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THE EU-SACU ECONOMIC PARTNERSHIP AGREEMENT: RESULTANT TRENDS AND PATTERNS IN SADC INTRA-REGIONAL AGRICULTURAL TRADE FLOWS

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Abstract. The study analyses the effects of the EU-SACU Economic Partnership Agreement (EPA) on intra-regional agricultural trade in the SADC region. Trade data for the SADC region from 1996 to 2020 was utilized. The study used a "before and after" analytical approach, where first, after establishing that intra-regional trade in the region was relatively higher before the EPA compared to the period after the EPA was signed, a gravity model was estimated to identify the determinants of SADC imports from the EU before and after the EPA. The regression showed that GDP and population had positive and significant effects on bilateral trade, while distance and tariffs had negative but not highly significant effects. In conclusion, the results indicated that the EPA was trade-creating, with the SADC having more imports after entering the agreement with the EU.

Keywords: intra-regional trade, economic partnership agreement, agricultural trade, gravity model

INTRODUCTION

Throughout the history of international trade, regional integration has gained recognition. Primarily, countries pursue the idea with a focus on improving trade relations among themselves. According to Baker and Deleplancque (2015), since the establishment of the World Trade Organization (WTO) in 1995, African governments have incorporated regional integration as an integral component of international trade, resulting in them concluding a very large number of Regional Integration Arrangements (RIAs), which comprise substantial membership overlaps.

Southern African countries have also subscribed to the notion of regional integration and are involved in multiple RIAs with the aim of increasing trade between member states. The multiple RIA schemes in the Southern African region include the Southern African Customs Union (SACU) and the Southern African Development Community (SADC). The SACU, which is a more integrated customs union, exists within the SADC region and it comprises South Africa, Botswana, Lesotho, Namibia, and Eswatini, which are often referred to as the BLNS countries (Krapohl and Huut, 2020). The objectives of SACU are spelt out in Article 2 of the treaty establishing the union. The union's goal is not limited only to enhancing the cross-border movement of goods amongst member states but also to establishing democratic and transparent institutions that ensure the promotion of full economic and political convergence and a confederacy on the continent. The treaty also has the objective of promoting fair competition, investment opportunities, economic development, diversification, and industrialization in the union. The anticipated enhanced trade and investment are expected to promote the integration of the member states into the global economy. It is also the aim of the SACU to enable a fair distribution of duty and customs revenue and come up with common policies and strategies (SACU, 2002).

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As the world's oldest customs union, the origins of the SACU date back to what was called the Customs Union Convention (CUC) of 1889 between the British Cape Colony and the Orange Free State Boer Republic (Ngalawa, 2014). In 1893 the CUC was extended to include Botswana and Lesotho, then Eswatini (then Swaziland) in 1903. According to McCarthy (2003) on 29June 1910, another agreement was signed to extend to the Union of South Africa, followed by a renegotiation of the agreement in 1969, leading to the adoption of the name SACU in 1970. During the series of negotiations, before becoming a *dejure* member, Namibia was taken to be a *de facto* member, as its administration was part of South Africa. Following the independence of Namibia in 1990 along with the end of apartheid in South Africa in 1994, the SACU agreement was once more negotiated to start in November 1994, culminating in a new SACU agreement on 21 October 2002 in Gaborone, Botswana, with the primary goal being to promote economic development through the regional coordination of trade (Ngalawa, 2014). McCarthy (2003) highlights the important development in the history of SACU, which is the oldest functional customs union and a building block to the SADC, where South Africa, one of the most powerful economies in the continent, entered into a regional integration arrangement with four much smaller economies, the BLNS.

All the five SACU member states are also members of SADC in their respective individual capacities. The Southern African Development Community (SADC) dates to 1977 with membership evolving over time. Initially, it was called the Southern African Development Co-ordination Conference (SADCC), the outcome of a meeting that was held in Arusha Tanzania in July 1979. The Lusaka declaration was signed on 1 April 1980 in Zambia under the theme, "*Southern Africa: Towards Economic Liberation*" establishing the SADCC comprising Angola, Botswana, Lesotho, Malawi, Mozambique, Eswatini (then Swaziland), Zambia, and Zimbabwe (SADC, 2017). In July 1981, the SADCC adopted a more formal status of a Memorandum of Understanding (MOU) and this became the subject of a meeting that convened in Harare, Zimbabwe, where it was agreed that it would become a legal entity in the form of a treaty as opposed to the initial MOU status. This therefore led to the SADCC being changed to the Southern African Development Community (SADC) on 17 August 1992 in Windhoek, Namibia, after the signing of the SADC Treaty. The Treaty was signed with the objective of creating a development community that would achieve economic integration in the whole of Southern Africa through increased intra-regional trade.

SADC countries, some in their individual capacity, entered into various trade agreements aimed at attaining reciprocal trade liberalization among themselves as well as with countries in other regions.

One such agreement is the Economic Partnership Agreement (EPA) with the European Union (EU) which was established upon the principle of reciprocal trade liberalization, where both parties, that is the EU and the African countries, were required to keep their domestic markets open for imports (Krapohl and Huut, 2020). EPAs are mutual trade agreements between the EU and some regional groupings in the African, Caribbean and Pacific (ACP) countries with a primary objective of committing to trade liberalization. They are a replacement of four-decade-old trade arrangements between the EU and the ACP countries, in which the ACP countries freely accessed the EU market with no mutual obligation to liberalize their own markets. The nature of the agreement allows ACP countries to be exempt from liberalization products that they deem sensitive in order to take account of their level of development (Berends, 2016).

This article is an attempt to empirically collate, analyse and evaluate trade between the selected SADC countries and the EU as well as among themselves. The evaluation focused on agricultural trade, specifically maize and rice for the period 1995 to 2020. The period covers the five years prior to the EPA negotiations all the way through to 2020, which means after the signing of the EPAs by parties involved. For the sake of the study, the trade analysis involved Germany, France, Italy, Netherlands, United Kingdom, Sweden, Spain, Belgium, and Austria as representatives of the EU. These countries have been considered to be the major SADC trading partners of the EU (WITS, COMTRADE, 2022). Anticipated changes in trade flows were analysed from the year 2016, when the economic partnership agreement was signed. Signing the EPA followed adherence to tariff reduction commitments by signatories as espoused in the agreement. The agreement was signed on 10 June 2016 and came into force on 10 October 2016 and the agreed upon market access provisions effectively came into force on 1 November 2016 (Wesgro & Tralac, 2018).

