

DIGITALES ARCHIV

ZBW – Leibniz-Informationszentrum Wirtschaft
ZBW – Leibniz Information Centre for Economics

Mugume, Regean; Nattabi, Aida Kibirige

Book

How will the Democratic Republic of Congo's joining the EAC bloc affect regional trade?

Provided in Cooperation with:

Economic Policy Research Centre (EPRC), Kampala

Reference: Mugume, Regean/Nattabi, Aida Kibirige (2021). How will the Democratic Republic of Congo's joining the EAC bloc affect regional trade?. Kampala, Uganda : Economic Policy Research Centre.

<https://eprcug.org/publication/how-will-the-democratic-republic-of-congos-joining-the-eac-bloc-affect-regional-trade/?wpdmdl=14298&refresh=614b0b19c7a3e1632307993>.

This Version is available at:

<http://hdl.handle.net/11159/6281>

Kontakt/Contact

ZBW – Leibniz-Informationszentrum Wirtschaft/Leibniz Information Centre for Economics
Düsternbrooker Weg 120
24105 Kiel (Germany)
E-Mail: [rights\[at\]zbw.eu](mailto:rights[at]zbw.eu)
<https://www.zbw.eu/econis-archiv/>

Standard-Nutzungsbedingungen:

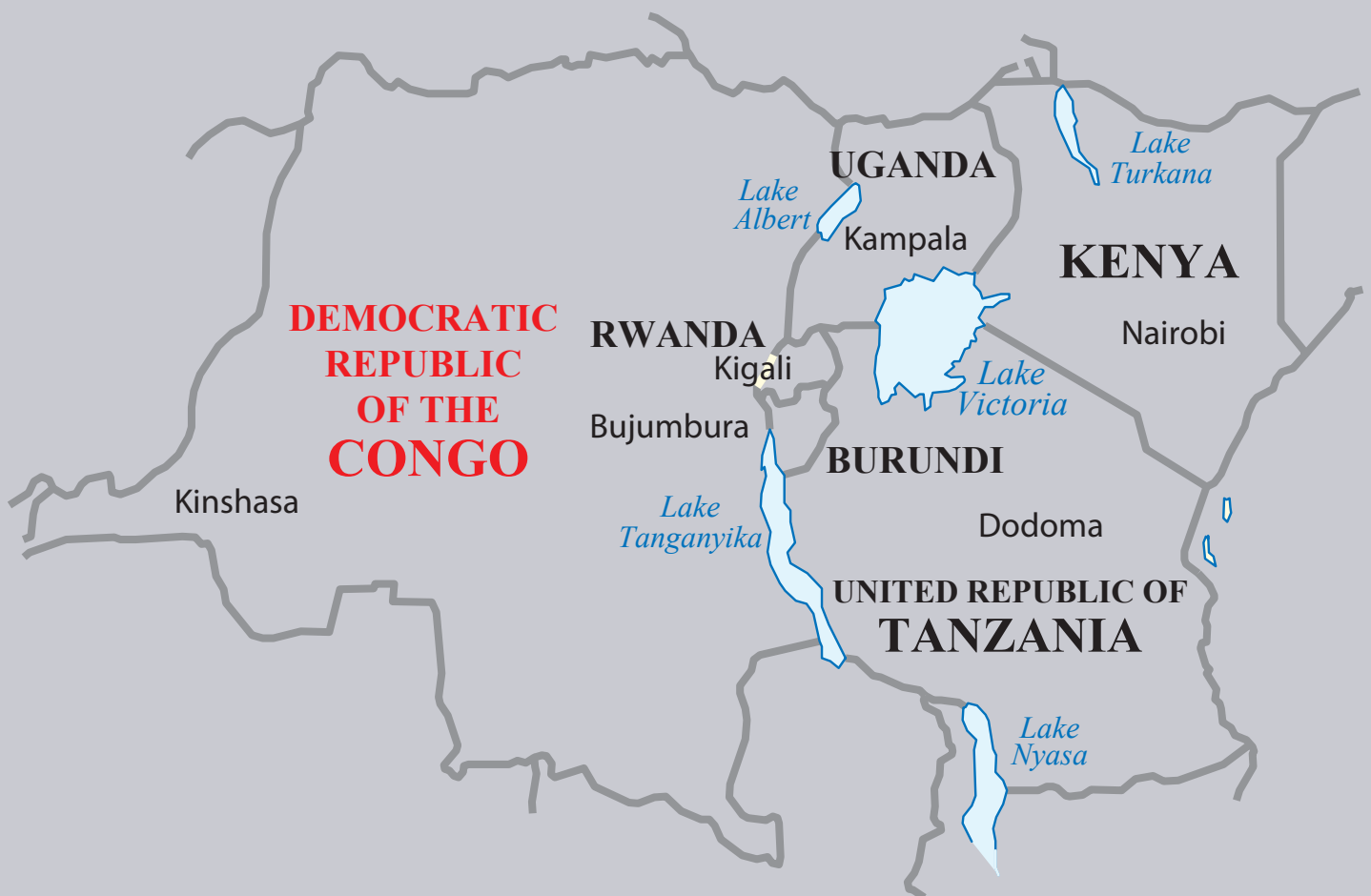
Dieses Dokument darf zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden. Sie dürfen dieses Dokument nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, aufführen, vertreiben oder anderweitig nutzen. Sofern für das Dokument eine Open-Content-Lizenz verwendet wurde, so gelten abweichend von diesen Nutzungsbedingungen die in der Lizenz gewährten Nutzungsrechte.

<https://zbw.eu/econis-archiv/termsfuse>

Terms of use:

This document may be saved and copied for your personal and scholarly purposes. You are not to copy it for public or commercial purposes, to exhibit the document in public, to perform, distribute or otherwise use the document in public. If the document is made available under a Creative Commons Licence you may exercise further usage rights as specified in the licence.

HOW WILL THE DEMOCRATIC REPUBLIC OF CONGO'S JOINING THE EAC BLOC AFFECT REGIONAL TRADE?



Regean Mugume and Aida Kibirige Nattabi

Copyright © Economic Policy Research Centre (EPRC)

The Economic Policy Research Centre (EPRC) is an autonomous not-for-profit organization established in 1993 with a mission to foster sustainable growth and development in Uganda through advancement of research –based knowledge and policy analysis. Since its inception, the EPRC has made significant contributions to national and regional policy formulation and implementation in the Republic of Uganda and throughout East Africa. The Centre has also contributed to national and international development processes through intellectual policy discourse and capacity strengthening for policy analysis, design and management. The EPRC envisions itself as a Centre of excellence that is capable of maintaining a competitive edge in providing national leadership in intellectual economic policy discourse, through timely research-based contribution to policy processes.

Disclaimer: The views expressed in this publication are those of the authors and do not necessarily represent the views of the Economic Policy Research Centre (EPRC) or its management.

Any enquiries can be addressed in writing to the Executive Director on the following address:

Economic Policy Research Centre
Plot 51, Pool Road, Makerere University Campus
P.O. Box 7841, Kampala, Uganda
Tel: +256-414-541023/4
Fax: +256-414-541022
Email: eprc@eprcug.org
Web: www.eprcug.org

RESEARCH SERIES No. 156

HOW WILL THE DEMOCRATIC REPUBLIC OF CONGO'S JOINING THE EAC BLOC AFFECT REGIONAL TRADE?

Regean Mugume
Aida Kibirige Nattabi

May 2021

TABLE OF CONTENTS

ABSTRACT	1
ACRONYMS	2
1. INTRODUCTION	3
1.1 Context	3
2. LITERATURE REVIEW	4
2.1 Theoretical Underpinnings	4
2.2 Empirical literature	5
3. METHODOLOGY	6
3.1 Analytical Approach	6
3.2 Application of the SMART WITS model and Excel simulation	7
3.3 Data and source	9
4. FINDINGS	9
4.2 The patterns and composition of Trade between DRC and EAC trade bloc 2010-2018	9
4.2.1 EAC Export trade with DRC Export trade (2010-2018)	9
4.2.2 DRC's import trends with EAC and the Rest of the World 2010-2018	11
4.3 Trade, effects of the trade liberalisation between EAC and DRC	13
4.3.2 Sectoral distribution of trade effects	14
5. CONCLUSION AND POLICY RECOMMENDATIONS	16
5.1 Policy recommendations	16
REFERENCES	17
APPENDICES	19
EPRC RESEARCH SERIES	24

LIST OF TABLES

Table 1 Distribution of MFN tariff duties for DRC	9
Table 2 Formal trade between EAC and DRC for the period 2010-2018 ('000' USD)	10
Table 3 Average EAC's export trade to DRC between 2010-2018 in '000' USD	11
Table 4 DRC's top imports from the World (2010-2018) in USD 000s	12
Table 5 Top sources of DRC's imports by share (2010-2018)	13
Table 6 The trade effects of the EAC countries in thousand Dollars	14
Table 7 EAC's net trade effect by HS product classification (USD 000s)	15
Table AI Kenya's top 20 commodities with highest Trade effect	19
Table II Tanzania's top 20 commodities with the highest trade effect	20
Table III Burundi's top 20 commodities with highest Trade effect	21
Table IV Rwanda's top 20 commodities with the highest trade effect	22
Table V Uganda's top 20 commodities with highest trade effect	23

ABSTRACT

The Democratic Republic of Congo (DRC) in 2019 expressed interest in joining the East African Community (EAC) regional bloc to tap into the benefits of the regional trade and expanded markets. Using the SMART-WITS Model simulation approach, this study examines the likely trade effects of DRC's membership to the EAC. The results reveal that trade effects are positive among the EAC partner states, more so for Rwanda and Uganda, given that there are the current leading EAC exporters to DRC. Specifically, DRC's membership to the EAC increases exports of Rwanda by USD 81 million, Uganda (USD 60 million), Tanzania (USD 50 million), Kenya (USD 42 million) and Burundi (USD 6 million), Tanzania (USD 50 million), Kenya (USD 42.5 million) and Burundi (USD 6 million). The positive trade effects are attributed to trade creation (due to new exports by EAC to DRC initially sourced from non-EAC countries) rather than trade diversion. In terms of trade growth shares, it is estimated that free trade with DRC increases the current trade with Uganda by 30 percent, 24 percent for Rwanda, 34 percent for Tanzania, 29 percent for Kenya and 33 percent for Burundi. The main economic sectors/industries poised to benefit from DRC membership are agro-processing, metal products (mainly iron and steel) and mineral ores industries. Overall, the potential entry of DRC into the EAC calls for strategic investments in these industries while addressing Non-Trade Barriers (NTBs) such as poor infrastructure and insecurity in DRC.

