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Macroeconomic and sectoral impacts of the AfCFTA: The case of Nigeria and South Africa in light of core export competences

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Abstract

The African Continental Free Trade Area (AfCFTA), considered the largest free trade area globally by participating countries, entered into force in May 2019. This paper investigates the macroeconomic and sectoral impacts of the AfCFTA on Nigeria and South, specifically targeting their core export competences and the sustainability of import demand within the AfCFTA. Utilising selected filters of the Decision Support Model (DSM) and the Global Trade Analysis Project (GTAP)–Computable General Equilibrium (CGE) model, the paper projects that the AfCFTA could improve the macroeconomic and sectoral positions of both Nigeria and South Africa. Expected macroeconomic improvements include gains in real GDP, household income, and export volumes. Sectoral, Nigeria's textiles, clothing, and chemical products, along with South Africa's petroleum, coal products, and machinery, are expected to experience significant improvements in export value and value addition. However, potential trade balance deterioration due to increased imports poses challenges. Hence, the paper underscores the need for effective policy interventions to manage such challenges and ensure inclusive growth. By considering the countries' core export competences and the sustainability of import demand in the AfCFTA, this paper contributes to existing literature by offering valuable insights for policymakers and stakeholders on harnessing the AfCFTA's potential to drive economic growth and development in the African continent.

1. Introduction

The African Continental Free Trade Area (AfCFTA), enacted in May 2019, represents a transformative development in the landscape of African economic integration. As the global largest Free Trade Area (FTA) by the number of participating countries since the establishment of the World Trade Organization (WTO), the AfCFTA aims to significantly bolster intra-African trade, stimulate economic growth, and enhance the continent's competitive position on the global stage. As of 2024, the AfCFTA includes 54 of the 55 African Union (AU) member states, representing over 1.4 billion people and a combined Gross Domestic Product (GDP) of approximately $3.4 trillion (Afreximbank, 2024a). By eliminating tariffs on most goods and creating a single continental market, the AfCFTA

seeks to address longstanding barriers to trade and economic cooperation within Africa. Given its relative size and ambitious objectives, the AfCFTA has attracted considerable scholarly interest, particularly regarding its implications for welfare, trade and economic dynamics in key African economies.

From a macroeconomic standpoint, the AfCFTA is projected to increase Africa's GDP by up to 1.4% or approximately US$450 billion by 2035, driven by improvements in trade efficiency, expanded market access, and reduced trade costs (World Bank [WB], 2020). The agreement is also expected to boost Africa's export volumes, with non-oil exports anticipated to rise by up to 30% (United Nations Conference on Trade and Development [UNCTAD], 2022). Sectoral, the AfCFTA is poised to bring significant benefits to the manufacturing and agricultural sectors. By reducing tariffs and non-tariff barriers, the agreement is likely to enhance competitiveness and spur growth in industries such as textiles, automobiles, and agribusiness. For instance, the textiles and apparel sector could see increased regional value chains and job creation due to reduced import costs and better access to regional markets (African Development Bank [AfDB], 2023). Similarly, the agricultural sector is expected to benefit from improved access to regional markets and greater investment opportunities, potentially leading to enhanced food security and rural development (WB, 2020).

However, the impact of mega deals, such as the AfCFTA, on individual countries and other regional groupings may vary due to their differences in the stages of development, the legal framework and the political systems, among others (Kimura & Chen, 2016). This makes the potential effects of the AfCFTA on member states, such as Nigeria and South Africa in particular, practically inconclusive. While the findings of Mhonyera and Meyer (2023) reveal that Nigeria and South Africa are expected to achieve overall welfare and trade gains from the formation of the AfCFTA, the extant literature that has documented the macroeconomic and sectoral implications of the establishment of the AfCFTA has disregarded the respective members' core export competences, and the size, growth and consistency of the import demand in the AfCFTA countries.

These gaps in extant literature are critical to the success of the AfCFTA as they directly shape the ability to craft informed, precise policies that maximise the benefits of the continental agreement. By overlooking how the AfCFTA will impact sectors with core export competences in member states and sustainable import demand within the AfCFTA, particularly in countries like Nigeria and South Africa, policymakers risk creating broad, ineffective strategies that fail to address the specific challenges and opportunities of individual industries. Thus, addressing the identified gaps would not only assist policymakers develop sector-specific support measures, such as infrastructure improvements or investment incentives, but also contribute to the economic literature on trade agreements. Explicitly, understanding how core export competencies and sustained import demand interact with market access and trade liberalisation can provide deeper insights into how nations can navigate regional integration complexities. This knowledge would enhance national strategies, enrich the discourse on intra-Africa trade, and offer a more robust framework for analysing the outcomes of similar agreements globally.

Building on the foundational analysis presented in Mhonyera and Meyer (2023), this paper intend to investigate the specific macroeconomic and sectoral implications of the AfCFTA for Nigeria and South Africa, two of Africa's most significant economies, in light of their core export competences and the sustainability of import demand within the AfCFTA. Nigeria and South Africa represent uniquely significant cases for assessing the impact of the AfCFTA due to their distinctive economic sizes, regional influence, and diverse industrial structures, making them critical drivers of African economic integration. As Africa's largest economies, they play a substantial role in the continent's trade flows and are poised to influence the agreement's success or challenges. Nigeria, with its vast population and resource-driven economy, contrasts sharply with South Africa's comparatively more diversified industrial base, offering a unique juxtaposition of trade dynamics and sectoral responses

under the AfCFTA.

By focusing on these two countries, the study addresses how different economic compositions (i.e., resource-intensive versus industrially diversified) respond to continental trade liberalisation. This choice contributes to understanding the potential broader impacts of the AfCFTA, as these two economies likely represent key patterns, challenges, and opportunities that other African countries with varying levels of industrialisation might also experience. Their combined analysis, therefore, enriches the existing literature by exploring how different economic structures can either capitalise on or encounter constraints under the AfCFTA, offering insights into how other nations could strategically position themselves within this trade framework.

Furthermore, understanding how the AfCFTA influences the countries' macroeconomic and sectoral space in core export sectors can provide critical insights into the broader effects of the continental trade agreement. Hence, by considering the countries' core export competences and the sustainability of import demand in the AfCFTA, this paper provides valuable intuitions for policymakers and stakeholders on harnessing the continental FTA's potential to drive economic growth and development in Nigeria, South Africa and other member states. In fact, investigating sector-specific benefits and challenges, contributes to tailored policy interventions and strategic planning, cognisant of the broader effects on economic indicators such as GDP and employment.

The rest of the paper proceeds by providing a comprehensive review of the relevant theoretical and empirical literature, detailing the research methodology, presenting the results and discussions, and concluding with key findings and implications for policy and future research.

