ISSN 1831-9424

European Commission

in collaboration with

The impact of the African Continental Free Trade Area on the Tanzanian economy

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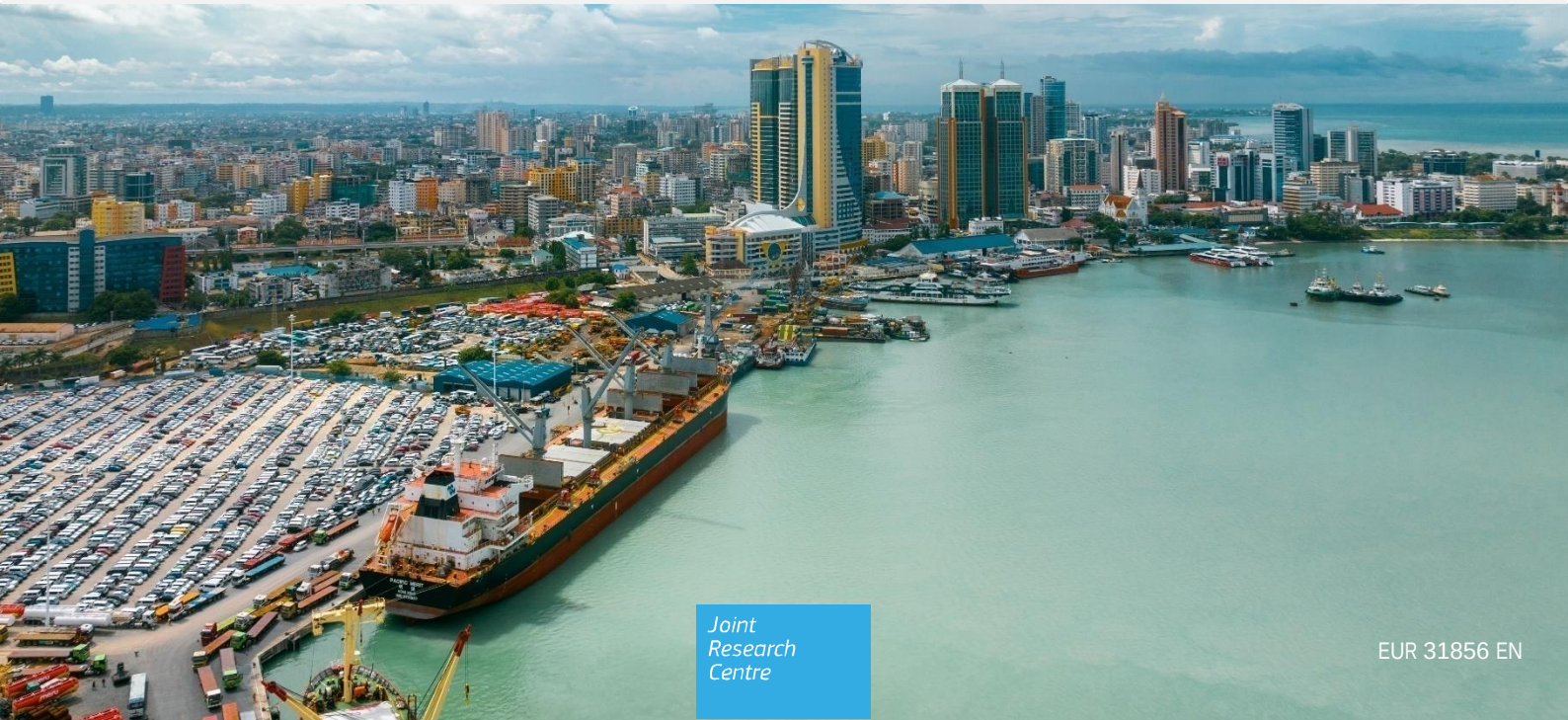
2024



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JRC136637

EUR 31856 EN

Print	ISBN 978-92-68-13420-7	ISSN 1018-5593	doi:10.2760/783798	KJ-NA-31-856-EN-C
PDF	ISBN 978-92-68-12873-2	ISSN 1831-9424	doi:10.2760/008789	KJ-NA-31-856-EN-N

Luxembourg: Publications Office of the European Union, 2024

How to cite this report: European Commission, Joint Research Centre, Maskaeva, A., Mgeni, C., Msafiri, M., Kinyondo, G., Msemo, E.M., Nechifor, V., El Meligi, A., Ferreira, V., Boysen, O. and Simola, A., The impact of the African Continental Free Trade Area on the Tanzanian economy, Publications Office of the European Union, Luxembourg, 2024, https://data.europa.eu/doi/10.2760/008789, JRC136637.

Contents

Abstract

This study utilises the DEMETRA (Dynamic Equilibrium Model for Economic Development, Resources and Agriculture) computable general equilibrium model to conduct an economy-wide assessment of the impacts of the African Continental Free Trade Area (AfCFTA) on mainland Tanzania. The model provides a comprehensive description of the trade agreement's effects on the economy as a whole, and on the agriculture and industrial sectors in particular. The study also employs a global, multiregional model to determine the trade creation and diversion effects of four liberalisation schedules defined by various policy objectives. The findings show that the AfCFTA will have a positive effect on both economic growth and welfare, mainly because the reduction in trade barriers, especially non-tariff barriers, will result in increased consumption and output (by reducing distortions) and consequently an improvement in efficiency. The Tanzanian national income is expected to improve as exports increase. Exporting sectors that are expected to gain include the agriculture, food processing, textiles, chemicals, paper and glass sectors. The AfCFTA will lead to increased output in industries that employ a large number of women, leading to a rise in their relative wages. In the agriculture sector, cash crops production will expand to a greater extent than that of food crops, and male labour employment in this sector will expand. Primary commodities will continue to be the most important exports. The study shows that trade in Tanzania is dominated by trade in raw materials, with trade in manufactured goods correspondingly weak, which is clearly reflected in current patterns in intra- and extra-African trade. The findings thus highlight the need for the Tanzanian government to promote industrialisation.

Summary

The African Continental Free Trade Area (AfCFTA) was established in May 2019 to enable the economic integration of Africa. It is a flagship project of Agenda 2063, the Africa and Union's development framework. The AfCFTA, with 54 signatories, is the world's largest free trade area in terms of the number of participating countries, and those countries are home to a total of 1.3 billion people. The project has the potential to increase household incomes and to bring millions of people out of extreme poverty. However, realising these positive outcomes will require effective policy reforms and trade facilitation measures in all member states. This study uses the DEMETRA (Dynamic Equilibrium Model for Economic Development, Resources and Agriculture) computable general equilibrium model to conduct an economy-wide assessment of the impacts of the AfCFTA on the economy of mainland Tanzania from 2021 to 2035. It also employs findings from a global, multiregional model (the Modular Applied General Equilibrium Tool – MAGNET) to determine the trade creation and diversion effects across the African continent. The study simulates the impact of two scenarios, tariff-only liberalisation and a combination of tariff and non-tariff measures (NTMs), under four policy objective schedules: revenue maximisation, agricultural trade, intermediate inputs trade and revealed comparative advantage.

The study findings show that the implementation of the tariff-only liberalisation scenario positively affects output and exports in various sectors in which Tanzania has a competitive advantage, for example cash crops, livestock, meat and fish, and food crops. The greatest percentage change increases are in exports of processed agri-food and manufacturing products. However, the exports of manufacturing products is outpaced by their imports, increasing the balance of payment deficit. The reduction in tariffs encourages more production by stimulating demand, with the greatest expansion being observed in the agri-food processing, manufacturing and cash crops sectors. The modelling results suggest that the tariffs and NTMs liberalisation scenario will result in strong growth in exports of most products, particularly processed agri-food and manufacturing products. However, under this scenario, output in many subsectors decreases due to higher competition from imports, lower government revenues and spending and a shift in production towards agri-food sectors.

The welfare effects of tariff-only liberalisation are more marked for rural households that engage in agriculture activities due to increased production of cash and food crops. Moreover, employment will increase, particularly among women, in the sectors that benefit the most from tariff-only liberalisation, such as livestock, meat and fish, food crops, manufacturing and processed food products. The consumption spending of households, especially spending on food, also increases due to a decline in the consumer price index, which increases households' purchasing power. The welfare effects are amplified when both tariffs and NTMs are liberalised, showing the benefits of reducing non-trade barriers.

Tariff-only liberalisation will have a slightly negative impact on government revenues under all schedules. However, a small increase in the sales tax rate, to compensate for the negative effects on government revenue, will lead to an improvement in macroeconomic indicators such as gross domestic product (GDP), consumption and output. Under the tariffs and NTMs liberalisation scenario, government revenue, in nominal terms, recovers in the long run (by 2035) and, under the REV (revenue maximisation from tariffs) and INT (intermediate inputs trade) schedules, exceeds the baseline value.

The study, therefore, highlights the dominance of trade in raw materials in the Tanzanian economy and the country's simultaneous weakness in manufacturing goods, which is clearly reflected in the current patterns of intra- and extra-African trade. For this reason, it is recommended that the Tanzanian government promotes industrialisation.

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Acknowledgements

The authors thank Saulius Tamosiunas (JRC – Seville) for creating a web infographic to illustrate the results presented in this report. A link to this tool is included at the end of the document, in Annex 2.

1. Introduction

The African Continental Free Trade Agreement (AfCFTA) is a landmark trade deal that has the potential to reshape the economic landscape of Africa. The AfCFTA was formally established in May 2019 at the 10th Extraordinary Session of the African Union (AU) Assembly in Kigali, Rwanda. It is one of the key priorities of the Africa Agenda 2063 and a major step towards African continental economic integration. It also featured highly in the political declaration of the fifth European Union–African Union summit that took place in 2017 in Abidjan, Côte d'Ivoire.

Remarkable progress has been made: 54 of the 55 AU member States have signed the agreement, leaving out Eritrea. As of August 2023, 47 African countries, including Tanzania, had ratified the agreement and deposited ratification instruments.

The AfCFTA envisages the creation of a unified continental market for goods and services, the free movement of people and investments, trade liberalisation and the establishment of a common market. By harmonising and coordinating trade liberalisation, the goal is to accelerate intra-African trade, amplifying welfare gains and mitigating trade barrier costs.

The AfCFTA tariff liberalisation envisages that 90 % of Harmonised System (HS) tariff codes will be fully liberalised within 5 years, that liberalisation of a further 7 % of codes will take longer, up to 10 years, and that 3 % will be excluded from liberalisation. The agreement also aims to reduce and eliminate trade costs associated with non-tariff measures (NTMs). The list of NTMs includes both technical barriers and non-technical barriers, and these can be categorised into the following groups: (i) trade and restrictive practices tolerated by governments, (ii) customs and administrative entry procedures, (iii) technical barriers to trade, (iv) sanitary and phytosanitary measures, (v) specific limitations (embargoes and quantitative limitations), (vi) charges on imports (non-tariff) and (vii) other (transport, clearing and forwarding).

Currently, a mere 15 % of African exports are destined for other countries in the continent, significantly lower than in other regions such as Asia (40 %) and Europe (37 %) ([1]). Africa therefore stands to benefit substantially from enhanced regional integration. However, challenges persist, including infrastructure limitations, institutional capacity gaps, trade policy management issues and political complexities.

Tanzania's economy is fundamentally open, with international trade constituting a substantial portion of its gross domestic product (GDP). According to recent national statistics, exports of goods and services account for 9.1 % of Tanzania's GDP while imports of goods and services account for 15.1 % of GDP (BOT, 2023). Trade is a primary driver of a country's development strategies due to the implicit belief that trade can create jobs, expand markets, increase incomes, facilitate competition and disseminate knowledge. Contributing to regional economic integration, Tanzania is a founding member of both the East African Community (EAC) and Southern African Development Community (SADC).

Trade and growth policies in Tanzania, as in many other African nations, have undergone a transformation. In Tanzania, this transformation has been enacted through the National Trade Policy of 2003 (URT, 2003). This policy responds to and builds upon the internal economic reforms that have been implemented since the mid-1980s. Its aims are to build a competitive economy, to increase the rate of economic growth and to enable the country to

([1]) Values from https://www.fiw.ac.at/en/2023/12/07/the-african-continental-free-trade-area-progress-opportunities-and-challenges-of-africas-mega-regional-initiative/ based on UNCTAD statistics.

respond to events unfolding on the international economic scene. In addition, the policy eliminated export restrictions and foreign exchange controls. Further, in its efforts to liberalise trade, the country has ratified and deposited ratification instruments of the AfCFTA agreement, which consolidates Africa into a USD 2.3 trillion market of 1.3 billion people.

Before the creation of the AfCFTA, the majority of Tanzania's trade, both imports and exports, was with non-African countries. According to the Bank of Tanzania (BOT, 2023), India, South Africa, Switzerland and the United Arab Emirates together accounted for more than half of the country's total exports in 2021/22. Furthermore, the top 15 export destinations accounted for 86.8 % of total exports, while the top 15 import countries accounted for 80.4 % of imports. China, India and the United Arab Emirates together accounted for 48.7 % of total imports.

During 2021, Tanzania exported goods worth USD 1 460 million to member countries of the SADC, slightly less than in 2020 (USD 1 544.7 million). South Africa and the Democratic Republic of the Congo continued to be the country's main trading partners, accounting for 14.3 % and 3.2 % of exports, respectively. The main exports to the SADC included gold, textiles and glassware, as well as iron and steel. The SADC accounted for 5 % of Tanzania's imports in 2021, with South Africa being the main trade partner. .

In 2021, exports from Tanzania to the EAC region increased by 30.7 % compared with 2020, reaching USD 1 057.5 million. Imports from the EAC were also higher than in 2020, increasing by 43.7 %, to USD 468.3 million. Overall, Tanzania recorded an overall trade surplus with the EAC of USD 589.2 million in 2021, higher than the 2020 surplus of USD 340.2 million. Goods exported to EAC countries mainly comprised rice, mineral water, cooking oil, maize, cosmetics and iron and steel, while major imports included imported refined white products, crown corks, salt, iron and steel, soap and detergents and pharmaceutical products.

Kenya remains Tanzania's major trading partner within the EAC, accounting for 37.4 % of intra-EAC exports in 2021, up from 28.4 % in 2020. Kenya was also the origin of the majority of imports from the EAC, accounting for 75.9 % of total imports, slightly less than in 2020 (76.4 %). According to the World Development Indicators, in 2017–2018, import tariffs accounted for 7 % of the revenue of the Tanzanian government, compared with 10–12 % in other sub-Saharan African countries (World Bank, 2021). This suggests that the impact of liberalisation on Tanzania's customs revenue is minimal (Maliszewska et al., 2020). However, it is important to determine the possible impacts and find ways to mitigate losses.

This study, therefore, examines the benefits and challenges of a free trade agreement (AfCFTA) among African countries in the aftermath of the COVID-19 pandemic. Tanzanian trade is dominated by a small number of sectors, namely agricultural commodities and minerals, and, therefore, not everyone will reap the benefits of the AfCFTA. It is imperative to understand which segments of the population will gain and which might lose out, to enable the formulation of complementary measures to offset adverse effects.

The study employs the Joint Research Centre (JRC) DEMETRA model, a single-country dynamic computable general equilibrium (CGE) model calibrated using the 2015 Tanzania Social Accounting Matrix (SAM). The analysis provides a detailed characterisation of the impact of the AfCFTA on the Tanzanian economy from 2021 to 2035. It considers two

liberalisation scenarios (a tariff-only scenario and another scenario combining tariff measures and NTMs) across four liberalisation schedules defined by alternative objectives related to government revenue, agricultural trade, intermediate inputs trade or comparative advantage trade. To consider the effects of the AfCFTA agreement outside Tanzania, the model is combined with a global multiregional CGE model – the Modular Applied GeNeral Equilibrium Tool (MAGNET) (Woltjer et al., 2014). The results of this multiregional model, namely changes in export demand following the establishment of the AfCFTA as a multilateral agreement, were used as shocks to the DEMETRA model.

