3. Existing barriers to trade

Tariffs

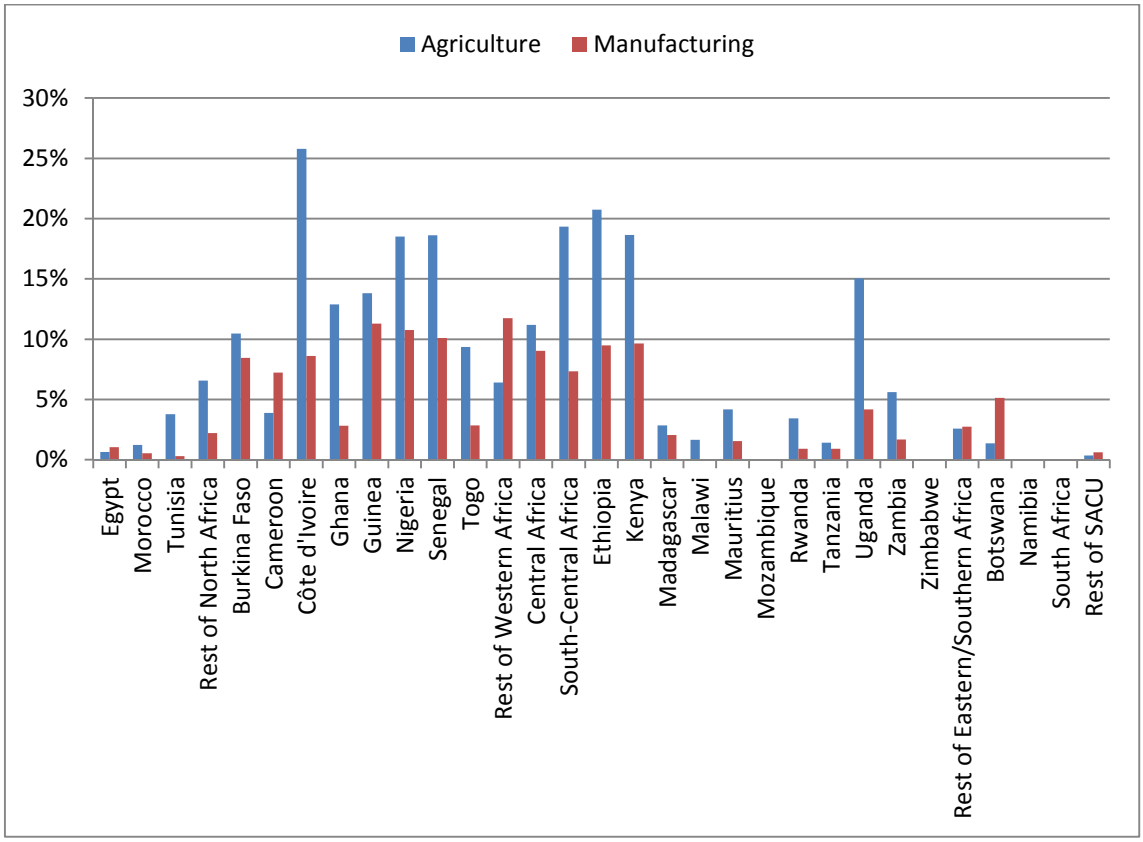
Average MFN tariffs in ACP countries vary a great deal, from zero to 33 per cent. North and Southern African tariffs are rather low while West, Central and Eastern Africa tend to have higher tariffs. A customs union exists in West Africa but external tariffs are high. Average tariffs of Caribbean and Pacific countries vary as well. Many have simple average tariffs of around 10 per cent with slightly lower trade weighted tariffs. Average tariffs in Africa on imports from the rest of Africa are shown in figure 1 for agriculture and industrial (non-agriculture) tariffs. Agriculture tariffs tend to be twice as high as industrial tariffs.

Trade is also fragmented, with many countries having little or no trade with several other African countries, or only importing 200-300 items. This is important for the selection of sensitive products. Negotiators have expressed an interest in exempting from tariff reduction ten per cent of the tariff lines. For some countries, such as Zambia, this could cover all intra-African imports.

[5] Paddy and processed rice are aggregated to avoid a divide-by-zero problem in the simulation.

[6] See Horridge and Laborde (2008) for documentation.

