



THE IMPACT OF EUROPEAN UNION - SOUTH AFRICA TRADE DEVELOPMENT AND COOPERATION AGREEMENT ON BOTSWANA, LESOTHO, NAMIBIA AND SWAZILAND

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***Abstract:** This paper examines the impact of the European Union-South Africa Trade Development and Cooperation Agreement (EU-SA TDCA) on trade between the RSA and Botswana, Lesotho, Namibia and Swaziland (BLNS). The results indicate that demand for imports are income elastic and price inelastic. This implies that imported goods are necessary and consumers and producers of the BLNS countries depend on them. The results also indicate that the agreement between the RSA and the EU brought about increased imports to the BLNS countries. Demand for exports is also income elastic and price inelastic. The volume of exports to the RSA, from the BLNS, seems to increase following the agreement. The empirical findings imply first, that imports could have led to a crowding out of domestic production, which would negatively impact on domestic industry. Second, the EU-SA TDCA has benefited the BLNS countries by boosting their exports.*

Keywords: EU-SA TDCA; Customs Union; SACU; Trade; BNLN; RSA.

JEL Classification: F 10; 13; 15; 36 & 42

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INTRODUCTION

A free trade agreement (FTA) is a preferential arrangement among countries in which tariff rates among them are reduced to zero. However, different members of the arrangement may set external tariff for non- members at different rates (Krueger, 1997). FTAs are designed to liberalize trade between economies as countries seek to open up opportunities for productive commercial partnerships and other forms of cooperation.

European Union-South Africa Trade Development and Cooperation Agreement (EU-SA TDCA) is the first reciprocal free trade agreement in Southern Africa and became fully implemented in the year 2004. The RSA signed a free trade agreement with the European Union in October 1999. The implementation date of the agreement was set for January 1st 2000 (Assarson, 2005).

This followed the completion of the ratification procedures by the EU member states and the RSA Parliament. The trade liberalization between the EU and the RSA is asymmetric in the sense that the liberalization period is different for the two parties. The RSA has 12 years to fully implement the agreement, while the EU has only 10 years. Furthermore, the RSA was to liberalize around 86% of its imports from the EU, while the respective figure for the EU is 95%. The EU-SA TDCA covers around 83% and 86.5% of South Africa's agriculture and industrial sectors, respectively, while for the EU, the corresponding figures are 61.4% and 99.98%.²⁵

Although the EU-SA TDCA was signed between the EU and the RSA, it applies *de facto* to Botswana, Lesotho, Namibia and Swaziland (BLNS). The BLNS states are in the Southern Africa Custom Union (SACU) with the RSA. Therefore, by default, the BLNS countries have become party to the EU-SA TDCA with respect to imports from the EU. Although the BLNS states are not contracting parties to this free trade agreement, the porous nature of the BLNS borders implies that goods entering the RSA market under the free trade agreement could easily end up in the BLNS. Therefore, this makes BLNS countries the *de facto* members of the EU-SA TDCA.

Additionally, an important feature of the EU-SA TDCA is the implicit asymmetry of trade liberalization between the EU and the BLNS countries. Even though the EU-SA TDCA effectively grants the EU free access to the markets of the BLNS countries, it does not grant the BLNS countries reciprocal access to the

markets of the EU.²⁶ This poses immediate questions about the EU-SA TDCA effects upon the other members of the SACU of which the RSA is the dominant member. This agreement has had the potential to impact the BLNS countries in a number of ways. Firstly, impacts of the EU-SA TDCA are of a more dynamic nature in terms of increased imports and exports competition for the products. Secondly, this agreement has to lead to substantial reduction in the revenue that accrued to SACU common revenue pool, as a direct outcome of tariff reductions. So, reduction of the tariffs means the loss of revenue by the BLNS countries' governments. This is because the common external tariff that used to apply to the EU has been removed by the agreement. This paper, therefore, attempts to examine the impact of the EU-SA TDCA on the BLNS countries with the RSA. Specifically, it investigates if there has been any effect of the EU-SA TDCA on the trade of the BLNS countries with the RSA

The aim of this paper is to examine the possible impact of the EU-SA TDCA on the trade patterns between Republic of South Africa (RSA) and the BLNS countries. The paper proceeds as follows: Section 2 provides a brief history of SACU as well as the state of each country's bilateral trade with the RSA. Section 3 reviews the literature, while Section 4 discusses the methodological framework that the study uses for estimating the results. . Section 5 reports the estimation and analyses the results of the study. Lastly, conclusions are discussed in Section 6.