The scenarios' outcomes shed light on potential changes in sectors, commodities, factor markets and households, providing insights into the multifaceted impacts of the AfCFTA on Tanzania. In essence, this study endeavours to bridge the knowledge gap in understanding the complex interplay of trade liberalisation, economic dynamics and welfare implications within the Tanzanian context.

The main objective of the study is to evaluate the economic impact of the AfCFTA on the Tanzanian economy as a whole and on its agri-food sectors at the national, regional and household levels. Specifically, the study aims to:

i. Examine the macroeconomic impacts (the impacts on GDP and government revenues) arising from the reduction in tariffs and NTMs under four schedules of liberalisation;

ii. Assess the impact of the AfCFTA on the regional employment of men and women, specifically employment in those agri-food sectors involved in cross-border trade;

iii. Analyse the changes in households' welfare in urban and rural areas.

The rest of the report is arranged as follows. Section 2 provides a brief literature review on trade liberalisation policies, with a focus on CGE modelling. Section 3 discusses the methodology, while Section 4 presents scenarios description and a discussion of the results. Section 5 concludes the paper and introduces policy recommendations.

2. Literature review: trade liberalisation and computable general equilibrium modelling

2.1. Trade liberalisation

The impact of reducing or removing trade barriers depends on whether trade diversion or trade creation dominates. Thus, whether the AfCFTA increases or decreases welfare is an empirical issue (Mevel and Karingi, 2012; Abrego et al., 2020; Kararach et al., 2023).

From a theoretical perspective, economic integration has several objectives including (i) facilitating trade flows, (ii) expanding the market and (iii) creating an environment conducive to performing economic activities. Viner (1950), in his classical analysis, pointed out that FTAs have one of two effects: trade diversion or trade creation. As a result, the welfare effects of FTAs are theoretically ambiguous (Krugman, 1991; Limão, 2016): lower trade barriers promote trade creation, thus increasing welfare, whereas the removal of trade barriers may lead to trade diversion to countries that are not party to the trade agreement, thus reducing welfare (Abrego et al., 2020).

The results of empirical studies aiming to determine the effects of a free trade area (FTA) (and, by extension, the AfCFTA) are contradictory (Charles, 2021). Some studies have concluded that the AfCFTA will benefit its signatories (e.g., Maliszewska and Ruta, 2020; World Bank, 2020; Tröster and Janechová, 2021; Echandi, et al., 2022), while others suggest that it will have negative effects (Elbadawi, 1997; Mevel and Karingi, 2012; Abrego et al., 2020; Oloruntoba et al., 2023). Yet other studies have found the AfCFTA to have both positive and negative effects on countries (Shinyekwa et al., 2020; Saygili et al., 2018; Bouët et al., 2017). Assessing past economic integration efforts in Africa, Elbadawi (1997) found that regional trade agreements in Africa have not contributed to trade flows, which is mainly attributable to a lack of infrastructure, institutional capacity and trade policies management and coordination, and the political environment (Mevel and Karingi, 2012; Charles, 2021). More recently, Abrego et al. (2020) have cited several factors limiting the potential of intra-African trade, such as a lack of import and export complementarities and the fact that African exporters are less competitive than those in other countries.

On the contrary, some studies have found that the AfCFTA will have a positive effects on participating countries. Maliszewska and Ruta (2020) and Tröster and Janechová (2021) show that the AfCFTA will result in significant growth of intra-African trade flows and positive effects on welfare and GDP, attributable mainly to the elimination of non-tariff barriers (NTBs) and the execution of the trade facilitation agreement. Similarly, Abrego et al. (2020) estimated that the AfCFTA will increase intra-African trade by more than 80 %. World Bank (2020) has suggested that it will increase employment opportunities, especially for women. While these studies provide insights into the overall effects of implementation of the AfCFTA, they do not detail outcomes for individual countries such as Tanzania. A more comprehensive analysis, focusing on the specific implications for Tanzania, could provide deeper insights into how the trade agreement might affect that country's economy, trade patterns and overall development.

Factors limiting the benefits of regional integration include the lack of a coherent policy framework for cooperation between countries, the inability to access large markets, the high cost of trade between countries and the lack of an effective mechanism to utilise resources (Charles, 2021). Despite these challenges, it may still be possible for sub-Saharan Africa (SSA) to reap the benefits of FTA agreements and regional economic

integration. For example, Ethiopia's participation in the Common Market for Eastern and Southern Africa (COMESA) free trade area has enabled the country to increase trade flows (Makonnen and Halellujah, 2014). Also, Charles (2021), in a study of the impact of the AfCFTA on Côte d'Ivoire, found that the AfCFTA has the potential to increase Côte d'Ivoire's exports to more than half of its trading partners. Importantly, the study found that the AfCFTA has the potential to substantially increase Côte d'Ivoire's trade with some countries, such as Lesotho (by 100 %), Algeria (by 90 %), Seychelles (by 88 %) and Gabon (by 70 %).

2.2. Empirical studies of trade policy analysis

Globally, and in particular in developing countries, efficient resource use and allocation are issues of long-standing debate among policymakers and development practitioners. Tanzania, like many other developing countries, needs to understand the wider effects of potential policies and interventions before committing its resources to them. The methods most widely used to analyse multiplier effects resulting from government intervention and other extraneous shocks are CGE models. CGE models allow the specification of economies with the desired level of detail with regards to the behaviour of economic agents, sectors, factors and market linkages.

CGE models have a number of advantages as a tool for policy analysis (Lofgren et al., 2002; Cockburn et al., 2014). First, they are theoretically consistent, with a solid foundation in microeconomic theory. Second, CGE models can incorporate many unique features of an economic system (Dixon et al., 2020). Compared with other numerical methods, such as econometric estimation models, partial equilibrium models or gravity models, CGE models have unique features that allow the explicit modelling of multisectoral and, in many cases, multiregional economies, along with the behaviour of economic agents.

In other words, in a CGE model, all markets are linked; consequently, a change in an economic system caused by the imposition of a policy or by an intervention will often have repercussions far beyond the intended sector. Thus, by linking the markets, CGE techniques are effective at capturing the relevant feedback and the mechanisms through which effects flow (Perali and Scandizzo, 2018). CGE models can better describe the efficiency-maximising behaviour of producers and utility-maximising behaviour of consumers, ultimately capturing the whole welfare of an economy following policy or exogenous shocks (Burfisher, 2017). Finally, problems of income distribution among economic agents following a shock, such as a price change, can be analysed. Thus, CGE models can play an important role in government policy decisions, helping governments to determine how to make best use of the available resources, to the benefit of all segments of society.

Studies employing CGE models to assess the effects of FTAs stress the significance of underlying assumptions (Raza et al., 2016). Furthermore, the literature on CGE-based analysis of the economic benefits of international trade and trade liberalisation offers valuable insights into the effects of FTAs and their impact on various aspects of economies. These studies encompass a broad spectrum of findings, indicating both positive and negative consequences of FTAs. In most instances, these models evaluate the impact of reduced trade costs resulting from tariff elimination and the removal of NTBs and administrative procedures (Tröster and Janechová, 2021).

Mevel and Karingi (2013) adopted the MIRAGE CGE model to assess the economic impacts of FTAs, focusing specifically on agricultural outcomes. Their findings indicated overall benefits for Africa as a whole, including increases in continental exports, real income and

real wages for workers. The formation of larger FTAs at the continental level would amplify these gains and stimulate intra-African trade significantly.

Several studies have examined the impacts of the AfCFTA on specific dimensions, such as long-term effects, environmental consequences and income inequality. For instance, Mevel and Karingi (2012), employing the MIRAGE CGE model, discovered that the AfCFTA could lead to an overall increase in real income and exports, although some countries might experience a decrease in real income due to the loss of tariff revenue.

Saygili et al. (2018) employed the Global Trade Analysis Project (GTAP) CGE model to evaluate the long-term outcomes of the AfCFTA, considering various schedules of tariff liberalisation. Their results indicated that the AfCFTA was likely to have positive impacts on GDP, employment and overall welfare, with the manufacturing sector, in particular, experiencing substantial employment growth.

Similarly, Abrego et al. (2020) suggested that the AfCFTA will potentially lead to welfare and income gains, with a significant portion of these benefits arising from the reduction of NTBs, since import tariffs were already low before the implementation of the FTA. Furthermore, it was estimated that there is scope to expand intraregional trade by over 80 %. However, it is crucial to acknowledge that the AfCFTA could have adverse distributional impacts.

Simola et al. (2022) utilised the global recursive dynamic CGE model MAGNET to assess the impact of the AfCFTA on food security in Africa. Their analysis revealed positive effects in terms of economic growth, greater intra-African market integration and reduced tariff revenue. The analysis also suggested that food security indicators, including food affordability and consumption, would improve following the implementation of the AfCFTA.

Nechifor et al. (2022) studied the impact of the AfCFTA on the Kenyan economy using the JRC DEMETRA CGE model. Their simulations emphasised the importance of liberalisation of both tariff measures and NTMs for stimulating trade and promoting welfare and food consumption.

In the context of Tanzania, several studies have used CGE models to analyse the effects of various economic policies. For instance, Maskaeva et al. (2019) modelled tax policy options in Tanzania. Lattore (2016) explored the impact of tariff reforms and the reduction of regulatory barriers faced by domestic and foreign firms operating in the business services sector in Tanzania.

However, there remains a need for more specific country-level analyses, particularly focusing on the agriculture sector, which is crucial to many African economies. This study aims to address this gap by employing a two-level modelling framework, spanning the global and country geographic scales, to comprehensively analyse the impacts of the AfCFTA on the Tanzanian economy, with a specific focus on the agriculture sector.

3. Methodology

3.1. Economy-wide model for evaluating the impact of the AfCFTA

This study uses a country-level dynamic CGE model (DEMETRA ([2])) to simulate the effect on Tanzanian trade of policy interventions related to the international trade. The model describes a small open economy assumes that world prices are exogenous. Producers maximise their profit under the constraint of available production technologies, and consumers maximise their utility under a budget constraint. The separation of marketed and subsistence commodities, combined with consistent accounting of home production for home consumption (HPHC), enables the study of semi-subsistence agriculture, in which production and consumption decisions are not separable.

The model is based on the perfect competition assumption, which holds that prices and quantities are not subject to market power on either the supply or the demand side. Producers can sell their goods on domestic markets or export them, depending on the elasticity of transformation of products for these two destinations, hence the use of a constant elasticity of transformation (CET) function. Changes in exports take into account changes in export prices and exogenous shifts in export demand and are determined through a downward-sloping curve. Consumers have the choice of consuming domestic goods or their imported substitutes. There is imperfect substitution between these products, as specified by the Armington hypothesis.

Households draw their income from remuneration to production factors and transfers received from enterprises, government and abroad. Their savings are a share of disposable income (savings rate). The government draws its income from total tax revenues, public borrowing and various transfers received. Its distribution of expenditure is between transfers to non-public agents and public expenditures, which are exogenous in real terms.

As in all CGE models, the modeller adopts a set of assumptions (the so-called closure rules) regarding agent behaviour in terms of income and spending adjustments when an economic shock is presented. In the model implementation for this application, for households, the savings rate adjusts, that is, savings adjust proportionally to a target level of nominal investment. It is assumed that government borrowing and transfers to domestic agents are fixed, while public spending on goods and services adapts to changes in government income. In the investment sector, total available resources are assumed to be fixed and composed of foreign capital inflows (fixed to baseline levels), household savings (subject to the savings rate) and government borrowing (fixed to baseline levels). Capital is assumed to be fully employed, sector specific and fixed in the initial period, while labour and land are assumed to be mobile across economic sectors and regions.

3.2. MAGNET- DEMETRA linking

The DEMETRA model for Tanzania simulates the effects of trade liberalisation at the country level only. Thus, to capture the trade creation and trade diversion effects as a result of Tanzania's participation in the AfCFTA, the DEMETRA model is linked to the global

([2]) DEMETRA is a development of the STAGE_DEV models documented in Aragie et al. (2017). STAGE_DEV is a variant of STAGE_2 (McDonald and Thierfelder, 2021) that incorporates a series of additional behavioural relationships that better account for economic relationships in developing countries, such as the dual role of semi-subsistent agricultural households, a nested consumption function, the endogeneity of the functional distribution of income, domestic migration and factor market segmentation. The recursive dynamic version of DEMETRA is derived from the STAGE_DYN model and STAGE_DEV_DYN models. The full model documentation can accessed at https://datam.jrc.ec.europa.eu/datam/model/DEMETRA/documentation.html.

multiregional CGE model the Modular Applied GeNeral Equilibrium Tool (MAGNET) (Woltjer et al., 2014), calibrated using the GTAP database version 10 (Aguiar et al., 2019).

The two models are linked in a top-down fashion related to the exports and imports structure of the two models. In the MAGNET global model, export changes in one region are determined by the import changes of all trade partners. In this way, both price and trade quantities are determined endogenously. Conversely, in the country model, DEMETRA, the trade partners are explicitly modelled as the rest of the world (ROW) and the export decisions of a producer are determined by the CET function based on the relative prices between the domestic commodities price and the world export price. In this setting, either the price is set exogenously while the quantity varies endogenously or vice versa. Therefore, when the two models are linked, the modeller chooses which variable, price or quantity, should be exogenous and which should endogenous.

In the first stage, liberalisation scenarios similar to those described in Section 4.1 were run in the MAGNET model. The results from this model represent the changes in bilateral trade after tariffs and NTMs liberalisation at the continental level. In the second stage, changes in the import prices from the MAGNET model, tariff reductions and rent-generating NTMs are introduced in the DEMETRA model as exogenous shocks. The changes in import prices from the MAGNET model are aggregated into a single ROW trade partner for Tanzania. The exogenous world import price in the DEMETRA model is then simulated, following these import price changes from MAGNET. Moreover, the iceberg NTMs (non-rent generating) are included in DEMETRA as efficiency gains of each commodity's imported variety are affected by NTMs. After the inclusion of price and NTMs changes in the DEMETRA model, the import quantities are determined following the Armington specification of trade, which is a similar function in MAGNET. The trade elasticities applied are obtained from the GTAP database to better align the two models.

To better align the exports, the study follows the approach in Horridge and Zhai (2006) and introduces an export demand function in the DEMETRA model (see equation 1). With this function, the export price and quantity information from the MAGNET model are introduced as exogenous export demand shift parameters arising from trade interactions taking place due the AfCFTA across the continent and in the ROW (equation 2).

$$\mathrm{QE} = \left(\frac{\mathrm{FP}}{\mathrm{PWE}}\right)^{\frac{1}{\mathrm{ESUBM}}} \tag{1}$$

$$\Delta FP = \left(\frac{QE_{magnet}}{QE_{base}}\right)^{\frac{1}{ESUBM}} * \frac{PE_{magnet}}{PE_{base}} \tag{2}$$

where *QE* is export of commodity, *PWE* is the world export price and *PE* is export price.

3.3. Data

The DEMETRA dynamic model is calibrated using the 2015 SAM for mainland Tanzania developed by the JRC (El Meligi et al., 2024). The SAM includes 99 accounts of production activities (25 of which are accounts of households as home producers) and 91 accounts of marketed commodities and 18 accounts of home commodities. The factor account includes three factors of production: labour, capital and land. Labour is disaggregated across three categories: gender, male or female; residence, rural or urban; and regional residence (25 regions). Institutional accounts include accounts for taxes and margins, households, firms, government and the ROW. The tax accounts include five types of taxes: import tariffs, rent-generating NTMs, indirect taxes (including sales tax), direct taxes, and factor taxes. There

are 10 household types, distinguished by their income quintile and residence (rural or urban). There is a savings–investment account, and the world trade and foreign capital flows are captured through a ROW account.

