Poverty and Inequality impact of the AfCFTA: Focus on a selected African Countries

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Abstract:

This study uses a CGE microsimulated model to examine the potential growth and poverty and inequality impacts of the implementation of the African Continental Free Trade Agreement on a selected African countries. The computable general equilibrium model used is the MIRAGE-e model which is a dynamic global computable general equilibrium model. It is calibrated using the GTAP 10.1 database. The results from the simulation of the AfCFTA trade reforms are used to feed into microsimulation country models that use detailed microeconomic data from household surveys in a sample of African countries that are parties to the agreement. Overall, the results indicate that the implementation of the AfCFTA will result in a reduction in poverty. However, this reduction could be quite modest and the magnitude of the declines depends on liberalization efforts. In sum, the inclusion of services liberalization and the reduction of NTMs could reinforce the beneficial effects of the agreement both in terms of economic growth and in terms of poverty and inequality reduction.

1. Introduction

Launched officially on January 1, 2021, the African Continental Free Trade Area (AfCFTA) is the largest free trade area in the world in terms of the number of members. The Agreement aims, among other things, to boost trade through the elimination of tariff barriers, harmonization and coordination of trade liberalization and facilitation. To date, 54 of the 55 member countries of the African Union have signed the Agreement and the number of States Parties has increased significantly from 32 in December 2020 to 40 as of January 31, 2022. At the 35th Session of the African Union (AU) Heads of State Assembly, it was noted that the number of countries that submitted their tariff offer increased from 18 in December 2020 to 44 countries in February 2022, representing 80% of member states.

The impact of the AfCFTA on economic growth, public finances and the welfare of the people are among the main concerns in the implementation of this continental agreement. This is due to a number of factors. First, for most African economies, customs revenue is a key component of government revenue, so any economic and trade reform that affects customs revenue requires careful analysis to understand the potential effects on government fiscal balances. This analysis, to be comprehensive, must not only highlight the potential impact on customs revenues, but must also take into account the interactions with other government tax revenues, and therefore the impact on the overall balance of public finances.

Second, issues of inequality and poverty have been central to development strategies on the African continent in recent years. This is especially important because even though the poverty rate has declined in recent years on the continent going from 56% in 1990 to 40% in 2018, the number of poor people continues to increase[1]. In order to continue to reduce the poverty rate and invert the curve of the number of poor people, it is important to pay constant attention to the impact of economic policies on economic growth and household welfare.

The effect of economic policies at the micro-level is relatively difficult to identify. It can positively affect some categories of actors and negatively others. For example, Herault (2006) indicates that the elimination of tariffs on footwear products can hurt workers in this sector, while having a positive impact on other households by improving their purchase power through the reduction of consumer prices. Therefore, in the context of trade agreements such

[1] https://blogs.worldbank.org/opendata/number-poor-people-continues-rise-sub-saharan-africa-despite-slow-decline-poverty-rate

as the African Continental Free Trade Area (AfCFTA), a rigorous assessment of the economic and social consequences of the process is necessary to guide its negotiations and ratification as well as facilitating the implementation process. This is particularly important since such trade configuration involves substantial price variations and changes in allocations of resources and income within and between countries (Decreux and Valin, 2007).

Methodology

The methodology used here combines a top-down manner a general equilibrium model and a microeconomic model to assess the impact of AfCFTA-related reforms on poverty. The computable general equilibrium model is used to simulate the reform and the latter are fed into the microeconomic model to measure the impact of the AfCFTA on poverty and inequality. The top-down approach is fairly widespread in the literature (see, for example, Bourguignon, Robilliard and Robinson, 2003; Boccanfuso, Richard and Savard, 2013). It consists of developing a microsimulation model separately from a computable general equilibrium model. The latter is based on a SAM, while the microsimulation model uses a microeconomic database constructed from a household survey. Specifically, the simulation results provided by the CGE model are used to feed into the microsimulation model to generate the income vectors. The income vectors are used for poverty assessment and income distribution.