Figure 2. Intra-African agricultural and industrial tariffs



Source: GTAP database Version 10.

Non-tariff measures

UNCTAD has made a determined effort to list non-tariff measures in various countries and to estimate ad valorem equivalents from those listings. However, as yet, it does not have ad valorem equivalents (AVEs) of non-tariff measures for individual ACP countries or regions. Instead, we use estimates for Africa as a whole estimated by Cadot et al. (2015). We assume the NTMs estimated for Africa are applicable to each country. The absence of country specific data means each country has the same value for a given product or sector.

For the Caribbean we use NTM estimates taken from South America and for Pacific countries we use Asia estimates. The ad valorem equivalents estimated by Cadot et al. (2015) for Africa are shown in table 2. Data for Latin America and Asia are somewhat similar. The SPS and TBT AVEs are modelled as productivity shocks. The others are treated as tariffs.[7]

Regulatory NTMs have benefits, for example in limiting the spread of infectious diseases and pests, and therefore it is unrealistic to remove them completely. Some measures may be too entrenched to be negotiated away. That leads to a challenging decision about what proportion of NTM-related trade costs may be removed. Knebel and Peters (forthcoming) estimate that about a quarter of the trade distorting effect of technical NTMs can be removed through regulatory cooperation. In our simulation, we therefore assume that a quarter of the existing cost effects of SPS measures and TBT can be reduced. Outright non-tariff barriers, such as quotas and price controls, are fully eliminated.

[7] For more details see Vanzetti, Peters and Knebel (2016). Walmsley and Minor (2015) suggest a third approach, based on the willingness to pay to avoid delays for goods passing through customs.

Table 2. Ad valorem equivalents of non-tariffs measures in Africa

	SPS	TBT	Other
	%		
Animals	9.5	4.2	4.6
Vegetables	14.2	2.7	2.3
Fats & oils	7.8	0.2	3.9
Beverages and tobacco	11.4	5.8	2.9
Minerals	4.6	8.2	1.8
Chemicals	5.6	5.8	2.9
Plastics	0.1	8.1	1.3
Leather	5.4	5.5	3.6
Wood products	4.3	6.7	0.6
Paper	0	9	0.8
Textile and clothing	0	6.4	2.5
Footwear	0	9.2	3.3
Stone and glass	0	8.3	4.3
Pearls	0	3.1	6.2
Metals	0	9.6	4.8
Machinery	0	11.3	10.4
Vehicles	0	9.2	4
Optical and medical	0	11.1	6.1
Arms	0	5.9	9.5
Miscellaneous	0	12.6	3.9

Source: Cadot et al. (2015).

4. Results

Welfare and trade

According to our GTAP simulation results, complete elimination of the existing tariffs among African countries creates an overall welfare gain of about US$3.6 billion in the long run (table 3, first column). The gains are not evenly spread. In fact several countries are estimated to experience negative impacts, the most significant being Zimbabwe and Botswana. Some of these losses reflect the fact that these countries have previously liberalised their tariffs and there are no further gains to be had. The neighbours are catching up with them so the countries that liberalised first appear to become relatively worse off.

Table 3. Welfare impacts of CFTA

	Full tariff elimination	Tariff elimination with exemptions	Non-tariff measures
	US$ million	US$ million	US$ million
Egypt	348	98	1537
Morocco	359	162	845
Tunisia	112	49	609
Rest of North Africa	-1	8	500
Burkina Faso	12	7	244
Cameroon	-16	4	296
Cote d'Ivoire	545	89	618
Ghana	70	0	357
Guinea	90	108	96
Nigeria	-9	-13	514
Senegal	491	125	685
Togo	173	93	341
Rest of Western Africa	-113	-50	485
Central Africa	-45	-27	311
South Central Africa	-120	-153	613
Ethiopia	136	141	261
Kenya	-34	29	1141
Madagascar	-1	0	52
Malawi	-2	0	189
Mauritius	11	-1	183
Mozambique	-16	0	310
Rwanda	13	-2	98
Tanzania	72	19	566
Uganda	24	1	194
Zambia	56	28	680
Zimbabwe	-81	-14	408
Rest of Eastern Africa	1	-23	376
Botswana	-79	-43	765
Namibia	144	110	1317
South Africa	1489	787	5891
Rest of South African Customs	9	-8	516
Africa	3638	1524	21002
Caribbean and Pacific	62	21	121
World	371	76	11183

Source: GTAP simulations.