2.   Literature review

Since the inception of the WTO in 1995, Regional Trade Agreements (RTAs) have expanded significantly, reshaping trade dynamics and strengthening intra-regional ties. In Africa, regional markets are increasingly critical for industrial development, much like they were for Europe during its industrialisation (Signé & Johnson, 2018). RTAs such as the AfCFTA promote the exchange of manufactured goods rather than raw commodities, leading to greater value-added production within the continent. This shift supports knowledge transfer, enhances economic resilience, and creates welfare gains for member countries (Songwe, 2019). By fostering trade in diverse, value-added sectors, RTAs not only boost intra-African trade, but also provide new opportunities for economic diversification and job creation.

The theoretical and empirical literature on RTAs highlights the complex macroeconomic and sectoral impacts of such agreements. Classical economic theories provide foundational insights into RTAs' benefits. Ricardo's theory of comparative advantage argues that countries benefit by specialising in goods for which they have relative efficiency, optimising resource allocation and creating mutual gains (Ricardo, 1817). Supporting empirical evidence, such as Caliendo and Parro (2015), demonstrates how the North America Free Trade Agreement (NAFTA), now the United States-Mexico-Canada Agreement (USMCA), spurred GDP and trade increases in the United States and Mexico, illustrating how RTAs can enhance specialisation and trade. Similarly, the Heckscher-Ohlin model expands on comparative advantage by incorporating factor endowments like labour and capital, suggesting that countries will export goods that intensively use their abundant factors (Heckscher & Ohlin, 1991). Bagci et al. (2023) empirically support this, finding that the AfCFTA could increase Africa's manufacturing output by 25% before the year 2035, aligning with Africa's comparative advantage in labour-abundant manufacturing.

The New Trade Theory (NTT), developed by Krugman (1979), adds another layer, focusing on economies of scale and product variety in larger integrated markets. The theory posits that RTAs enable firms to reduce costs and diversify offerings, enhancing competitiveness. Aichele and Heiland's (2018) study of the European Union (EU) aligns with this, showing how the larger market created by the EU drove trade and economic growth. This is echoed in Balistreri et al. (2018), who project that

the AfCFTA could boost intra-African trade by 10%, benefiting from economies of scale. Further, the Gravity Model of Trade underscores the importance of economic size and geographic proximity in trade flows (Tinbergen, 1962). Empirical studies on the Association of Southeast Asian Nations Free Trade Area (AFTA) and the EU confirm this model, revealing that regional integration reduced trade barriers and leveraged geographic closeness to enhance trade (Roberts, 2004; Badinger, 2005). The Gravity Model is applicable to Africa's trade, as the AfCFTA aims to enhance intra-continental trade by mitigating trade barriers.

Endogenous Growth Theory (EGT), associated with Romer and Lucas, emphasises internal drivers of economic growth, such as human capital and technological progress (Romer, 1990; Lucas, 1988). The WB (2020) highlights AfCFTA's potential to drive sustainable growth by reducing poverty for millions, with projected economic gains of $450 billion by 2035, driven by human capital growth and technology transfer, thus supporting the EGT. Structural change theories, like those of Lewis and Chenery, describe the shift from agriculture-based to diversified, industrial economies (Lewis, 1954; Chenery, 1979). Bagci et al. (2023) show that the AfCFTA could accelerate Africa's shift toward manufacturing and services, reflecting Lewis's notion that economic development involves industrial transformation, spurred by broader market access.

Institutional Economics, advanced by Douglass North, stresses the importance of effective institutions in maximising RTAs' benefits by reducing transaction costs and ensuring agreement enforcement (North, 1990). In the AfCFTA context, the WB (2020) and Hakobyan and McLaren (2016) study on NAFTA demonstrate how institutions are critical in reducing inequality, suggesting that strong institutions will be essential to maximising the AfCFTA's potential for inclusive growth. Similarly, Global Value Chain (GVC) Theory explains how RTAs facilitate integration into global production networks by reducing trade barriers and enabling specialisation (Gereffi, Humphrey, & Sturgeon, 2005). ASEAN and the EU have effectively integrated member countries into global supply chains, especially in manufacturing sectors like electronics (Roberts, 2004). The AfCFTA is expected to provide similar benefits, with increased market access and connectivity fostering Africa's participation in GVCs.

Empirical research further highlights the considerable macroeconomic and sectoral impacts of RTAs, with the AfCFTA and other RTAs like NAFTA (now USMCA), the EU, and ASEAN showing significant gains. The WB (2020) estimates that the AfCFTA could raise Africa's GDP by $450 billion by 2035, supporting theoretical predictions of economic gains from trade and integration. Bagci et al. (2023) also project a 25% increase in African manufacturing output by 2035 due to the AfCFTA-driven market access, consistent with the NTT's economies of scale benefits. However, the distributional impacts remain a crucial area, as RTA benefits often vary across regions and sectors. For example, Caliendo and Parro (2015) find that NAFTA's gains were most pronounced for the US and Mexico, while Hakobyan and McLaren (2016) show that some sectors benefited more than others. Balistreri et al. (2018) also emphasise that, while the AfCFTA is likely to increase welfare in general, certain African regions and sectors may experience different benefits.

The literature accentuates RTAs like the AfCFTA as powerful drivers of macroeconomic and sectoral growth, with Africa's manufacturing, services, and agriculture sectors particularly positioned to benefit. Experiences from NAFTA, the EU, and ASEAN support these positive outcomes, though varying distributional impacts highlighting the need for inclusive growth policies. This study contributes to the literature by examining the AfCFTA's macroeconomic and sectoral effects on Nigeria and South Africa, focusing on key export sectors. By integrating theoretical and empirical insights, it offers an in-depth understanding of AfCFTA's broader impacts on Nigeria and South Africa's sectoral space, providing valuable guidance for policymakers to promote sustainable and inclusive growth within the countries and across Africa.

Research method

Empirical strategy

This paper utilises an integrated approach, combining the Decision Support Model (DSM) framework, specifically Filter 1 and 2 as proposed by Cuyvers et al. (1995), with the Global Trade Analysis Project (GTAP) Computable General Equilibrium (CGE) model developed by Hertel (1997). The DSM is employed to systematically assess market opportunities, identifying Nigerian and South African sectors with strong export potential within the AfCFTA member states. Filters 1 and 2 of the DSM are particularly useful as they focus on determining sectoral export potential based on macroeconomic import demand and export supply conditions, aligning well with the goals of this paper to pinpoint sectors with sustained trade advantages.