Keywords: Trade effects, liberalisation, Non-Tariff Barriers

ACRONYMS

CET	Common External Tariff
CM	Common Market
COMESA	Common Market for Eastern and Southern Africa
CU	Customs Union
DRC	Democratic Republic of Congo
EAC	East Africa Community
FDI	Foreign Direct Investment
FTA	Free Trade Area
IGAD	Intergovernmental Authority on Development
MFN	Most Favored Nation
ROW	Rest of the World
RTA	Regional Trade Agreements
SADC	Southern African Development Community
TC	Trade Creation
TD	Trade Diversion
TT	Total Trade

1. INTRODUCTION

In the recent past, African countries have increasingly pursued the idea of regional integration following failed efforts to industrialise through import substitution strategy (UNECA, 2017). This has resulted in political enthusiasm for regional integration, which has obliged most African economies to join various Regional Trade Agreements (RTAs). The key objective of RTAs is to promote free trade among members. Notably, membership to RTAs is associated with economic growth through increased market size, exploitation of economies of scale, increased competition, learning by doing, and increased investment (ibid). Pursuing these benefits, the Democratic Republic of Congo (DRC) in 2019 has applied for membership to the East African Community (EAC). According to the letter of interest submitted to the EAC secretariat, DRC seeks to tap into the bloc's benefits of the regional trade, expanded markets, and attraction of Foreign Direct Investment (FDI) in the EAC bloc (Tabaro, 2019).

Many observers consider DRC's interest in EAC as a game-changer to the bloc's trade performance given its natural resources base and a vast consumer market of 81 million people (almost half the current EAC population). Noteworthy, DRC is the World's biggest producer of cobalt, a significant component in the manufacture of rechargeable batteries for electric vehicles, and Africa's leading copper producer. It is also a major producer of gold, diamonds, uranium, coltan, oil and other precious metals, making it one of the most resource-rich countries in the World. The availability of these resources, coupled with appropriate transport infrastructure, can boost the EAC's industrialisation agenda through reduced transactional costs for labour from lower- to higher-productivity activities (Cilliers, 2018). Hence, this would lead to economic transformation in the East African economies, which key to achieving economy-wide productivity improvements, job creation and sustained progress in growth and poverty reduction (WTO, 2018). Moreover, DRC shares borders with four of the six countries; it also shares EAC's official

language, Kiswahili, with about 50% of the population fluent in the language (Kamabale, 2004).

A previous study by Gaalya (2015) examined the impact of trade liberalisation between DRC, Sudan and the EAC on Uganda's revenue and total trade effects. This current study focuses on the trade effects of DRC-EAC trade bloc membership on existing EAC member states using SMART-WITS Simulation. The model utilises specific most favoured nation (MFN) commodity tariffs to provide a more realistic ex-ante analysis. Moreover, this study comes at an opportune time after the DRC has applied to join the bloc. Further, this study is premised on the most recent data (2018) data that points to a relative improvement in the trade balances between DRC and the EAC bloc, considering different sectors and trade-related aspects between the two parties.

This study, therefore, explores the trade effects of DRC's membership in the EAC trade bloc. Specifically, the paper analyses the likely trade creation and diversion accrued to the EAC partner states and the sectors poised to benefit as a result of this trade liberalisation.

The rest of the paper is structured as follows: Section 1.1 contextualises the structure and value of EAC and DRC. Section 2 reviews the past literature, while section 3 presents the methodology adopted by the study. Section 4 explains the results, and Section 5 offers the conclusion

1.1 Context

The EAC, established in 2001, currently has a membership of six states, has since made strides in achieving a deeper economic integration by establishing closer economic links through a Free Trade Area, a Customs Union, and a Common Market. In addition, the EAC is in the process of developing a Monetary Union and a Political Federation. Despite the low intra-regional trade accounting for 20 percent of the total trade, EAC is considered the most successful among

all the Regional Economic Communities (RECs) in Africa, with the highest Regional Integration Index and intra-regional trade (African Union, 2020). According to African Development Bank report (2019), the EAC is approaching the highest stage of integration, having ratified the protocol for a monetary union as compared to other RECs such as IGAD, COMESA and SADC

Additionally, EAC partner states had relatively good economic growth performance over the last two decades compared to the World and sub-Saharan Africa (SSA). On average, the EAC region grew by around 5.6 per cent between 2000 and 2016 (UNCTAD, 2018). Relatedly, real GDP per capita in the region grew faster (2.6 per cent) than the SSA average (2 per cent) during the same period. Arguably, these advantages motivate DRC's interest to join the EAC trade bloc (ibid). Nevertheless, the benefits could be mutual. On the one hand, DRC can expect the EAC to provide a stimulus to enhance full natural resource exploitation, infrastructural development and regional security. On the other hand, the EAC partner states can leverage DRC's membership for a broader market and stimulate resource-based industrialisation in the region.

According to Hoderlein and Vanhems (2013), regional integration results in the potential polarisation of benefits across different economic units. In particular, some countries and economic sectors are poised to benefit at the expense of others, thereby dividing countries and economic sectors into winners and losers. For instance, more industrialised countries that produce highly competitive products benefit from a trade block at the expense of the least developed ones, reducing incomes and livelihoods of other economic sectors (Mold & Mukwaya, 2015). Further, Mitsuo and Nyuyen (2008) noted that regional integration has varying sectoral impacts on the member states that determine their achievement of structural transformation. Therefore combined with imperfect substitution of the factors of production, especially labour, may lead to welfare losses (Gray, 1998).

Additionally, sectors characterised by a poorly regulated and non-competitive environment risk being outcompeted in a regional bloc framework (Cuts international, 2010). Hence, these dynamics of economic integration raise pertinent questions for the EAC partner states regarding the potential impact of DRC membership in the bloc. Particularly on what the likely trade effects will be with DRC's membership in the EAC trade block. Secondly, what economic sectors are likely to gain at the expense of others, thus potentially lead to structural changes in the respective economies as productive resources move from less productive to profitable sectors of the economy?

2. LITERATURE REVIEW

2.1 Theoretical Underpinnings

Economic theory on free trade has substantially evolved over time since the time of the "Mercantilist theory (Ekelund, 2004). The Mercantilist theory promoted the predominant thinking that a successful nation should export more than it imports. The trade surplus should be used to expand the nation's treasures, primarily gold and silver. This would allow the country to have a bigger and more powerful army and navy and more colonies. However, Adam Smith challenged this prevailing thinking in his publication on "*The Wealth of Nations*". Smith (1776) argued that nations have varying efficiency in producing various products, and as such, they could all benefit from trade when they specialise in making the products where they possess an absolute advantage and thereby increasing total production. These insights by Adam Smith implied less government involvement in the economy and a reduction of barriers to trade as opposed to earlier mercantilism.

However, Ricardo (1817) introduced a new modification to trade theory, with a law of comparative advantage which revealed that trade would occur between nations even where one country has an absolute advantage in producing all the products traded. Remarkably, the law emphasised that countries focus on producing

commodities where they incur the lowest opportunity cost of labour using one factor of production. Heckscher and Ohlin (1919) complemented Ricardo's findings by assuming various factors of production such as land and capital. The Heckscher-Ohlin theory holds that a country will export commodities produced by the factors that a country has in relative abundance and import commodities whose production requires domestically scarce factors of production.

Therefore, subsequent economic approaches to international trade are premised on the previous aforementioned work by Smith and Ricardo. Notably, the customs union theory by Viner (1950) introduced welfare-enhancing aspects 'trade creation' and 'trade diversion', which became essential concepts for the analysis and understanding of the effects of economic integration. He defined trade creation as the shift in the trade flows from less efficient domestic producers to efficient ones, while trade diversion is when a customs union shifts trade from producers that are efficient to less efficient ones. According to the custom theory, trade creation is welfare-enhancing while trade diversion reduces welfare.

While Viner's theory focused on the production effects of Customs Unions, the seminal contributions of Meade (1955) and Lipsey (1957) added the consumption aspect to Customs unions theory. Allowing for the consideration of non-zero elasticity demand curves, Meade (1955) introduced the concept of trade expansion as a factor potentially improving economic welfare. This aspect of customs union theory, known as the inter-commodity substitution effect, is also explored by Lipsey (1957), who shows how a trade diversion may improve welfare because of consumption considerations. Apart from production and consumption aspects, the customs union theory entails other related elements such as selection of partners states, the role of administrative costs, terms of trade, the role of economies of scale, and the effects of CUs on firms and industry efficiency among others

Krugman (1979) and Lancaster (1979) independently developed the New Trade Theory (NTT), which

stressed the consumers' need for differentiated goods. Whereas the past theories were based on comparative advantages to explain trade patterns of different countries, the NTT analysed trade based on implications of inter-industry trade; the simultaneous exports and imports of goods requiring similar production factor endowments. Krugman (1979) stresses two critical concepts as having a significant impact on the flows of international trade, economies of scale and imperfect competition. When firms are experiencing the positive effects of economies of scale, they can also be experiencing increasing Returns to Scale (RTS).

