



United Nations Economic Commission for Africa

Report on the Use of the Global Trade Analysis Project (GTAP) Tools For the period 2018-2019

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I. Introduction

As a leading think-tank based in the African continent, the United Nations Economic Commission for Africa (ECA) is mandated to produce and disseminate high quality research on emerging issues and key priorities for Africa. In this context, the tools made available by the Global Trade Analysis Project (GTAP) to carry out various policy analyses are taken very seriously and frequently used by the ECA. These allow the Commission to provide its member States as well as Regional Economic Communities (RECs), often on a demand-driven basis, with empirically-based policy recommendations. In fact, the use of GTAP tools can go a long way in influencing policy decisions across the continent. For instance, over the last few years, ECA's research in support of the African Continental Free Trade Area (AfCFTA) – which is expected to enter into force in 2019 – has been particularly instrumental. It did help member States (including their negotiators) and RECs making informed decisions to make progress in the process.

At ECA, GTAP tools are used not only at its headquarter based in Addis Ababa but also in several of its sub-regional offices (SROs) located in Africa's five main regions, for

sub-regional analyses, as well as at the African Institute for Economic Development and Planning (IDEP) - training arm of ECA - situated in Dakar.

ECA is also committed to work closely with the GTAP network to make sure that better data for the 54 African countries can be made widely available for policy analysis on the issues that matter most for Africa.

II. Recent research carried out by ECA using GTAP tools

For the period 2018-2019, ECA has produced, through the African Trade Policy Centre (ATPC) several publications, using GTAP tools, in relations to the AfCFTA as well as to Africa-India relations. Other notable research pieces using modeling tools have been undertaken by IDEP and ECA's SROs for Eastern Africa, Western Africa and Northern Africa. Those are briefly presented thereafter.

a) Toolkit on AfCFTA modalities on trade in goods

Back in March 2018, 44 African Union (AU) member States signed the Agreement establishing the AfCFTA in Kigali, Rwanda. At that time, beyond the need to have the other African countries signing and then ratifying the Agreement, member States parties to the Agreement had to prepare and their tariff offers under the modalities on trade in goods.

ECA was called upon to provide guidance in that respect and subsequently developed a toolkit, through the ATPC, aimed at providing options to the member States in terms of ranking products (defined at the 6-digit level of the harmonized system of product classification) from the most to the least import-sensitive from other African partners. This was done for two distinct liberalization approaches that were on the negotiating table by then, namely the tariff line approach (i.e. liberalization based on a minimum share of tariff lines only) and the double qualification approach (i.e. a minimum

proportion of total tariff lines, representing not less than the same proportion of total imports, is to be liberalized).

The main conclusions of the toolkit (which is available at the following address: https://www.uneca.org/sites/default/files/PublicationFiles/afcfta-towards_the_finalization_of_modalities_on_goods_rev1.pdf) are that: 1) Although there are pronounced differences across countries/regions (due to different tariffs and import structures) a tariff line approach, even if extremely ambitious, will result in relatively limited liberalization of imports for most countries/regions as compared to a double qualification approach; 2) Taking into account criteria aimed at promoting industrialization (e.g. ensuring all intermediate products are liberalized) when ranking products (from the least to the most sensitive) is expected to make the liberalization reform more ambitious (whatever the liberalization approach picked) and more beneficial to African countries. But it is important to complement this static analysis based on trade and tariff data through computable general equilibrium (CGE) assessment.

b) An empirical assessment of AfCFTA modalities on goods

An empirical assessment of the various options/scenarios defined in the toolkit on AfCFTA modalities on goods (see previous sub-section) was undertaken by ATPC through CGE modeling.