To complement this sectoral analysis, the GTAP-CGE model is utilised to simulate the macroeconomic and sectoral impacts of the AfCFTA on these identified sectors, providing a detailed, quantitative macroeconomic and sectoral evaluation of trade liberalisation effects. The GTAP-CGE model is well-suited for this purpose because it enables the assessment of economic shifts across multiple sectors and regions, capturing the broader impacts of the AfCFTA on GDP, trade volumes, trade balance, value added, and income distribution within Nigeria and South Africa. By incorporating tariffs, non-tariff barriers, and other trade policies into its simulations, the GTAP-CGE model allows for realistic economy-wide projections of the AfCFTA's impact on key economic indicators.

The integration of the DSM and the GTAP-CGE model thus offers a comprehensive analytical framework, aligning the market-driven insights of the DSM with the macroeconomic precision of CGE Modeling. This combination is particularly relevant to the investigations in this paper, as it enables both a targeted assessment of sectoral trade opportunities and an evaluation of broader economic outcomes, delivering enriched insights into how the AfCFTA could shape Nigerian and South African sectoral space and their economies as a whole. By leveraging these established methodologies, this paper aims to deliver actionable insights for policymakers and stakeholders in maximising the benefits of AfCFTA's implementation. A visual illustration of the empirical technique applied in this paper is depicted in Figure 1.
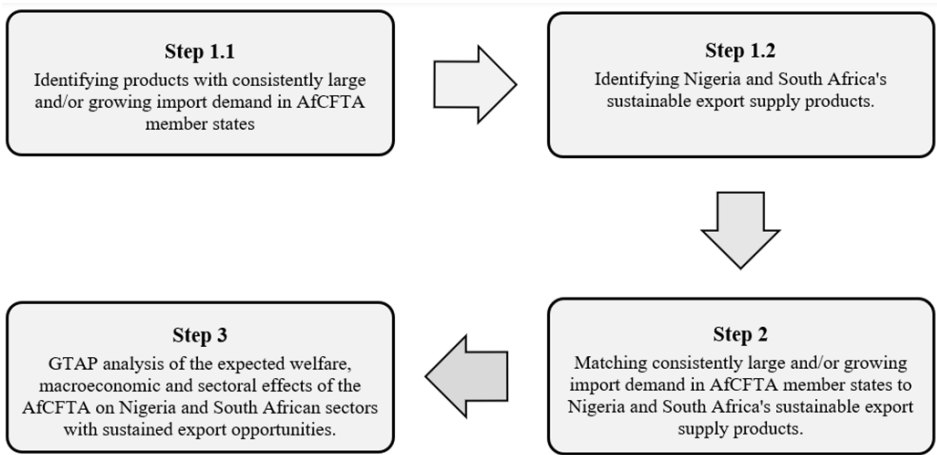

Step 1.1
Identifying products with consistently large and/or growing import demand in AfCFTA member states

Step 1.2
Identifying Nigeria and South Africa's sustainable export supply products.

Step 2
Matching consistently large and/or growing import demand in AfCFTA member states to Nigeria and South Africa's sustainable export supply products.

Step 3
GTAP analysis of the expected welfare, macroeconomic and sectoral effects of the AfCFTA on Nigeria and South African sectors with sustained export opportunities.

Figure 1. Visual illustration of the empirical technique applied in this paper
Source: Authors' own figure.

Filter 2 of the DSM is employed to identify Harmonised System (HS) 6-digit products with consistently large and/or growing import demand in AfCFTA member states, excluding the exporting country under analysis, over a five-year period from 2014 to 2018, in Step 1.1. In Step 1.2, Nigeria and South Africa's sustainable export supply products are identified over the same period. Following

Mhonyera et al. (2018; 2023), consistently large and/or growing import demand in AfCFTA member states is matched to Nigeria and South Africa's sustainable export supply products in Step 2. Trade data at HS6-digit level is accessible from the United Nations (UN) Comtrade database (UN, 2024). The macroeconomic and sectoral effects of the AfCFTA on Nigerian and South African sectors with sustained export opportunities in AfCFTA member states are then analysed using the GTAP CGE model in Step 3.

The selection of the upper limit period is based on the fact that 2018 precedes the onset of the COVID-19 pandemic, which had a major impact on trade through both supply- and demand-side channels. Consequently, trade data for the five years from 2019 onward may not accurately reflect the true trade capacities of the countries analysed in this paper. Each of the systematic steps is discussed in detail in the following section.

Data analysis

Step 1.1

To identify HS6-digit products with large or growing import demand in AfCFTA member states from 2014 to 2018, three variables are considered: short-term import growth (annual growth rate), long-term import growth (five-year compounded annual growth rate), and relative import market size (country i's imports of product j relative to world imports of product j). The identification process requires the computation of cut-off values for the abovementioned variables. This process begins by establishing the threshold of the short- and long-term import growth through computing a scaling factor, formulated as:

$$S_j = 0.8 + [1/(RCA_j + 0.85)exp^{(RCA_j - 0.01)}] \qquad (1)$$

Where: RCA_j, expressed as $[(X_{i,j}/(X_{w,j})/(X_{i,tot}/X_{w,tot})]$), is the RCA index of the exporting country for product j (Balassa, 1965; Reis & Farole, 2012) with X denoting the exports, i representing the country, j signifying the product, w denoting the world, and tot indicating total. The cut-off values are then defined as follows (Willemé & Van Steerteghem, 1993, as quoted in Cuyvers, 2004:260):

$$g_{i,j} \geq G_j \qquad (2)$$

With $g_{i,j}$ being the short- or long-term import growth rate of product j in importing country i ; and

$$G_j = g_{w,j}s_j, \quad \text{if} \quad g_{w,j} \geq 0; \quad \text{or} \quad G_j = g_{w,j}/S_j, \quad \text{if} \quad g_{w,j} < 0$$

For import market size, the relative import market size of country i for product j (i.e., $M_{i,j}$) is regarded sufficiently large if $M_{i,j} \leq C_j$. The notation C_j is the cut-off value for relative import market size cognisant of the exporting country's degree of specialisation in exporting product j such that $C_j = 0.02M_{w,j}$, if $RCA_j \leq 1$; or $C_j = [(3 - RCA_j)/100]M_{w,j}$, if $RCA_j < 1$ with $M_{w,j}$ being the total world imports of product j.