2.2 Empirical literature

Empirical evidence on the potential trade outcomes of free trade has increasingly contributed to trade policy debate. Several empirical studies have used several models at various levels, ranging from industry/sectoral, single and multi-country studies used in both the partial and general equilibrium frameworks. The commonly used methodology for the partial equilibrium framework is the World Integrated Trade Solution (WITS) Single Market Partial Equilibrium Simulation Tool (SMART), whereas most studies using the general equilibrium framework are based on the Global Trade and Analysis Project (GTAP) models. On the other hand, other studies have also used other econometric approaches, such as the gravity model approach.

For instance, using the single country partial equilibrium framework based on the WITS- SMART approach, Gaalya (2015) examined the potential total trade effects arising from FTAs between Uganda and DRC and Sudan under tariff scenarios of zero rate and 25 percent tariff rate between and Zambia and South Africa respectively. Results revealed a positive trade effect with a more significant trade creation than trade diversion under the zero rate tariff scenario compared to when the applied rate is applied. The results are consistent with simulations by Punt & sundry (2016) in their SMART model analysis of trade effects of FTA between Zambia and South Africa under the exact scenarios.

Furthermore, sectoral level studies by Poczta and Sapa (2017) and Hoang et al. (2019) use the WITS-SMART approach to estimate the trade effect of Free Trade Agreements (FTAs) on the apparel and textile industries and agri-food sectors in Vietnam and the EU markets respectively. Whereas both studies reveal a positive trade effect estimated at 42% and 8.5% export growth, respectively, there are mixed findings on the total trade effect simulations. The composition of trade creation vis-à-vis trade diversion of the net trade effect varies in both studies. Notably, Poczta and Sapa (2017) found that the EU's trade effect is primarily marked by trade creation concentrated in a few product groups. On the contrary, Hoang et al. (2019) found that trade diversion from the Vietnam-EU FTA dominates trade creation as Vietnam's apparel are poised to benefit than non-FTA members.

Using a multi-country SMART-WITS model, Pasara and Dunga (2019) estimated the potential trade effects of a tripartite agreement between COMESA, the EAC and SADC members. Their findings reveal mixed results of both positive and negative net trade effects for the member countries, owing to the level of protection policies pursued by countries before the FTA, level of trade flows and capacity to leverage the economies of scale. Notably, whereas countries with high pre-FTA tariffs such as Mozambique and DRC were poised to increase trade by USD 166 million and USD 146 million respectively, negative trade effects were estimated for Madagascar (USD 0.5 million) and Mauritius (USD -0.31 million) mainly due to limited trade flows before the establishment of the FTA. On the contrary, Remi (2006) assessed ECOWAS-EU Economic Partnership Agreement using the SMART model. The simulation results found that agreement would boost EU exports by USD 1.8 billion, mainly driven by trade creation worth 81 percent of the total trade effects compared to USD 0.36 Billion worth of trade diversion.

Lisandro et al. (2019) used a multi-country, multi-sectoral General Equilibrium model to estimate the welfare effects of the AfCTA for 45 countries in Africa. The study was based on simulation, including full employment of import tariffs and partial but substantial

reduction in the Non-Tariff Barriers. Results of the study revealed significant potential welfare gains from trade liberalisation in Africa. The results further showed that because of the already low intraregional import tariffs, most of the gains result from lowering the Non-tariff barriers instead of the tariffs per se.

In conclusion, the reviewed literature reveals that economic theories of regional integration have been evolving as one theory seeks to address what is missing and strengthen the previous theories. The reviewed studies also indicate that several empirical methodologies have been used to study the effects of regional blocs on member and non-member countries. These include the Computable General Equilibrium model, Partial Equilibrium model (WITS-SMART) Excel Based simulation. Although the current study has been conducted on the impact of trade liberalisation between the DRC and EAC partner states, this study analyses the potential trade impact of DRC's membership on the EAC member states, using more current data of DRC's desire to join the bloc. It also goes further to analyse the effects of non-tariff barriers therein, foreseeable challenges and opportunities that could arise in terms of the policy. Notably, most studies apart from Punt and Sundrey (2016) do not utilise specific commodity tariff rates. Hence this study examines the potential trade effects of the DRC's membership on the EAC partner States, focusing on Uganda.

3. METHODOLOGY

3.1 Analytical Approach

This section presents the analytical framework and methods used in the study. Notably, the study adopts a structure, and trend analysis of the trade flows between EAC partner states and DRC, and each of the two parties with the rest of the World (ROW) for the period 2010-2018. This analysis seeks to understand the competitiveness of EAC's exports to replace DRC's imports from the ROW.

Secondly, to estimate the trade effects arising from DRC's membership, the paper adopts the Single Market Partial Equilibrium Simulation Tool (SMART) using the most current data available of 2018. The SMART is a partial equilibrium model developed by the United Nations Conference for Trade and Development (UNCTAD) and the World Bank during the 1980's, mainly to assess the impact of General Agreement on Trade and Tariffs (GATTs) rounds. The SMART model relies on the Armington assumption to model the consumer's behaviour based on the premise of imperfect substitution between different import sources (WITS, 2011).

The model is a very useful and efficient analytical tool in simulating the likely economic effects of the various trade policy alternatives. First, it can be used to analyse the impact of a domestic trade reform as it provides insights into the distribution of the potential gains and losses from any contemplated policy changes. Thus, the model can help predict any adjustment costs associated with reform implementation. Second, it also provides an analytical framework of the impact of foreign trade liberalisation. For example, market access analysis helps identify the sensitive sectors where negotiation efforts should be focused (WITS, 2011). SMART model also simulates the possible impact of a given trade policy intervention or reforms (tariff changes) for a single market on critical variables including trade flows (exports, imports and trade effects), tariff revenue variations, economic welfare effects and other measures (Othieno & Shinyekwa 2011).

Worth noting is that the SMART being a partial equilibrium model, has several advantages and disadvantages while performing trade and tariff analysis. One of the SMART model benefits is that it allows analysis at the most disaggregated level of trade data. Hence it provides the basis for tariff negotiations which is not the case with the General Equilibrium model. Additionally, it provides the impact of the FTA on all countries that export to a particular country, not only to partner countries (Punt & Sundry, 2016). Notably, Milner et al. (2002) acknowledged that the

partial equilibrium framework remains more suitable than the general equilibrium model.

However, for Partial Equilibrium models, SMART model inclusive provide results limited to direct effects of a trade policy change in only one market; thus, it ignores indirect effects of trade policies. The model only allows consistent cuts in the tariffs across all the products selected in the product groups. Notwithstanding such weaknesses, the model is the best for analysing detailed effects of any tariff policy reforms; hence we selected it as our choice for analysis in the study. The study adopted the Excel-based simulations approach of the SMART model to allow flexibility in running product-specific tariff reduction and sensitivity analysis.

3.2 Application of the SMART WITS model and Excel simulation

The model considers elasticities that relate to the quantity changes as a result of price changes. It is assumed that tariff changes are the only effects on the prices (Punt and Sunder, 2016). Hence the model assumes three elasticities namely, supply elasticity, import substitution and import demand elasticities.

The Supply elasticities, which are deemed to be infinite ($=99$). The model assumes that an increase in demand for a given product due to tariff liberalisation will always be matched by the producers and exporters of that good, without any impact on the price of the good. However, this assumption is unrealistic in this case, given that reduction in DRC commodity tariffs may not necessarily be accompanied by increased supply and exports by the EAC countries. Accordingly, the export supply elasticity ($\mu_{i,k}$) of 10 for all products is assumed for the simulation. This implies that for every one percentage increase in the export price of a product, the quantity of exports of the product by a particular country will increase by 10%. This tariff is more realistic than the one proposed by Laird and Yeats (1986) and WITS (2011) of infinitely elastic elasticity. This elasticity is used in the calculations of trade diversion and the trade creation under the assumption of elastic export supply. Instead, the study uses supply elasticities that recognise production and supply side

constraints to be more exact. This implies that lowering and removing tariffs may not automatically lead to increased supply which is a more realistic assumption.

Import substitution elasticities define the degree of substitution between two goods from different countries. In the SMART Model, the import substitution elasticity is considered to be 1.5 for each good. This is derived from the Armington assumption, which indicates that similar goods from different countries are imperfectly substitutable. This assumption is close to the real World, and therefore, it was used in the study without alteration.

The Import demand elasticities measure the demand response to a shift in import price. In SMART, the import demand elasticity varies at the HS-6 level and is based on the study on the price elasticities according to International Trade by Stern (1976). The import demand elasticity ($\varepsilon_{i,k}$) of -1.5 for all products is assumed for the simulation. This implies that for every 1 percentage decrease in the tariff on the import price relative to the domestic (DRC) price of a product, the quantity of the product's imports from EAC partner States will increase by 1.5%. The elasticity is used in the calculation of trade creation. Another important assumption made by the model is that of perfect competition, which means that tariff cuts are fully reflected in the prices paid by consumers.

Theoretically, once DRC joins the EAC trade bloc, the tariff on its commodities are reduced or eliminated. The price of these commodities will decrease by the same amount as the tariffs. Depending on EAC Partner states export supply elasticity, they will increase the production of commodities to trade with DRC. This is considered as trade creation as indicated where more EAC's products are demanded due to eliminating the tariffs on the exports. Trade creation is calculated in SMART Model as the direct increase in exports by DRC attributable to a tariff reduction.