DATA AND METHODS

Description of the study area

The study concentrated on the SADC region in Southern Africa. In terms of trade, there are some similarities in the profiles of the SADC countries, as well as some differences. The region has five landlocked countries (Botswana, Zimbabwe, Zambia, Lesotho, and Eswatini) and three island countries that lie in the Indian Ocean (The United Union of the Comoros Islands, Mauritius, and Seychelles). Out of the sixteen SADC countries, Botswana, Lesotho, Namibia, Eswatini and South Africa form the SACU region and have their external common tariff. As a way of determining intra-regional trade patterns, the difference in languages used in the SADC region is also an important variable, since it facilitates trade between countries. The region has three main official languages: French is used by DRC, Seychelles, Madagascar, Mauritius, and Comoros, while Angola and Mozambique use Portuguese. The remaining SADC countries use English. Another important variable of the study is population, since it determines the size of a market, thus contributing to the gravitational mass of the trading countries. The total population of SADC was estimated at 345.2 Million in 2018 with the DRC and South Africa being the highest populated countries with 91.7 million and 57.7 million people, respectively (SADC, 2018). As of 2018, the least populated country was the Seychelles with an estimated 97,000 people.

Data and Data Sources

The study was confined to agricultural trade, specifically maize and rice in the SADC region for the period 1995 to 2020. The research used secondary data and the data used was obtained mainly from the SADC trade database, the World Integrated Trade Solution (WITS), COMTRADE (trade data in thousands of metric tonnes) and FAOSTAT.

Due to the possibility of inconsistencies in data availability when both exporting and importing countries report trade flows with differences, the study used credible and accurate data obtained through the CEPII-BACI Database (Centre d'Etudes Prospectives et d'Informations Internationales Base pour l'Analyse du Commerce International") to complement that from the UN COMTRADE. Brewer et al. (2020) assert that the BACI database significantly adds value to the UN COMTRADE through filling gaps with reporting differences. It utilizes mirror data to provide a more complete and coherent set of trade flows. The main advantages of BACI data, in comparison to other similar databases, are its wide product and geographical coverage (Gaulier and Zignago, 2012).

Of the sixteen SADC countries, eight were used in the study. These are Botswana, Namibia, Eswatini, and South Africa to represent the SACU region, then Zimbabwe, Malawi, Tanzania, and Zambia to represent the non-SACU countries of SADC. Due to inconsistencies in the reporting of trade data, Lesotho, Angola, DRC, and Mozambique were left out of the study. The small island nations, Mauritius, Madagascar, Comoros, and Seychelles were also left out because of their unique trading challenge of connectivity to the mainland SADC countries.

Progression of Intra-SADC Trade versus SADC-EU Trade

Intra-regional trade in the SADC and extra-regional trade with the EU during two periods, that is, two years after the start of negotiations of the EU-SACU EPA and two years after signing of the Economic Partnership Agreement is analysed in Table 1. This was to give an indication of whether signing the EPA agreement resulted in a significant shift in the trade patterns. Intra- and extra-regional trade is in this case measured as percentages of the total trade of the selected countries.

A comparison of intra-regional agricultural trade in the SADC versus its trade with the European Union shows that during the initial years of the EU's negotiations with the SADC EPA group, the average percentage of intra-regional trade in the region was relatively higher (53.6%) than after the EPA was signed. The average percentage of extra-regional trade between the SADC with the EU also increased (4.7%) after the signing of the agreement compared to the period before signing.

Table 1 shows that for countries outside the SACU, the shift from intra-SADC trade to extra-regional trade did not affect them, as the percentages of intra-regional trade to total trade even increased after the agreement came into force. This is also as suggested by Deme and Ndrianasy (2017), namely that smaller economies in an RTA tend to rely on each other than relying on extra-regional trade, thus leaving bigger economies to rely more on trade with externals like the EU. Additionally, according to Hulse (2020), intra-regional trade in most regions with FTAs in Africa has remained fairly small and

Table 1. Comparison of SADC intra-regional trade and extra-regional trade with the EU, 2004 and 2018

	Total agricultural trade (1000 USD) in 2004	Intra-SADC agricultural trade (% of total trade)	Agricultural trade with the EU (% of total trade)
South Africa	1,909,278.0	11.4	8.7
Botswana	375,591.2	98.7	0.1
Namibia	287,524.1	87.4	3.1
Eswatini	225,850.2	84.4	
Zimbabwe	659,994.7	73.7	5.7
Zambia	147,910.9	77.5	2.6
Tanzania	348,942.9	7.4	3.3
Malawi	162,890.7	35.7	1.5
Total	4,117,983.0	59.5	3.1
	Total Agricultural Trade (1000 USD) in 2018	Intra-SADC Agricultural Trade (% of total trade)	Agricultural Trade with the EU (% of total trade)
South Africa	4,461,866.4	13.8	12.7
Botswana	491,011.0	98.6	0.1
Namibia	605,255.5	78.5	4.7
Eswatini	322,669.8	63.6	0.6
Zimbabwe	646,183.7	48.1	7.6
Zambia	400,307.2	78.1	2.8
Tanzania	576,907.1	10.7	7.0
Malawi	226,784.4	37.3	1.7
Total	7,730,985.0	53.6	4.7

Source: The World Integrated Trade Solution (UN COMTRADE), 2022.

as much as there has been liberalization of trade within the regions, no meaningful gains have been noted. This has resulted in greater motivation towards extra-regional integration, particularly with European countries.

Was the EPA agreement trade creating or diverting?

Tariff reductions by the SADC-EPA group came into effect in line with the provisions of Article 23 (paragraphs 3 and 4) of the EPA between the EU and the SADC EPA States.

This article states that the Most-Favored-Nation (MFN) duty rate that is applicable on the date of entry into force of the agreement shall be the basic duty against which tariff reduction commitments apply for each product. The provisions of the article in question further elaborate state either the rate of duty applicable on the agreement's entry into force or the rate of duty that is applied when a relevant tariff reduction schedule is initiated will be used, depending on which one is lower.

This article sought to establish whether the agreement brought about trade creation or trade diversion in the SADC region. In light of the assertion by Pfaffermayr (2020) that it is much easier and more straight-forward to measure the effects of trade creation than trade diversion, the study focused on trade creation effects.