In the CFTA negotiations there is much discussion about exemptions for sensitive products.[8] Exemptions of 10 to 15 per cent of tariff lines have been considered. It should be noted that for some countries just five per cent of tariff lines cover all the country's imports. Thus, the exemption of ten per cent would permit no tariff cuts on all intra-African imports.

[8] UNCTAD (2015a and 2015b) discuss the negotiating options.

A more realistic level of exemptions would be five per cent. This is some 250 lines at the HS6 level. The average tariff on intra-African trade is currently around 11 per cent. Complete elimination of tariffs under an FTA with no exemptions would obviously reduce the tariff to zero. If five per cent of the highest tariffs were exempt from reduction, the average tariff would be around 2.5 percentage points, assuming no change in trade flows, reducing the average tariff to 8.5 per cent.

The impact of five per cent exemptions on welfare is seen in the second column of table 3. Total welfare for African countries reduces welfare by more than half, from $3.6 billion to $1.5 billion. This favours Kenya, Mozambique, Kenya and Botswana, but many countries do not benefit as much as they would under a more ambitious scenario.

The third scenario focuses on non-tariffs measures. Here we assume that one quarter of the costs associated with SPS measures and TBT can be reduced; and traditional barriers, such as quotas, are fully eliminated. The impact far outweighs the effect of reducing tariffs. The welfare gains amount to $21 billion. Once again the gains are not shared equally, but at least there are no losers from this policy change. The major beneficiaries are South Africa, Kenya and Egypt, reflecting the size and composition of their trade, not the specific constraints.

Addressing non-tariff measures makes African countries more competitive, and as a result we see that China and the European Union are made worse off by these changes. Globally, however, there is a sizeable benefit from facilitating trade in Africa.

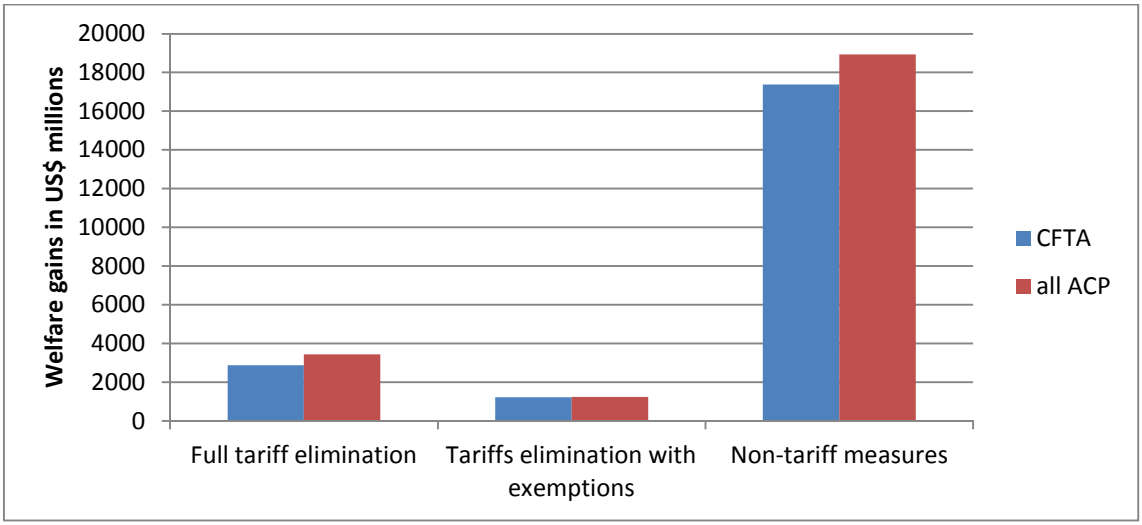
What about the benefits for Africa of extending the CFTA?

Extending CFTA to the Caribbean and Pacific

The welfare impacts for Africa of a free trade agreement that includes Caribbean and Pacific countries are summarised in figure 3. The gains and losses to individual countries, including members of the Caribbean and Pacific, are shown in more detail in table 4. The three scenarios are similar to the CFTA, namely complete tariff eliminations between all members, five per cent exemptions and addressing non-tariff measures.