According to Jammes and Olarreaga (2005), trade creation is described by the following equation

$$TC_{i,k} = \varepsilon_{i,k} * m_{i,k} * \frac{dt_{i,k}}{(1+t_{i,k})} * \left(\frac{1}{1 - \varepsilon_{i,k} / \mu_{i,k}} \right)$$

Where $TC_{i,k}$ is the trade created from product (i) which is the value of new imports of product (i) imported by DRC from EAC partner states (k) and $\varepsilon_{i,k}$ is the elasticity of import demand concerning domestic (DRC) price. In addition, this very tariff reduction will result in the substitution of imports (since the assumption is that products are differentiated according to their country of origin), between those from EAC and other countries (Rest of the World), hence induce demand away from other exporters. This is referred to as a trade diversion. This trade diversion is calculated in SMART using the elasticity of substitution. Following Jammes and Olarreaga (2005), trade diversion under the assumption of elastic supply can be expressed as:

$$TD_{i,k} = \frac{m_{i,\neq k} * m_{i,k} * \frac{dt_{i,k}}{(1+t_{i,k})} * \sigma_{i,k,\neq k} \left[\frac{(m_{i,k} + m_{i,\neq k})\mu_{i,k}}{(m_{i,k} + m_{i,\neq k})\mu_{i,k} - m_{i,\neq k}} \right]}{m_{i,\neq k} + m_{i,k} + m_{i,\neq k} * \frac{dt_{i,k}}{(1+t_{i,k})} * \sigma_{i,k,\neq k} \left[\frac{(m_{i,k} + m_{i,\neq k})\mu_{i,k}}{(m_{i,k} + m_{i,\neq k})\mu_{i,k} - m_{i,\neq k}} \right]}$$

The price effect reflects a rise in the world price for the product whose demand increases following the tariff reduction (also known as the terms of trade effect). In other words, it is the additional import value of imports by DRC from the EAC Partner States because of the increased world price. In line with Punt and Sandrey (2016), under the assumption of elastic export supply, the change in world price can be expressed as:

$$dp_{i,k}^w = \frac{TC_{i,k} + TD_{i,k}}{\mu_{i,k}}$$

The total trade effect is calculated as the sum of three effects trade creation, trade diversion and the price effect, as shown below

$$TT_{i,k} = TC_{i,k} + TD_{i,k} + dp_{i,k}^w$$

Where $dp_{i,k}^w$ is the change in world price (price received by the exporter) of the product (i) exported by EAC partner States (k). The Excel spreadsheet simulation only reports the price effect for the partner country.

3.3 Data and source

Trade data: The study utilised trade data obtained from Trade Map from the International Trade Centre (ITC). To understand the patterns of trade between EAC and DRC, import and export data for the period 2010-2018 was selected and downloaded at a two-digit HS level. Furthermore, the most recent data (2018) for each EAC partner state was selected at the highest level of disaggregation (6 digit HS level) for trade effects analysis. Noteworthy, South Sudan was not considered in this analysis because it only joined the EAC recently; hence her trade data was not available in the ITC database.

Tariff data: The pre-liberalisation, MFN rate data for DRC as an importer was used obtained from Market Access Map at 6-digits of HS level disaggregation. The post-FTA MFN rates were set at zero representing a total trade liberalisation. Worth noting is that DRC liberalised its tariff structure in 2011 into four bands of 0%, 5%, 10% and 20% to reduce duties on raw materials and other inputs to stimulate economic growth (**Table 1**). The zero rate applies to a few commodities that include postage stamps, stamped paper and coins. The 5% rate applies to capital goods, raw materials, agricultural and livestock inputs, pharmaceutical inputs, milk and other infant food preparations. The 10% rate applies to parts, components, accessories and sub-assemblies intended for assembly under Medium Knocked Down (MKD), staple food stuffs, spare parts and industrial inputs, whereas the 20% rate applies to other finished products. With DRC's membership in the EAC trade bloc, it is assumed that all imports from the other partner states will be exempted from tariffs, and the

country will adopt a common external tariff (CET) on imports from non-member countries outside the bloc.

4. FINDINGS

This section presents and discusses the results as follows. 4.2 presents the trends of imports and exports of DRC to EAC compared to ROW. At the same time, section 4.3 delves into the discussion of the trade effects resulting from the trade liberalisation between EAC and DRC, with a particular focus on Uganda.

4.2 The patterns and composition of Trade between DRC and EAC trade bloc 2010-2018

This section presents a discussion on EAC's trade performance and structure with DRC for 2010 -2018. Furthermore, the trade performance of the two trading partners with RoW is also analysed to gain a broader picture of the competing countries in the EAC-DRC bilateral trade.

4.2.1 EAC Export trade with DRC Export trade (2010-2018)

Table 2 presents the available official data on merchandise export trade between the EAC countries and DRC from 2010 to 2018. Generally, all EAC member states are net exporters to DRC, with Rwanda and Uganda being the most prominent trade partners while Burundi has the lowest export values. Notably, EAC's exports have more than doubled from USD 419 million to USD 855 million between 2010 and 2018. Relatedly, imports from DRC in the same period equally increased albeit by a lesser 28 percent.

The data reveals that in 2010, Uganda and Tanzania were the leading EAC exporters to DRC, valued at USD 183 million and USD 156 million, respectively the two have been surpassed by Rwanda, whose trade has drastically grown by 120 percent to USD 337 million in 2018. Notably, the DRC currently stands as the leading export destination for Rwanda and accounts for 75 percent of the country's exports. On the other hand, Burundi's export trade to DRC has increasingly

Table 1 Distribution of MFN tariff duties for DRC

Pre-TFA tariff	Number of tariff lines	Proposed tariffs	Proportion
0%	23	0%	0.4
5%	1,963	0%	33.6
10%	2,121	0%	36.3
20%	1,718	0%	29.4

Source: WTO (2016)

Table 2 Formal trade between EAC and DRC for the period 2010-2018 ('000' USD)

Country	2010	2011	2012	2013	2014	2015	2016	2017	2018
<i>Panel A: Exports</i>									
Uganda	183,992	182,441	240,881	268,175	181,680	152,561	176,921	189,606	204,309
Kenya	61,352	198,443	218,294	214,063	239,380	211,063	197,480	182,612	149,800
Tanzania	156,081	128,102	187,353	237,559	281,493	198,290	157,428	114,323	144,926
Burundi	269	10,434	141	12,079	28,400	28,272	27,471	26,648	18,904
Rwanda	18,137	44,620	109,300	114,991	153,607	193,631	202,979	280,789	337,443
Total	419,831	564,040	755,969	846,867	884,560	783,817	762,279	793,978	855,382
<i>Panel B: Imports</i>									
Uganda	7,278	6,354	12,223	6,751	5,917	3,641	2,532	4,870	34,492
Kenya	6,770	28,958	10,470	6,521	2,954	1,304	2,053	4,881	12,723
Tanzania	134	403	906	110	825	628	338	967	559
Burundi	5,330	6,342	3,854	3,712	50	3,849	987	3,923	2,785
Rwanda	30,918	16,675	10,414	9,300	10,722	11,010	9,105	12,716	14,290
Total	50,430	58,732	37,867	26,394	20,468	20,432	15,015	27,357	64,849

Source: Trade Map (2019)

dwindled compared to other EAC partner states, mainly due to an underdeveloped manufacturing sector coupled with the aftermath of civil unrest in the country in 2015 that could hinder trade and production. Hence, trends in export data suggest that DRC's membership is likely to witness growth in export trade flows to the EAC bloc. More succinctly, trade effect and export trade accrued to Rwanda and Uganda to DRC is poised to be most significant compared to other EAC members.

limited value addition and manufacturing sector in the EAC partner states. Hence, from a sectoral perspective, membership of DRC is likely to increase EAC's export trade skewed in primary commodities compared to manufactured/processed goods.

To better understand the sectoral composition of EAC-DRC exports, Table 3 summarises the average export trade for the top 25 commodities. The products represent 81.1 percent of the total EAC export to DRC, implying that they account for the largest share of total export trade. Analysis of EAC export trade structure with DRC reveals that exports are predominantly primary products that include and ores and metals, mineral fuels, agricultural commodities, and food and beverages. For instance, the top 6 exports, which account for 44.5 percent of the total exports, are all primary products. These are mineral fuels (USD 73 million), iron and steel (USD 59 million), Cereals (USD 52 million), cement (USD 46 million), Vegetable/animal Oil (USD 49 million) and mineral and ores (USD 49 million). The structure of exports is mainly explained by

Table 3 Average EAC's export trade to DRC between 2010-2018 in '000' USD			
HSCODE	Total exports	749,598	100%
27	Mineral fuels, mineral oils and products of their distillation; bituminous substances; mineral ...	73,920	9.9
72	Iron and steel	59,342	7.9
11	Products of the milling industry; malt; starches; inulin; wheat gluten	55,034	7.3
15	Animal or vegetable fats and oils and their cleavage products; prepared edible fats; animal ...	49,284	6.6
25	Salt; sulphur; earths and stone; plastering materials, lime and cement	49,246	6.6
24	Tobacco and manufactured tobacco substitutes	46,192	6.2
39	Plastics and articles thereof	38,245	5.1
34	Soap, organic surface-active agents, washing preparations, lubricating preparations, artificial ..	33,129	4.4
22	Beverages, spirits and vinegar	31,328	4.2
87	Vehicles other than railway or tramway rolling stock, and parts and accessories thereof	26,040	3.5
73	Articles of iron or steel	24,120	3.2
17	Sugars and sugar confectionery	22,698	3.0
63	Other made-up textile articles; sets; worn clothing and worn textile articles; rags	14,720	2.0
94	Furniture; bedding, mattresses, mattress supports, cushions and similar stuffed furnishings; ...	14,689	2.0
64	Footwear, gaiters and the like; parts of such articles	13,916	1.9
48	Paper and paperboard; articles of paper pulp, of paper or of paperboard	11,687	1.6
84	Machinery, mechanical appliances, nuclear reactors, boilers; parts thereof	11,037	1.5
21	Miscellaneous edible preparations	10,428	1.4
20	Preparations of vegetables, fruit, nuts or other parts of plants	9,410	1.3
76	Aluminum and articles thereof	6,397	0.9
68	Articles of stone, plaster, cement, asbestos, mica or similar materials	3,645	0.5
30	Pharmaceutical products	3,551	0.5
32	Tanning or dyeing extracts; tannins and their derivatives; dyes, pigments and other colouring ..	3,519	0.5
67	Prepared feathers and down and articles made of feathers or of down; artificial flowers; articles .	1,179	0.2

Authors' computations based on Trade map trade data (2019)

4.2.2 DRC's import trends with EAC and the Rest of the World 2010-2018

Table 4 presents the average import trade for DRC's top 22 imports from the ROW for the period 2016-2018. Noteworthy, these imports represent 78 percent of the total imports implying that they comprise the most significant proportion of DRC's import bill. A critical analysis of these commodities reveals that

DRC mainly imports high value manufactured goods, including machinery, electronics, motor vehicles, and pharmaceutical products, which EAC does not have a competitive edge to produce.