Trade creation is defined by Matoo, Mulabdic and Ruta (2019) as an improvement in the welfare of

member states that join a free trade area through the reduction of tariffs, thereby lowering prices. Ultimately, trade that would otherwise not have existed is created, as a more efficient producer supplies a product.

An integral part of the analysis was the presentation of the trends of MFN and preferential tariff rates imposed on merchandise trade between selected SADC and EU countries. The practicality that some exporters use MFN tariff rates while others use preferential tariff rates at the same time was described by Hayakawa and Yoshimi (2020) as the tariff heterogeneous regime. Table 2 shows how tariff reductions evolved over the period of the review.

For countries outside the SACU FTA, meaning Tanzania, Zimbabwe, Zambia and Malawi, there is no preferential tariff throughout the period. This thereby results in the MFN tariff rate being the preferential tariff, because, as highlighted by Hayakawa and Yoshimi (2020), in the absence of any RTA regime, the MFN tariffs will represent the RTA tariffs as applied tariff rates. This also applies even to the SACU countries before the signing of the Economic Partnership Agreement. Table 2 shows that SACU countries started applying tariff liberation commitments in 2016 after signing the EPA and the tariffs have been decreasing yearly. For South Africa, preferential tariff rates have been in place since 2001 after the country signed the TDCA agreement with the EU in 2000.

Statistical significance in the change in Intra-SADC trade, Welch's unequal variance t-test

For the analysis on whether there was a statistically significant difference in the trade patterns before and after the EU-SADC EPA came into effect, data was obtained for total exports within the SADC and total exports to the EU. Data was collected from 2010 to 2020, which is 6 years before and 5 years after the EPA came to force. Table 3 shows the intra-regional and EU export data including the mean and variances to determine the t-test to use.

The differences or similarities in variances inform the appropriateness of the t-test method for comparing means (Ruck et al., 2018). Table 3 presents descriptive statistics of the export figures during the period 2010 to 2020 and the results show unequal variances. In such an instance of difference in the number of observations and variances of two independent data sets, Awata et al.

Table 2a. MFN and EPA preferential tariff rates for Agricultural Products in 1995–2008 (%)

Importer	EU	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
South Africa	MFN		11.4	9.1		8.8	8.6	9.0	8.7	7.9	8.8	8.5	8.5	9.0	8.7
	PRF	←		MFN			→	9.1			4.2	7.3	6.5	5.8	4.5
Botswana	MFN							15.1	11.0		9.4	10.1	10.4	13.4	12.9
	PRF	←						MFN							→
Namibia	MFN							12.7	12.8		11.9	10.1	10.9	11.1	10.9
	PRF	←						MFN							→
Eswatini	MFN							14.4	13.0		11.2	12.1	12.0	11.8	9.9
	PRF	←						MFN							→
Zimbabwe	MFN		40.7	25.5	26.2	28.7	24.6	17.7	23.3	19.3				26.8	
	PRF	←						MFN							→
Zambia	MFN			16.2				18.4	19.2	19.9	18.7	19.5	19.2	19.3	19.6
	PRF	←						MFN							→
Tanzania	MFN			30.9	30.6		19.7			19.9		22.3	22.2	22.0	22.1
	PRF	←						MFN							→
Malawi	MFN		30.9	26.2	21.8		16.6	18.6		18.3			17.0		16.8
	PRF	←						MFN							→

Table 2b. MFN and EPA preferential tariff rates for Agricultural Products in 2009–2020 (%)

Importer	EU	2009	2010	2011	2012	2013	2013	2014	2015	2016	2017	2018	2019	2020
South Africa	MFN	8.7	8.3	8.4	8.3	8.2	7.9	8.1	8.2	7.9	8.9	8.6	8.6	8.7
	PRF	3.9	2.3	1.4	0.2	0.3	0.2	0.3	0.2	0.3	0.3	0.3	0.3	3.9
Botswana	MFN	13.1	12.9	12.7	12.7	12.9	12.5	12.2	13.6	17.8	15.3	13.4	13.2	13.1
	PRF	← MFN →								0.0	0.0	0.7	0.9	
Namibia	MFN	10.3	10.3	10.5	10.3	9.6	9.3	9.6	10.2	10.2	12.1	12.1	11.0	10.3
	PRF	← MFN →								0.5	0.4	0.4	0.5	
Eswatini	MFN	11.0		11.0		11.0		11.0		11.0		11.0		11.0
	PRF	9.2		9.2		9.2		9.2		9.2		9.2		9.2
Zimbabwe	MFN		25.4	26.0	26.5			21.1	23.0					
	PRF	← MFN →												
Zambia	MFN	19.7	20.1	19.9	20.5	20.8		20.5	20.5		20.3		20.0	19.7
	PRF	← MFN →												
Tanzania	MFN	22.3	22.2	22.1	22.9	22.8	22.2	21.8	22.3		23.9	24.1	24.1	22.3
	PRF	← MFN →												
Malawi	MFN	16.8	18.4	18.9	19.4	19.4		20.0	21.2			13.2	19.6	16.8
	PRF	← MFN →												

Source: World Integrated Trade Solution (UNCTAD TRAINS), 2022.

Table 3. SADC intra-regional and EU exports including means and variances

Year	EU	SADC
2010	19,124,242.37	21,081,004.26
2011	21,423,767.27	25,417,779.59
2012	18,735,795.10	26,774,355.74
2013	16,095,924.83	28,163,195.26
2014	13,988,767.56	26,547,118.36
2015	13,269,476.44	23,950,769.36
Mean	17,106,328.93	25,322,370.43
Variance	10,165,790,170,032.30	6,311,626,782,327.86
2016	13,729,592.32	22,019,553.25
2017	15,033,942.03	21,697,180.70
2018	17,666,829.58	21,784,472.77
2019	16,848,903.72	21,059,180.48
2020	15,803,867.60	18,662,662.05
Mean	15,816,627.05	21,044,609.85
Variance	2,364,329,288,873.16	1,899,412,023,509.85

Source: own computation based on data from World Integrated Trade Solution (UNCTAD TRAINS), 2022.

Table 4. Descriptive statistics on exports to the EU and intra-regionally, 2010–2020

	Time	N	Mean	Std. Deviation	Std. Error Mean
Export_EU	Before EPA	6	17106328.93	3188383.629	1301652.166
	After EPA	5	15816627.05	1537637.566	687652.424
Export_SADC	Before EPA	6	25322370.43	2512295.124	1025640.189
	After EPA	5	21044609.85	1378191.579	616346.011

Source: own computation from SPSS 28.