As in Mhonyera et al. (2018; 2023), for each product–country combination, the procedures outlined above were performed five times for all the respective variables annually from 2014 to 2018. The AfCFTA markets are then selected according to the classification shown in Figure 2. If the cut-off criterion is satisfied, a value of 1 is assigned to the product-country combination or a value of 0 is assigned, if otherwise.
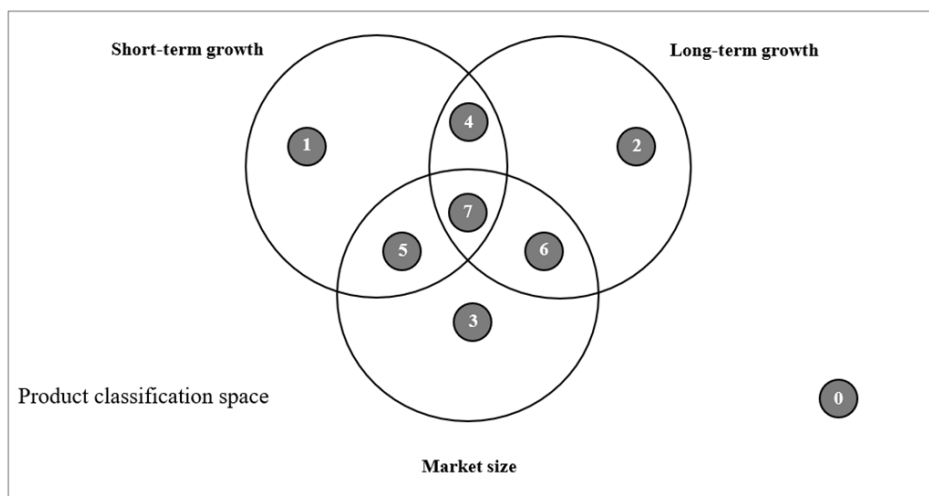
Figure 2. Classification of product-country combination
Source: Adapted from Cuyvers (2004:261)

Product–country combinations are classified annually into categories 0 to 7 based on these metrics, with only those in categories 3 to 7 annually over a 5-year period from 2014 to 2018 are considered for further analysis as the AfCFTA markets possessing consistently large and/or growing import demand.

Step 1.2
For export analysis, the study calculates the Revealed Trade Advantage (RTA), combining RCA and the Revealed Import Advantage (RMA), computed as:

$$RTA_{ij} = RCA_{ij} - RMA_{ij} = [(X_{i,j}/(X_{w,j})/(X_{i,tot}/X_{w,tot})] - [(M_{i,j}/(M_{w,j})/(M_{i,tot}/M_{w,tot})]$$

With M representing imports. The RCA index measures export specialisation, while the RMA index measures import specialisation. An RTA index above zero indicates a positive trade advantage, showing that a country is a net exporter with most exported products produced domestically, even after accounting for re-exports. The criteria for selection in this paper require $RTA > 0$ and $RCA \geq 1$, indicating net exporter status and specialisation. Products fulfilling the selection criteria annually over the 5-year period from 2014 to 2018 are identified as Nigeria and South Africa's sustainable exports.

Step 2
Following Mhonyera et al. (2018; 2023), this step involves matching the AfCFTA products with large and/or growing import demand with Nigeria and South Africa's sustainable exports. This matching process eliminates product–country combinations that do not meet the criteria of both or either import demand (Step 1.1) and export sustainability (Step 1.2).

Step 3
Finally, the study uses the static version of the standard GTAP Model (Version 11) to assess the macroeconomic and sectoral effects of the AfCFTA on the identified sectors. The standard GTAP Model is a multiregion, multisector, CGE Model, with perfect competition and constant returns to scale. In this model, bilateral trade is handled via the Armington assumption in which products traded internationally are differentiated by country of origin (Armington, 1969).

According to Aguiar et al. (2019), The GTAP 11 database features five reference years (i.e. 2004, 2007, 2011, 2014 and 2017) together with 141 GTAP regions for all the 65 GTAP sectors. For the model experiments simulated in this paper and drawing from the matched product-country combinations identified in Step 2, the aggregation scheme was defined as follows (see Table B.1 to B.3 in appendix B): under Scenario 1 (Nigeria), the 141 GTAP regions were aggregated to 4 new regions, while the 65 GTAP sectors were aggregated to 21 new sectors; under Scenario 2 (South Africa), the 141 GTAP regions were aggregated to 4 new regions, while the 65 GTAP sectors were aggregated to 26 new sectors; and for both scenarios, the eight GTAP factors were aggregated to four new factors considering labour and capital to be mobile, while land and natural resources were considered sluggish (see Table B.3 in appendix B).

The ultimate objective of the AfCFTA, with respect to trade, is to reach full liberalisation (i.e. the gradual elimination of all import taxes and export subsidies). In light of this and to assess the macroeconomic and sectoral effects of the AfCFTA on Nigerian and South African sectors possessing sustained export potential in the AfCFTA member states, the following model experiments are defined and simulated under these two scenarios:

- Scenario 1: full elimination of the AfCFTA_24 import tariffs on all matched sustainable exports originating from Nigeria, and full elimination of Nigeria's export subsidies on all its matched sustainable exports to the AfCFTA_24; and
- Scenario 2: full elimination of the AfCFTA_24 import tariffs on all matched sustainable exports originating from South Africa, and full elimination of South Africa's export subsidies on all its matched sustainable exports to the AfCFTA_37.

The analysis applies an unemployment closure for Nigeria, South Africa, and other relevant AfCFTA regions, reflecting the high unemployment rates in these areas.

Results and discussions

The results of the methodological steps applied in this paper to assess the macroeconomic and sectoral effects of the AfCFTA on Nigerian and South African sectors possessing sustained export potential in AfCFTA member states are presented and discussed in this section.

Macroeconomic effects of the AfCFTA under the two scenarios

GTAP simulation results of the macroeconomic effects of the AfCFTA under the two scenarios are shown in Table 1. Under Scenario 1, the real GDP and the household income of Nigeria are expected to individually increase by 0.11%. This also applies to its export volume (estimated to improve by 0.04%), import volume (0.21%) and TOT (0.09%). However, while the export and import volumes of the AfCFTA_24 are expected to improve by 0.04% and 0.03%, respectively, its real GDP, TOT and household income are all anticipated to deteriorate by 0.01%. It is clear in Table 1 that the macro-elements (i.e. real GDP, export and import volumes, and the TOT) of the Rest of AfCFTA and the Rest of World are anticipated to remain unchanged.

The modest growth in GDP and household income of Nigeria are supported by studies from the United Nations Economic Commission for Africa (UNECA, 2019) and the AfDB (2019), which highlight the potential for moderate GDP and income gains in the AfCFTA driven by enhanced trade and investment flows. Similarly, the moderate expansion in Nigeria's export and import volumes aligns with the WB (2020) report, which suggests that while Nigeria may experience increased trade volumes, the relative gains might be smaller compared to other African nations due to its large domestic market. Additionally, the improvement in the country's TOT is corroborated by the International Monetary Fund (IMF, 2020), which points to potential gains from improved export competitiveness. However, the deterioration in Nigeria's trade balance, as export growth lags behind

import growth, echoes concerns raised by Abrego et al. (2019), who warn of trade balance issues stemming from trade diversion effects and increased imports from other African countries.