Overall, the EAC member countries have 13.1 percent market share of DRC's total imports; however the share is much lower at 5.5 percent for the top 5 high-value products that account for 40 percent of the total import

products. More succinctly, the EAC regions possess a low market share in most of these high-value imports such as machinery (1.4%), electrical machinery (8.3%), vehicles (6.5%), and pharmaceuticals (1.2%). This is primarily attributed to limited capacity or technological advancement to produce these high technology products. Even for the goods that are made in the EAC countries, the region commands a smaller market share, averaged 20.9 percent, which presents an opportunity to scale up production to supply this market. For instance, EAC's market share for plastics

stands at 16.7%, mineral fuels (17.2%), iron and steel (36.3%), soap and its articles (37.2%). This is explained by limited production in EAC countries characterised by an underdeveloped manufacturing sector. Conclusively, these results suggest that building capacity to produce high-value technology products such as machinery, vehicles, and electrical appliances, while scaling production in light manufactured goods like soap and salt is vital to tap into a vast DRC export market.

Table 4 DRC's top imports from the World (2010-2018) in USD 000s

HSCODE	Products	Imports from the World	% world imports	% EAC market share
	Total imports	6,098,728	100.0	13.1
84	Machinery, mechanical appliances, nuclear reactors, boilers; parts thereof	798,240	13.1	1.4
85	Electrical machinery and equipment and parts thereof; sound recorders and reproducers,	506,527	8.3	1.2
27	Mineral fuels, mineral oils and products of their distillation; bituminous substances...	429,367	7.0	17.2
87	Vehicles other than railway or tramway rolling stock, and parts and accessories thereof	394,703	6.5	6.6
30	Pharmaceutical products	295,871	4.9	1.2
73	Articles of iron or steel	283,292	4.6	8.5
39	Plastics and articles thereof	228,793	3.8	16.7
25	Salt; sulphur; earths and stone; plastering materials, lime and cement	223,569	3.7	22.0
28	Inorganic chemicals; organic or inorganic compounds of precious metals, , ...	191,840	3.1	2.3
72	Iron and steel	163,597	2.7	36.3
2	Meat and edible meat offal	141,484	2.3	1.0
11	Products of the milling industry; malt; starches; inulin; wheat gluten	128,536	2.1	42.8
17	Sugars and sugar confectionery	125,478	2.1	18.1
3	Fish and crustaceans, molluscs and other aquatic invertebrates	120,708	2.0	4.9
10	Cereals	115,766	1.9	29.1
15	Animal or vegetable fats and oils and their cleavage products; prepared edible	103,504	1.7	47.6
22	Beverages, spirits and vinegar	96,543	1.6	32.4
63	Other made-up textile articles; sets; worn clothing and worn textile articles; rags	91,258	1.5	16.1
34	Soap, organic surface-active agents, washing preparations, lubricating preparations, artificial	89,101	1.5	37.2
94	Furniture; bedding, mattresses, mattress supports, cushions and similar stuffed furnishings; ...	81,093	1.3	18.1
40	Rubber and articles thereof	72,571	1.2	2.6
64	Footwear, gaiters and the like; parts of such articles	69,175	1.1	20.1
	Total proportion for the top 22 products imported by DRC		77.9	

Source: Authors computation based on Trade map data (2019)

To further illustrate the dominance of DRC's imports by manufactured products, analysis of the 20 top exporters of the DRC (2010-2018) includes China, South Africa, Zambia, Belgium, USA, France among others (Figure 5). These countries with advanced manufacturing sectors account for the lion's share of DRC's imports from the World. Noteworthy China, South Africa, Belgium and France are significant producers of machinery, pharmaceuticals and other manufactured products. For instance, between 2010 and 2018, China's share in DRC imports has more than doubled from 11 percent to 23.9 percent, mainly due to imports in machinery, electronics and pharmaceuticals. On the other hand, Kenya is the only EAC country, mainly due to a more developed manufacturing sector than other EAC partner states. Still, even then, its share in DRC's imports is on the declining trend.

Rwanda and Uganda will be the biggest beneficiaries of the trade effect from DRC's membership in the EAC trade bloc. Export trade is expected to increase by USD 83.9 million and USD 62.4 million, respectively. This could be explained by the fact that the two countries enjoy the geographical advantage over Kenya and Tanzania, reducing the transactional cost to trade with DRC. In addition, it is noted in Cuts international (2015) that trade between Rwanda and DRC is facilitated by strong traders associations that enjoy economies of scale, unlike other EAC countries.

In addition, Tanzania exports will grow by USD 42.2 million, Kenya by USD 48.3 million and Burundi by USD 6.4 million. In terms of trade creation, Rwanda's trade to DRC will increase by USD 43.6 million, equivalent to 13 percent share of the current export

Table 5 Top sources of DRC's imports by share (2010-2018)

Country/Year	2010	2011	2012	2013	2014	2015	2016	2017	2018
China	11	14.1	13	13.5	19.7	22	19.7	18.2	23.9
South Africa	19.6	18.7	23	19.3	17.9	16	15.5	16.5	17.4
Zambia	7.5	9.9	12.5	16.9	11.6	8.4	8	9.9	11.7
Belgium	8.3	7.5	7	6.9	6.1	7.4	7.6	8.3	5.5
France	5.3	4.2	4.3	4.2	3	4.2	5.1	2.7	1.7
Netherlands	2.9	2.6	2.2	2.2	2.2	1.6	1.7	3.3	4
India	0.3	0.1	1.9	2.1	3.2	5	4.6	3.9	3.8
Kenya	3.7	3.4	3.4	3	3.5	3.3	3.9	3.4	2
Germany	2.9	2.7	2.6	3	2.5	2.5	1.8	1.5	1.4
USA	2.2	2.8	3.1	2.4	2.6	2.1	1.6	1.4	1.1
Total (% of total DRC imports)	73.8	73.2	83.1	84.1	83.5	82.6	83.2	83.1	83.6

Source: Authors' computations based on Trade map data 2019

4.3 Trade, effects of the trade liberalisation between EAC and DRC

The trade effects arising from the trade liberalisation are derived from the sum of the trade creation, price changes and diversion effects. While trade creation and trade diversion effects depict the impact of free trade on quantity, the price effect represents the additional export value from increased world price. Table 6 summarises these effects and suggests a positive net trade effect across all the EAC partner states. Notably,

trade, while Uganda's trade creation amounts to USD 28.8 million, equivalent to a 14% increase in exports to DRC. Noteworthy, more trade across all EAC partner states will be created than diverted from the ROW economies on account of the increased market access into the previously restricted DRC market. Similarly, the two countries will have the most remarkable trade diversion effect arising from trade diversion from non-EAC partner states. It is estimated that USD 31.1 million worth of export trade will be diverted to Rwanda while USD 26.0 million worth trade will be diverted to

Table 6 The trade effects of the EAC countries in thousand Dollars

Trade effects	Uganda	Rwanda	Tanzania	Kenya	Burundi	Total EAC
Trade creation from DRC	28,886	42,651	24,780	21,763	2,808	120,888
Trade creation as % of initial exports to DRC	14	13	17	15	15	14
Trade diversion from Rest of World	26,049	31,153	20,866	16,963	2,861	97,892
Trade diversion as % of initial exports to DRC	13	9	14	11	15	11
Price effect from trade with DRC	5,494	7,380	4,565	3,873	567	21,879
Price effect as % of initial exports to DRC	3	2	3	3	3	3
Total trade effect for EAC Partners states trade to DRC	60,429	81,185	50,210	42,598	6,236	240,658
Total trade effect as % of initial exports to DRC	30	24	34	29	33	28

Source: Authors' computations based on the SMART-WITS simulation

Uganda. Worth noting is that East African Community bloc will experience a positive trade effect of USD 240.7 million equivalent to a 28 percent growth of EAC export trade with DRC. Overall, the magnitude of the trade effects of trade liberalisation is explained by the GDP structure, trade flows of specific member countries and the level of pre-FTA trade tariffs between EAC countries and DRC.

4.3.2 Sectoral distribution of trade effects

A detailed sectoral analysis of net trade effect by product classification (HS) results reveals that the EAC bloc's greatest trade gains lie in processed/food stuff and beverages, mineral products, agriculture and metal products which account for 27.8%, 18.0%, 15.6% and 10.3% of the total trade effect respectively (Table 7). Worth noting is that even with FTA in place, there will be limited trade in high value manufactured products such as machinery and electrical equipment products.

Uganda possesses a competitive edge in the export of food stuff and beverage products at a country level mainly because of the country's agricultural production potential and its recent pursuit for the agro-industrialisation strategy and value addition as compared to the export of raw agricultural exports. On the other hand, while Rwanda and Tanzania will gain

the greatest in the trade of raw agricultural products. Also, it is essential to note that Rwanda's most significant trade gain, estimated at USD 4.5 million is explained by the recent growth of the industry and the total ban on second-hand clothes that has attracted domestic textile industries to grow and more export textile products.

Further, Kenya and Uganda will become the leading EAC contenders for the export market in metal products in the DRC. Tables AI-IV (Appendix) show that the main processed food stuffs with the most impressive trade gains include palm oil and its fractions, sugar, beer from malt and broken rice and mineral products traded include Portland cement, petroleum products and electricity. In addition, metals include iron and steel and articles of steel. The main agricultural products with the highest trade gains include wheat or meslin flour, Maise flour, broken flour and food preparations. Noteworthy, Agriculture and agro-processing are key sectors poised to benefit from EAC trade liberalisation with DRC. The nature of their industrial linkage presents a great opportunity for EAC countries to increase trade with DRC by pursuing an agro-industrialisation strategy. Similarly, the presence of high trade gains in metal and mineral products such as iron and steel, port land cement calls for EAC partners to strengthen and develop the manufacturing sectors.