4. Scenarios and results

This section presents the description of simulated policies and simulation results.

4.1. Scenarios description

The study simulates two liberalisation scenarios consistent with the AfCFTA liberalisation conditions for middle-income member states. In this context, it is expected that: 1) 90 % of HS tariff lines will be fully liberalised within 5 years of implementation in 2021, which is by 2025, 2) a further liberalisation of a further 7 % of tariff lines will take longer, up to 10 years, and 3) 3 % of tariff lines will be excluded from liberalisation.

The first scenario assumes that in 2021–2035 only tariffs are reduced, while the second scenario assumes a reduction in both tariff measures and NTM-related costs in the same period. The NTMs capture both rent-generating (assuming that all rents are revenue to the government) and efficiency losses (so-called iceberg costs). Table 1 presents the list of DEMETRA commodities subject to tariff reduction following the tariff concessions schedule of the AfCFTA in the EAC region. However, shocks are not applied to services, as services are not considered in the liberalisation scenarios. The reduction in NTMs is consistent with the results obtained by Simola et al. (2022) using the MAGNET model. They found that NTMs for all intra-African trade were reduced by 50 %, while NTMs for trade between the AfCFTA area and the ROW were reduced by 25 %. The two simulations are implemented under four alternative schedules considering tariff changes at the HS6 level, then aggregated to the corresponding DEMETRA commodities:

- REV (revenue maximisation from tariffs). Under this schedule, tariffs at HS6 level are selected for liberalisation to ensure maximum effects on the government revenue. The selection is based on a priori calculation of impacts on tariff revenues and therefore does not consider the potential changes in the bilateral trade flows following the liberalisation.
- AGR (agricultural trade). Tariffs on agri-food commodities are liberalised to improve food accessibility and food security.
- INT (intermediate inputs trade). The schedule is in line with a pan-African industrialisation strategy that aims to increase the accessibility of intermediate products through tariff liberalisation.
- RCA (revealed comparative advantage). Tariffs in sectors deemed competitive, based on the country's comparative advantage, are liberalised, to promote efficiency and increase government revenue.

Given that a reduction in tariffs and NTMs affects government revenue and leads to further distributional effects, all simulation scenarios are accompanied by a hypothetical sales tax intervention. The sales tax (value added tax) is adjusted to offset any decline in government revenue relative to the multiannual baseline values. The adjustments are applied to product categories that are mostly imported, to avoid adverse impacts on domestic production (see Annex 1).

Table 1. Commodities considered for tariff reduction in Demetra

Commodity group	Commodity	Commodity group	Commodity
Cash crops	Coffee	Manufacturing	Basic metals
	Cotton		Pharmaceutical products
	Tea		Chemical products
	Tobacco		Coke and refined petroleum products
Food crops	Fruits		Electronic and optical products
	Maize		Electrical equipment
	Oilseeds and oleaginous fruits		Fabricated metal products
	Other cereals (millet, sorghum)		Furniture
	Other crops		Leather and footwear
	Other roots and tubers		Machinery and equipment
	Pulses		Motor vehicles, trailers and semi-trailers
	Rice		Non-metallic mineral products
	Sweet potatoes		Other manufactured articles
	Vegetables		Other transport equipment
	Wheat		Paper and paper products
Livestock, meat and fish	Forestry, logging and related services		Rubber and plastics products
	Fish and other fishing products; aquaculture products; support services to fishing		Textiles
	Other livestock		Wearing apparel
	Raw milk		Wood and of products of wood and cork
Processed agri-food	Beverages	Extractive industries	Coal and lignite
	Food products		Crude petroleum and natural gas
	Tobacco products		Metal ores
Utilities	Electricity, gas, steam and air conditioning		Other mining and quarrying products

Source: Produced by the authors, based on the 2015 SAM (El Meligi et al., 2024).

4.2. Simulation results

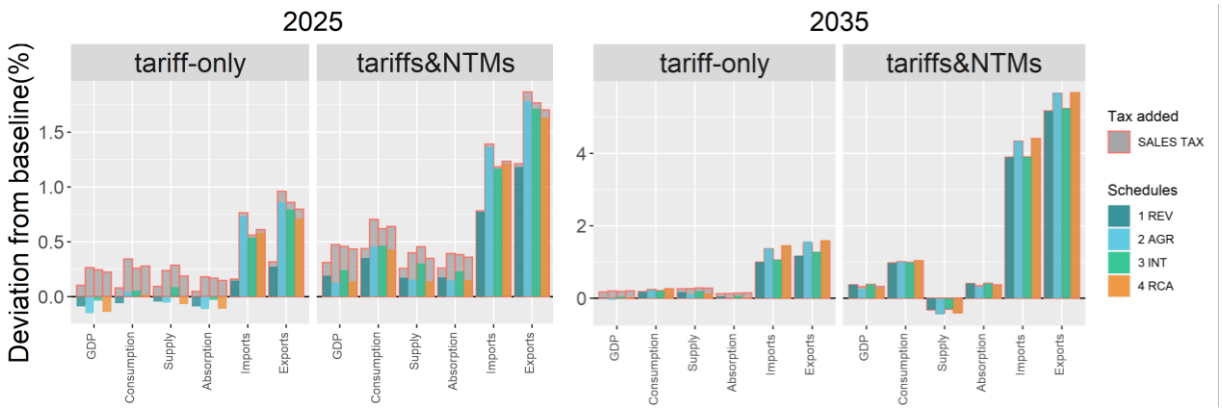
The effects of the two scenarios on various indicators are presented in the subsections below. Each subsection reports the results of each scenario, to allow comparison of the policy effects. Annex 2 includes a web link to an interactive data visualisation tool illustrating additional simulation results across sectors, commodities, factor markets and households. All results are expressed as changes or deviations from the baseline values ('no AfCFTA') in the specified year, and all monetary values are expressed in 2015 constant Tanzanian shillings (TSh).

4.2.1. Macroeconomic impacts

Tariff-only liberalisation

Tariff-only liberalisation leads to negative effects on most macroeconomic indicators, except exports and imports, in the short term. By 2025, GDP declines (by between 0.03 % and 0.07 %) under all liberalisation schedules (Figure 1). The drop is mainly due to a reduction in government revenue (0.78–1.11 %), which reduces aggregate demand. Aggregate supply also decreases slightly due to higher imports of manufacturing products. Absorption ([3]) declines due to both lower government demand and a reduction in household consumption, driven by declining income in some household segments. However, the small increase in the sales tax rate results in a significant increase in GDP and other macroeconomic indicators (i.e. consumption, supply and exports) in the short term.

Figure 1. Impact on macroeconomic indicators under both scenarios.



Source: Authors' calculation, based on DEMETRA results.

Declining macroeconomic indicators recover in the long term. By 2035, GDP, consumption, aggregate supply and absorption show moderate increases. The positive outcome is mainly due to the introduction of a sales tax to counteract the adverse effects of dwindling government revenue caused by the removal of the tariff on imports. Economic growth in the long term contributes to the expansion of international trade. The expansion of exports (1.18–1.61 %) outpaces that of imports (1.0–1.46 %) and causes a decrease in the trade balance deficit under all schedules.

([3]) Absorption is the sum of all domestically produced goods consumed locally and all imports. It is equal to national income minus the balance of trade.

The reduction in tariffs has the implication of reducing the price of imported commodities relative to the price of domestic substitutes, and therefore increases demand for imports at the expense of demand for domestic substitutes. Indeed, by 2035, the removal of import tariffs leads to a fall in domestic prices, thus enhancing aggregate supply, especially for the REV (0.16 %) and INT (0.19 %) liberalisation schedules. Lower prices culminate in a decrease in the consumer price index (CPI) (of 0.06–0.15 %), which leads to an increase in consumption (0.17–0.25 %) under all schedules. The reduction in the CPI implies hints at import prices also decreasing, thus increase in imports. At the same time, the tariff liberalisation increases the positive effects of the AfCFTA on investment, especially in the case of the REV (0.05 %) and INT (0.06 %) liberalisation schedules.

Tariffs and non-tariff measures liberalisation

The combination of tariffs and NTM liberalisation leads to a moderate increase in GDP (of 0.13–0.24 %), given the rise in aggregate supply, by 2025. This follows the reallocation of factors of production towards sectors in which the value added accounts for a higher share of total output. This indicates a further concentration of the economy in sectors where the country has a comparative advantage (Figure 1). Furthermore, in the short term, the sales tax intervention yields positive outcomes in terms of GDP, consumption and all other macroeconomic indicators, which proves that this instrument is a suitable complementing measure that has no adverse effects at the macro level.

A liberalisation expanding into the NTMs introduces GDP gains (reaching 0.26–0.38 % above the baseline in 2035) and has positive effects on other macroeconomic indicators (consumption, absorption, exports and imports), except aggregate supply, in the long term. Aggregate supply decreases (by 0.52–0.62 % by 2035) (Figure 1).

Notably, the impacts on trade and consumption are even greater. Consumption expands by 0.99–1.03 %, with the RCA liberalisation schedule showing the greatest increase. Imports grow by 3.89–4.34 % relative to baseline, while exports expand even more (by 5.12–5.69 %). In the case of both exports and imports, increases in trade are greatest, among the four schedules considered, under the AGR and RCA schedules. Export expansion can have a positive impact on the trade balance deficit. However, the increase in net imports leads to a depreciation of the Tanzanian shilling of 4.07–4.51 % and to an increase in the CPI of 0.32–0.42 % relative to baseline levels.

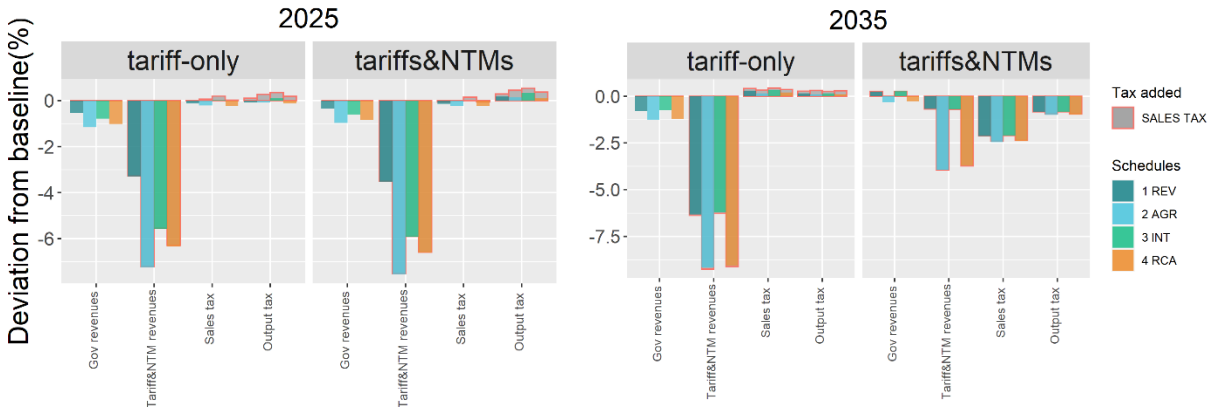
Despite the increase in exports, investment under the AGR and RCA schedules is in the long term 0.05–0.06 % below the baseline. This decline is explained by an overall increase in the costs of commodities associated with investment. This is caused partly by the depreciation of the Tanzanian shilling, which makes some imported commodities, specifically intermediate inputs used in production, more expensive, and partly by an increase in the costs of factors of production (labour and capital), as economic output expands in other areas, having a 'crowding-out' effect. This decline in investment may to some extent be offset by foreign capital inflow, but this could also have a negative effect on the trade balance. Under the REV and INT schedules, investment is 0.05–0.06 % above the baseline.

4.2.2. Impacts on government revenue

Tariff-only liberalisation

The removal of tariffs results in a decrease in government revenue (i.e. revenue is forgone), relative to baseline, during the period of analysis (Figure 2). Indeed, by 2025, tariff-only liberalisation would reduce government revenues by TSh 103.81–193.87 billion relative to baseline values, which will be caused by a reduction in tariff revenue by TSh 95.99–210.87 billion (Figure 3).

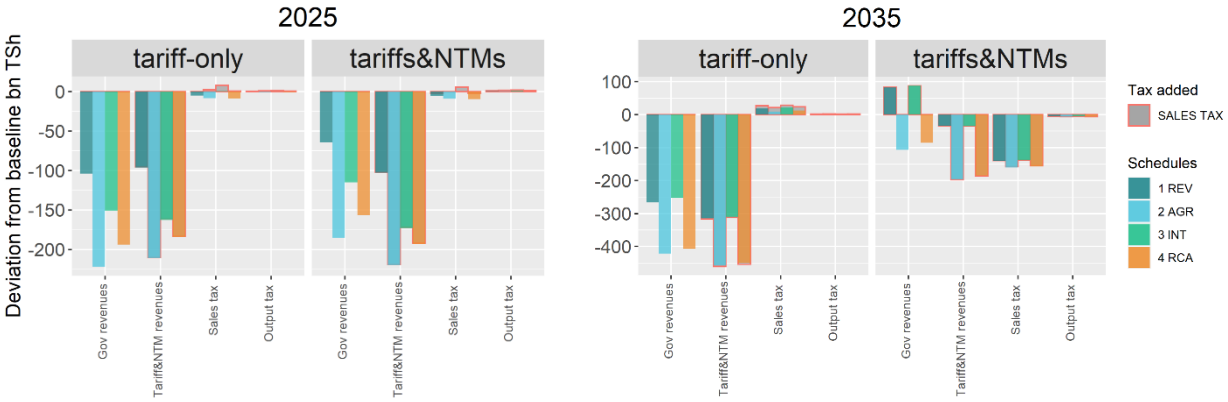
Figure 2. Impact on government revenue under both scenarios.



Source: Authors' calculation, based on DEMETRA results.

By 2035, total government revenue exhibits a declining trend relative to the baseline values (Figure 3). The highest decline in total revenues occurs under the AGR (– 1.26 %) and RCA (– 1.22 %) schedules (Figure 2). Overall, the decrease in tariff revenues is 6.22–9.17 % (TSh 309.64–456.13 billion) and the decrease in total revenues is 0.75–1.26 % (TSh 251.76–421.75 billion). However, sales tax and output tax revenues are positive under all liberalisation schedules. The reduction in government tax revenues resulting from the elimination of import tariffs under the AfCFTA could be partially offset through higher output and sales taxes, especially in the long term. Indeed, higher GDP due to increased efficiency would increase the revenue collected. Higher consumption, due to increased imports and income, would also increase revenue.

Figure 3. Change in government revenues under both scenarios (values in 2015 Tanzanian shillings).



Source: Authors' calculation, based on DEMETRA results.

Tariffs and non-tariff measures liberalisation

The NTMs liberalisation scenario has a slight negative effect on government revenues, and this has an impact on government demand, which shrinks relative to the baseline during the transition to 2035. However, the combination of tariffs and NTMs liberalisation has a positive effect on consumption and trade, leading to an increase over the baseline in 2035.

Combining tariff liberalisation and NTMs reduces government revenue by TSh 63.87–185.04 billion in 2025 (Figure 3). By 2035, government revenues are reduced (by 0.5–1 %) only under the AGR and RCA liberalisation schedules. By 2035, revenue loss recovers in nominal values, and revenues exceed the baseline values also under the REV (TSh 83.4 billion) and INT (TSh 87.6 billion) liberalisation schedules. This positive effect on revenues is driven by an increase in the sales tax, which compensates for loss of government revenue.