Under Scenario 2, the real GDP of South Africa are expected to increase by 0.91%, while its household income is expected to improve by 0.99%. These findings are supported by UNECA (2019), which forecasts substantial GDP growth for South Africa due to its diversified economy and strong industrial base. The AfDB (2019) also anticipates significant household income growth, attributing it to enhanced export opportunities and improved trade infrastructure. This also extends to its export volume (2.47%) and import volume (3.02%), reflecting its strong integration into regional and global value chains. This is consistent with the WB (2020), which predicts that South Africa will be a major beneficiary of the AfCFTA due to its advanced manufacturing sector. The improvement in South Africa's TOT is in line with a study by the African Export-Import Bank (Afreximbank, 2018), which highlight the country's potential to improve its export composition and value-added products.

Table 1. Macroeconomic effects of the AfCFTA under the two scenarios

	Real GDP (%)	Export Volume (%)	Import Volume (%)	Terms of Trade (%)	Trade Balance (US$ million)	Regional Household Income (%)
Scenario 1						
Nigeria	0.11	0.04	0.21	0.09	-27.27	0.11
AfCFTA_24	-0.01	0.04	0.03	-0.01	-32.85	-0.01
Rest of AfCFTA	0.00	0.00	0.00	0.00	0.52	0.00
Rest of World	0.00	0.00	0.00	0.00	59.60	0.00
Scenario 2						
South Africa	0.91	2.47	3.02	-0.11	-716.28	0.99
AfCFTA_37	0.04	0.17	0.35	0.10	-594.27	0.05
Rest of AfCFTA	0.01	-0.01	0.00	0.01	3.19	0.01
Rest of World	0.00	0.00	-0.01	0.00	1307.35	0.00

Source: GTAP 11 model simulation.

Similar to Nigeria, the GTAP-CGE model simulation anticipates a deterioration in South Africa's trade balance due to higher import volumes. This is supported by Abrego et al. (2019), who suggest that while export opportunities grow, increased imports, especially of intermediate goods, might lead to a trade balance deficit. However, with the exception of trade balance, all the other macro-elements of the AfCFTA_37 are expected to improve. The macro-elements (i.e. real GDP, export and import volumes, the TOT and household income) of the Rest of AfCFTA and the Rest of World are mostly estimated to remain unaffected.

In general, the formation of the AfCFTA positively affects the trade performance of Nigeria, South Africa and the AfCFTA countries with sustained export opportunities for Nigeria and South Africa (i.e. the AfCFTA_24 and the AfCFTA_37) in all the two scenarios. This aligns with the IMF (2020), which predicts enhanced intra-African trade flows and diversification of trade portfolios. The Afreximbank (2024b) emphasises that the AfCFTA will create new trade routes and reduce trade barriers, further boosting trade performance across the continent. However, the deterioration in trade balances for Nigeria and South Africa due to higher import growth relative to export growth highlights potential trade diversion effects, where benefits are unevenly distributed. This necessitates careful policy considerations to maximise the benefits of the AfCFTA and mitigate adverse effects. Nonetheless, the improvements in the trade balances for the Rest of AfCFTA (Scenario 1, US$0.52 million; Scenario 2, US$3.19 million) and the Rest of World (US$59.60 million; US$1.31 billion) suggest that some countries might benefit more from the agreement, underscoring the need for

targeted policies to address these disparities.

The observed macroeconomic trends are primarily influenced by increased trade liberalisation, which fosters resource reallocation to areas of comparative advantage, contributing to moderate growth in real GDP and household income in countries like Nigeria and South Africa. Trade facilitation improvements, including reduced tariffs and streamlined customs procedures, lower trade costs and enhance regional trade flows, ultimately bolstering economic growth. Nevertheless, the expansion of imports, particularly of consumer and intermediate goods, poses challenges to trade balances, especially in Nigeria and South Africa. These trade balance issues arise partly from trade diversion, where increased intra–African trade displaces existing trade flows, leading to a faster growth in imports relative to exports. Furthermore, increased market integration reshapes import and export patterns, causing potential transitional adjustments and, in some cases, short–term trade deficits as countries adapt to the new trade environment.

Sectoral effects of the AfCFTA under the two scenarios

An important impact of AfCFTA's full trade liberalisation is the reallocation of factors of production to sectors where the member countries possess comparative advantages (Brown et al., 2006; Siriwardana & Yang, 2008). The results of the projected percentage sectoral changes in Nigeria's value of merchandise exports and the AfCFTA's value of merchandise imports, together with their respective variations in value added, resulting from the full liberalisation of the Nigerian sectors possessing sustained export potential in the AfCFTA are presented in Table 2.

In Nigeria, textiles and clothing sector merchandise exports reveals the largest expected surge in value (232.84%). In this context, empirical analyses by Geda and Yimer (2023) highlight that reduced tariffs and improved market access under AfCFTA are expected to boost growth in textiles and clothing due to enhanced regional trade opportunities. The export value of Nigeria's chemical products also significantly increases by 54.16%. This aligns with findings that RTAs generally pro-mote intra–regional trade in intermediate goods and chemicals (Ofori–Amoah, 2022). Moreover, the agreement's emphasis on trade facilitation measures can reduce trade costs and enhance compet-itiveness in the chemical sector (Saygili et al., 2018). Furthermore, Tayo and Odijie (2024) noted that AfCFTA's trade facilitation measures and reduction in non–tariff barriers are likely to enhance competitiveness in the chemical sector.

Other Nigerian sectors with outstanding increases in export value includes: beverages and tobacco products (40.70%), metal products (39.55%), leather products (36.60%), sugar (33.50%) and processed rice (30.87%). However, the value of Nigerian exports of bovine meat products declines by 0.67%, while that of the animal products not elsewhere specified, forestry and oil seeds sectors declines by 0.21%, 0.20% and 0.16%, respectively. Value addition is projected to improve in most of the Nigerian sectors with noticeable improvements in leather products, textiles and chemical products. Empirical studies support the notion that AfCFTA promotes value addition. Research by Ajibo (2023) found that the agreement encourages value chain integration and industrialisation, leading to increased value addition in sectors like textiles, leather, and chemicals. Furthermore, Sanguinet et al. (2022) document that trade agreements often lead to more sophisticated production processes and higher value–added products as firms adapt to increased competition and market opportunities.