Figure 3 shows that Africa as a group gains relatively little from extending the agreement across the Atlantic and Pacific, at least as far as tariff reductions are concerned. There are gains from addressing non-tariff measures, as seen from the last two columns in figure 3. The Caribbean and Pacific countries often produce similar goods, such as sugar and textiles, as many African countries. They are, in fact, competitors. There are small improvements in terms of trade for African countries.

Figure 3. Welfare benefits to Africa of extending CFTA



Source: GTAP simulations.

There are benefits to the Caribbean and Pacific from joining an ACP wide free trade agreement, about $619 million annually (table 4). These gains are easily eroded if five per cent of exemptions are allowed (second column). However, there are significant gains to be had from eliminating even a quarter of the measured barrier effects of NTMs. For the Caribbean and Pacific, potential gains from non-tariff measures are more than double those available from eliminating tariffs alone.

Table 4. Welfare impacts of ACP FTA

	Full tariff elimination	Tariff elimination with exemptions	Non-tariff measures
	US$ million	US$ million	US$ million
Egypt	320	29	1551
Morocco	357	84	964
Tunisia	113	27	611
Rest of North Africa	-14	11	490
Burkina Faso	12	7	244
Cameroon	-18	-1	301
Cote d'Ivoire	551	99	708
Ghana	70	-6	358
Guinea	90	105	96
Nigeria	-13	-11	508
Senegal	490	120	767
Togo	172	92	340
Rest of Western Africa	-112	-56	487
Central Africa	-45	-24	312
South Central Africa	-121	-162	632
Ethiopia	136	126	263
Kenya	-29	16	1144
Madagascar	-1	0	54
Malawi	-3	0	190
Mauritius	12	-2	184
Mozambique	-17	-3	316
Rwanda	13	-2	99
Tanzania	72	15	571

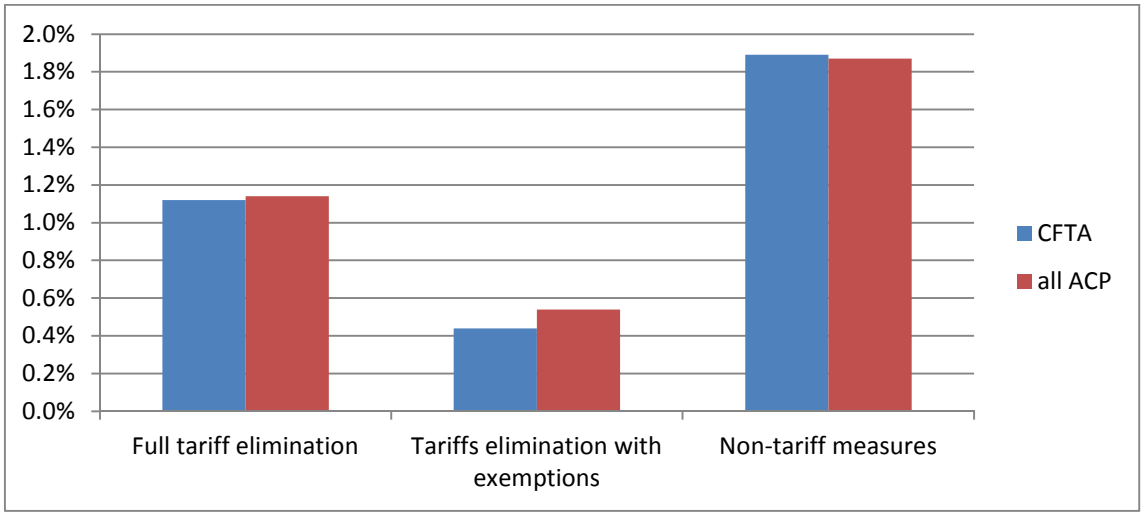
Uganda	24	0	197
Zambia	56	27	681
Zimbabwe	-81	-14	409
Rest of Eastern Africa	5	-71	378
Botswana	-80	-42	767
Namibia	146	113	1336
South Africa	1497	759	5906
Rest of South African Customs	11	-6	519
Jamaica	7	0	103
Dominican Republic	314	-10	423
Trinidad and Tobago	0	3	40
Rest of Caribbean	238	154	641
Pacific	61	27	209
Africa	3616	1229	21384
Caribbean and Pacific	619	173	1416
World	389	-172	11950

Source: GTAP simulations.