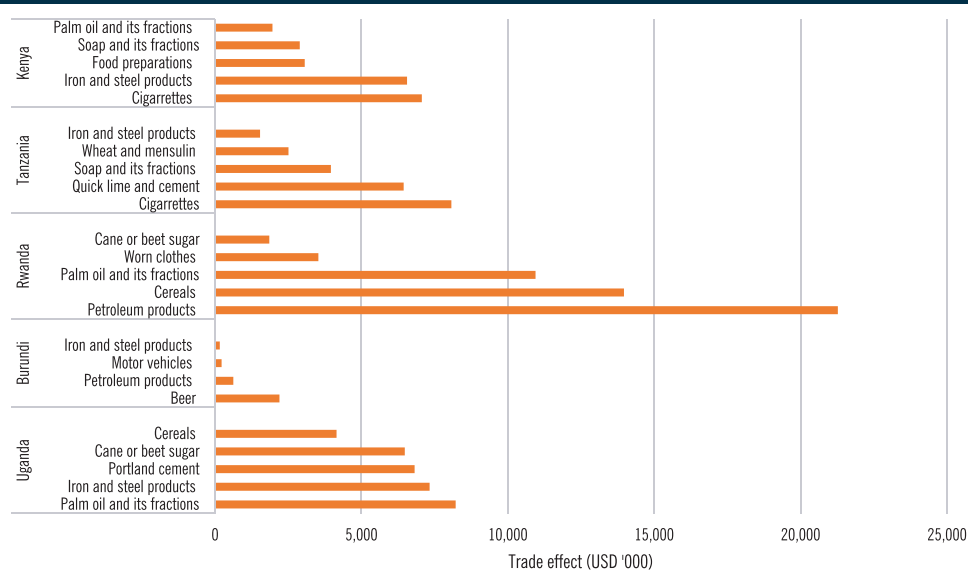
Table 7 EAC's net trade effect by HS product classification (USD 000s)

HS CODE	Sector	Uganda	Kenya	Rwanda	Tanzania	Burundi	Overall %share
0-15	Agriculture products	699	3,241	28,230	3,589	2,410	15.6
16-24	Foodstuffs and beverages	29,737	15,075	9,305	10,948	2,688	27.8
25-27	Mineral Products	8,339	2,404	23,593	9,142	494	18.0
28-38	Chemicals & Allied Industries	2,263	6,367	4,928	7,732	38	8.7
39-40	Plastics / Rubbers	3,211	2,519	1,232	2,689	30	4.0
41-43	Raw Hides, Skins, Leather, & Furs	17	3	174	250	2	0.2
44-49	Wood & Wood Products	1,017	467	1,084	780	2	1.4
50-63	Textiles	2,457	1,375	4,556	230	76	3.6
64-67	Footwear / Headgear	492	2,717	1,758	1,193	1	2.5
68-71	Stone / Glass	56	1,231	1,232	1,387	11	1.6
72-83	Metals	8,987	10,145	2,923	2,847	177	10.3
84-85	Machinery / Electrical	604	859	2,063	195.9	164	1.6
86-89	Transportation	3,634	459	1,347	109	298	2.4
90-97	Miscellaneous	956	1,545	2,057	1,191	37	2.4

Source: Authors' computations based on the SMART-WITS simulation

To delve into the details of the particular products that yield the most extensive trade margins in the sectors highlighted above, Table 8 presents the top 5 products with the highest trade effects in each of the EAC partner states. Burundi will derive the highest trade effects from the export of wheat, beer, petroleum products, while Uganda's highest trade gains lie in palm oils, iron and steel products, Portland cement and cereals. Kenya's trade gains lie in cigarettes, iron

and steel products and palm oil, while Tanzania's most considerable trade effects will be the export of cigarettes, cement, soap and its fractions and iron and steel products. Noteworthy iron and steel, palm oil petroleum products, cement and sugar, are the common products that yield the highest trade gains to the EAC partner states, thus calling for increased production to tap into the DRC market.

Figure 1 Top five products with the highest trade effects in EAC partner states ¹

¹ The detailed breakdown of the top 20 products with highest trade effects is in the Appendix section

Source: Authors' computations based on the SMART-WITS simulation

5. CONCLUSION AND POLICY RECOMMENDATIONS

The study examined the likely trade effects of DRC's membership in the EAC. More succinctly, to establish trade effects of liberalising trade between EAC partner states and consequently reveal the primary sectors that will benefit as a result of this trade liberalisation. Analysis of the trade flows between 2010 and 2018 shows that the EAC bloc possesses a positive trade balance with DRC estimated at 790 million USD in 2018. With tariff liberalisation under FTA, this positive trade balance is likely to translate into increased export volumes from EAC partner states mainly driven by Rwanda and Uganda, the leading sources of DRC's imports in the bloc. Notwithstanding this anticipated growth in exports, the EAC bloc still accounts for a smaller 11 percent of her imports; and only 5 percent of the DRC's top 4 imports from the World include machinery, electrical equipment, vehicles and articles of iron and steel. Thus, the EAC bloc will not satisfactorily supply these goods to EAC partner states in the short run due to limited technological capacity to produce these products. On the other hand, EAC imports primary products (agriculture and mineral ores) from DRC but still in smaller quantities, given that EAC equally produces the same. Hence, even with trade liberalisation, EAC imports are not likely to increase significantly as these same primary products are available on the EAC domestic market.

Simulations for the trade effects indicate a positive effect among the EAC partner states, with Rwanda and Uganda reaping the highest trade gains. More succinctly, DRC's membership in the EAC is poised to increase Rwanda's exports by USD 81 million, Uganda (USD 60 million), Tanzania (USD 50 million), Kenya (USD 42 million) and Burundi (USD 6 million). In terms of per percentage share, the trade liberalisation will increase current trade with Uganda by 30 percent, 24 percent for Rwanda, 34 percent for Tanzania, 29 percent for Kenya and 33 percent for Burundi. Notably, most of the increase in this trade is attributed to trade creation (as a result of new exports by EAC to DRC

initially sourced from non-EAC countries). A critical analysis of the vital sectors that are likely to boost export trade with DRC shows that the bloc harvests the most significant gains in agriculture, agro-processing (food and beverages), mineral products and metal industries. Specifically, Tanzania and Rwanda have the largest export of agricultural products. Uganda and Tanzania will reap the most considerable trade benefits from agro-processing, while concerning metal products (iron and steel); Kenya and Uganda have the highest trade gains.

Overall, DRC's membership is likely to positively affect the bloc's exports mainly driven by trade creation, as EAC is poised to be a cheaper source for DRC's imports than ROW. Nonetheless, these exports are primarily dominated by primary goods rather than sophisticated manufactured goods. In light of these findings, EAC Partners states should adopt a long term strategy of building their capacity to produce high technology products such as machinery, electrical equipment and motor vehicles, which are DRC's leading imports to overcome supply constraints. In the short run, the EAC members can establish themselves as re-export/ assembling hubs to supply high-value manufactured products such as electronics and machinery with a strategy to manufacture these products themselves.

5.1 Policy recommendations

- EAC Partners states should adopt a long term strategy of building their capacity to produce high technology products such as machinery, electrical equipment and motor vehicles, which are DRC's leading imports, to overcome supply constraints. In the short run, the EAC members can establish themselves as re-export/ assembling hubs to supply high-value manufactured products such as electronics and machinery with a strategy to manufacture these products themselves.
- There is a need to develop Agro-processing industries (food) to add value to raw agricultural products, especially sugar and palm oil and cereals, alongside investing in commercial agricultural production to supply inputs to the agro-food industries

- To increase the exports of iron and steel products, the government should promote the growth of the iron and steel industry production and attract private investment to overcome the supply constraints.
- To realise the estimated trade gains with DRC, EAC partners need to urgently address the Non-Tariff barriers (NTBs) that limit trade between the two parties, such as the development of transport infrastructure and addressing security issues in the naturally endowed country.

REFERENCES

- Abrego, L., Amado, M. A., Gursay, T., Nicholls, G. P., & Perez-Saiz, H. (2019). The African Continental Free Trade Agreement: Welfare Gains Estimates from a General Equilibrium Model. *Working paper*.
- African Union . (2020). *Africa Regional Integration Index report 2019*. Addis Ababa: African Union.
- Chidede, T. (2017, August 02). Intra-SADC trade remains limited: How can it be boosted?
- Cilliers, J. (2018). *Manufacturing and the fourth Industrial revolution : Made in Africa*. Pretoria, South Africa: Insitute for Security studies .
- EAC. (2018). *The EAC trade and Investment report 2018*. Arusha: The East African Community .
- Ekelund, R. (2004). *Ekelund R.B. (2004) Mercantilism. In: Rowley C.K., Schneider F. (eds) . Boston,MA: The encyclopedia of public choice. Retrieved from https://doi.org/10.1007/978-0-306-47828-4_144*
- Gray, H. (1998). Free international economic policy in a world of schumpeter goods. *The International Trade Journal*, 12(3), 323–344.
- Heckscher. (1992). *Heckscher, Eli. "The Effect of Foreign Trade on the Distribution of Income." A translation is provided by H. Flam and M. J. Flanders, eds., Heckscher-Ohlin Trade Theory. Cambridge: MIT Press.*
- Hoderlein, S., & Vanhems, A. (2009). Estimating the distribution of welfare effects using quantiles. *Journal of applied econometrics*, 3(33).
- Iyoha, M. (2005). Enhancing Africa's Trade: From Marginalization to an Export-Led Approach to Development. *Economic Research Paper Series*, 77.
- Jammes, O., & Olarreaga, M. (2005). *Explaining SMART and GSIM models*. World Bank, Working paper.
- Kamabale. (2004, January 9). Culture: Congolese Welcome Swahili As Official African Language. Kishansha, DRC.
- KPMG. (2017). *DRC Economic Snapshot H2, 2016*. johannesburg, South Africa: KPMG