Table 2. Sectoral effects of the AfCFTA under Scenario 1 (%)

Sector	Nigeria		AfCFTA_24	
	Export value	Value added	Import value	Value added
Animal products not elsewhere specified	-0.21	-0.06	-0.01	0.01
Beverages and tobacco products j	40.7	1.32	0.71	-0.05
Bovine cattle, sheep and goatsn	0.08	0.04	-0.01	0.01
Bovine meat products	-0.67	0.02	-0.02	0.00
Chemical products	54.16	4.41	0.04	-0.02
Crops not elsewhere specified	0.58	0.14	0.10	0.00
Ferrous metals	17.19	2.11	0.01	0.02
Food products not elsewhere specified	21.16	1.01	0.23	-0.03
Forestry	-0.20	0.02	0.02	0.01
Leather products	36.6	11.66	0.70	-0.28
Manufactures not elsewhere specified	30.59	0.89	0.04	0.01
Metal products	39.55	0.92	0.02	0.01
Metals not elsewhere specified	2.08	1.75	0.05	0.03
Oil seeds	-0.16	0.19	0.00	0.01
Petroleum, coal products	6.94	0.45	0.01	0.01
Processed rice	30.87	-0.08	-0.01	0.01
Sugar	33.50	0.99	-0.02	0.01
Textiles	232.84	10.05	0.34	-0.17
Vegetable oils and fats	5.07	-0.08	-0.01	0.02
Vegetables, fruit, nuts	0.15	0.02	-0.01	0.00

Source: GTAP 11 model simulation.

The import value in the AfCFTA_24 improves mainly in beverages and tobacco products (0.71%), leather products (0.70%) and food products not elsewhere specified (0.23%). These findings align well with existing literature on the effects of trade liberalisation under the AfCFTA. For instance, Abrego et al. (2019) highlight that consumer goods, particularly in the food and beverage sectors, often see significant import growth due to reduced tariffs and improved market access. Similarly, Mevel and Karingi (2012) found that leather goods show positive import responses in liberalised trade scenarios due to comparative advantages in production and increased consumer demand. Balistreri et al. (2018) also noted that the food processing and distribution sectors benefit from liberalised trade, aligning with the observed import growth in miscellaneous food products.

While the import value of the majority of the AfCFTA_24 sectors improve, very insignificant deteriorations not exceeding 0.02% are anticipated in the following sectors: animal products not elsewhere specified; bovine cattle, sheep and goats; bovine meat products; processed rice; sugar; vegetable oils and fats; and vegetables, fruit, nuts. This is consistent with the findings of Fusacchia et al. (2022) who indicated that some agricultural sectors in the AfCFTA might experience minor declines due to competitive pressures, while others might benefit from increased efficiency and export opportunities. Value added improves by small magnitudes in most of the AfCFTA_24 sectors, while notable deteriorations are estimated in leather products (0.28%) and textiles (0.17%).

Table 3 shows the results of the expected percentage sectoral variations in South Africa's value of merchandise exports and the AfCFTA's value of merchandise imports, along with their corresponding changes in value added, resulting from the full liberalisation of the South African sectors possessing sustained export potential in the AfCFTA. Expected improvements in export value are outstanding in

the following South African sectors: petroleum, coal products (36.39%); machinery and equipment not elsewhere specified (17.61%); textiles (17.16%); metal products (15.16%). This aligns with Fosu (2017) who highlighted that sectors with high export potential and existing competitive strengths are likely to benefit significantly from trade liberalisation under the AfCFTA. Value addition is expected to improve in the following sectors: petroleum, coal products (8.79%); machinery and equipment not elsewhere specified (6.17%); motor vehicles and parts (3.34%) and metal products (2.97%). This outcome finds empirical support from a report by the African Development Bank (2023), which emphasised that sectors with established manufacturing bases and high value–added processes are poised to gain from integrated markets and economies of scale under the AfCFTA.

Table 3. Sectoral effects of the AfCFTA under Scenario 2 (%)

Sector	South Africa		AfCFTA_37	
	Export value	Value added	Import value	Value added
Beverages and tobacco products	3.35	0.61	1.06	0.01
Chemical products	5.84	2.13	0.30	0.03
Crops not elsewhere specified	-0.43	-0.94	0.06	0.07
Dairy products	15.37	1.35	0.37	0.00
Ferrous metals	-0.77	1.05	0.07	-0.02
Fishing	-0.51	-0.03	0.18	0.05
Food products not elsewhere specified	6.19	1.02	0.63	0.01
Forestry	-2.74	0.69	0.02	0.08
Machinery and equipment not elsewhere specified	17.61	6.17	0.38	-0.72
Manufactures not elsewhere specified	2.98	0.68	0.57	-0.01
Metal products	15.16	2.97	0.67	-0.22
Metals not elsewhere specified	-4.25	-4.81	0.06	0.29
Mineral products not elsewhere specified	3.67	0.66	0.15	0.12
Minerals not elsewhere specified	-0.14	-0.49	0.18	0.12
Motor vehicles and parts	8.73	3.34	0.70	-0.44
Oil	-12.89	0.45	-0.67	-0.01
Paper products, publishing	6.09	1.48	0.45	-0.24
Petroleum, coal products	36.39	8.79	0.37	-0.71
Rubber and plastic products	13.17	2.05	0.33	-0.09
Textiles	17.16	2.04	0.21	0.00
Vegetable oils and fats	4.53	0.76	0.07	0.09
Vegetables, fruit, nuts	2.25	1.18	1.51	0.01
Wearing apparel	10.2	0.64	0.45	0.04
Wood products	2.1	0.61	0.20	0.11
Wool, silk-worm cocoons	-3.52	-2.85	0.27	0.04

Source: GTAP 11 model simulation.

With the exception of the oil sector whose import value is anticipated to decline by 0.67%, the import value in the AfCFTA_37 improves in all the sectors. Value addition is also expected to improve by small magnitudes in most of the sectors, while deteriorations in value addition are noticeable in the machinery and equipment not elsewhere specified (0.72%) and the petroleum, coal products (0.71%) sectors. The anticipated decline in the import value of the oil sector aligns with the WB (2020) findings that suggest countries with significant oil exports might see trade pattern shifts as

AfCFTA encourages diversification into other sectors. Conversely, improvements in import values across most sectors are supported by the International Trade Centre (2021) report, which highlights that AfCFTA could boost trade flows and enhance market access for African products. However, the deterioration in value addition in the machinery and equipment not elsewhere specified and petroleum, coal products sectors can be attributed to transitional adjustments as industries adapt to new trade dynamics and competitive pressures introduced by the AfCFTA.

It can be observed that, at the sectoral level, the AfCFTA fosters growth in industries with strong comparative advantages, especially in manufacturing and value-added sectors. In Nigeria, sectors such as textiles, chemicals, leather products, and metal products see substantial export growth, driven by improved market access, tariff reductions, and enhanced regional demand. South Africa experiences significant expansion in machinery, equipment, petroleum products, and motor vehicles, where established industrial bases and competitive strengths enable them to capitalise on the larger market. The increase in value-added within these sectors, particularly textiles and chemicals in Nigeria and machinery and petroleum products in South Africa, reflects gains from increased efficiency, value chain integration, and higher productivity driven by the AfCFTA.