Imports and exports

The trade impacts of CFTA are modest, around one per cent on average. This is shown in figure 4. Most of the gains in exports are intra-African trade. These modest gains are reduced even further with exemptions. However, there are more significant gains in exports by addressing non-tariff measures.

Figure 4. Exports for African countries as a group



Source: GTAP simulations.

The trade benefits for individual countries are detailed in Appendix table A5. For half the countries the increase in exports is less than one per cent with the most ambitious scenario. With five per cent exemptions, the proportion of countries with a gain in exports of less than one per cent rises to 90 per cent.

With NTMs inclusion, the greatest increase in exports is enjoyed by Cameroon, Ivory Coast, Rwanda, and South Africa. This reflects the composition of exports, with these countries exporting a higher share of goods that attract NTMs, such as livestock products and fruit and vegetables. In this analysis, as noted previously, all African countries share the same NTMs for a particular commodity. Likewise, all Caribbean and all Pacific countries share the same NTMs, respectively.

5. Conclusions and recommendations

Our analysis indicates that an ACP Free Trade Agreement provides benefits for all three sub-regions. Welfare gains, a measure comprising consumer, producer and government benefits, are, however, not equally distributed.

We attempt to quantify the benefits of reducing the remaining tariffs, and conclude that while all countries would increase their exports, some countries would suffer a net loss in real incomes. This makes negotiation of a binding agreement difficult. This disparity comes about because of the range of tariffs. Countries that have the most protected industries have the most to gain. Countries that have already liberalised can benefit from improved market access, but not from improving their allocation of resources.

While tariff barriers remain significant, non-tariff measures have a greater impact on trade. Most significant are SPS measures and TBT on agricultural products. While most of these measures are necessary, for example to protect crops and animals from invasive species, and pests and diseases, some may be too stringent and a lack of coordination unnecessarily increases costs of trading. Significant gains to trade could be made through convergence of regulatory NTMs (SPS measures and TBT). All countries benefit from an ACP FTA if NTMs are addressed as well. Furthermore, trade brings with it investment and technology. These are the real drivers of growth.

Exploring an ACP FTA takes place against the background of ongoing African CFTA negotiations. Reducing barriers to trade in Africa is overdue. Many countries in Northern and Southern Africa have already taken these steps, but sizeable tariffs remain. Extending the CFTA to include the Caribbean and Pacific members of the ACP would provide positive albeit relatively small additional benefit to African countries.

A drawback of this analysis is the estimation of NTMs for ACP countries in particular. There is one value for all African, Caribbean and Pacific countries, respectively, for each broad commodity. This obviously hides a lot of variation. UNCTAD is working on scaling up data collection and improving the quality of this data.

A further issue is the assumption that a reduction by a quarter of trade costs related to technical NTMs could be achieved through regulatory cooperation and harmonization. This is obviously a generalisation, hiding significant variation between what may be possible to achieve. Knebel and Peters (forthcoming) are developing a new methodology that calculates for each country pair the possible reduction of costs if NTMs data are available for each country.

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Appendix

Table A1. Regions

No.	*Label*	*Description*
1	EU28	European Union
2	USA	USA
3	JPN	Japan
4	KOR	Korea
5	AUS	Australia
6	ODV	Other developed
7	CHINA	China & HK
8	IND	India
9	ASEAN	Asia
10	XAS	Other Asia
11	LAM	Latin America
12	ME	Middle East
13	EGY	Egypt
14	MAR	Morocco
15	TUN	Tunisia
16	XNF	Rest of North Africa
17	BFA	Burkina Faso
18	CMR	Cameroon
19	CIV	Cote d'Ivoire
20	GHA	Ghana
21	GIN	Guinea
22	NGA	Nigeria
23	SEN	Senegal
24	TGO	Togo
25	RWF	Rest of Western Africa
26	XCF	Central Africa
27	XAC	South Central Africa
28	ETH	Ethiopia
29	KEN	Kenya
30	MDG	Madagascar
31	MWI	Malawi
32	MUS	Mauritius
33	MOZ	Mozambique
34	RWA	Rwanda
35	TZA	Tanzania
36	UGA	Uganda
37	ZMB	Zambia
38	ZWE	Zimbabwe
39	XEC	Rest of Eastern Africa
40	BWA	Botswana
41	NAM	Namibia
42	ZAF	South Africa
43	XSC	Rest of South African Customs
44	JAM	Jamaica
45	DOM	Dominican Republic
46	TTO	Trinidad and Tobago
47	XCB	Caribbean
48	XOC	Pacific
49	RoW	Rest of World