4.2.3. Trade impacts

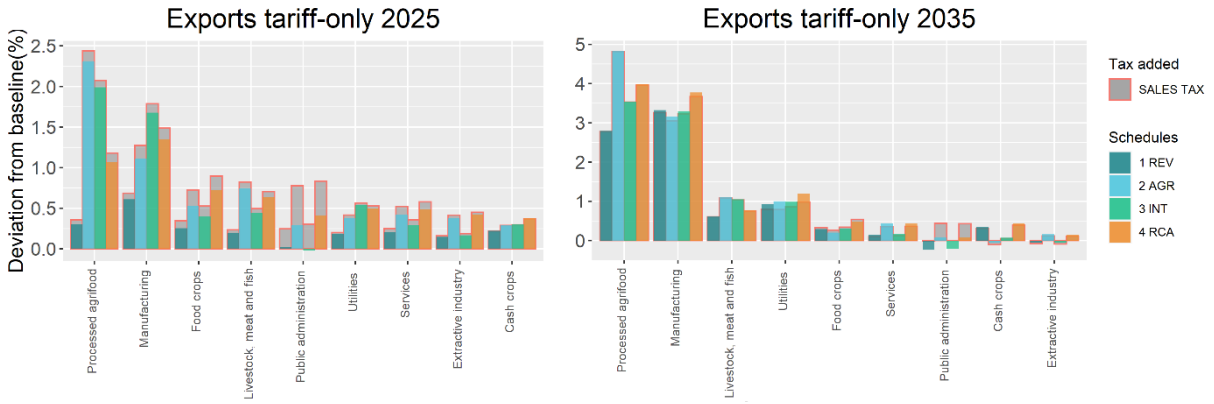
Tariff-only liberalisation

Tariff-only liberalisation positively affects Tanzanian exports of most product groups (Figure 4). The greatest expansion by 2035 is in the processed agri-food sector, followed by the manufacturing products sector. The increase in exports of processed agri-food is greatest under the AGR and RCA schedules, 4.86 % and 3.90 %, respectively. Exports of manufacturing products benefit most from the RCA and REV schedules, increasing by 3.75 % and 3.30 %, respectively. The equivalent increase in manufacturing exports value ranges from TSh 186.81 billion (AGR) to TSh 222.60 billion (RCA) while for processed agri-foods the increase ranges from TSh 189.34 billion (REV) to TSh 340.45 billion (AGR). Exports of utilities, livestock, meat and fish, cash crops and food crop products also experience an increase under the tariff-only liberalisation scenario. The changes, in monetary terms, range from TSh 7.17 billion (INT) to TSh 33.91 billion (RCA) for cash crops, from TSh 3.43 billion (AGR) to TSh 9.47 billion (RCA) for food crops, from TSh 2.39 billion (REV) to TSh 4.62 billion (AGR) for livestock, meat and fish and from TSh 3.21 billion (REV) to TSh 4.15 billion (RCA) for utilities.

Exports of services increase by less than 1 % although they are indirectly affected by tariff liberalisation under the AfCFTA. In monetary terms (2015 constant prices), the increased income from exports of services, which ranges from TSh 9.80 billion (REV) to TSh 33.53 billion (AGR), exceeds that from food crops, livestock, meat and fish, and utilities.

However, exports of products of the extractive industries, such as mining products, and exports of public services decrease under the REV and INT schedules. This decline in exports of extractive products is explained by the trade diversion effects due to a decrease in export demand relative to the baseline value, as obtained from the global MAGNET model.

Figure 4. Impact on exports under the tariff-only liberalisation scenario.

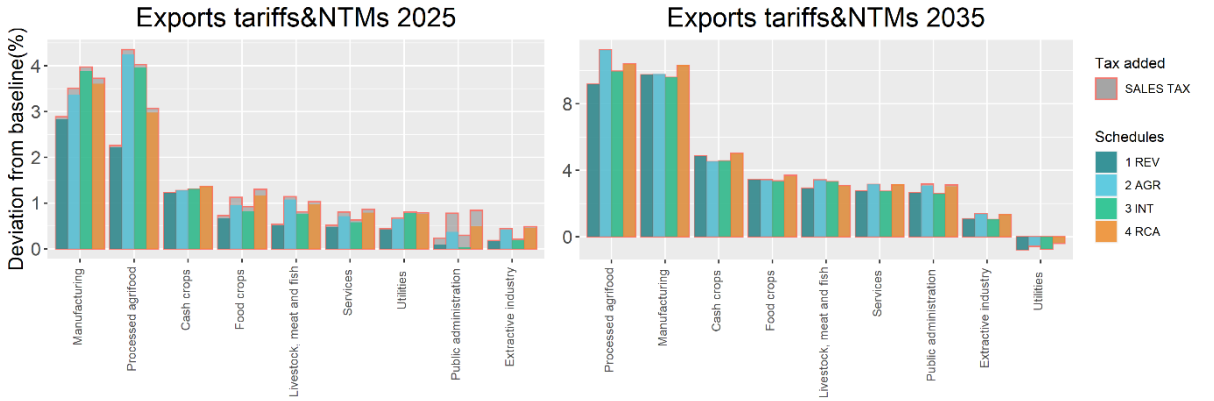


Source: Authors' calculation, based on DEMETRA results.

Tariffs and non-tariff measures liberalisation

The combination of tariffs and NTMs liberalisation results in more significant growth of exports of most products, except for utilities, which show a decline compared with the tariff-only liberalisation scenario (Figure 5).

Figure 5. Impact on exports under the tariffs and NTMs liberalisation scenario.



Source: Authors' calculation, based on DEMETRA results.

Expansion of exports by 2035 is highest in the processed agri-food products sector, particularly under the AGR schedule (8.93–11.18 %), followed by the manufacturing

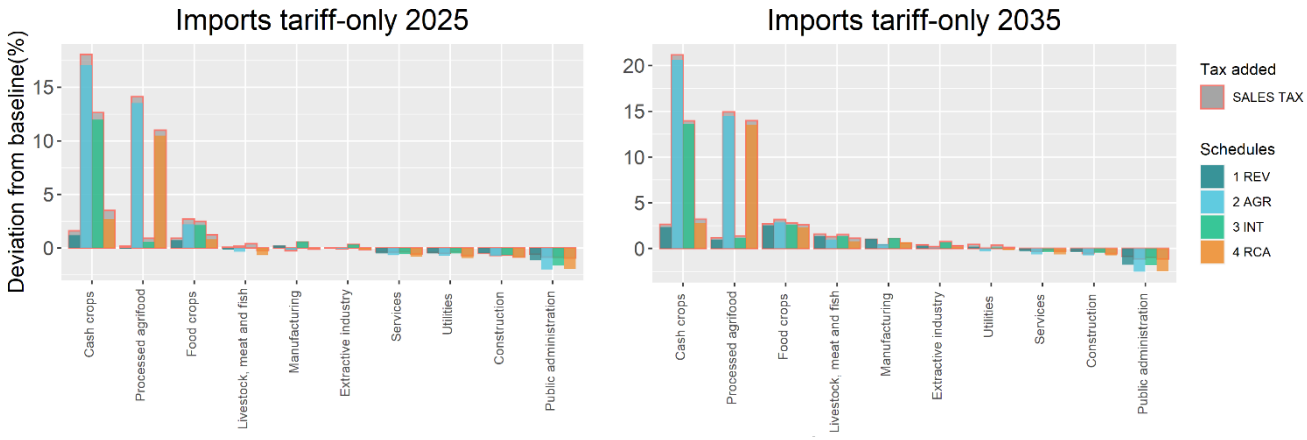
products sector, which records an increase in exports in the range 9.62–10.88 %, the RCA schedule showing the highest increase.

When expressed in monetary terms (in 2015 constant prices), increased income from exports is again highest in the processed agri-food products sector, ranging from TSh 626.24 billion (REV) to TSh 783.49 billion (AGR) while the increased income from exports of manufacturing products ranges from about TSh 580.06 billion (REV) to TSh 616.06 billion (RCA).

Exports of cash crops, food crops, and livestock, meat and fish also increase more under this scenario than under the tariff-only liberalisation scenario. In contrast to the tariff-only scenario, the liberalisation of both tariffs and NTMs leads to an increase in exports of extractive industry products and public administration services under all schedules. This is because the significant reduction in trade costs increases export demand, resulting in a tendency to create in trade in these products at a continental level.

As regards imports, tariff-only liberalisation increases Tanzanian imports of most products, except utilities, construction, services and public administration, imports of which decrease (– 1.76 % to – 2.49 %) by 2035 (Figure 6). The reduction in imports of construction commodities under the REV and INT schedules can be partly attributed to a lower demand for these commodities for investment purposes due to a reduction in government revenue. The sector experiencing the greatest reduction in exports is public administration services, and this is due to a reduction in government income as a result of tariff liberalisation.

Figure 6. Impact on imports under the tariff-only liberalisation scenario.



Source: Authors' calculation, based on DEMETRA results.

In other sectors, imports increase. The greatest increases in imports are in the cash crops sector, under the AGR (20.79 %) and INT (13.56 %) schedules, and in the processed food products sector, under the AGR (14.52 %) and RCA (13.57 %) schedules (Figure 7). Expressed as a change in absolute monetary values (in 2015 constant prices), imports of manufacturing products increase by TSh 210.95 billion (AGR) to TSh 464.34 billion (INT), imports of processed agri-foods increase by TSh 24.86 billion (REV) to TSh 392.55 billion (AGR), imports of food crops increase from TSh 33.23 billion (RCA) to TSh 41.08 billion (AGR) and imports of cash crops increase by TSh 0.20 billion (REV) to TSh 1.82 billion (AGR).

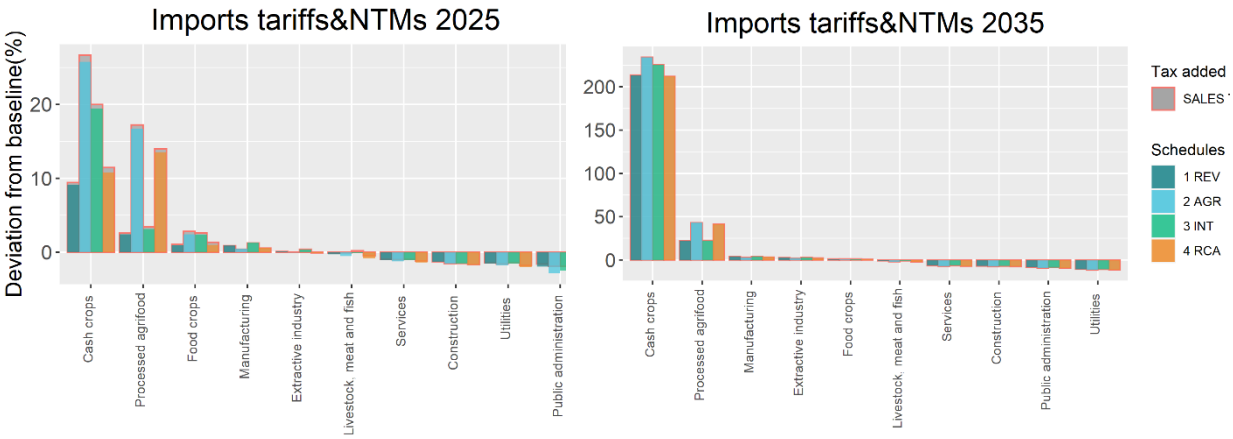
The lowest increases in import values are in the extractive industry and livestock, meat and fish sectors.

Under the scenario of liberalisation of tariffs and NTMs, the increase in imports is greatest for cash crops, followed by processed agri-food products (Figure 7). Imports of cash crops increase by 221–243 % under all the liberalised schedules by 2035, because imports of these crops at baseline are relatively low. The equivalent increase in cash crops imports in monetary terms (in 2015 constant prices) is nevertheless small, ranging from TSh 19.32 billion (RCA) to TSh 20.48 billion (INT). Imports of processed agri-food products increase by TSh 601.69 billion (REV) to TSh 1 161.01 billion (AGR).

The manufacturing products, extractive industry and food crops sectors also experience an increase in imports, in the range 3–4 %, 2–3 % and 0–1 %, respectively. In absolute monetary terms, the increase in imports amounts to TSh 1 239.15 billion (AGR) to TSh 1 635.15 billion (INT) in the case of manufacturing products, to 2.90 billion (AGR) to 4.08 billion (INT) in the case of the extractive industries and to TSh 3.21 billion (RCA) to TSh 11.88 billion (AGR) in the case of food crops.

As in the tariff-only liberalisation scenario, imports of utilities, services, public administration and construction commodities decrease, but the magnitude of the decrease is slightly higher. Therefore, this scenario results in the expansion of imports relative to baseline in the order cash crops, processed agri-food, manufacturing, extractive industry products and food crops. However, when these changes are expressed in absolute monetary values, the order of import bill expansion is manufacturing, processed agri-food, cash crops, food crops and, finally, extractive industry products.

Figure 7. Impact on imports under the tariffs and NTMs liberalisation scenario.



Source: Authors' calculation, based on DEMETRA results.

The export–import comparison under the two scenarios shows that, by 2035, Tanzania will experience both trade creation and trade diversion effects, reflected by an increase in net exports of some product groups and a decrease in net exports of other products. Under the tariff-only liberalisation scenario, an increase in net exports will be experienced in the manufacturing, processed agri-food, cash crops, public administration and utilities sectors, while exports of services, extractive industry products, food crops and livestock, meat and fish will show a net decrease despite the potential of the Tanzanian agricultural sector.

The liberalisation of tariffs and NTMs generally leads to positive impacts on trade, especially trade in those commodities for which, at baseline, iceberg costs and rent-generating NTMs are estimated to be high. In the case of these commodities, which include some crops (vegetables, pulses, tobacco, other crops), processed agri-foods (food, beverages) and manufacturing products (textile, cloth, metals, equipment, furniture, rubber and other manufacturing), a reduction in NTMs costs has a marked effect on imports.

In monetary terms, Table 2 presents the change of exports and imports from the baseline in 2015 constant prices for the REV schedule. The changes in net exports vary between the two scenarios; however, the pattern of trade creation and diversion is similar.

By 2035, the greatest loss of income in Tanzania (in the form of the increased cost of imports) arising from trade liberalisation under AfCFTA provisions is experienced by the manufacturing products sector. Further, under the tariff-only liberalisation, the value of net exports for the extractive industry commodities and food crops decrease relative to the baseline, while these product groups record a net increase in exports value under Tariffs and NTMs liberalisation revealing that NTMs present significant barriers to these commodities' exports.

Other sectors record an increase in net export values, with the increase being particularly notable in the cash crops, extractive industry products and processed agri-food products sectors. Higher import bills offset the net exports gain, leading to a current account deficit and directly contributing to currency depreciation.

Table 2. Export-import value change from the baseline by 2035 (TSh billion)

Commodity group	Tariff-only liberalisation			Tariffs and NTMs liberalisation		
	Exports	Imports	Net exports	Exports	Imports	Net exports
Manufacturing	200.99	440.27	-239.28	589.08	1582.99	-993.91
Public administration	-0.67	-6.14	5.47	7.38	-30.16	37.55
Construction	0.00	-0.25	0.25	0.00	-4.67	4.67
Cash crops	20.11	0.28	19.82	289.02	25.74	263.27
Extractive industry	-3.18	0.53	-3.71	65.90	3.94	61.96
Processed agri-food products	192.52	25.63	166.89	633.88	601.58	32.31
Food crops	7.08	37.36	-30.28	82.54	16.07	66.47
Services	11.99	-22.20	34.18	231.12	-490.87	721.99
Livestock, meat and fish	2.57	0.58	1.99	12.11	-0.41	12.52
Utilities	3.41	0.23	3.18	-2.84	-10.37	7.53

Source: Authors' calculation, based on DEMETRA results.