AN OVERVIEW OF REGIONAL ECONOMIES AND INTRA-SACU TRADE

The RSA is the largest trading partner for the BLNS countries within the Southern African Customs Union (SACU). It is considered to be the biggest and the most developed economy in the region, hence essential for these countries. Thus, whatever effects accrue as a result of it forming the trade agreement with the EU is likely to affect BLNS states. The agreement between the EU and the RSA therefore raises concerns as to whether it will have any negative effects on the BLNS countries. For instance, the agreement may divert exports and imports of the RSA away from the BLNS countries to the EU. The BLNS countries are likely to face both import and export competition from the EU.

²⁵ Source: ANNEX 4 South Africa, Trade Policy Review, WT/TPR/S/114/ZAF

²⁶ This assumes the rules of origin are effective

Since the agreement was signed, around 40% of the RSA's imports are sourced from the EU27. Due to intra-SACU free movements of goods it means that these imports will find their way into the BLNS countries. The problem encountered by the BLNS countries is that it may not be possible for them to formulate trade policies independently given the limited degree of freedom in tariff policies and the dominance of the RSA. Thus, domestic BNLS industries are likely to face competition of imports from the EU as prices from the EU are likely to be lower (a case of trade creation). This can result in local industries having to close down because they cannot compete with the lower prices of the EU exports. This can have a negative implication for the infant industries in the BLNS countries because of the heavier competition from the manufactured exports from industrialized nations of Europe. Thus, the enlarged market for the European goods can result in de-industrialization of the BLNS countries (Jachia and Teljeur (1999); Motlaleng (2004)).

Furthermore, since imports from the EU now enter the RSA at reduced tariffs, the implication is that SACU faces a significant amount of revenue reductions. SACU is based upon a common external tariff (CET) around all five members. This has been reduced because of the free trade agreement between the RSA and the EU. The common revenue pool for customs and excise receipts is expected to have shrunk, leaving lesser funds for distribution among the SACU members. The distribution of funds is made in such a way that smaller countries receive a large share of custom revenues as opposed to larger countries. This works in favour of the BLNS countries. Therefore, a fall in tariffs means these countries are the ones which are likely to be more negatively affected.

Brief History of SACU

The Southern African Customs Union (SACU) dates back to June 29th 1910. This was when the RSA, Lesotho, Swaziland and Botswana signed an agreement at Potchefstroom in the RSA to enter into a customs union. Only Britain and the RSA were involved in the 1910 negotiations. This agreement lasted until the British Protectorates received independence in the mid 1960s. Thereafter, the agreement was re-negotiated by the newly independent states in 1969. The 1969 Agreement attracted widespread attention from economists and political commentators. It effectively ensured that throughout the sanctions period that the RSA faced, the

²⁷ Source: South Africa Trade Statistics, 2007.

three frontline states (Botswana, Lesotho and Swaziland) continued to depend on the RSA for their imports and to a lesser extent their exports (Kirk *et al*, 2003). When Namibia attained its independence from South Africa in 1990 it also became a member of SACU.

The 1969 agreement included a revenue sharing formula for the division of customs and excise revenue collected in the union. The BLNS received a significant proportion of their government revenue through this formula. According to Flatters *et al* (2005), this revenue sharing formula specified BLNS entitlements to the total customs and excise duty collections, and the RSA received the residual amount. These BLNS entitlements meant that the smaller member states received their shares based on the total imports and excisable production independently of the actual revenue collections. As the residual claimant, the RSA absorbed all the revenue impacts of changes in imports of the other members. Against this background the smaller members of SACU expected that upon the formation of the first the RSA government of national unity in April 1994, negotiations would begin for a new reconstituted and democratized SACU. This culminated in a new agreement signed in 2002.

