![United Nations Economic Commission for Africa]

Report on the Use of the Global Trade Analysis Project (GTAP) Tools
Period 2020-2021

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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 frequently used by the ECA. These allow the Commission to provide its Member States and Regional Economic Communities (RECs), often on a demand-driven basis, with evidence-based policy analyses and recommendations.

At ECA, GTAP tools are used not only at its headquarter, based in Addis Ababa, Ethiopia, but also in its sub-regional offices (SROs) for sub-regional analyses, as well as at the African Institute for Economic Development and Planning (IDEP) - training arm of ECA - situated in Dakar, Senegal.

ECA is also committed to work closely with the GTAP network to improve data coverage for African countries in order to enhance the quality of policy analysis on issues of interest to Africa.

Main activities, in relation to GTAP tools/network, undertaken by ECA can be summarized as follow:

1) Research on AfCFTA-related issues;
2) Contribution to the GTAP database from an African perspective;
3) Capacity building through online course on economic modeling in Africa and research projects with a focus on the African Continental Free Trade Area (AfCFTA).

It should also be highlighted that ECA has officially been selected to co-organize the 2022 Annual Conference on Global Economic Analysis, which is expected to take place in Kigali, Rwanda.

I. Research on AfCFTA-related issues

a) *New comprehensive assessment of the AfCFTA Agreement*

Jointly with CEPII, ECA has undertaken a new comprehensive assessment of the AfCFTA Agreement using MIRAGE-e CGE model and relying on GTAP 10.1 database.

This new assessment not only considers the latest AfCFTA modalities on trade in goods for tariffs but also liberalization in the 5 AfCFTA priority services sectors (i.e. communication, transport, tourism, financial and business services) along with health and education services (the latter two having gained importance with the Covid-19 crisis) as well as reduction of non-tariff measures. The analysis strictly focused on the AfCFTA Agreement through the reduction of trade barriers within the African Continent. It should be noted that new and refined ad-valorem equivalent of services restrictions by CEPII are used in the analysis.

In short, key findings confirm that the implementation of the AfCFTA Agreement, which officially commenced on 1 January 2021, is expected to stimulate Africa's GDP, exports, welfare and most notably boost intra-African trade and its industrial content (with around

2/3rd of gains in intra-African trade to be felt in industrial sectors). Moreover, and following liberalization in services, financial, business and communication services would benefit the most, followed by tourism and transport and to a lesser extent health and education. It should however be noted that even as increases in health and education services tend to be relatively more modest overall, gains would still be considerable in many countries (e.g. Cameroon, Cote d'Ivoire, Ethiopia, Kenya, Nigeria, Mozambique, Zimbabwe). Not surprisingly, reducing NTMs on top of goods and services liberalization will boost further intra-African exports in all sectors. The analysis also explores the climate change implications of the AfCFTA reform. Transport, refined oil and vegetables/fruit/nuts are found to be sectors that would generate the largest shares of CO2 emissions following implementation of the AfCFTA.

It should be emphasized that ECA staff have developed their own capacity for economic modeling in 2020-2021 with two staff to present their first GTAP-related work at the 2021 Global Economic Analysis (GEA) Conference on the following issues: 1) "Survey of AfCFTA Impact Studies with special attention given to the estimation and implementation of Non-Tariffs Measures (NTMs) and their Impact of Welfare Results"; 2) "Impact of the Covid-19 on remittances and Economic growth in Africa: Theoretical framework and empirical evidences".

b) *Ambitious programme of work on AfCFTA in relation to poverty, the environment and value chains*

Based on the results obtained from the comprehensive CGE assessment of the AfCFTA Agreement (described under previous sub-section), ECA has started undertaking micro-simulation work to assess the poverty and inequality impacts of the AfCFTA reform. This analysis will also be based on detailed and recent household datasets collected for over 20 African countries by the ECA. As such, country-level pieces will be produced where poverty and inequality impacts will be disaggregated/reported by gender, as much as possible. The methodology will be presented into details at the 2021 GEA Conference.

Additionally, and in Partnership with CIREM/CEPII, ECA will undertake before the end of 2021 a deeper analysis on the AfCFTA and the environment, including how carbon borders adjustment mechanisms to be potentially put in place by third countries may affect Africa's trade in the AfCFTA context and its ability to develop value chains. Further work aimed at identifying countries/sectors with potential for regional value chins development within the AfCFTA framework will also be conducted.

II.   Contributions to the GTAP database from an African perspective

In the latest GTAP 10.1 database, 26 African countries are available as individual economies, while the remainder 28 countries from the Continent are aggregated into 6 regional groupings. In addition, for several African countries, the input-output tables behind the GTAP database are started to be outdated with the risk to see those countries being chopped from future releases of the database. Those data limitations clearly undermine modeling analysis and subsequent evidence-based policy recommendations which can be formulated by ECA and others to African Member States.

Therefore, ECA is making considerable efforts to fill the data gaps for African countries through the compilation of supply and use tables (SUTs) or input-output tables (IOTs) to be converted into the GTAP database format. Currently, ECA is working on 9 tables/countries to ultimately have 6 of them (i.e. Central African Republic, Chad, Comoros, Congo, Equatorial Guinea and Gabon) added as new single tables/individual countries into the database and the remaining 3 (i.e. Cameroon, Cote d'Ivoire and Zimbabwe) updated in the database.

Already 2 tables (i.e. Chad and Comoros) have been accepted for insertion in future release of the GTAP database. The plan is to complete the work for the other 7 tables and also work on an additional 5 tables to be completed before end of 2021.

III.   Capacity building on economic modeling in Africa

Following the signing of a Memorandum of Understanding (MoU) between ECA and IFPRI for collaboration framed around economic integration and diversification, a joint ECA-IFPRI initiative on economic modeling for Africa was launched back in 2019.

The first activity under this initiative consisted in organizing an online course on modeling for Africa. 2 curricula were organized in 2019 under two parallel tracks: 1) A Massive Open Online Course (MOOC) open to anyone interested in gaining knowledge on partial and general equilibrium modeling; 2) A Small Private Online Course (SPOC) with selected trainees keen to build or enhance their modeling skills.

In 2020, a third and more advanced curriculum was organized only for the trainees from the SPOC. Following completion of the course each of the trainees was asked to produce a research paper, based on the learnings from the course, using modeling tools and focusing on a thematic in relation to the AfCFTA. 16 draft research projects have already been submitted to ECA. 4 of them have been subsequently submitted and selected for presentation in a dedicated joint ECA-IFPRI organized session at the 2021 GEA Conference.

As a result of this initiative, the research papers already produced by the trainees will help informing the AfCFTA negotiations and implementations. More broadly, 280 individuals were trained [260 from the MOOC (213 males and 54 females) and 20 from the SPOC (13 males and 7 females)], thereby offering an invaluable network/pool of African researchers/modelers to undertake future economic analysis to further inform policy design/making in Africa.