Focusing on cash crops, the greatest increase in the value of net exports relative to the baseline in both scenarios under the REV schedule is observed for tobacco, followed by tea. In the case of food crops, the income increase from net exports is highest for oilseeds, oleaginous fruits, and wheat under the tariff-only liberalisation and pulses when both tariffs and NTMs are liberalised. Other crops particularly maize exhibit the greatest decline in the value of net exports relative to the baseline in both scenarios (Table 3).

Table 3. Export-import value change from the baseline for crops by 2035 (TSh billion)

Crops	Tariff-only liberalisation			Tariffs and NTMs liberalisation		
	Exports	Imports	Net Exports	Exports	Imports	Net Exports
Tea	3.40	0.19	3.20	57.73	21.19	36.54
Tobacco	15.00	0.09	14.91	175.41	4.56	170.85
Cotton	-0.38	0.00	-0.38	4.55	0.00	4.55
Cloves	-0.01	0.00	-0.01	0.57	0.00	0.57
Coffee	1.57	0.00	1.57	24.21	0.00	24.20
Cashew nuts	0.10	0.00	0.10	24.60	0.00	24.60
Sisal	0.43	0.00	0.43	1.96	0.00	1.96
Wheat	4.90	3.25	1.65	5.10	-15.79	20.89
Maize	0.07	30.05	-29.99	1.86	18.72	-16.86
Other cereals (millet, sorghum)	0.13	2.12	-1.98	0.65	0.22	0.43
Fruits	-0.51	1.44	-1.95	6.79	6.20	0.59
Pulses	-0.15	0.41	-0.56	27.27	0.80	26.47
Other crops	0.05	0.07	-0.02	17.40	6.64	10.76
Oilseeds and oleaginous fruits	2.75	-0.07	2.81	20.44	-0.88	21.32
Vegetables	-0.05	0.06	-0.12	2.55	0.11	2.44
Other roots and tubers	-0.11	0.01	-0.12	0.48	0.05	0.43
Rice	0.00	0.01	-0.01	0.01	0.02	-0.01
Sweet potatoes	0.00	0.00	0.00	0.00	0.00	0.00
Cassava	0.00	0.00	0.00	0.01	0.00	0.00

Source: Authors' calculation, based on DEMETRA results.

4.2.4. Market and consumer prices

Market prices plays a crucial role in trade liberalisation by influencing the supply and demand dynamics of goods and services in an open and competitive market. Trade liberalisation facilitates the free movement of goods and services across borders, leading to changes in market prices. It is important to note that the impacts on market prices can vary depending on factors such as the specific industry involved, the level of competition and the policies implemented by governments to manage the transitions.

Tariff-only liberalisation

By 2035, the market prices for cash crops, livestock, food crops, extractive industry products, construction, health, utilities and services all increase above the baseline values under the tariff-only liberalisation scenario (Figure 8). This means that people will replace the consumption of these products with the consumption of relatively cheaper products from other countries that participate in the AfCFTA; in other words, these products will be subject to trade diversion. Higher domestic prices explain the low demand for these products and the resulting decline in output and the relative increase in imports of these products. However, under the tariff-only liberalisation scenario, the market prices of manufacturing products, processed agri-food products and education services experience a relative decrease under the AGR and RCA schedules. Lower prices in these sectors under the tariffs-only liberalisation scenario are to be expected because production costs are reduced.

Tariffs and non-tariff measures liberalisation

Under the tariffs and NTMs liberalisation scenario, by 2035 the market prices of all commodity groups experience an increase, with the exception of manufacturing products (under the REV and INT schedules) and processed agri-food products (under the AGR and RCA schedules). Utilities, services, cash crops, food crops and health services experience the highest increases in market prices relative to the baseline values. Among the cash crops, increases in market prices are most marked for tobacco and coffee, particularly under the AGR schedule (tobacco prices increase by 4.38 % and coffee prices by 1.25 %). Among food crops, the increase in market prices is highest for cassava, sweet potatoes and other roots and tubers under the INT schedule (0.89 %, 0.67 % and 1.01 %, respectively). However, the market prices for maize, other cereals (millet and sorghum) and fruits under the AGR schedule decline relative to their baseline values.

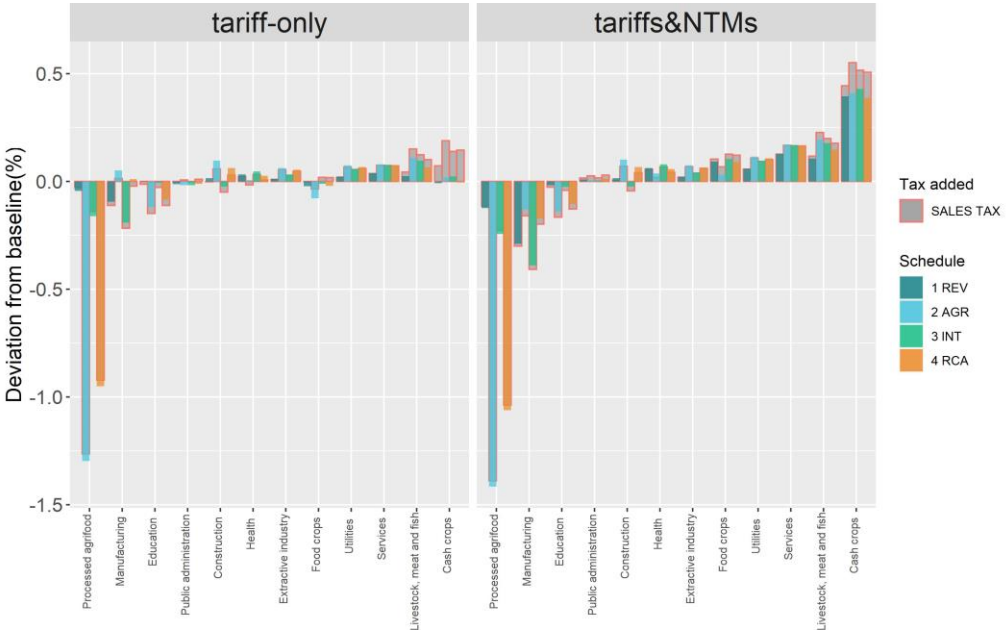
Contrary to expectations, the market prices of most commodity groups increase following liberalisation of tariffs and NTMs under the AfCFTA schedules. This is explained by several factors: (i) a shift in demand for exports – resulting in reallocation of the factors of production, which leads to an implicit increase in factor costs; (ii) a scaling of demand (as described in Section 4.2.7.2), as households incomes increase, leading to increased consumption; and (iii) a change in the free-on-board (FOB) prices of imported commodities due to changes in trade and commodity demand at a continental level. The last driver is captured by the value of the world price of imports derived from MAGNET and applied as shocks to DEMETRA.

In addition, a value added tax (VAT) reform leads to an increase in the consumer prices of most commodities except processed agri-foods and education. The effect is more pronounced for manufacturing commodities, whose VAT rate changes following the reform

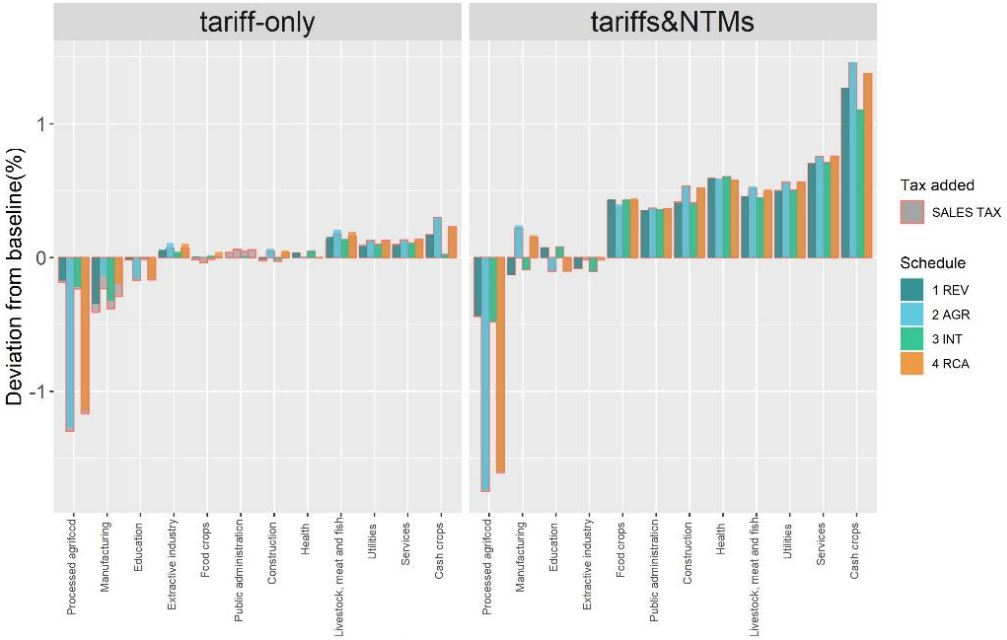
(Figure 9). It is important to note that the market prices are VAT exclusive, whereas consumer prices are VAT inclusive.

Figure 8. Market prices under both scenarios.

a) 2025



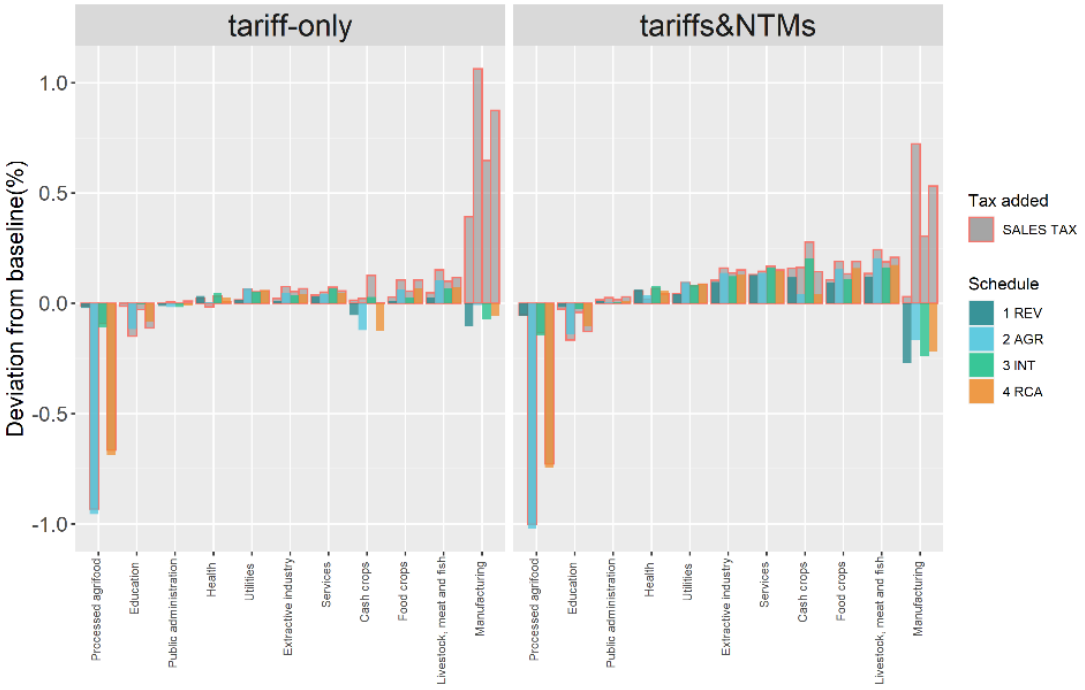
b) 2035



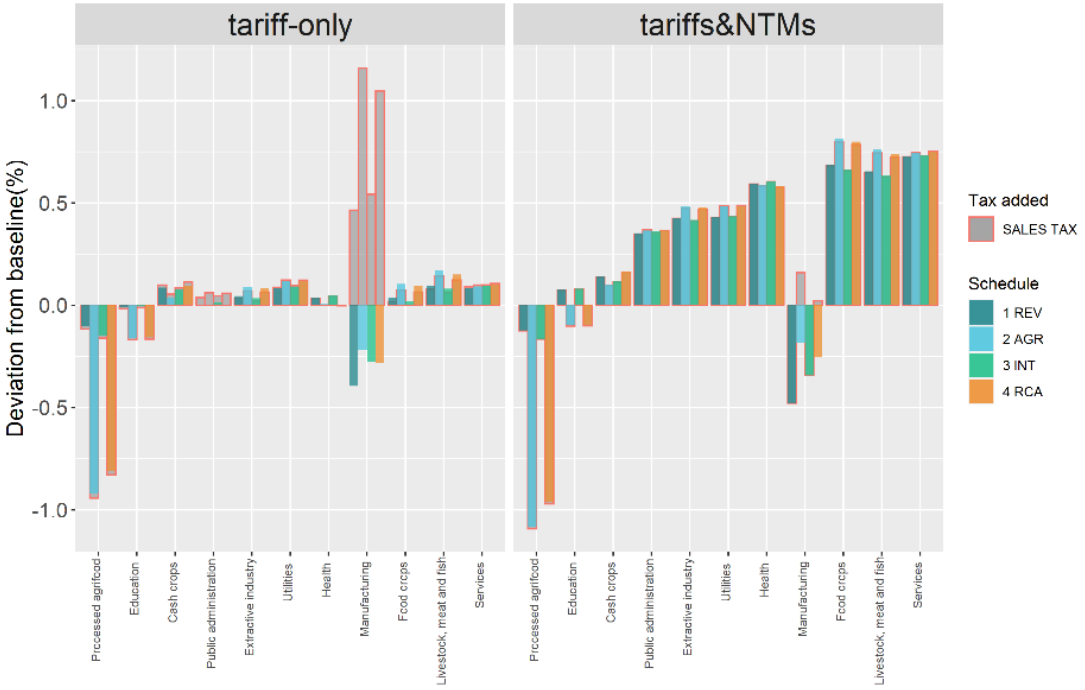
Source: Authors' calculation, based on DEMETRA results.

Figure 9. Consumer price changes under both scenarios.

a) 2025



b) 2035



Source: Authors' calculation, based on DEMETRA results.

4.2.5. Sectoral output

Tariff-only liberalisation

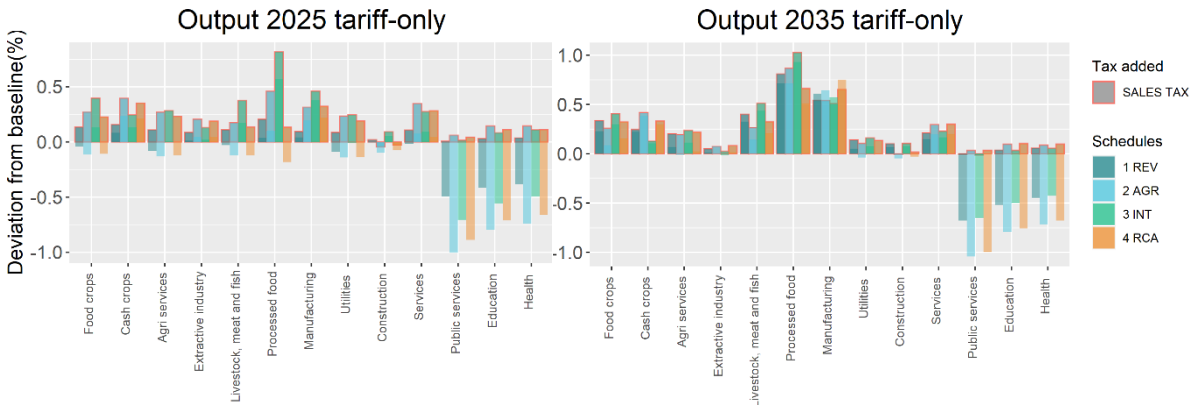
By 2035, the tariff-only liberalisation leads to increased output in most subsectors. The reduction of tariffs reduces production costs and stimulates demand for products, leading to more exports and higher output. The increase in output is greatest for manufacturing products and processed food products, but output of cash crops also increases, mostly under the AGR, RCA and REV scenarios. The increase in output in the manufacturing products and processed food subsectors can be explained by the large decline in the market prices of these products (Figure 10). When expressed in monetary values, the increase in manufacturing output relative to the baseline values is equivalent to YTSh 216.86 billion (INT) to TSh 295.17 billion (RCA). The processed agri-food subsector experiences an increase in output to the tune of TSh 150.42 billion (RCA) to TSh 270.70 billion (INT).