- International .
- Krugman, P. (1979). Increasing returns, monopolistic and International trade. *Journal of International Economics*, 9, 469-479.
- Lancaster, K. (1980). Intra-Industry Trade Under Perfect Imperfect Competition. *Journal of international economics*(10), 151-175.
- Lipsey, R. (1957). The Theory of Customs Unions: Trade Diversion and Welfare. *Economica*, 24, 40-46.
- Meade, J. E. (1955). *Trade and Welfare*. London: Oxford University Press. .
- Mitsuo, E., & Nguyen, D. (2007). Regional Economic Integration and Its Impacts on growth, Poverty and Income Distribution in EAST Asia. *Review of Urban and Regional Development Studies*.
- Mold, A., & Mukwaya, R. (2015). The Effects of the Tripartite Free Trade Area: Towards a New Economic Geography in Southern, Eastern and Northern Africa. *Credit Reserach paper*, 4(15).
- Mosley, P., & Chirinpahura, B. (2009). Liberalisation and poverty in Africa since 1990-Why the Operation of invisible hand uneven? *Journal of International Development*(21), 749-756.
- Othieno, J., & Shinyekwa, M. (2011). *Trade, Revenue and Welfare Effects of the East African Community Customs Union Principle of Asymmetry on Uganda: An Application of WITS-SMART Simulation Model*. Kampala: Economic Policy Research Centre.
- Poczta-Wajda, A., & Sapa, A. (2017). Potential trade effects of tariff liberalisation under the transatlantic trade and investment partnership (TTIP) for the EU Agri-food sector. *Journal of Agribusiness and Rural Development*, 2017(44).
- Punt, C., & Sundry, R. (2016). *Trade creation and trade diversion effects of economic integration: Illustration of excel based tariff simulation of Zambia entering into a hypothetical agreement (FTA) with South Africa* . Stellenbosch: tralac.
- Rémi, L. (2016). *A partial equilibrium analysis of the impact of the ECOWAS-EU Economic Partnership Agreement*. Addis Ababa: United Nations Economic Commission for Africa.
- Ricardo. (1951). *The works and correspondence of David Ricardo, edited by P. Sraffa*. Cambridge: Cambridge printing press.
- Smith, A. (1776). *An Inquiry into the Nature and Causes of the Wealth of Nations*.
- Tabaro, J. (2019, June 13th). DRC Knocking To Join EAC As 7th Member. Kigali, Rwanda.
- UNCTAD. (2018). *East African Community Regional integration: Trade and gender implications* . Geneva: United Nations conference on Trade and Development.
- UNECA. (2017). *History of Africa's Regional Integration Efforts*. Retrieved from United Nations Economic commission for Africa.
- UNWOMEN. (2012). *Walking in the Dark: Informal crossborder trade in the Great lakes region*. London, UK: International Alert .
- Viner, J. (1950). *The Customs Union Issue*. New York: Carnegie Endowment for International.
- Vos, R., & Jong, N. (2013). Trade Liberalization and Poverty in Ecuador: A CGE Macro-Microsimulation Analysis. *Economic Systems Research*, 211-232.
- WITS. (2011). *User's manual for World integrated Trade systems* . Washington DC: World Bank.
- WTO. (2016). *Trade Policy review for the Democratic Republic of Congo(DRC)*. Geneva: World Trade Organisation.
- WTO. (2018). *Trade and poverty reduction: Evidence from developing countries* . Geneva: World Trade organisation.

APPENDICES

Table AI Kenya's top 20 commodities with highest Trade effect		
HSCODE	Products	Trade effect
240220	Cigarettes, containing tobacco	6,083
210690	Food preparations, n.e.s.	3,066
721061	Flat-rolled products of iron or non-alloy steel, of a width of ≥ 600 mm, hot-rolled or cold-rolled ...	2,943
340220	Surface-active preparations, washing preparations, auxiliary washing preparations and cleaning ...	2,403
151190	Palm oil and its fractions, whether or not refined (excluding chemically modified and crude)	1,962
721070	Flat products of iron or non-alloy steel, of a width of ≥ 600 mm, hot-rolled or cold-rolled ...	1,912
300490	Medicaments consisting of mixed or unmixed products for therapeutic or prophylactic purposes, ...	1,746
721041	Flat-rolled products of iron or non-alloy steel, of a width of ≥ 600 mm, hot-rolled or cold-rolled ...	1,703
271019	Medium oils and preparations, of petroleum or bituminous minerals, not containing biodiesel, ...	1,342
640192	Waterproof footwear covering the ankle, but not the knee, with outer soles and uppers of rubber ...	1,154
170490	Sugar confectionery not containing cocoa, incl. white chocolate (excluding chewing gum)	1,081
681181	Corrugated sheets of cellulose fibre-cement or the like, not containing asbestos	1,078
240290	Cigars, cheroots, cigarillos and cigarettes consisting wholly of tobacco substitutes	980
170410	Chewing gum, whether or not sugar-coated	663
252329	Portland cement (excluding white, whether or not artificially coloured)	655
940370	Furniture of plastics (excluding medical, dental, surgical or veterinary, and seats)	582
220830	Whiskies	560
940421	Mattresses of cellular rubber or plastics, whether or not covered	527
392410	Tableware and kitchenware, of plastics	499
340111	Soap and organic surface-active products and preparations, in the form of bars, cakes, moulded ...	492

Table II Tanzania's top 20 commodities with the highest trade effect		
240220	Cigarettes, containing tobacco	8,072
340119	Soap and organic surface-active products and preparations, in the form of bars, cakes, moulded ...	1,513
252210	Quicklime	3,070
110100	Wheat or meslin flour	3,958
252329	Portland cement (excluding white, whether or not artificially coloured)	2,508
252230	Hydraulic lime (excluding pure calcium oxide and calcium hydroxide)	1,218
310230	Ammonium nitrate, whether or not in aqueous solution (excluding that in pellet or similar forms, ...)	1,566
251990	Fused magnesia; dead-burned "sintered" magnesia, whether or not containing small quantities ...	1,807
392490	Household articles and toilet articles, of plastics (excluding tableware, kitchenware, baths, ...)	1,033
701090	Carboys, bottles, flasks, jars, pots, phials and other containers, of glass, of a kind used ...	1,210
220210	Waters, incl. mineral and aerated, with added sugar, sweetener or flavour, for direct consumption ...	780
271019	Medium oils and preparations, of petroleum or bituminous minerals, not containing biodiesel, ...	702
720854	Flat-rolled products of iron or non-alloy steel, of a width of ≥ 600 mm, not in coils, simply ...	589
220290	Non-alcoholic beverages (excluding water, fruit or vegetable juices and milk)	560
960500	Travel sets for personal toilet, sewing or shoe or clothes cleaning (excluding manicure sets)	989
330499	Beauty or make-up preparations and preparations for the care of the skin (other than medicaments), ...	500
730661	Tubes and pipes and hollow profiles, welded, of square or rectangular cross-section, of iron ...	660
721041	Flat-rolled products of iron or non-alloy steel, of a width of ≥ 600 mm, hot-rolled or cold-rolled ...	700
220710	Undenatured ethyl alcohol, of actual alcoholic strength of $\geq 80\%$	548
340213	Non-ionic organic surface-active agents, whether or not put up for retail sale (excluding soap)	325

Table III Burundi's top 20 commodities with highest Trade effect		
110100	Wheat or meslin flour	2,396
220300	Beer made from malt	2,203
271019	Medium oils and preparations, of petroleum or bituminous minerals, not containing biodiesel, ...	210
271012	Light oils and preparations, of petroleum or bituminous minerals which $\geq 90\%$ by volume "incl. ...	226
240220	Cigarettes, containing tobacco	400
870333	Motor cars and other motor vehicles principally designed for the transport of persons, incl. ...	154
721041	Flat-rolled products of iron or non-alloy steel, of a width of ≥ 600 mm, hot-rolled or cold-rolled ...	150
630900	Worn clothing and clothing accessories, blankets and travelling rugs, household linen and articles ...	61
252329	Portland cement (excluding white, whether or not artificially coloured)	54
841830	Freezers of the chest type, of a capacity ≤ 800 l	59
843049	Boring or sinking machinery for boring earth or extracting minerals or ores, not self-propelled ...	17
870899	Parts and accessories, for tractors, motor vehicles for the transport of ten or more persons, ...	25
870332	Motor cars and other motor vehicles principally designed for the transport of persons, incl. ...	37
870323	Motor cars and other motor vehicles principally designed for the transport of persons, incl. ...	34
521215	Woven fabrics of cotton, containing predominantly, but $< 85\%$ cotton by weight, other than those ...	9
852859	Monitors, not incorporating television reception apparatus (excluding with cathode ray tube ...	28
870590	Special purpose motor vehicles (other than those principally designed for the transport of ...	8
220429	Wine of fresh grapes, incl. fortified wines, and grape must whose fermentation has been arrested ...	27
721499	Bars and rods, of iron or non-alloy steel, only hot-rolled, only hot-drawn or only hot-extruded ...	13
870423	Motor vehicles for the transport of goods, with compression-ignition internal combustion piston ...	6