The analysis confirms preliminary findings from the toolkit and more explicitly indicate that:

- Regardless of the scenario envisaged in the analysis, the AfCFTA reform would stimulate Africa's GDP and exports;
- The largest impacts of the AfCFTA are very much centered on intra-African trade;
- If intra-African trade would increase substantially in all main sectors, it is in industry that the largest benefits would be felt, thereby offering opportunities for Africa's much needed industrialization;

- As expected, the analysis confirms that a tariff line approach would deliver less benefits than double qualification; the difference in impacts between a tariff line approach and double qualification can actually be considerable for most countries and sectors;
- Small economies should not fear to undertake ambitious liberalization under the AfCFTA reform as it generates greatest benefits to them; the analysis further demonstrates that LDCs would be those getting the largest increase of intra-African exports in industrial products;
- The loss in tariff revenues would only marginally affect the welfare of African countries-which would even slightly increase.

This analytical work has been declined into three different versions (a comprehensive empirical assessment – forthcoming in Journal of African Trade; a research brief – https://www.uneca.org/sites/default/files/PublicationFiles/brief_assessment_of_afcfta_modalities_eng_nov18.pdf ; a one-pager with key messages – https://www.uneca.org/sites/default/files/PublicationFiles/afcfta_modalities_key_messages_eng.pdf) to be able to reach out to various audiences.

All these materials, along with the toolkit (see previous sub-section), have been disseminated widely, including through training-workshops to negotiators involved in the AfCFTA processes. The material produced has been quite useful to African member States, especially considering that the outcomes¹ from the negotiations on AfCFTA modalities on goods are very much aligned with the recommendations from ECA’s analysis.

c) Report on Deepening Africa-India Trade and Investment Partnership

ATPC collaborated with the Confederation of Indian Industry (CII) and produced a joint report on Deepening Africa-India Trade and Investment Partnership.

¹ See: <http://archives.au.int/bitstream/handle/123456789/2756/Assembly%20AU%204%20%28XXXII%29%20E.pdf?sequence=2&isAllowed=y>.

Using a CGE analysis, the report examines the effects of mega-regional trade agreements, particularly the Regional Comprehensive Economic Partnership (RCEP). RCEP, is expected to erode preferences and increase competition for African countries in the Indian market, which in turn, could undermine the benefits for them stemming from the Duty Free Tariff Preference Scheme offered by India to least-developed countries (LDCs). Meanwhile, the analysis clearly demonstrates that the establishment of the AfCFTA would be critical to mitigate the negative effects expected to be brought about by RCEP on African economies. Moreover, AfCFTA would provide a strong basis for the industrialization and structural transformation efforts in Africa as it would boost intra-African trade and the continent's industrial content. The establishment of AfCFTA also offers important opportunities for Indian firms and investors, as it would provide a potentially larger, unified, simplified and more robust African market to tap into. As a matter of fact, only after the establishment of AfCFTA would Africa and India be in a position to effectively enter into an economic integration partnership implying market access reciprocity. It is explicitly illustrated in the report that deepening integration between Africa and India would generate significant benefits for both partners. Such gains could even help to rebalance the composition of traded products by presenting opportunities to exploit value chains and enhance the structural transformation.

The report (available at: https://www.uneca.org/sites/default/files/PublicationFiles/africa-india_trade_and_investment_study_fin.pdf) was launched during the CII-EXIM Bank Conclave on India-Africa Partnership in March 2018.

d) Modelling the Economic Impact of the China's Belt and Road Initiative on East Africa

The purpose of this study conducted by ECA's SRO for Eastern Africa is to evaluate the effect of People's Republic of China's Belt and Road initiative strategy on trade and welfare in Eastern Africa.

To provide some background, in 2013, Chinese President Xi Jinping announced a proposal for a “Silk Road Economic Belt” and a “21st Century Maritime Silk Road”, formally known as Belt and Road Initiative(BRI). The BRI will be funded by a US\$ 40 billion Silk Road Fund from the Asian Infrastructure Investment Bank. The BRI routes will run through countries in Asia, Europe, and Africa. In Eastern Africa, the countries along the BRI include Kenya, Ethiopia, Tanzania and Djibouti. One of the BRI projects in Eastern Africa, the standard gauge railway is already under construction. It will connect the ports of Mombasa and Dar-es-salaam to Kenya, Uganda, Tanzania and Rwanda. The standard gauge railway is expected to reduce transport costs in the region, which has implications for trade and welfare.