The output of food crops and livestock products also increases, especially under the INT and REV schedules, despite an increase in market prices, due to higher demand for these commodities as a result of increased household income and consumption. In monetary terms, the increased output of food crops relative to the baseline values is equivalent to TSh 33.98 billion (AGR) to TSh 151.14 billion (INT).

Although the tariff-only liberalisation scenario does not affect services directly, output in the services sector increases following an increase in the output of other products. A relatively lower increase in output in sectors other than the manufacturing products and processed food subsectors can be attributed to increased market prices of products in these sectors. The output of education, health, utilities and public services decreases, mainly due to lower government income and spending caused by lower tariffs. Generally, this scenario results in an overall increase in output in the economy, with the INT schedule being the most beneficial (resulting in a 0.14 % increase in output), followed by the REV schedule (0.12 % increase); both the AGR and RCA schedules have a lower positive impact on output (0.09 % increase).

Changes in sales tax (VAT) to attain fiscal neutrality have positive effects. The effect on output is most pronounced in the public services sectors (public administration, education and health), which faced a downward trend due to a decline in the government revenue after tariff reductions. Moreover, sectors that otherwise faced a decline in output, such as food crops (AGR and RCA), processed food (RCA), utilities (REV, AGR and RCA), construction (AGR and RCA) and others, experience an increase in output after adjustments to the sales tax. This is because public spending recovers, leading to higher incomes among consumers, in turn boosting demand and, therefore, output.

Figure 10. Sector output by activities under the tariff-only liberalisation scenario.



Source: Authors' calculation, based on DEMETRA results.

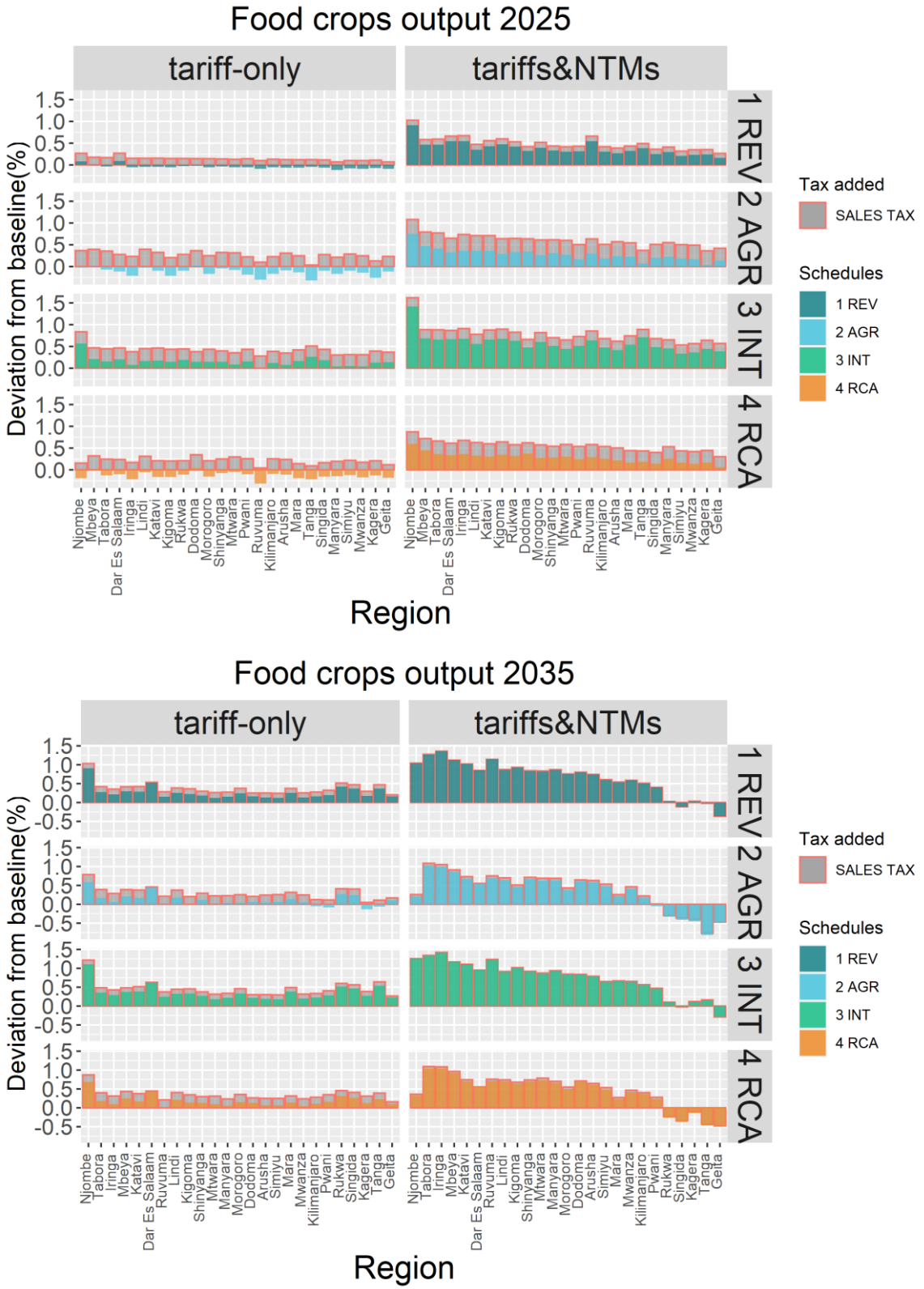
Focusing on the agricultural sector, the increase in output by 2035 following tariff-only liberalisation is greater for cash crops than for food crops. Table 4 shows that output expansion is highest for tobacco, ranging from 0.08 % under the INT schedule to 0.56 % under the AGR schedule. The output of cashew nuts increases under all schedules except INT, while the output of cloves decreases under the REV schedule. The output of cotton decreases under all schedules, ranging from – 0.05 % under the INT schedule to – 0.12 % under the AGR and RCA schedules. However, expressed in monetary values, the contribution to the economy of the increased output of food crops ranges from TSh 33.98 billion (AGR) to TSh 151.14 billion (INT) while the contribution of cash crops ranges from TSh 14.85 million (INT) to TSh 51.74 billion (AGR). Therefore, by 2035, under the tariff-only liberalisation scenario, food crops will contribute more than cash crops to the economy's output.

Table 4. Cash crops output change (%) under the tariff-only liberalisation scenario

Schedule	Cash crop						
	Cashew nuts	Cloves	Coffee	Cotton	Sisal	Tea	Tobacco
REV	0.00	– 0.04	0.14	– 0.1	0.19	0.26	0.37
AGR	0.18	0.28	0.31	– 0.12	0.06	0.01	0.56
INT	– 0.01	0.12	0.23	– 0.05	0.26	0.09	0.08
RCA	0.11	0.14	0.29	– 0.12	0.11	0.24	0.44

Source: Authors' calculation, based on DEMETRA results.

Figure 11. Sector output of food crops, by region, under both scenarios.



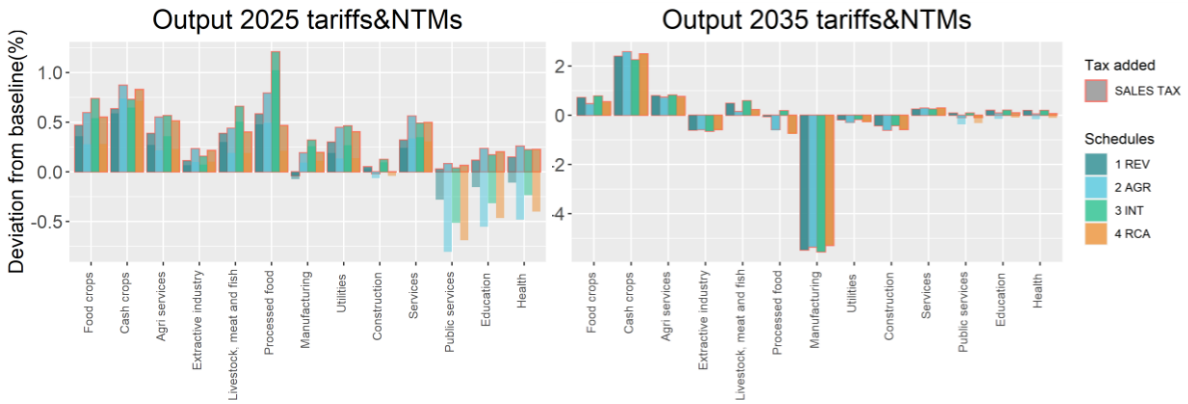
Source: Authors' calculation, based on DEMETRA results.

Analysis of the output of food crops in 2035, by region, under the tariff-only liberalisation scenario reveals that the increase in output is greatest in the Njombe region (0.47–0.81 %), followed by Dar es salaam (0.41–0.62 %) (Figure 11). Expansion of food crops output in Dar es Salaam is attributed to the growth of urban agriculture, accompanied by a decline in inputs prices following tariff liberalisation. Other regions also experience an increase in food production. However, some regions experience output reduction, particularly under the AGR schedule, for example Kagera (– 0.12 %), Tanga (– 0.06 %). Kilimanjaro (– 0.05 %), Kigoma (– 0.04 %), Pwani (– 0.04 %), Manyara (– 0.03 %), Mtwara (– 0.01 %), and Mwanza (– 0.01 %).

Tariffs and non-tariff measures liberalisation

In contrast to the tariff-only liberalisation scenario, output in most subsectors decreases by 2035 when both tariffs and NTMs are liberalised (Figure 12). This decrease is driven by a reduction in real investment, with the highest reduction observed under the AGR and RCA schedules (– 0.61 %), followed by the REV schedule (– 0.53 %) and the INT schedule (– 0.52 %).

Figure 12. Sector output by activities under the tariffs and NTMs liberalisation scenario.



Source: Authors' calculation, based on DEMETRA results.

The greatest decrease in output is experienced in the manufacturing sector, ranging from – 5.39 % (RCA) to – 5.69 % (INT). This is due to the reduction in rent-generating NTMs in some sectors for which the baseline NTMs were high on top of tariffs reduction. For example, the machinery sector is subject not only to a reduction in tariffs but also to a 4 % decrease in rent-generating NTMs (see the 'Tariff and NTM rate changes' sheet in the interactive tool ([4])). The construction, education, extractive industry, health, processed agri-food products, public administration and utilities sectors also experience a decline in output by 2035 (Figure 13). The decline in the output of the construction sector is driven by the decline in real investment. Construction accounts for 73.8 % of the demand for goods for investment purposes. Thus, the closure rule (which states that nominal investment is to be fixed at baseline levels), the increase in the costs of production in the construction sector (0.4 %) and the fact that real investment varies in inverse proportion to price all have the effect of reducing the value of construction as an investment good. The reduction in the output of other public services is attributable to a decline in the government revenue

([4]) https://datam.jrc.ec.europa.eu/datam/mashup/AFCFTA_TANZANIA_DASHBOARD/index.html

needed to support these sectors. The decline in output in the extractive industry sector can be linked to the decline in construction, as the extractive industry sector produces goods that serve as intermediates in the construction sector. The general decline in output suggests that these sectors are vulnerable to trade liberalisation under this scenario.

The changes in the sales tax introduced to compensate for government revenue lost under the tariffs and NTMs liberalisation scenario have negligible effects output, with the exception of public services sector. The overall trend in sector output is similar with and without the tax changes, especially by 2035.

Conversely, the output of cash crops, agriculture services, food crops and livestock increases by 2035 under the REV and INT schedules. The cash crops subsector records the highest increase in output, ranging from 2.21 % under the INT schedule to 2.50 % under the AGR schedule. As in the tariff-only liberalisation scenario, the greatest increase in output is for tobacco, ranging from 3.09 % under the INT schedule to 3.61 % under the AGR schedule, emphasising the comparative advantage of this sector. For comparison, the output of sisal increases by a lower amount under the INT schedule (0.08 %) and falls under the AGR (– 0.14 %) and RCA (– 0.08 %) schedules, signifying that less importance is attached to this crop (Table 5).

Table 5. Cash crops output change (%) under the tariffs and NTMs liberalisation scenario

Schedule	Cash crops					
	Cashew nuts	Cloves	Coffee	Cotton	Sisal	Tobacco
REV	1.83	1.80	1.12	0.24	0.00	3.41
AGR	2.09	2.27	1.35	0.33	– 0.14	3.61
INT	1.77	1.96	1.21	0.31	0.08	3.09
RCA	1.98	2.12	1.34	0.31	– 0.08	3.49

Source: Authors' calculation, based on DEMETRA results.

Analysis of food crops output by region reveals an increase in output in all major food crop-producing regions of Tanzania, namely Iringa (0.82–1.16 %), Mbeya (0.53–0.78 %), Njombe (0.54–1.22 %), and Ruvuma (0.48–0.87 %) (Figure 12). In all these regions, the increase in food crops output is lowest under the AGR schedule and highest under the INT schedule. This suggests that the implementation of liberalisation policies positively impacts the output of food crops in these regions, particularly after the liberalisation of intermediate products and the associated rent-generating NTMs. In contrast, the regions of Geita, Kagera and Singida experience a decline in output across all schedules, ranging from – 0.40 % to – 0.63 % in Geita, from – 0.23 % to – 0.58 % in Kagera and from – 0.37 % to – 0.62 % in Singida. This implies that the liberalisation policies might not align well with the agricultural systems or resources present in these regions, leading to a reduction in food crops production, and implicitly a drop in farmer income. Overall, when considering the collective performance of regions, the total output of food crops is significantly increased compared with the baseline scenario. However, the output increase is less for food crops than for cash crops, suggesting that cash crops crowd out food crops.

4.2.6. Factor market impacts

4.2.6.1 Impacts on capital

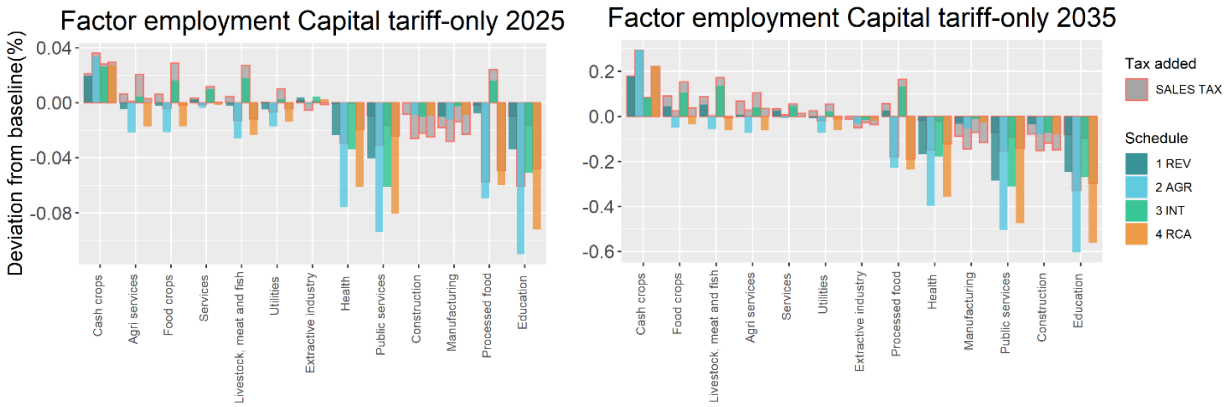
Factor employment, in the context of trade liberalisation, refers to the utilisation and allocation of different factors of production within an economy following the reduction or elimination of trade barriers. When a country engages in trade liberalisation, it opens up its markets to international trade, which can have significant impacts on how these factors are employed across sectors.