Table IV Rwanda's top 20 commodities with the highest trade effect

271012	Light oils and preparations, of petroleum or bituminous minerals which $\geq 90\%$ by volume "incl. ...	12,579
271019	Medium oils and preparations, of petroleum or bituminous minerals, not containing biodiesel, ...	8,697
151190	Palm oil and its fractions, whether or not refined (excluding chemically modified and crude)	7,483
100630	Semi-milled or wholly milled rice, whether or not polished or glazed	6,480
110100	Wheat or meslin flour	5,899
630900	Worn clothing and clothing accessories, blankets and travelling rugs, household linen and articles ...	3,529
252329	Portland cement (excluding white, whether or not artificially coloured)	2,133
170199	Cane or beet sugar and chemically pure sucrose, in solid form (excluding cane and beet sugar ...	1,853
190531	Sweet biscuits	1,802
151620	Vegetable fats and oils and their fractions, partly or wholly hydrogenated, inter-esterified, ...	1,801
151219	Sunflower-seed or safflower oil and their fractions, whether or not refined, but not chemically ...	1,665
220290	Non-alcoholic beverages (excluding water, fruit or vegetable juices and milk)	1,594
340119	Soap and organic surface-active products and preparations, in the form of bars, cakes, moulded ...	1,593
110220	Maize "corn" flour	1,590
340220	Surface-active preparations, washing preparations, auxiliary washing preparations and cleaning ...	1,448
640220	Footwear with outer soles and uppers of rubber or plastics, with upper straps or thongs assembled ...	1,398
721430	Bars and rods, of non-alloy free-cutting steel, not further worked than hot-rolled, hot-drawn ...	901
100640	Broken rice	727
870333	Motor cars and other motor vehicles principally designed for the transport of persons, incl. ...	720
10290	Live bovine animals (excluding cattle and buffalo)	699

Table V Uganda's top 20 commodities with highest trade effect		
151190	Palm oil and its fractions, whether or not refined (excluding chemically modified and crude)	8,219
252329	Portland cement (excluding white, whether or not artificially coloured)	6,816
170199	Cane or beet sugar and chemically pure sucrose, in solid form (excluding cane and beet sugar ...	6,483
220300	Beer made from malt	2,743
100640	Broken rice	2,653
190531	Sweet biscuits	2,396
721049	Flat-rolled products of iron or non-alloy steel, of a width of ≥ 600 mm, hot-rolled or cold-rolled ...	2,368
110100	Wheat or meslin flour	1,499
730690	Tubes, pipes and hollow profiles "e.g., open seam, riveted or similarly closed", of iron or ...	1,479
271019	Medium oils and preparations, of petroleum or bituminous minerals, not containing biodiesel, ...	1,402
870323	Motor cars and other motor vehicles principally designed for the transport of persons, incl. ...	1,396
731700	Nails, tacks, drawing pins, corrugated nails, staples and similar articles of iron or steel, ...	1,284
721420	Bars and rods, of iron or non-alloy steel, with indentations, ribs, grooves or other deformations ...	1,205
871120	Motorcycles, incl. mopeds, with reciprocating internal combustion piston engine of a cylinder ...	1,036
721041	Flat-rolled products of iron or non-alloy steel, of a width of ≥ 600 mm, hot-rolled or cold-rolled ...	993
940421	Mattresses of cellular rubber or plastics, whether or not covered	876
391723	Rigid tubes, pipes and hoses, of polymers of vinyl chloride	709
200290	Tomatoes, prepared or preserved otherwise than by vinegar or acetic acid (excluding whole or ...	688
220860	Vodka	675
392190	Plates, sheets, film, foil and strip, of plastics, reinforced, laminated, supported or similarly ...	655

EPRC RESEARCH SERIES

Listing of Research Series published since 2010 to date. Full text format of these and earlier papers can be downloaded from the EPRC website at www.eprc.or.ug

Series No.	Author(s)	Title	Date
154	Aida K. Nattabi, Justine Luwedde and Isaac M.B. Shinyekwa	Import Substitution: How do increased import duties in Uganda affect trade, revenue and welfare	November 2020
153	Isaac M.B. Shinyekwa, Enock N.W. Bulime, Aida K. Nattabi	AfricaN Continental Free Trade Area: The potential revenue, trade and welfare effects for the East African Community	July 2020
152	Alemayehu Gedda, Nathan Sunday, Rehema Kahunde, Ezra Munyambonera, Paul Lakuma, Brian Sserunjogi, Isaac Shinyekwa	Export and Import Price Elasticity for Uganda: An Empirical Analysis	July 2020
151	Tonny Odokonyero and Swaibu Mbowa	Potential Productivity and Economic Outcomes from adopting both Agricultural Technology and Extension	December 2019
150	Madina M. Guloba, Tonny Odokonyero, Marios Obwona and Patrick Olowo	Why the Growth of Uganda's Middle Class Matters	December 2019
149	Corti Paul LAKUMA	Income Tax Evasion in Uganda	June 2019
148	Corti Paul LAKUMA	Attracting Investments using Tax Incentives in Uganda: The Effective Tax Rates	April 2019
147	Tonny Odokonyero Gemma Ahaibwe	Financing Indoor Residual Spraying for Malaria prevention in Uganda: Options for cost minimization	March 2019
146	Sserunjogi Brian Paul Corti Lakuma	Court Actions and Boosting Domestic Revenue Mobilization in Uganda	March 2019
145	Corti Paul Lakuma Brian Sserunjogi	The Value Added Tax (VAT) Gap Analysis for Uganda	October 2018
144	The Distributional Impacts of Fiscal Consolidation in Uganda	Corti Paul Lakuma Joseph Mawejje Musa Mayanja Lwanga Ezra Munyambonera	June 2018
143	Ezra Munyambonera Miriam Katunze Martin Luther Munu Brian Sserunjogi	Expanding the Pension Sector in Uganda	May 2018
142	Martin Luther Munu Isaac Shinyekwa	Outcomes of the Nairobi WTO 10th Ministerial Conference: Implications for the EAC Cotton Sector Development	May 2018

Series No.	Author(s)	Title	Date
141	Musa M. Lwanga Ezra F. Munyambonera Madina Guloba	Effectiveness of the Public Payroll Decentralisation Reforms in Uganda	April 2018
140	Musa Mayanja Lwanga Corti Paul Lakuma Brian Sserunjogi Isaac Shinyekwa	Boosting Domestic Revenue Mobilisation In Uganda	April 2018
139	Isaac M.B. Shinyekwa Anita Ntale	The Role of Economic Infrastructure in Promoting Exports of Manufactured Products: Trade Facilitation and industrialisation in the EAC	September 2017
138	Swaibu Mbowe Tonny Odokonyero Anthony T Munyaho	Harnessing Floating Cage Technology to Increase Fish Production in Uganda	July 2017
137	Miriam Katunze Annette Kuteesa Theresa Mijubi Denis Mahebe	Uganda Warehousing Receipt System: Improving Market Competitiveness and Service Delivery	June 2017
136	Tonny Odokonyero Francis Mwesigye Annet Adong Swaibu Mbowe	Universal health coverage in Uganda: The critical health infrastructure, healthcare coverage and equity	June 2017
135	Joseph MAWEJJE Paul C. E. LAKUMA	Macroeconomic Effects of Mobile Money in Uganda	June 2017
134	Madina Guloba Sarah Ssewanyana Elizabeth Birabwa	Rural Women Entrepreneurship in Uganda A synthesis report on policies, evidence, and stakeholders	May 2017
133	Madina Guloba Sarah Ssewanyana Elizabeth Birabwa	A pathway to social protection development in Uganda: A synthesis report	May 2017
132	Isaac M.B. Shinyekwa Francis M. Mwaura Patrick Apecu	A comparative Analysis of the Tourism Sectors in the East African Community: The Way Forward for Uganda	April 2017
131	Corti Paul Lakuma Musa Mayanja Lwanga	Linking budgets to plans in a constrained resource and institutional environment: The Case of Uganda	March 2017
130	Joseph Mawejje Ezra Munyambonera	Financing Infrastructure Development in Uganda	February 2017
129	Isaac M.B. Shinyekwa, Miriam Katunze	Assessment of the Effect of the EAC Common External Tariff Sensitive Products List on the Performance of Domestic Industries, Welfare, Trade and Revenue	September 2016

Series No.	Author(s)	Title	Date
128	Isaac M.B. Shinyekwa Alex Thomas IJJO	Determinants of Domestic Food Price Differentials in Uganda: The Potential for and Constraints on Intra-County Trade	August 2016
127	Musa Mayanja Lwanga Annet Adong	A Pathway to Financial Inclusion: Mobile Money and Individual Savings in Uganda	March 2016
126	Gemma Ahaibwe Corti Paul Lakuma Miriam Katunze Joseph Mawejje	Socio Economic Effects of Gambling: Evidence from Kampala City, Uganda	January 2016
125	Joseph Mawejje Ezra Francis Munyambonera	Tax Revenue Effects of Sectoral Growth and Public Expenditure in Uganda	January 2016
124	Tilak Doshi Fred Joutz Paul Lakuma Musa Mayanja Lwanga Baltasar Manzano	The Challenges of Macroeconomic Management of Natural Resource Revenues in Developing Countries: The Case of Uganda	October 2015
123	Ssewanyana N. Sarah Ibrahim Kasirye	Progressivity or Regressivity in Uganda's Tax System: Implications for the FY2014/15 tax proposals	June 2015
122	Gemma Ahaibwe Ibrahim Kasirye	Creating Youth Employment through Entrepreneurship Financing: The Uganda Youth Venture Capital Fund	May 2015
121	Ezra Munyambonera Musa Mayanja Lwanga	A Review of Uganda's Public Finance Management Reforms (2012 to 2014): Are the Reforms Yielding the Expected Outcomes?	April 2015
120	Joseph Mawejje Musa Mayanja Lwanga	Inflation Dynamics and Agricultural Supply Shocks in Uganda	March 2015



**51, Pool Road, Makerere University Campus,
P. O. Box 7841 Kampala, Uganda
Tel: +256414541023/4 Fax: +256414541022
Email: eprc@eprcug.org,**



www.eprcug.org



TWITTER: [@EPRC_official](https://twitter.com/EPRC_official)



www.facebook.com/EPRCUganda



eprcug.org/blog