(2022) recommends the use of Welch's unequal variances t-test, which is represented by the formula:

$$t = \frac{\left(\overline{x}_1 - \overline{x}_2\right)}{\sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}}} \quad (1)$$

where:

$\overline{x}_1$ and $\overline{x}_2$ are the averages of the two independent data sets;

s_1^2 and s_2^2 are the variances of the two independent data sets; and

n_1 and n_2 are the respective number of observations in each data set.

with the degrees of freedom (*df*) being:

$$df = \frac{\left(\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}\right)^2}{\frac{\left(\frac{s_1^2}{n_1}\right)^2}{n_1 - 1} + \frac{\left(\frac{s_2^2}{n_2}\right)^2}{n_2 - 1}} \quad (2)$$

Welch's unequal variance test was performed using the SPSS package to test the hypothesis on whether or not the two data sets (before EPA 2016 and after EPA 2016) have equal means, given that the variances and sample sizes are not equal.

The t-test is performed in the notion that the null hypothesis (H_0) assumes no statistically significant difference in the mean of the export values reported before and after coming into force of the EPA. The alternative hypothesis (H_1) assumes a statistically significant difference in the means for the two data sets. Table 4 shows the SPSS outcome, indicating the descriptive statistics on the data obtained, while Table 5 shows the independent sample t-tests results from SPSS.

From Table 5, the highlighted columns show the t-scores, the degrees of freedom for the two groups and the p-values, which correspond to the t-values at the respective degrees of freedom. The p-values, according to Spanton and Berry (2020), are used to determine if there is a significant difference in the means or not by checking whether it is lower than 0.05. The results of the analysis show that for SADC's exports to the EU, there was no statistically significant difference between the period before and the period after adopting the EPA agreement, since the p-values are greater than the 0.05 limit. However, the results show that the p-values for Intra-SADC exports were lower than 0.05, implying a statistically significant difference in the means of exports between the two time periods under review, thereby entailing a substantial effect on intra-SADC trade. Section 4.4.2 will analyse the effect of the noted changes in intra-SADC trade to determine if the EPA agreement was trade creating from diverting.

Exploratory estimation on the possibility of trade creation

An empirical analysis of determining trade creation was performed using regression analysis. According to Popović (2019), regression is a tool that establishes a cause and effect explanation between some dependent and independent variables through the use of estimations, data simulations and predictions of the outcomes. Kamga (2019) describes trade creation as an increase in the supply of goods from a more efficient producer upon entering an FTA and it has a welfare-improving effect through eliminating tariffs and reducing prices. It is opposed to trade diversion, which entails diverting trade from a supplier who produces efficiently but outside an FTA to one in an FTA but who produces less efficiently. A gravity model was developed using the

Table 5. Inferential statistics – independent samples t-test (Welch's t-test) for equality of means, before and after the EPA

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
exportEU	Equal variances assumed	4.880	0.055	0.823	9	0.432	1289701.878	1567197.248	–2255544.60	4834948.358
	Equal variances not assumed			0.876	7.455	0.408	1289701.878	1472129.144	–2148758.58	4728162.338
exportSADC	Equal variances assumed	1.520	0.249	3.387	9	0.008	4277760.578	1263026.352	1420596.470	7134924.687
	Equal variances not assumed			3.575	7.965	0.007	4277760.578	1196586.898	1516309.453	7039211.703

Source: own computation from SPSS 28.

imports of agricultural products from selected EU countries to selected SACU countries. All the variables in the model are expressed in the natural logarithm form, which Araiza-Aguilar, Rojas-Valencia and Aguilar-Vera (2020) describe as a tool that moderates skewed data to being more normally distributed, thereby achieving constant variance.

A standard gravity model incorporates variables that estimate an importer's ability to import, an exporter's ability to export and also trade resistance between the trading partners (Chen, 2017). This ordinarily implies that bilateral trade between two parties is dependent on the incomes of the trading partners and is decimated by the distance between them. However, to fully capture all the factors involved in bilateral trade, Braha et al. (2017) suggest including various other factors such as a common border and language, exchange rates and tariffs. In addition to the standard variables, namely GDP and distance, this study has incorporated population and tariffs. Panel data was used for estimations using the gravity model through the Ordinary Least Squares (OLS). The data, similar to its treatment by Gauto (2012), was pooled over two time periods, which were six years before the EPA and five years after the EPA, in order to ascertain any possibility of trade creation following the agreement. For the sake of the gravity model, South Africa, which according to Berger and Schwab (2020) contributes over 80% of the SACU EPA trade with the EU, represented the SACU region together with Botswana, Namibia and Eswatini. In this section, Lesotho was left out due to inconsistencies in reporting data, particularly tariff data.

The gravity model for imports of agricultural products (AgIm) was estimated as follows:

$$\begin{aligned}\ln AgIm_{xyt} = {} & \vartheta_0 + \vartheta_1 \ln GDP_{xt} + \vartheta_2 \ln GDP_{yt} + \\ & + \vartheta_3 \ln Pop_{xt} + \vartheta_4 Pop_{yt} + \vartheta_5 \ln DIST_{xy} + \vartheta_6 \ln RER_{xt} + \\ & + \vartheta_7 \ln NTM_{xy} + \vartheta_8 \{(1 - FTA_{xyt}) \cdot (1 + MFNrate_{xt})\} + \\ & + \vartheta_9 \{FTA_{xyt} \cdot (1 + PTRrate_{xyt})\} + \varepsilon_{xyt}\end{aligned} \quad (3)$$

where:

- ln – is the Natural Logarithm;
- x – represents the importing countries, i.e. the selected SACU countries; South Africa, Botswana, Namibia and Eswatini;
- y – represents the exporting countries, i.e. the selected EU countries, Germany, France, Italy, Netherlands, United Kingdom, Sweden, Spain, Belgium, and Austria;
- t – is the time in years, i.e. period 2010, 2011, 2012, …, 2018, 2019, 2020;
- ϑ_0 – is a constant;
- $\vartheta_1 – \vartheta_9$ – represent the coefficients of variables under study;
- ε – is the error term.