Table A2. Sectors

No.	Label	Description
1	WHT	Wheat
2	GRO	Cereal grains nec
3	V_F	Vegetables, fruit, nuts
4	OSD	Oil seeds
5	C_B	Sugar cane, sugar beet
6	PFB	Plant-based fibers
7	OCR	Crops nec
8	CTL	Cattle, heep, goats, horses
9	OAP	Animal products nec
10	WOL	Wool, silk
11	FRS	Forestry
12	FSH	Fishing
13	COA	Coal
14	OIL	Oil
15	GAS	Gas
16	OMN	Minerals nec
17	CMT	Meat: cattle, sheep, goats, horse
18	OMT	Meat products nec
19	VOL	Vegetable oils and fats
20	DRY	Dairy products
21	RICE	Rice
22	SGR	Sugar
23	OFD	Food products nec
24	B_T	Beverages and tobacco products
25	TEX	Textiles
26	WAP	Wearing apparel
27	LEA	Leather products
28	LUM	Wood products
29	PPP	Paper products, publishing
30	P_C	Petroleum, coal products
31	CRP	Chemical, rubber, plastic prods
32	NMM	Mineral products nec
33	I_S	Ferrous metals
34	NFM	Metals nec
35	FMP	Metal products
36	MVH	Motor vehicles and parts
37	OTN	Transport equipment nec
38	ELE	Electronic equipment
39	OME	Machinery and equipment nec
40	OMF	Manufactures nec
41	UTL	Utilities
42	TTC	Trade, transport & communications
43	SER	Services

Table A3. Factors

No.	Label
1	Land
	Labour
2	Technical
3	Managerial
4	Clerical
5	Service
6	Unskilled
7	Capital
8	Natural Resources

Table A4. Intra-African agricultural and industrial tariffs

Country/region	Agriculture	Industrial
	%	%
Egypt	1	1
Morocco	1	1
Tunisia	4	0
Rest of North Africa	7	2
Burkina Faso	10	8
Cameroon	4	7
Cote d'Ivoire	26	9
Ghana	13	3
Guinea	14	11
Nigeria	19	11
Senegal	19	10
Togo	9	3
Rest of Western Africa	6	12
Central Africa	11	9
South Central Africa	19	7
Ethiopia	21	9
Kenya	19	10
Madagascar	3	2
Malawi	2	0
Mauritius	4	2
Mozambique	0	0
Rwanda	3	1
Tanzania	1	1
Uganda	15	4
Zambia	6	2
Zimbabwe	0	0
Rest of Eastern Africa	3	3
Botswana	1	5
Namibia	0	0
South Africa	0	0
Rest of SACU	0	1

Source: GTAP Version 10 database. 2014 applied tariffs on imports from Africa.

Table A5. Exports for African countries, CFTA and ACP

	CFTA	ACP
	%	%
Egypt	0.7	0.7
Morocco	1.3	1.4
Tunisia	0.9	0.9
Rest of North Africa	0.2	0.2
Burkina Faso	2.1	2.1
Cameroon	3.8	3.8
Cote d'Ivoire	6.4	6.2
Ghana	2.3	2.3
Guinea	4.8	4.8
Nigeria	0.7	0.7
Senegal	0.0	0.0
Togo	1.7	1.7
Rest of Western Africa	2.0	2.0
Central Africa	0.6	0.7
South Central Africa	0.7	0.7
Ethiopia	2.5	2.5
Kenya	1.8	1.9
Madagascar	0.1	0.1
Malawi	1.0	1.0
Mauritius	0.0	0.0
Mozambique	0.9	0.9
Rwanda	1.6	1.6
Tanzania	2.7	2.7
Uganda	1.3	1.3
Zambia	0.1	0.1
Zimbabwe	1.8	1.8
Rest of Eastern Africa	0.6	0.6
Botswana	0.1	0.1
Namibia	0.0	0.1
South Africa	1.8	1.9
Rest of South African Customs	1.5	1.6
Africa		
Caribbean and Pacific		
World	0.036	0.041

Source: GTAP simulations.