Nevertheless, the reallocation of resources toward competitive sectors brings competitive pressures to certain industries, especially in agriculture and some manufacturing sectors, which face declines in value addition as they adjust to increased competition and shifting demand. These sectoral adjustments reflect the broader structural changes as industries adapt to trade liberalisation, with high-value-added sectors generally benefiting from increased integration and economies of scale within the continental market. The emphasis on trade facilitation and reduced non-tariff barriers also boosts competitiveness across these sectors, enabling them to tap into both regional and global value chains.

It is also apparent that certain sectors outperform others under the AfCFTA. This can be attributable to a combination of comparative advantage, regional demand alignment, and established production capacities. For instance, sectors like textiles, chemicals, and machinery benefit because they align well with the AfCFTA's reduced tariff and non-tariff barrier structure, which enhances their competitiveness. Comparative advantage plays a key role, as countries with abundant resources or expertise in specific industries, such as Nigeria in textiles and leather or South Africa in machinery, are better positioned to expand in these sectors. Additionally, established production capacity and integration into regional value chains help these industries leverage the AfCFTA's trade facilitation measures, allowing them to meet increased regional demand more effectively than sectors with less established infrastructure.

Implications for policy

The anticipated macroeconomic and sectoral improvements under the AfCFTA carry significant policy implications to maximise benefits and address emerging challenges. First, policymakers should focus on enhancing export competitiveness and reducing import dependency to improve trade balances. Strategies such as export incentives, tax breaks, and subsidies can provide much-needed support for firms looking to expand their reach in regional and global markets. Additionally, capacity-building programs targeting Small to Medium Enterprises (SMEs) are essential for helping smaller firms scale operations, meet export standards, and effectively compete within the AfCFTA framework. Investing in improved trade logistics and infrastructure, such as modernised ports and streamlined customs processes, can further reduce trade costs and support smoother movement of goods, boosting trade performance across sectors.

Given the sectoral gains expected in textiles, clothing, and chemicals in Nigeria, as well as petroleum and machinery in South Africa, targeted industrial policies are key to maximising value addition and export performance in these industries. Policies that support innovation, research and development, and workforce training in these sectors can help firms build competitive advantages and move up the value chain, producing more sophisticated products and increasing exports. Investment

in technology and infrastructure, such as reliable energy supply, digitalisation, and transport networks, is critical for enhancing productivity and competitiveness, enabling industries to meet the demand of a larger integrated market under the AfCFTA.

To ensure that the benefits of the AfCFTA are widely shared, policymakers should also aim for inclusive growth. This includes supporting vulnerable sectors, such as certain agricultural and manufacturing areas that may face stiffer competition, with measures that ease the transition, like retraining programs and temporary support schemes. Efforts to create employment opportunities across different regions and demographics are also vital to spread the benefits of increased trade and economic activity. Social policies that promote skill development, particularly for youth and women, can enable more equitable participation in the growing sectors, fostering long-term economic resilience and sustainable growth across the continent.

3. Conclusions and recommendations

The macroeconomic elements of both Nigeria and South Africa are expected to improve. This includes real GDP (Nigeria, 0.11%; South Africa, 0.91%), household income (0.11%; 0.99%), export volume (0.04%; 2.47%) and import volume (0.21%; 3.02%). However, the trade balances of both countries are expected to deteriorate since the expansion in their import volumes surpasses the expansion in export volumes. Regarding sectoral effects, the Nigerian textiles and clothing sector merchandise exports reveal the largest expected surge in value (232.84%). The export value of Nigeria's chemical products also significantly increases by 54.16%. Other Nigerian sectors with notable increases in export value include beverages and tobacco products (40.70%), metal products (39.55%), leather products (36.60%), sugar (33.50%) and processed rice (30.87%). For South Africa, expected improvements in export value are outstanding in the following sectors: petroleum and coal products (36.39%); machinery and equipment not elsewhere specified (17.61%); textiles (17.16%); metal products (15.16%). Value addition is projected to improve in most Nigerian sectors, with noticeable improvements in leather, textiles and chemical products. For South Africa, value addition is expected to improve in the following sectors: petroleum and coal products (8.79%); machinery and equipment not elsewhere specified (6.17%); motor vehicles and parts (3.34%) and metal products (2.97%).

The findings above suggests that the AfCFTA holds substantial promise for the economic growth and development of both Nigeria and South Africa. The projected improvements in key macroeconomic indicators such as real GDP, household income, and trade volumes underscore the potential benefits of deeper regional integration and increased market access. The significant sectoral gains, particularly in Nigeria's textiles and clothing sector and South Africa's petroleum and machinery sectors, highlight the opportunities for these countries to strengthen their industrial bases and diversify their export portfolios. These developments are not only crucial for enhancing economic resilience but also for positioning Nigeria and South Africa as pivotal players in the regional and global trade arenas.

However, realising these benefits will require careful and strategic policy interventions. Policymakers must address the potential challenges posed by the expected deterioration in trade balances and ensure that the gains from the AfCFTA are inclusive and widely distributed. By fostering an environment conducive to export competitiveness, supporting vulnerable sectors, and investing in infrastructure and innovation, Nigeria and South Africa can maximise the positive impacts of the AfCFTA. Furthermore, ongoing research and adaptive policy measures will be essential to navigate the dynamic economic landscape and fully leverage the opportunities presented by the AfCFTA. As these countries embark on this transformative journey, their experiences and insights will also provide valuable lessons for other member states, contributing to the overall success and sustainability of the AfCFTA initiative.

This paper, while comprehensive, has certain limitations. The analysis relies on available data,

which may not capture the most recent trends or unforeseen economic shifts. The projections are based on specific assumptions about market conditions and policy environments that may not hold true in practice. While the study highlights key sectors, it may not fully account for the interconnectedness of various industries and broader economic impacts. Additionally, the use of a static GTAP-CGE model introduces further limitations. The static nature of the model implies that it does not consider dynamic adjustments over time, such as capital accumulation, technological progress, and changes in consumer preferences, which are crucial for understanding long-term economic impacts. Moreover, the GTAP CGE model assumes perfect competition and constant returns to scale, which may oversimplify the complexities of real-world economies. The model also relies on aggregate data, potentially overlooking firm-level heterogeneity and the nuanced responses of different economic agents to policy changes.