In the variable $(1 – FTA_{xyt}) \cdot (1 + MFNrate_{xt})$ the time variant MFN rate "$MFNrate_{xt}$" is a rate that applies to all

Table 6. Variable descriptions, expected effects and data sources

Variable	Variable representation	Variable description	Expected sign (effect)	Period	Data Source
Agricultural Imports	$\ln AgIm_{xyt}$	the dependent variable, it represents the value of imports of agricultural products to the selected SACU countries from the selected EU countries. (in million USD)		2010–2020	United Nations Commodity Trade Statistics Database (UN-COMTRADE)
GDP (reporter)	$\ln GDP_x$	the Gross Domestic Product of the reporter countries, it represents the economic size	+	2010–2020	World Bank & CEPII
GDP (partner)	$\ln GDP_y$	the Gross Domestic Product of the partner countries, it represents the economic size	+	2010–2020	World Bank & CEPII
Distance	$\ln DIST_{xy}$	the distance of trading partners and it denotes trade resistance between the countries;	-	2010–2020	Centre d'Etudes Prospectives et d'Informations Internationales (CEPII) geodist & gravity database
Population (reporter)	$\ln Pop_{xt}$	Population of the reporter countries	+/–	2010–2020	CEPII
Population (partner)	$\ln Pop_{yt}$	Population of the partner countries. represents consumption of agricultural products in the importing countries and was used as a proxy to denote demand of the agricultural products therefore consumption	+	2010–2020	CEPII
Real Exchange Rate	$\ln RER_{xt}$	represents the Real Exchange Rates which is an important variable to consider especially in light of the fluctuation in prices during trade transactions, caused by the exchange rates. However, the variable was not estimated due to inconsistencies in availability of data.			
Non-Tariff Measures	$\ln NTM_{xy}$	a variable for the Non-Tariff Measures that can be introduced as countries trade in an FTA. NTMs increases trade resistance and failure to capture them may result in biased estimates for variables of tariffs. However, as much as Costantiello, Laureti and Leogrande (2021) maintain that NTMs remain very much a significant hindrance to trade in the region, authors like Kalaba (2014) and Khalid et al. (2021) have asserted on the diverse nature of these trade restricting measures and therefore the difficulties associated with quantifying them. In the aforementioned model, NTMs was incorporated as a dummy variable to indicate if the importing countries have imposed any NTM or not;	–	2010–2020	
Most Favored Nation (MFN) and Preferential (PRF) trade rates	*MFN* and *PRT*	Variables used to indicate if the rate applied at the period was MFN (if there is no FTA) of Preferential (in the presence of an FTA agreement, in this case EPA). Tariffs are considered as trade costs.	+/–	2010–2020	United Nations Conference on Trade and Development (TRAINS)

Source: own elaboration.

exporters not in the FTA, therefore the coefficient "ϑ_8" captures the changes in imports of agricultural products by changes in MFN tariff rates.

For $FTA_{xyt} \cdot (1 + PRTrate_{xyt})$ the time variant PRT rate $PRTrate_{xyt}$ is the preferential export tariff rate that applies to an exporting country in the FTA.

In both terms, FTA_{xyt} is a dummy variable which indicates whether the exporting and importing countries are in an FTA. If the two parties are in an FTA, the value 1 is assigned to the variable and if they are not in an FTA, "0" is assigned. This mathematically leaves $(1 + MFNrate_{xt})$ and $(1 + PRTrate_{xyt})$ if trading countries are not in an FTA and if they are in an FTA, respectively. As with the study by Obasaju et al. (2019), the tariffs were averaged over the two periods, 2010–2015 and 2016–2020.

The variables, their descriptions, expected effects and sources are summarized in Table 6.

Table 7 shows the countries from which the selected SACU countries imported agricultural products from as well as the variables in logarithm form used for analysis of ascertaining trade creation after the EPA agreement.

Table 7. Regression input-average imports, GDP, population, distance and tariffs as natural logarithms (Ln), 2010–2020

2010–2015 Before the EPA											
	$\ln AgIm_{xyt}$	$\ln GDP_y$	$\ln Pop_{yt}$	$\ln DIST_{xy}$				Import tariff			
Country:				S. Africa	Botswana	Namibia	Eswatini	S. Africa	Botswana	Namibia	Eswatini
Germany	19.4921	28.9152	18.2126	9.08578	9.06958	9.03195	9.09889	0.94170	6.5300	10.1833	8.4483
France	19.0162	28.6295	18.0027	9.07025	9.0505	8.99776	9.08777	1.15830	8.3833	11.8850	12.0150
U. Kingdom	19.6866	28.6214	17.9732	9.10869	9.08954	9.03774	9.12570	0.89670	13.7833	14.1550	9.2500
Italy	18.7044	28.3748	17.9086	8.94864	8.92849	8.88029	8.96584	1.27330	18.1967	14.1200	20.0333
Netherlands	19.4844	27.4560	16.6356	9.10297	9.08496	9.03862	9.11847	0.79830	11.9450	10.1133	17.7200
Belgium	18.3338	26.9455	16.2251	9.08690	9.06825	9.01977	9.10311	0.91000	11.1267	9.6683	9.4567
Spain	18.9175	27.9487	17.6573	8.99591	8.97150	8.90034	9.01892	1.29500	8.7467	11.2950	13.8000
Sweden	16.055	24.0116	19.0174	9.16045	9.14699	9.11777	9.17057	1.51670	17.7783	22.5380	0.0000
Austria	17.3765	26.7435	15.9531	9.02581	9.00908	8.97189	9.03925	1.11670	21.6667	18.3333	19.0000
2016–2020 After the EPA											
	$\ln AgIm_{xyt}$	$\ln GDP_y$	$\ln Pop_{yt}$	$\ln DIST_{xy}$				Import tariff			
Country:				S. Africa	Botswana	Namibia	Eswatini	S. Africa	Botswana	Namibia	Eswatini
Germany	19.3392	28.9565	18.2347	9.08578	9.06958	9.03195	9.09889	0.582	3.976	2.862	2.394
France	19.1668	28.6014	18.0144	9.07025	9.0505	8.99776	9.08777	0.63	4.24	3.568	4.8525
U. Kingdom	19.399	28.6413	18.0138	9.10869	9.08954	9.03774	9.1257	0.538	2.784	4.398	2.988
Italy	18.7385	28.3039	17.9128	8.94864	8.92849	8.88029	8.96584	0.81	2.582	4.722	4.476
Netherlands	19.3753	27.4894	16.6587	9.10297	9.08496	9.03862	9.11847	0.468	6.0925	2.878	4.97
Belgium	18.4686	26.9645	16.253	9.0869	9.06825	9.01977	9.10311	0.378	2.342	3.54	5.3767
Spain	19.0332	27.915	17.66	8.99591	8.9715	8.90034	9.01892	0.826	3.035	2.896	8.4367
Sweden	16.152	21.0073	19.1285	9.16045	9.14699	9.11777	9.17057	0.912	12.5933	7.416	0
Austria	17.553	26.781	15.9964	9.02581	9.00908	8.97189	9.03925	0.42	0	3.736	6.6667

Source: own computations from World Integrated Trade Solutions (COMTRADE-WITS), The World Bank, United Nations Conference on Trade and Development (TRAINS) and CEPII (BACI Database), 2022.