Tariff-only liberalisation

Under the tariff-only liberalisation scenario, by 2035 the employment of capital would, under all liberalisation schedules, increase only in the case of cash crop activities (Figure 13). It should be noted that cash crop activities that experience an output expansion can benefit from an increase in return on capital. Under the REV and INT liberalisation schedules, increases in the employment of capital are observed in sectors such as the food crops, livestock, meat and fish, services, agricultural services and processed food sectors.

However, under all liberalisation schedules, the employment of capital would decrease in service activities (such as health, public services and education) as well as in construction and manufacturing.

Figure 13. Impact on employment of capital under the tariff-only liberalisation scenario.

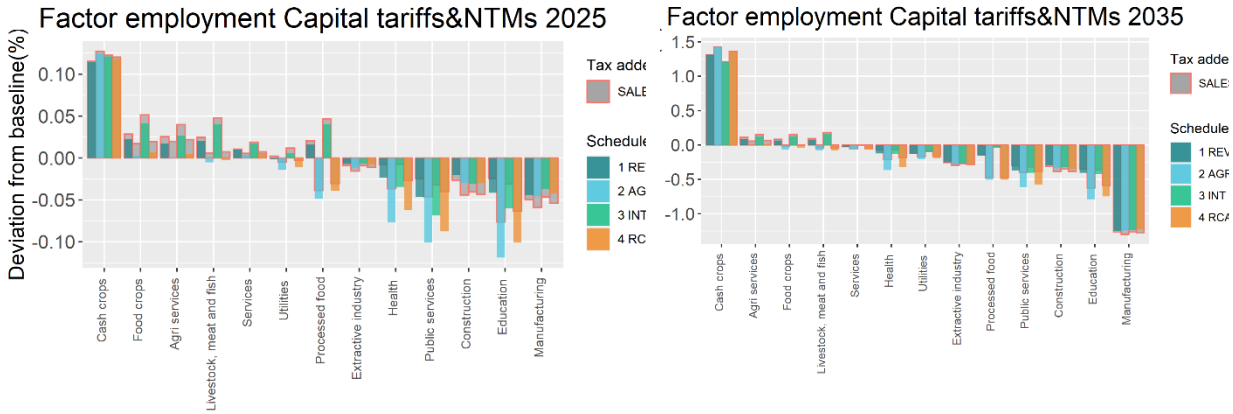


Source: Authors' calculation, based on DEMETRA results.

Tariffs and non-tariff measures liberalisation

Under the combined tariffs and NTMs liberalisation scenario, capital is increasingly utilised in cash crop activities, and decreasingly utilised in manufacturing, under all liberalisation schedules (Figure 14).

Figure 14. Impact on employment of capital under the tariffs and NTMs liberalisation scenario.



Source: Authors' calculation, based on DEMETRA results.

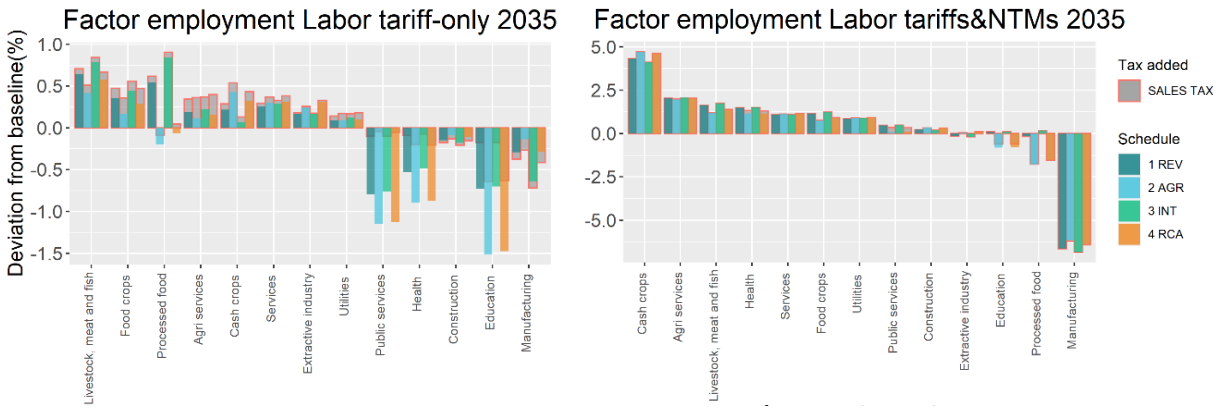
4.2.6.2 Impacts on employment

In the original DMETRA model closure, labour is fully employed and mobile across activities. In order to account for the specificities of the Tanzanian economy, we introduced unemployment in the national labour market. To model this condition, we extend the model by introducing the endogenous unemployment rate through the wage curve. We assume that there is a negative relationship between wage and unemployment rates. This means that a high rate of unemployment leads to a decrease in the wage rate. Moreover, wage and unemployment rates differ between women and men. For example, the unemployment rate in Tanzania is estimated at 12.2 % for women and 5.7 % for men (NBS, 2021).

Tariff-only liberalisation

The effects of the AfCFTA on labour demand are mixed (Figure 15). Consistent with the findings related to the effects of the tariff-only liberalisation scenario on trade, output and demand, the labour market in some industries (i.e. education, public services, health, manufacturing and construction) shrinks following trade liberalisation measures (i.e. REV, AGR, INT and RCA). The cut in tariffs could thus lead to lower labour demand in some sectors and, consequently, an increased prevalence of poverty among those households that either are dependent on income from government spending or are employed in sectors where competition from abroad is greater.

Figure 15. Impact on labour market under both scenarios.



Source: Authors' calculation, based on DEMETRA results.

By 2035, those sectors experiencing increased production (i.e. livestock, meat and fish, food crops and services) also experience growth in labour demand under all four trade liberalisation schedules. The results suggest that there is reallocation of labour across sectors due to labour mobility and therefore indicate the sectors in which employment gains would be dominated by male or female labour. The results suggest that tariff-only liberalisation increases employment, particularly among women. Demand for women's labour is higher than demand for men's labour in the livestock, meat and fish, food crops and services sectors (Figure 16).

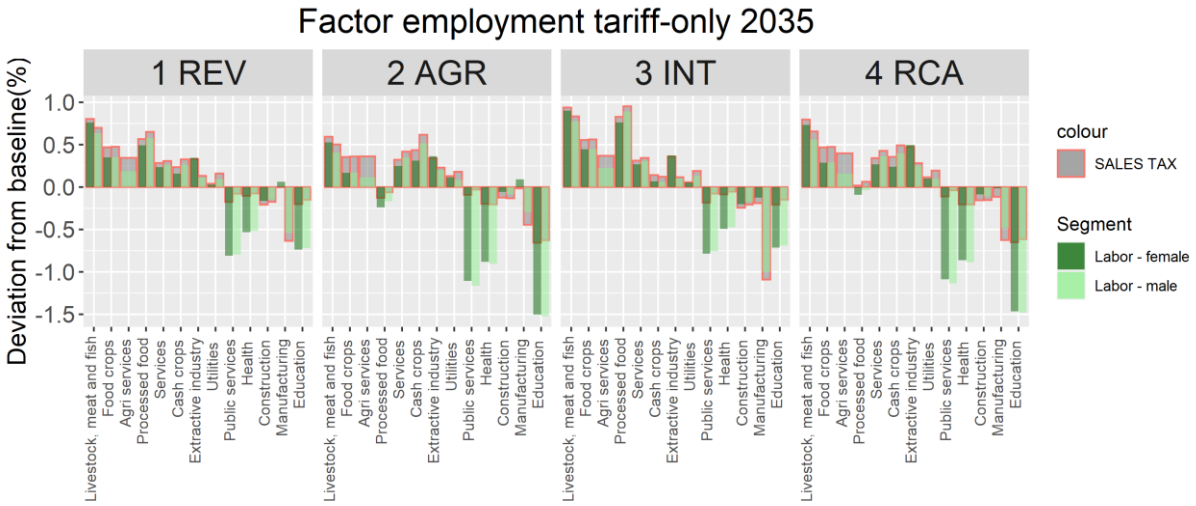
Tariffs and non-tariff measures liberalisation

Under the combined tariffs and NTMs liberalisation scenario, utilisation of labour, over time, increases more in the cash crops sector than in the food crops sector. For example, under the AGR schedule, labour utilisation in the cash crops sector is, by 2035, 3.52 % higher than at baseline. In contrast, the utilisation of labour in the production of food crops is, by 2035, less than 1 % higher than at baseline (Figure 16).

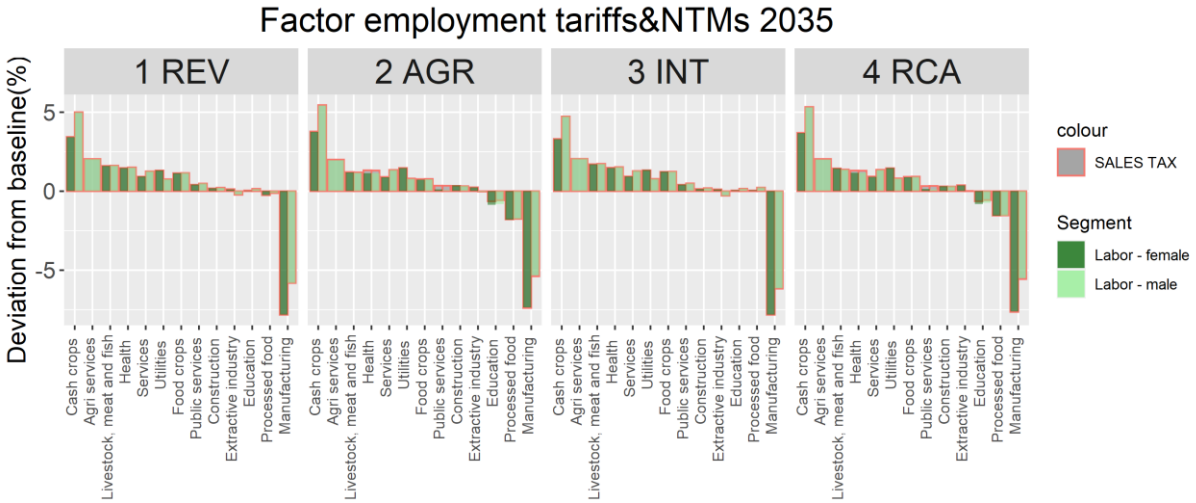
Under the combined tariffs and NTMs liberalisation scenario, the utilisation of labour in cultivating cash crops undergoes a noticeable increase over time. This pattern reflects the labour force's increasing willingness to dedicate more hours to the cultivation of cash crops. It is evident from Figure 16 that the production of cash crops utilises more labour, of both men and women, than food crops. However, over time, the increase in labour utilisation in this sector increases more among men than among women.

Figure 16. Impact on male and female employment under both scenarios.

a) Tariffs-only liberalisation scenario



b) Tariffs and NTMs scenario



Source: Authors' calculation, based on DEMETRA results.

4.2.7. Household impacts

4.2.7.1 Household welfare

The variation in households' nominal incomes and consumer prices is combined to assess the household welfare impact. Overall, the results indicate that households experience gains in welfare under all liberalisation schedules under both scenarios (Figure 18).

Figure 17. Impact on aggregated household welfare under both scenarios.

Source: Authors' calculation, based on DEMETRA results.

Tariff-only liberalisation

In the tariff-only liberalisation scenario, by 2025, both rural and urban households experience a small welfare increase, even without the introduction of a sales tax (Figure 18). This impact then rises as greater economic benefits accrue from the AfCFTA. Moreover, as rural households are mainly engaged in agricultural activities, expanding the production of cash crops can increase their income. Therefore, the welfare increases are attributable partly to lower prices for specific commodities (i.e. processed agri-food, education) and partly to income effects.

Figure 18. Impact on household welfare (urban and rural) under both scenarios.

Source: Authors' calculation, based on DEMETRA results.

The introduction of the sales tax has an even more positive impact on the welfare of both household groups in the transition period (2030). By 2035, rural and urban households' welfare is, on average, about 0.3 % above the baseline (Figure 19).

Tariffs and non-tariff measures liberalisation

The combination of tariffs and NTMs liberalisation is more beneficial for households' welfare than tariff-only liberalisation, under all schedules. The modelling results indicate that, by 2025, all household categories (rural and urban) will experience an improvement in

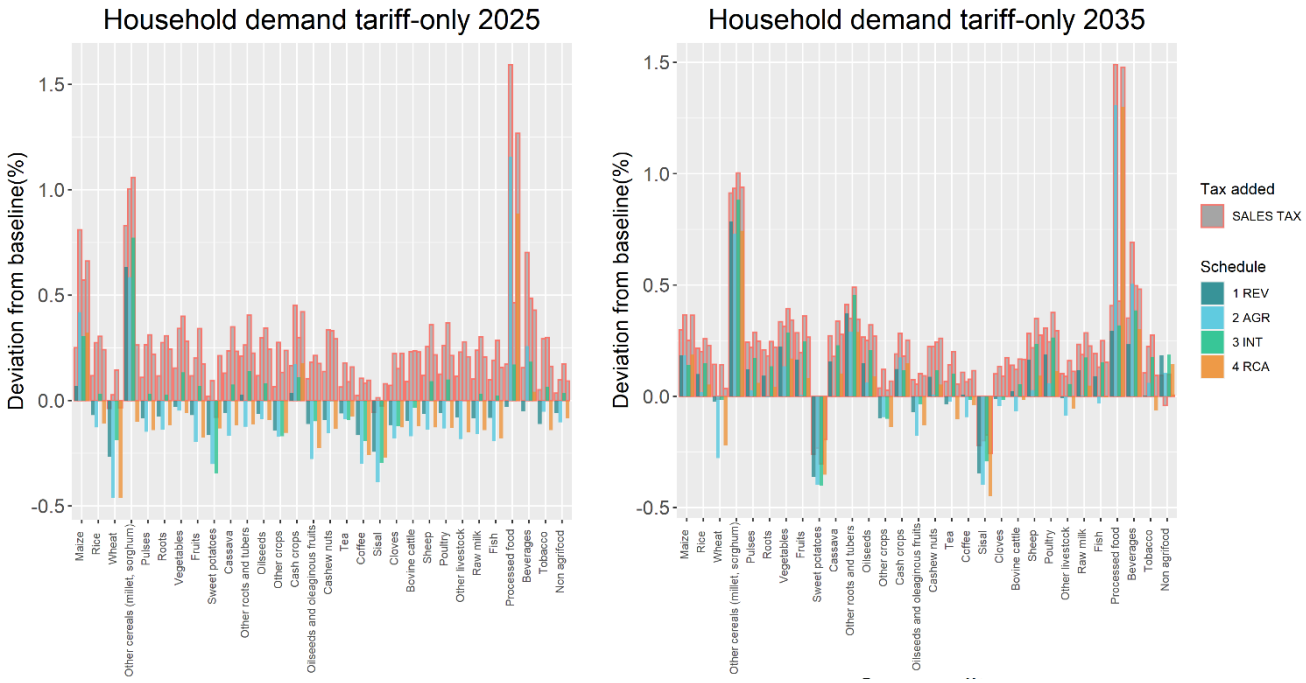
welfare, particularly under the AGR and RCA schedules and with the introduction of a sales tax (Figure 18). By 2035, an overall increase in household welfare can be observed, with the impact highest among rural households (Figure 19).