The limitations above suggest that while the findings provide valuable insights, they should be interpreted with caution and complemented with dynamic analyses and more granular data to capture the full range of economic implications. For instance, trade balance metrics and sectoral growth projections should be considered in light of potential risks, including political instability, currency fluctuations, and global economic downturns, which may significantly impact outcomes. Given these limitations, future research should undertake longitudinal studies to monitor the actual impacts of the AfCFTA over time, providing a more dynamic and detailed understanding of its effects. In-depth microeconomic analyses at the firm and industry levels can offer insights into the specific factors driving sectoral performance and competitiveness. Evaluating the effectiveness of implemented policies will help refine strategies and ensure that the intended benefits of the AfCFTA are realised. Expanding the scope to include other AfCFTA member states can provide comparative insights and identify best practices for maximising trade and economic benefits across the continent.

Another valuable direction for future research would be to explore how the AfCFTA could drive structural transformation within Nigeria and South Africa, facilitating a shift from primary export reliance to increased value-added production across the continent. While the current analysis highlights sectoral impacts, a deeper investigation into the AfCFTA's potential to reshape economic structures could provide distinct insights into long-term developmental outcomes. Specifically, examining how the agreement might influence industrial policy frameworks, stimulate nascent industries, and support economic diversification in these countries would be highly beneficial. Taking Nigeria's critical need for diversification away from oil exports and South Africa's challenges with persistently high unemployment into account, future research could assess how the AfCFTA could address these issues by creating value-added production opportunities and supporting sectors with strong growth potential. This approach would enrich the understanding of how regional trade integration can foster economic resilience, inclusive growth, and sustainable structural transformation in Africa's largest economies.

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Appendix A: AfCFTA countries with matching sustained import demand

Nigeria
Angola; Benin; Cabo Verde; Cote d'Ivoire; Egypt; Eswatini; Ethiopia (excludes Eritrea); Ghana; Guinea; Kenya; Lesotho; Libya; Madagascar; Mauritania; Mauritius; Morocco; Mozambique; Rwanda; Senegal; Somalia; South Africa; Sudan; Tunisia and Zimbabwe.
South Africa
Angola; Benin; Botswana; Burkina Faso; Cameroon; Comoros; Congo, Democratic; Republic Congo, Republic; Cote d'Ivoire; Djibouti; Egypt, Arab Republic; Eswatini; Ethiopia (excludes Eritrea); Gambia, The; Ghana; Guinea-Bissau; Kenya; Lesotho; Libya; Madagascar; Malawi; Mauritania; Mauritius; Morocco; Mozambique; Namibia; Nigeria; Rwanda; Sao Tome and Principe; Senegal; Somalia; Sudan; Tanzania; Tunisia; Uganda; Zambia and Zimbabwe.

Notes: Exporter-importer combinations identified in Step 2.

Appendix B: GTAP Aggregation Scheme

Table B.1. Regional aggregations utilised in Scenario 1 and 2

Scenario 1		Scenario 2	
Code	Description	Code	Description
nga	Nigeria	zaf	South Africa
AfCFTA_24	AfCFTA members with sustained import demand for Nigeria	AfCFTA_37	AfCFTA members with sustained import demand for South Africa
egy	Egypt	egy	Egypt
mar	Morocco	mar	Morocco
tun	Tunisia	tun	Tunisia
xnf	Rest of North Africa	xnf	Rest of North Africa
ben	Benin	ben	Benin
civ	Cote d'Ivoire	bfa	Burkina Faso
gha	Ghana	cmr	Cameroon
gin	Guinea	civ	Cote d'Ivoire
sen	Senegal	gha	Ghana
xwf	Rest of Western Africa	gin	Guinea
xcf	Central Africa	nga	Nigeria
eth	Ethiopia	sen	Senegal
ken	Kenya	xcf	Central Africa
mdg	Madagascar	eth	Ethiopia
mus	Mauritius	ken	Kenya
moz	Mozambique	mdg	Madagascar
rwa	Rwanda	mwi	Malawi
zwe	Zimbabwe	mus	Mauritius
xec	Rest of Eastern Africa	moz	Mozambique
bwa	Botswana	rwa	Rwanda
nam	Namibia	tza	Tanzania
zaf	South Africa	uga	Uganda
xsc	Rest of South African Customs	zmb	Zambia
		zwe	Zimbabwe
		xec	Rest of Eastern Africa
		bwa	Botswana
		nam	Namibia
		xsc	Rest of South African Customs
ROAfCFTA	AfCFTA members without sustained import demand for Nigeria	ROAfCFTA	AfCFTA members without sustained import demand for South Africa
ROW	Rest of World	ROW	Rest of World

Source: GTAPAgg database aggregator.

Table B.2. Sectoral aggregations utilised in Scenario 1 and 2

Scenario 1: Nigeria			Scenario 2: South Africa	
New sector	Old sector code	Shared old sector code	Old sector code	New sector
Beverages and tobacco products		b_t		Beverages and tobacco products
Chemical products		chm		Chemical products
Crops nec		ocr		Crops nec
Food products nec		ofd		Food products nec
Forestry		frs		Forestry
Manufactures nec		omf		Manufactures nec
Metal products		fmp		Metal products
Metals nec		nfm		Metals nec
Petroleum, coal products		p_c		Petroleum, coal products
Textiles		tex		Textiles
Vegetable oils and fats		vol		Vegetable oils and fats
Vegetables, fruit, nuts		v_f		Vegetables, fruit, nuts
Ferrous metals		i_s		Ferrous metals
Animal products	nec oap		fsh	Fishing
Bovine cattle, sheep and goats	ctl		mil	Dairy products
Bovine meat products	cmt		ome	Machinery and equipment nec
Leather products	lea		nmm	Mineral products nec
Oil seeds	osd		oxt	Minerals nec
Processed rice	pcr		mvh	Motor vehicles and parts
Sugar	sgr		oil	Oil
			ppp	Paper products, publishing
			rpp	Rubber and plastic products
			wap	Wearing apparel lum Wood products
			wol	Wool, silk-worm cocoons
	gro; mil;	afs; atp; bhp; obs;	oap; ctl;	
	fish; ome;	coa; cmn; ele; cns;	cmt; gro;	
	nmm; oxt;	dwe; edu; eeq; ely;	lea; osd;	
	mhv; oil;	ofi; gas; gdt; hht;	pcr; sgr;	
Rest of Sectors	ppp; rpp; wap; lum wol	ins; omt; osg; rmk; c b; trd; otn; otp; whs; wtr; wtp; wht		Rest of Sectors

Note: nec, not elsewhere specified; and shared old sector represents old sectors utilised in both scenarios.
Source: GTAPAgg database aggregator.

Table B.3. GTAP factors utilised in Scenario 1 and 2

Production factor	Description	Factor mobility
Land	Land	Sluggish (ETRAE = −1.000)
Labour	Labour	Mobile
Capital	Capital	Mobile
NatRes	Natural Resources	Sluggish (ETRAE = −0.001)

Source: GTAPAgg database aggregator.