With the exception of distance, regression data presented in Table 7 was generated by averaging the variables considered for the gravity model. Time-averaging of regression data was recommended by Machado and Santos Silva (2001), as they further acknowledged that the method improves efficiency in estimation through weighted least squares. The authors go on to note that problems faced in the use of averaged data are almost similar to those encountered in the use of stratified data. Averaged data is usually generated from time series data and the process of averaging is necessary because, according to Schneider, Stuart and Wu (2022), it removes any mismatches between the generated model and the data usually collected over small time periods, which was the case in this particular study.

RESULTS AND DISCUSSIONS

Table 8 presents the regression outputs for imports of agricultural products from selected EU countries to the SACU countries considering GDP, population, distance and import tariffs as explanatory variables.

Table 8. Regression output – Pre and Post EPA Period, 2010–2020 using OLS estimation

Explained Variable: Agricultural imports ($\ln AgIm_{xyt}$), Before EPA 2010–2015				
Variables	South Africa	Botswana	Namibia	Eswatini
Constant	30.9806	–34.4905	–24.2871	–80.1572
$\ln GDP_y$	0.4110	0.7290	0.5865	0.7621
$\ln Pop_{yt}$	0.3670	–0.1298	0.0206	0.0279
$\ln DIST_{xy}$	–2.9433	3.9421	3.0695	8.4415
Import tariff	–3.1527	–0.0302	–0.0938	0.0497
N (No. of observations)	9	9	9	9
Prob > F	0.0129	0.0257	0.0162	0.0202
R Squared (R^2)	0.9330	0.9044	0.9247	0.9156
Adjusted R Squared	0.8659	0.8088	0.8493	0.8313
Mean Variation Inflation Factor (VIF)	8.35	1.80	2.23	3.02
Explained Variable: Agricultural imports ($\ln AgIm_{xyt}$), After EPA 2016–2020				
Variables	South Africa	Botswana	Namibia	Eswatini
Constant	–123.0525	–2.6801	–16.8391	–52.0987
$\ln GDP_y$	0.6962	0.6255	0.3664	0.4664
$\ln Pop_{yt}$	–0.7851	–0.1918	0.2291	0.2104
$\ln DIST_{xy}$	14.6569	0.7502	2.4884	5.9356
Import tariff	5.8442	0.1995	–0.2383	0.0914
N (No. of observations)	9	9	9	9
Prob > F	0.0018	0.0031	0.0205	0.0157
R Squared (R^2)	0.9754	0.9677	0.9149	0.9257
Adjusted R Squared	0.9508	0.9353	0.8298	0.8514
Mean Variation Inflation Factor (VIF)	9.13	3.66	3.29	2.26

Source: own computation from STATA 14.

Diagnostic tests

To validate the regression output, diagnostic checks were conducted with a particular focus on model specification, heteroscedasticity and multicollinearity. The multicollinearity check looked at the possibility of there being a linear perfect relationship in the explanatory variables. A regression model that is characterized by high multicollinearity will result in inflated variances and unstable estimation outcomes (Senaviratna and Cooray, 2019). Multicollinearity was checked using the variance inflation factor (VIF) in STATA and in both regressions - before and after the EPA agreement (Table 8) – the VIF figures for all the SACU countries are below 10. According to Timsina and Culas (2020), such values below 10 indicate that there is no possibility of redundancy in the explanatory variables used, meaning that there are no two or more variables which measure the same thing.

Model specification was also checked to ascertain if there is an omission of relevant predictors or inclusion of irrelevant predictors in the regression model. Sunde and Ogbokor (2018) note that omitting a variable inflates the error term due to the obtained variance being ascribed to missing variables, thereby producing the wrong estimation results.

To check for model fit, namely how well the model used the predictors to estimate the dependent variable, Table 8 shows the R^2 values. South Africa, Botswana, Namibia and Eswatini had values of 0.93, 0.90. 0.92, and 0.92, respectively for pre-EPA and 0.98, 0.97, 0.91 and 0.93, respectively for the post-EPA period. According to Ali, Ormal and Ahmad (2018), these coefficients of determinants are the dependent variables' fractions of variation explained by the independent variables. This implies that for all the SACU countries the predictors estimated more than 90% of the countries' imports from

Table 9. Model specification checks, before and after the EPA

"linktest"				
Before EPA 2010–2015				
	South Africa	Botswana	Namibia	Eswatini
N	9	9	9	9
p-value for variable of squared prediction (hatsq)	0.55	0.60	0.63	0.65
After EPA 2016–2020				
	South Africa	Botswana	Namibia	Eswatini
N	9	9	9	9
p-value for variable of squared prediction (hatsq)	0.71	0.54	0.60	0.67
"ovtest"				
Before EPA 2010–2015				
	South Africa	Botswana	Namibia	Eswatini
N	9	9	9	9
Prob > F	0.55	0.66	0.87	0.28
After EPA 2016–2020				
	South Africa	Botswana	Namibia	Eswatini
N	9	9	9	9
Prob > F	0.41	0.52	0.16	0.05

Source: own computation from STATA 14.

the EU for both periods of review. The significance of the models is also shown by the "Prob>F" values, which were lower than 0.05 for all the selected SACU countries before and after the EPA, reflecting a lower likelihood of variables being omitted that could have been used to explain the bilateral trade.

Following the regression conducted, Regression Specification Error Tests (RESET) were conducted, specifically the "linktest" and the Omitted Variables Test (ovtest) on STATA to check for any specification issues. Table 9 shows the "linktest" and "ovtest" model specification outputs for the two regressions, which means before and after the EPA.

From the STATA outputs shown in Table 9 both the "linktest" and "ovtest" for the SACU countries have p-values that are greater than 0.05 and that implies that in both models the tests do not reject the hypothesis that both models are correctly specified. Therefore, predictors in the model predicted the dependent variable reliably.