4.2.7.2 Household food demand

Tariff-only liberalisation

Food demand by food category refers to the quantity and type of various food products that are consumed by a population. One of the main direct consequences tariff-only liberalisation as part of the AfCFTA is a decline in the CPI, particularly a decline in the price of agri-food products (Figure 10) which increases the purchasing power and, implicitly, the consumption spending of households in the long term.

Figure 19. Household demand by commodity under the tariff-only liberalisation scenario.



Source: Authors' calculation, based on DEMETRA results.

The effects on households' consumption of food commodities in the short term (2025) is more mixed. As Figure 19 shows, without the sales tax intervention, demand for many food products declines in 2025. It can be assumed that the sales tax intervention counters this negative effect.

Indeed, households reduce their consumption of wheat, sweet potatoes, other crops, oilseeds and oleaginous fruits, tea, coffee, sisal, bovine cattle and cloves under all liberalisation schedules. The reason for this decline is the rise in the market prices, exceeding the baseline values (see Section 4.2.3).

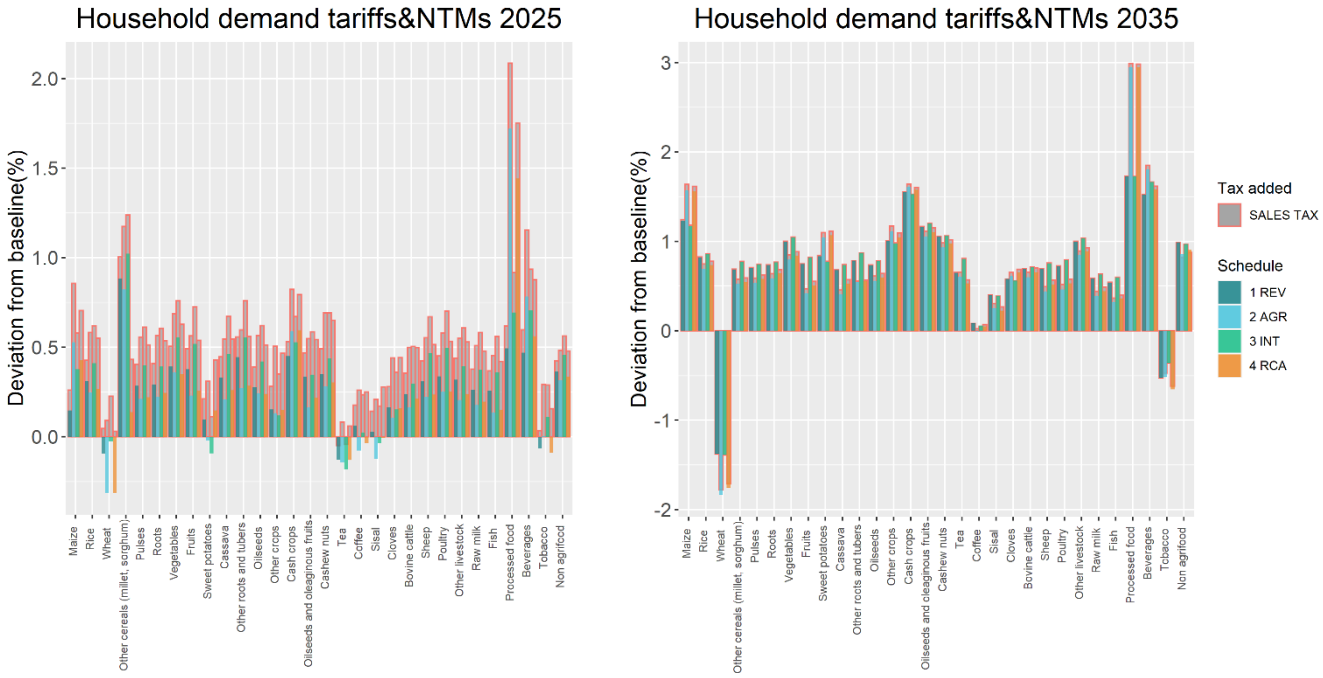
It is observed that, by 2035, under all liberalisation schedules, there is a significant increase in household demand for all commodities with the exception of sweet potatoes, other crops, oilseeds and oleaginous fruits and sisal. In line with the AGR and RCA

liberalisation schedules, there is a slight decline in household consumption of wheat, coffee and other livestock.

Tariffs and non-tariff measures liberalisation

The combined tariffs and NTMs liberalisation scenario, when applied to food sector, can have a significant impact on the demand for different food commodities, influenced by changes in market prices, consumer preferences, income levels and cultural factors.

Figure 20. Household food demand by commodity under the tariffs and NTMs liberalisation scenario.



Source: Authors' calculation, based on DEMETRA results.

Under the tariffs and NTMs liberalisation scenario, demand for food commodities increases in the short term (2025). However, it is worth noting that not all commodities show the same trend under all liberalisation schedules. For example, demand for wheat, which is grown mainly for subsistence purposes, declines under all liberalisation schedules and demand for tea, coffee, sisal, and tobacco declines under different schedules.

By 2035, the tariffs and NTMs liberalisation scenario leads to increases in demand, compared with the baseline, for most food commodities, especially food crops (Figure 20). These include cassava, fruits, maize, rice, oilseeds crops, as well as other crops grown for subsistence purposes, and other types of roots and tubers. This liberalisation scenario appears to favour these specific categories of food crops, contributing to their increased demand in the market.

However, there is a decline in demand for wheat and tobacco compared with the baseline values. The main reason for this decline is that the increase in market prices relative to the baseline values is highest for these commodities (see Section 4.2.4). It should be noted that

the increase in market prices is caused by an increase in the cost of wages and the prices of other agricultural inputs.

Overall, the impact on food security is positive under both liberalisation scenarios. Food consumption is expected to increase throughout mainland Tanzania, and the number of undernourished people can be expected to gradually decrease over the period to 2035 due to the rise in household welfare. A shift in food consumption baskets due to changes in the relative prices of different food categories could also contribute for this reduction in undernourishment.

5. Conclusions

The objective of this study was to evaluate the impact of the implementation of the AfCFTA on different areas of the Tanzanian economy (i.e. macroeconomic indicators, government revenue, prices, sectors, commodities, factor markets and households) between 2021 and 2035. The analysis is based on the results of simulations using a country-level CGE model linked with the results of the continental AfCFTA study by Simola et al. (2022). The results of this discussion can inform policymakers on how the AfCFTA is implemented in Tanzania, considering the different policy options. The main findings of this study are summarised below.

The results of the first scenario, which models tariff-only reduction under four schedules, showed that the AfCFTA will have a number of effects that are advantageous to the Tanzanian economy.

- The implementation of tariff-only liberalisation leads, under each of the four schedules, to a trade creation effect, resulting in increased domestic and export demand across various sectors. The increase in output by 2035 is greatest for the manufacturing and processed food products sectors, although cash crops output also increases, mostly under the AGR, RCA and REV schedules. In general, the reduction in tariffs reduces production costs and stimulates demand for products, leading to more exports and higher output. The greatest export expansion by 2035 occurs in the processed agri-food and manufacturing products sectors. Under this scenario, exports of utilities, livestock, meat, fish, cash crops and food crop products also increase.
- Although the tariff-only liberalisation scenario does not affect services directly, output in the services sector (i.e. education, health, utilities and public services) decreases, primarily due to lower government income and spending caused by lower tariffs. However, adjusting the sales tax (VAT) to attain fiscal neutrality has a positive impact on public sector output (public administration, education and health), food crops (AGR and RCA), processed food (RCA), utilities (REV, AGR and RCA) and construction (AGR and RCA), which would otherwise show a reducing trend due to a decline in government revenue resulting from tariff reductions.
- In sectors that benefit most from tariff-only liberalisation, for example the livestock, meat and fish, food crops, manufacturing and processed food products sectors, the changes in trade have a notably positive effect on employment, particularly for women.
- Although the welfare of urban and rural households increases modestly from the baseline in the short term (2025), the impact then rises as the economic benefits of the AfCFTA expand. Notably, rural households engaged in agricultural activities experience higher welfare gains due to increased production of cash crops.
- The impacts on government revenues are slightly negative under all liberalisation schedules. However, the small increase in the sales tax rate introduced to compensate for the negative effects of liberalisation on government revenue leads to an improvement in macroeconomic indicators such as GDP, consumption and output.

The results of the second scenario implementing the tariffs and NTMs liberalisation indicate that the AfCFTA will have an even more favourable impact on the economy and international trade.

- The combination of tariffs and NTMs liberalisation leads to a moderate GDP growth in both the short and long terms. Importantly, in the short term, the sales tax intervention yields to significant improvement in GDP and all other macroeconomic indicators. This proves that this fiscal instrument is a suitable additional measure to mitigate the negative impact of the AfCFTA, especially in the short term.
- The combination of tariffs and NTMs liberalisation leads to a significant growth in exports of most commodities in the manufacturing and processed food sectors. The expansion of exports by 2035 is greatest for processed agri-food products, particularly under the AGR schedule. Exports of manufacturing products also show an increase across all schedules, with the highest increase observed under the RCA schedule. For example, exports of cash crops, food crops, and livestock, meat and fish all increase more than under the tariff-only liberalisation scenario.
- The liberalisation of tariffs and NTMs has a generally positive impact on trade, especially in the case of the commodities for which, at baseline, the iceberg costs and rent-generating NTMs were estimated to be high. In the case of these commodities, which include some crops (vegetables, pulses, tobacco, other crops), processed agri-foods (food, beverages) and manufacturing products (textile, cloth, metals, equipment, furniture, rubber and other manufacturing), a reduction in NTMs has a marked imports effect.
- In some subsectors, output decreases by 2035 when both tariffs and NTMs are liberalised. Specifically, the manufacturing sector output records the greatest decrease under the RCA and INT schedules. This is due to the reduction of rent-generating NTMs in some sectors for which the baseline NTMs were high on top of tariff reduction. Conversely, the output of cash crops, agriculture services, food crops and livestock under the REV and INT schedules increases by 2035.
- In terms of the labour market, the reallocation of employment follows the sectoral output changes. For example, under the AGR schedule, cash crop activities, but not food crop activities, experience increasing demand for labour, especially for the male segment. This pattern emphasises the labour force's increasing willingness to dedicate more hours to the cultivation of cash crops.
- The results indicate an improvement in the welfare of all household categories (rural and urban), specifically under the AGR and RCA schedules, in the short term. In the long term, rural households benefit more from improved welfare.
- As for households' demand for food commodities, most commodities see an increase in demand, especially in the long term. However, demand for wheat and tobacco declines due to sharp increases in market prices caused by rising agricultural input costs.
- This liberalisation scenario leads to a reduction in total government revenue in the short term. However, by 2035, this revenue loss has been recouped, in nominal terms at least, and government revenue under the REV and INT liberalisation schedules exceeds the baseline value.

Overall, the report suggests that the AfCFTA will have a positive impact on the macroeconomy but there remains a need for careful consideration and policies that aim for balanced growth across diverse sectors. Tariffs and taxes on international trade are significant sources of government revenue. The reduction of tariffs through the implementation of trade liberalisation may lead to a loss of tax revenues. This can have implications for the Tanzanian government's budget, especially in the current context, with the country already experiencing fiscal imbalances. Therefore, additional measures, such as sales tax interventions, in the context of increasing trade with partners to the AfCFTA and other countries, allow policymakers to carefully consider the potential consequences and trade-offs associated with trade expansion. This helps to ensure that the interests of domestic industries are protected, while also taking into account the need for revenue generation and the necessity to maintain a balanced economy.

Policy recommendations

Addressing the potential costs of the AfCFTA implementation requires a complementary set of policy recommendations:

- Lower tariffs and NTMs reduce the prices of goods and services across the continent. However, the model shows that Tanzanian manufacturing products will fail to compete in the AfCFTA market, leading to a significant increase in net imports, which increases the stress on the balance of payments. Therefore, strategies to expand the manufacturing sector should focus on boosting capacity and competitiveness to reap the benefits of the trade agreement.
- The modelling suggests that implementation of the AfCFTA scenarios will have moderately positive effects on the Tanzanian economy, but there is the potential for improvements in some areas. This calls for increased production efficiency, mainly in sectors where the country has a comparative advantage, and should not negate trade with non-African countries so as to obtain products that are not available in most African countries.
- Tariff reductions and simplification of NTMs should be included in policy interventions, according to the Tanzanian government. However, when exploring ways to open up the economy, caution should be exercised. It is important to evaluated the state of domestic companies. Companies that are unable to produce goods that can compete in a global market will be made worse off by opening up international trade.
- A reduction in tariffs and NTMs will lead to a loss of tax revenues, and hence a worsening of the government's budgetary balance. The country is already experiencing significant fiscal imbalances, and taxes on international trade are an important source of government revenue. All implications of tariff reductions must be carefully considered. This study also recommends reforms to broaden the tax base in line with long-term growth plans. Thus, the introduction of a sales tax on specific imports is a desirable complementary measure that will have no adverse effects at a macro level.

- Directed support, such as investment in infrastructure and irrigation schemes, should be tailored to the agriculture-related sectors, such as the agri-food processing industries, to enhance productivity and further improve households' welfare.
- Enhancing investment in the processing and trading of cash crops such as tobacco emerged as a significant driver of economic advantage. Other crops, such as cashew nuts, cotton and sisal, play a relatively minor role in the country's economy and would benefit from greater commercialisation and other measures to boost market competitiveness.
- The government of Tanzania has a significant reliance on import taxes for revenue, so removing imports tariff as part of trade liberalisation could result in a reduction in the government's spending power.

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List of abbreviations and definitions

AfCFTA	African Continental Free trade Area
AGR	Agricultural trade (schedule)
ASEAN	Association of Southeast Asian Nations
AU	African Union
CGE	Computable General Equilibrium models
COMESA	Common Market for Eastern and Southern Africa
CPI	Consumer Price Index
EAC	East African Community
FTA	Free Trade Area
GDP	Gross Domestic Product
HPHC	Home Production for Home Consumption
HS	Harmonised System (tariff nomenclature)
INT	Intermediate inputs trade (schedule)
JRC	Joint Research Centre
NTBs	Non-Tariff Barriers
NTMs	Non-Tariff Measures
RTAs	Regional Trade Agreements
SAM	Social Accounting Matrix
VAT	Value Added Tax
RCA	Revealed comparative advantage commodity trade (schedule)
REV	Liberalisation based on revenue maximisation from tariffs (schedule)

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Annexes

Annex 1. Additional information

Table A1. Product groups with sales tax adjustments across tax intervention simulations

DEMETRA SAM code	Description
c_papr	Paper and paper products
c_prnt	Printing and reproduction of recorded media
c_chem	Chemicals and chemical products
c_phar	Pharmaceutical products
c_rubb	Rubber and plastics products
c_nmet	Other non-metallic mineral products
c_metl	Fabricated metal products
c_elec	Computer electronic and optical products
c_equi	Electrical equipment
c_mach	Machinery and equipment n.e.c. (not elsewhere classified)
c_vehi	Motor vehicles, trailers and semi-trailers
c_tequ	Other transport equipment

Annex 2. Web infographic with interactive data visualisations

This report is associated with an interactive infographic published on the European Commission's data portal of agro-economic modelling (DataM website). The link and the related QR code can be found below.

https://datam.jrc.ec.europa.eu/datam/mashup/AFCFTA_TANZANIA_DASHBOARD

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