The study uses the GTAP CGE model and the GTAP 10 database to analyse the effects of the establishment of the BRI. Simulations focus on reduced transport costs for imports and exports to evaluate the impact of the BRI (i.e. transportation network improvement from the China's Belt and Road Initiative) on trade, economic growth and welfare in Eastern Africa.

Findings from the analysis suggest that the BRI initiative could have a very significant positive impact on East Africa. However, the distribution of benefits arising from BRI is not equal, with some countries benefiting more than others. Indeed, the larger countries, Ethiopia, Kenya and Tanzania would gain substantially more from the BRI initiatives. It is, therefore, in their best interests to make sure that the regional initiatives to improve infrastructural provisions do not stall. Particularly interesting is the fact that the simulations suggest that the BRI would actually provide more of an impetus to intra-African exports than to exports with the rest of the world. In this sense, it seems that the infrastructure would facilitate the completion of regional agendas to intensify intra-African trade, as reflected in the African Continental Free Trade Area (AfCFTA). Nonetheless, it would not necessarily help resolve the chronic trade deficits that the region suffers from – the import supply response seems much more pronounced than exports. Transport infrastructure is a ‘two-way’ street, and there is no guarantee that a better provision of infrastructure will be conducive to a supply-side response on the part

of regional goods manufactures. That would require other complementary policies to boost productivity.

The full paper can be accessed from this link:
<https://www.gtap.agecon.purdue.edu/resources/download/9118.pdf>.

e) Making the Case for the African Continental Free Trade Area: An Assessment for Eastern Africa

ECA's SRO for Eastern Africa, in collaboration with TradeMark East Africa (TMEA), estimated the expected impacts of the AfCFTA on Eastern Africa.

The analysis is comprehensive and relies on different techniques, from econometrics (including gravity model of trade) to CGE modeling, depending on the specific issues looked at. The CGE-related part of the empirical work is undertaken through the use of GTAP tools and essentially focuses on the removal of the existing tariffs on all intra-African trade.

The study is in the process of being published and therefore its findings cannot be provided in the present report.

f) Impacts from potential accessions of Morocco, Tunisia and Mauritania to ECOWAS

ECA, through its sub-regional office for Western Africa, jointly with IFPRI, undertook a study on the expected impacts of Morocco, Tunisia and Mauritania's potential accessions to the Economic Community of West African States (ECOWAS).

The objective of this analysis was to examine the economic implications of these potential accessions for ECOWAS to inform the negotiations.

Particular emphasize was placed on assessing the potential effects of trade creation and diversion as well as the expected costs and benefits (e.g. tariff revenues, economic growth, welfare, production at sectoral level). The study was conducted through the dynamic version of MIRAGRODEP general equilibrium model. GTAP 9.1 databased was used to calibrate the model.

Findings from the analysis cannot be reported at this stage as the study has not been made public until now.

g) Impacts of Tunisia's adhesion to COMESA

ECA's SRO for Northern Africa led the realization of a study looking at the impacts of the adhesion of Tunisia to the Common Market for Eastern and Southern Africa (COMESA).

The study, which relies on a CGE model, examines essentially three scenarios that build on each other such has: 1) Tariff reduction implied by Tunisia as a member of COMESA; 2) Scenario 1) with reduction of tariff barriers within Africa (i.e. implementation of AfCFTA); 3) Scenario 2) along with adoption of trade facilitation measures.

Findings from the empirical analysis cannot be presented here since the study is not in the public domain yet.

h) The African Continental Free Trade Area and Trade Facilitation Agreement: A Win-Win Effect

IDEP conducted an analysis on the potential impacts of the AfCFTA and the positive role played by the Trade Facilitation Agreement (TFA) to magnify its impact.