To check for constancy in the variance of the predictors, heteroscedasticity was also tested. Table 10 shows the heteroscedasticity test outputs for the regressions performed for the periods before and after the EPA agreement.

The tests for heteroscedasticity were conducted using the Whites (imtest) and the Breusch-Pagan (hettest). The p-value is also used to establish whether the variances in the predictors are heterogeneous or not, where a small p-value indicates heteroscedasticity. In both cases, the p-values are greater than 0.05, indicating that there was no heteroscedasticity.

Discussion

This study looked at how the EU-SACU Economic Partnership Agreement impacted agricultural intra-regional trade in the SADC region. The study found out that intra-regional trade in the region was relatively higher before the EPA compared to the period after the EPA was signed. The determinants of this outcome were estimated using the gravity model of international trade. In line with the gravity model's expected outcomes, the results showed that GDP and population had positive and significant effects on bilateral trade, while distance and tariffs had insignificant but negative effects. Various authors observed similar findings when analysing bilateral trade. In a study that used the augmented gravity model to analyse how regional economic integration affects regional trade in Africa, Mohammed and Magai (2019) found a positive relationship between GDP and intra-African trade. Using the gravity model for estimating bilateral trade potential between Pakistan and China, Irshad et al. (2018) also found that GDP coupled with trade openness makes a great contribution to bilateral trade in the Pakistan–China Free Trade Agreement (PCFTA), while distance was found to decimate the prospects of bilateral trade in the FTA. Other authors, like Kabamba (2020) and Mhaka (2018), have also found a positive correlation between bilateral trade and GDP, and a statistically significant negative effect on bilateral trade induced by distance, which is a proxy of the transportation costs involved. Using the Ordinary Least Squares (OLS), Fixed Effects, Random Effects,

Table 10. Heteroscedasticity test – before and after the EPA

Before EPA 2010–2015				
	South Africa	Botswana	Namibia	Eswatini
The Cameron-Trivedi's decomposition of IM-Test for heteroscedasticity (p-value)	0.3894	0.4258	0.4713	0.5118
The Breusch-Pagan test for heteroscedasticity (Prob>chi^2)	0.8166	0.5482	0.2845	0.8949
After EPA 2016–2020				
	South Africa	Botswana	Namibia	Eswatini
The Cameron-Trivedi's decomposition of IM-Test for heteroscedasticity (p-value)	0.5514	0.5631	0.4505	0.2952
The Breusch-Pagan test for heteroscedasticity (Prob>chi^2)	0.8859	0.5557	0.6603	0.9417

Source: own computation from STATA 14.

Heckman and Poisson Pseudo-Maximum Likelihood Estimator models, Dadakas, Ghazvini Kor, and Fargher (2020) found that both importer and exporter GDPs had significantly positive impacts on bilateral trade, whereas distance negatively impacted trade in their study conducted to examine the trade potential of the United Arab Emirates (UAE).

Umair, Sheikh, and Tufail (2022) applied the Hecksher-Ohlin model in conjunction with the gravity model to ascertain bilateral trade between Pakistan and thirteen other countries. Their findings revealed that GDP contributes to a significantly positive effect on the volume of bilateral trade, while population adversely reduces the volume of bilateral trade.

As shown in Table 8, the findings of this study are in agreement with the laws of the gravity model, which describe GDP growth as a proxy for economic growth with an increase in bilateral trade being the result (Edeme and Nkalu, 2020). These findings are also in line with the Hecksher-Ohlin factor endowment theory where, according to Gaspar (2020), a country exports goods in which it has abundant factors of production. The EU has evolved to be endowed with capital over the two time periods of review and gradually exports of agricultural commodities to South Africa have increased.

The estimation results show positive and significant coefficients for the EU GPD's impact on exports to the SACU. The coefficients in Table 8 show that a 1% increase in the EU's GDP before the EPA resulted in 0.41%; 0.73%; 0.59%; and 0.76% increases in the agricultural exports to South Africa, Botswana, Namibia and Eswatini, respectively. For the same countries, a 1% increase in the GDP of the EU after the EPA resulted in 0.67%, 0.63%, 0.37%, 0.47% increases in EU agricultural exports to them. Before the EPA, however, the effect of GDP was much more pronounced for exports to the smaller SACU economies of Botswana, Namibia and Eswatini compared to South Africa. After the EPA, a positive shift in the GDP of EU resulted in more trade to South Africa compared to the other SACU countries. This could partly be attributed to an addition of concessions that came with the EPA over and above those that existed between the EU and South Africa under the TDCA. Cameron (2021) also highlights that of all the SACU countries, it is with South Africa that the EU has the most strategic and active preferential economic relationship, with the rest of the SACU countries being heavily affected by the effects of Brexit.

As regards the population size of the EU, which proxied the market size, Table 8 shows a positive significant coefficient of 0.37 before the signing of the EPA, indicating that an increase in the population by 1% resulted in a 0.37% increase in the EU's exports to South Africa. For Botswana, Namibia and Eswatini, however, the effect of the population was highly insignificant. In accordance with the Hecksher-Ohlin model, the EU developed as it is would export more commodities of capital intensive nature to the South Africa and import labour-intensive goods due to the difference in endowments (Aprilia et al., 2020). Inconsistent with the H/O theory, the results of the regression show that the increase in population, which suggests an increase in labour, could lead to an increase in exports to South Africa during the period, a scenario described by Król (2019) as the Leontief Paradox. For South Africa, during the post-EPA period, the negative coefficient of -0.79 implies that a 1% increase in the EU's population results in a decrease in South Africa's agricultural imports from the EU by 0.79%. Botswana also had a negative 0.19% effect of a population increase in the EU, whilst Namibia and Eswatini registered positive but insignificant coefficients of 0.23% and 0.21%, respectively. With time, an increase in the population may be expected to result in a bigger local market, entailing a reduced need to export, thereby conforming to the absorption effect asserted by Ebaidalla (2017). This possibly reduced the agricultural exports from the EU to the SACU countries in the post-EPA period. Accordingly, during the period, an increase in the EU market access by SADC countries might have increased exports to the EU, thereby reducing imports from the EU.