The CGE model

To simulate the AfCFTA reforms , we adopt the MIRAGE (Modelling International Relationships in Applied General Equilibrium) model. This is a multi-sectoral and multi-regional dynamic computable general equilibrium model able to capture the complex economic interactions taking place between economic agents and within and between countries and sectors. Over the past two decades, several versions of the model have been developed and applied in the study of various economic, and particularly trade, reforms around the world (see for example Bchir, Decreux, Guérin and Jean, 2002; Decreux and Valin, 2007; ECA, 2013; Mevel, de Alba and Oulmane, 2015; ECA, 2018). For more details on the standard version of the model, see Bchir, Decreux, Guérin and Jean (2002). For the purpose of the present modeling work, the MIRAGE-e 1.1 version is used (see Fontagne, Foure and Ramos, 2013).[2]

[2] See: http://www.cepii.fr/PDF_PUB/wp/2013/wp2013-39.pdf.

The model is calibrated based on the GTAP 10 database which includes 65 sectors of activities and 131 countries/regions. Considering the technical limitations of current mathematical solvers, it is required to aggregate countries/regions and sectors of activities available in the GTAP database to about 30 countries/regions and 30 sectors. The GTAP 10 database gives us the ability to explicitly model 26 African countries with the rest being aggregated into six blocks of countries. [3] The geographical and sectoral aggregation to be determined for the analysis will take into account the quality of the data and the priority sectors in the economic and social development of the African continent.

The Microsimulation model

Bourguignon and Spadaro (2003) distinguish between two broad categories of microsimulation models: arithmetic microsimulation models and behavioural microsimulation ones. The former aim to reproduce the institutional framework and the budgetary constraint to which economic agents are subject without considering the effects of behavioural change. In doing so, they only assess first-order effects (Spadaro, 2007; Fofana, Chitiga-Mabugu and Mabugu, 2018). Compared to this first category, behavioral models have the advantage of incorporating second-order effects through a detailed modeling of the economic decision-making process of individual agents. They represent the behavior of agents using rigorous mathematical functions to evaluate the effects of economic policy reforms. However, they are very complex, especially with the use of complex econometric techniques, making them difficult to access for many people.

Our model belongs to the family of arithmetic models. It is borrowed from Fofana, Chitiga-Mabugu and Mabugu (2018). It has also been used by Fofana et al. (2019) in Kenya, Diallo, Fofana, and Diallo (2020a) in Côte d'Ivoire and Diallo, Fofana, and Diallo (2020b) in Niger. It is based on a probability distribution of consumption expenditures of individuals in a given population. Changes in the probabilities associated with individual consumption levels induced by changes in average (per capita) consumption expenditures are captured by a generalized entropy measure" (Lee and Judge, 1996). Thus, changes in consumption behavior occur within the population through changes in the probability distribution across individual consumption expenditure levels in response to policies (Fofana, Chitiga-Mabugu, & Mabugu,

[3] Egypt, Morocco, Tunisia, Benin, Burkina Faso, Cameroon, Côte d'Ivoire, Ghana, Guinea, Nigeria, Senegal, Togo, Ethiopia, Kenya, Madagascar, Malawi, Mauritius, Mozambique, Rwanda, Tanzania, Uganda, Zambia, Zimbabwe, Botswana, Namibia, South Africa, Rest of North Africa, Rest of Western Africa, Rest of Central Africa, South Central Africa, Rest of Eastern Africa, Rest of South African Customs Union

2018). The mechanics of the model are based on minimizing the Kullback-Leibler cross-entropy measure of the distance between the posterior (w) and prior (v) probability distributions of consumption expenditures (i). Formally it is as follows:

$$Min\ \Omega = \sum_i w_i . ln\frac{w_i}{v_i} \quad (1)$$

With $\sum_i w_i = 1$ given aggregate data on population growth and urbanization. θ is the urbanization rate; u is the proportion of the rural population in the total population ($u \subset i$).

$$\sum_u w_u = \theta \quad (2)$$

$$\bar{Y} = \sum_i w_i . \bar{y_i} \quad (3)$$

On mean per capita consumption expenditure (Y); yi is individual (i) consumption expenditure.

If we denote P_z, the poverty rate along the poverty line z and $p_{i,z}$ the poverty status of individual (i), we have:

$$\bar{P_z} = \sum_i w_i \bar{p}_{i,z} . i(\bar{y}_i < z) \quad (4)$$

In this study we have built a microsimulation model for nine African countries which are: Cote d'Ivoire, Nigeria, Senegal, Cameroon, Ethiopia, Morocco, Rwanda, Namibia, and Uganda. For each of these countries we used the most recent household survey database we could obtain. The average household consumption for each country is obtained from the computable general equilibrium model. This information is used to assess the impact on income distribution and poverty.

Simulation results

To be completed

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