Using the PEP CGE model and the latest GTAP database, it is empirically assessed that trade flows and GDP growth increase following the AfCFTA. Those positive results are

considerably amplified by the TFA. Moreover, these impacts on trade and economic growth are larger when the TFA is extended to non-African countries. It is worth noting that all African regions experience an increase in exports of industrial and intermediate goods, which constitutes a catalyst for industrialization and structural economic transformation.

The paper is currently in the process of getting published.

III. Capacity building activities

Online course on “Economic modeling with a focus on the AfCFTA”

Following a series of on-site courses on “Trade policy analysis with a focus on gravity and CGE modeling” (covering all African countries) and feedback received from participants, ECA decided to develop, jointly with the International Food Policy Research Institute (IFPRI) an online course on “Economic modeling with a focus on the AfCFTA”.

This course is offered free of charge and was made possible thanks to the financial support from the European Union. It has been declined into two versions: 1) A free Small private online course (SPOC); 2) A free Massive open online course (MOOC). The former being a supervised course with a limited number of selected participants from within the African continent who are required to submit frequent assignments and even to develop a research project in the context of the AfCFTA reform; the latter is open to all and participants are being assessed via multiple choice questions.

The SPOC was officially launched on 1 April 2019 and the MOOC on 15 April. The first Curriculum of the two versions of the course is an “Introduction to economic modelling” and runs until end of May (SPOC) and mid-June (MOOC). The Second Curriculum of the course will be about “Economic modelling - Advanced issues” and taking place in September-October.

IV. Filling data gaps

a) Seminar on supply and use tables

ECA, through the African Centre for Statistics (ACS) and ATPC, organized a seminar on supply and use tables (SUTs) aimed at raising the awareness on the importance of SUTs for policy analysis and policy making as well as to review compilation techniques for SUTs (particularly in the context of the GTAP database and the Trade in Value Added (TiVA) database). The seminar was attended by statisticians from 31 African member States benefitted from the presence and interventions of representatives from GTAP, IFPRI, OECD and WTO, among others.

b) Compilation of supply and use tables

Following the seminar, Algeria and Chad submitted preliminary version of their SUTs to ECA. This effort, which needs to be strongly amplified, aims at filling the data gaps to enable for improved policy analysis on Africa in the area of trade, value chains and beyond.

V. ECA's involvement in the 22nd Annual Conference on Global Economic Analysis

Several ECA staff members are expected to attend this year's Conference. They will be actively engaged, taking part in the GTAP Board meeting as well as during the Conference.

Particularly ECA (through IDEP and ATPC) will be organizing, jointly with IFPRI, a special session on **“Reinforcing trade policy modelling in Africa through training and capacity building”** which will be held on 21 June. ECA will be sponsoring participants for this session.

The main objectives of the session are to: 1) Showcase the online training on economic modeling with a focus on the AfCFTA; 2) Offer an opportunity to selected course's participants to present their research projects (being developed under the framework of the course) and get constructive feedback to be able to improve further their research work.

VI. Looking forward

ECA is already planning work for 2019-2020 which could considerably contribute to enhance the use of GTAP tools by African researchers and policy makers; with potential to significantly improve policy making, with a strong focus placed in the area of trade, through the use of GTAP tools.

a) Pursuing capacity building activities on modelling techniques

A third curriculum for the online course on economic modeling with a focus on the AfCFTA is envisaged. Such addition will be critical to ensure that course's participants are able to use partial and general equilibrium modeling techniques on their own.

b) Scaling-up efforts to improve Africa's coverage in GTAP and TiVA databases

ECA has started engaging with member States so that they can more systematically update, compile and share supply and use tables based on official data. However, more efforts are required to ensure that necessary data to feed into future releases of GTAP and TiVA database are obtained. To that end, ECA is planning to engage national statisticians, in priority in countries not currently singled-out in the latest versions of GTAP and TiVA databases, for them to collect and compile necessary data. Once obtained, data will be checked and validated in collaboration with ACS before it is transmitted to GTAP and OECD for further treatment and inclusion into their respective relevant databases.