Expectedly, as indicated in Table 8, the distance between South Africa and the selected EU countries was found to have a negative effect on imports of agricultural products from the EU to South Africa in the period 2010–2015. The negative and significant coefficient of 2.94% before the EPA implies that the distance between South Africa and the selected EU countries negatively affected bilateral trade. However, since Kalaba and Kirsten (2011) take distance to be a proxy for trade infrastructure as well, poor infrastructure results in more bilateral trade costs. In that regard, the positive coefficients of distance for Botswana, Namibia, and Eswatini before the EPA and after the EPA including South Africa could imply an improvement in trade infrastructure for the SACU countries, which might be a result of the

development clauses in the EPA agreement, (Vickers, 2017).

As opposed to the past trading environment, where long distances were coupled with difficulties in transporting commodities, thereby introducing a monopoly of goods in certain areas (Jacek and Kira, 2019), nowadays such trade costs are minimal. According to Kassa and Sawadogo (2021), reduced trade costs can also be attributed to continuous improvement and investment towards transportation infrastructure like air travel and communication, thereby guaranteeing fast and reliable commodity mobility.

In line with the findings of other authors, the results for tariffs showed a general decrease in the agricultural imports from the EU to the SADC region with an increase in the tariffs levied. In a study by Gnutzmann-Mkrtchyan and Hugot (2022) on assessing bilateral trade resultant from tariff changes, the gravity model, which is also a general equilibrium tool, was used for quantifying the effects of the tariffs and the results indicated that an increase in the tariffs reduced access to foreign goods. Using the OLS estimator, Kinzius, Sandkamp, and Yalcin (2018) obtained statistically insignificant coefficients for tariffs in their study aiming to ascertain the effects of tariffs and non-tariff barriers in trade protection. However, the application of the PPML estimator revealed that tariffs induced a large negative impact of a 0.41% reduction on the volume of imports by the importer country. Zainuddin, Sarmidi, and Khalid (2020) found that tariffs had a negative effect on the imports of agricultural food, resulting in a decrease of 0.8% in the imports from a 1% increase in tariff rates. However, contrary to general expectations, Charandabi, Ghashami, and Kamyar (2021) highlighted a scenario where the US imposed tariffs on Chinese agricultural commodities. While US products retained access to the Chinese market, imports were still found to be low in both countries, which is possibly due to reduced GDP in the countries, resulting in China's inability to import many goods and export to the US due to the tariffs imposed.

Before the EU-SACU EPA, Table 8 shows that with the exception of Eswatini, which had a highly insignificant coefficient (0.05), South Africa, Botswana and Namibia had negative coefficients, implying that if all other factors are held constant, the value of agricultural imports from the EU decreased by 3.15%, 0.03% and 0.09%, respectively, upon a unit percentage increase in the tariffs imposed.

Apart from Namibia, the other SACU countries, namely South Africa, Botswana and Eswatini, had positive tariff coefficients of 5.84%, 0.20%, and 0.09%, respectively, as the tariff rates increased by a unit percentage after the EPA. Given that the tariffs were reduced after establishing the EPA FTA, this means that the reduction in tariffs resulted in an increase in imports. However, it is worth noting that the magnitude of improved import values caused by the reduction in tariffs is not significant, which is consistent with Crivelli, Inama and Kasteng's assertion (2021) that although tariff reductions in FTAs trigger improved trade, the significance of the trade transactions will not be as great as the reduction in tariffs. In support of the notion, Geda and Yimer (2019) also highlight that within a union, tariff cuts do not result in much trade being created. Tröster et al. (2019) further posit that the tariff reductions have drastically led to import competition, as well as to losses in tariff revenue, particularly for the SACU countries, who already suffer from weak industrial capacity.

CONCLUSIONS

The study uses the gravity model to establish the determinants of SADC agricultural imports from the EU before and after the Economic Partnership Agreement came into force. The regression outcome showed that GDP and population had positive and significant effects on bilateral trade, while distance and tariffs had negative but not highly significant effects.

What is worth noting is that the study showed how trade liberalization in the context of the EU-SACU economic partnership agreement has brought about an erosion of the pre-existing trade preferences in the SADC region, particularly affecting trade with the smaller economies in the region. It was seen that intra-regional trade in the region was higher before the EPA compared to the period after the EPA was signed.

It was also revealed that there was no statistically significant difference in SADC-EU trade, but for intra-SADC trade there was a significant difference during the two pre- and post-EPA time periods.

The importance of a study of this nature is premised on the need to assess the contribution of regional trade agreements towards promoting intra-regional and intra-African trade, particularly in the advent of a membership overlap on the continent. Additionally, the proliferation of regional trade agreements provides

sufficient evidence that most countries consider it economically beneficial to harness the available different gains attached to each agreement, thereby moving away the focus on improving conditions within each agreement in order to yield intra-regional benefits. Although intra-regional benefits sometimes take longer to be realised due to differences in countries' time to respond and ratify some agreements, intra-regional trade can be considered to be one of the surest determinants of economic growth in Africa, as it creates solid building blocks for the broader aspirations of the continental trade area.

Ideally, it is therefore worthwhile for countries in the SADC region to embrace the existing trade agreements in which they have membership and work on the fundamental facets that can enhance intra-regional trade, for example, trade-related infrastructure, tariffs, border procedures and other trade costs.

With the exception of South Africa, the majority of SADC countries have poor road networks, coupled with very long boarder clearing procedures. It is recommended that countries in the SADC region work towards reducing intra-regional trade costs through the development of their trade infrastructure in the form of border posts, ports of trade etc., as well as encouraging efficiency at these borders.

According to Tröster et al. (2019), Economic Partnership Agreements have been seen to significantly affect intra-regional trade and this is partly because of the tariffs mostly being lower than those in the intra-regional arrangement. Obasaju et al. (2019) assert that for there to be any success in value chains within a region there is need for a region to consider a downward review of intra-regional trade tariffs. It is recommended that the SADC countries review their own tariffs to promote intra-regional trade before being attracted to lower tariffs set for external trade.

Additionally, analytical findings showed that distance, which is used as a proxy for trade costs, has been a major hindrance to intra-SADC trade.

In the study results, population was found to be one of the variables with a positive contribution to increasing trade between the EU and the SADC. Considering population to be a proxy of both the market size of the importing country and conversely as availability of labour in the same country, the SADC region can take advantage of that characteristic due to its relatively large population. This implies that the market in the SADC can potentially absorb the imports without offsetting the trade balance, predominantly in less labour-intensive commodities. A larger population can also be utilized in terms of labour availability, particularly with the nature of agricultural production, which is labour-intensive and thereby implies less demand for agricultural imports.

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