The new (2002) SACU Agreement

The new agreement constituted a fundamental change. Unilateral dominance by the RSA was being replaced by a democratic dispensation. The essence of the new revenue formula is that the RSA no longer receives its share of revenue as the residual, but shares on the same basis as the BLNS countries. The extent to which the BNLS countries rely on SACU revenue sharing formula for a significant share of total budget revenue is shown in Table 10.

Table 10 *SACU Revenue Payments under the current (2002) Revenue Sharing Formula, 2006*

	SACU Payment (R million)	% of Revenue Pool	% of Total Government Revenue (excl. grants)
Botswana	5,634	17.8	20.1
Lesotho	2,836	9.0	53.0
Namibia	5,463	17.3	41.0
Swaziland	3,708	11.7	56.9
RSA	17,625	55.8	3.9

Source: budget documentation from the five member states.

Table 10 shows how dependent the BLNS countries are on income from the SACU Revenue Pool. Lesotho, Namibia and Swaziland remain dependent on SACU revenue for between 40% to 50 % of their government revenue. Botswana is an exception to this as its dependency on SACU revenue is around 13% of the total government revenue. Moreover, the revenue share to each member is now calculated from the three basic components, which: are a share of custom component, a share of the excise component and a share of a development component. The custom component distributes the custom revenues on the basis that, a country that has a largest share of intra-SACU imports gets the highest custom revenue. The excise component distributes the revenues according to the share of a country's GDP, while the development component adjust the shares of excise pool according to the inverse of each country's GDP per capita. The existence of this current revenue arrangement does not benefit the RSA, as opposed to the old sharing formula. This is because it no longer receives its share of revenue as the residual claimant, but shares on the same basis as other member countries.

Intra-Regional Trade

The SACU region is dominated by the RSA, which accounts for 87% of the population, and 93% of the GDP of the customs area (World Bank, 2000). While the RSA has developed a significant manufacturing and industrial capacity, the other countries remain dependent on agriculture and mineral extraction. Due to their different economic development agendas, the RSA and the BLNS countries pursue different industrialization strategies. Thus, while the RSA wants to protect its capital intensive industries, such as automotive industry, this is not in the best interest of the BLNS countries. They would like to benefit from cheaper inputs and consumer goods. In terms of trade, the BLNS countries depend heavily on the RSA for a significant proportion of their trade, investment and in some cases (migrant) employment. They source most of their imports from the RSA, although their exports are more geographically diverse. The commodity pattern of the RSA's exports to the BLNS differs significantly from its exports to the rest of the world. Whereas the RSA continues to export predominantly resource-based goods overall, the BLNS represent a significant market for the RSA's consumer goods and services (Kirk *et al*, 2003).

The BLNS economies and their trade with the RSA can be considered as follows. With regard to Swaziland, agriculture forms the backbone of its economic activity. Growth in Swaziland manufacturing output picked up in 2007 following the positive performance of some export commodities. These, include sugar, sugar-based products, wood-pulp and timber products, meat and meat products, soft drinks concentrates, citrus and zippers. Also, the stronger than anticipated economic performance by the RSA in 2007 boosted Swaziland's export demand. This is because 50% of the country's exports are destined for the RSA (CBS Annual Report, 2007/2008). In 2007, imports from the RSA amounted to 92%, while exports to the RSA accounted for 62% of Swaziland's exports. (CBS, Quarterly Review, 2008).²⁸

In the case of Namibia, over 70% of its imports originate in the RSA. Also, many Namibian exports are destined for the RSA market or transit that country. Specifically, in 2007, imports sourced from and exports to the RSA amounted to 78.1% and 29%, respectively (BoN factsheet, 2007). Namibia's exports consist mainly of diamonds and other minerals, fish products, beef and meat products, grapes and light manufactures. The country's main imports are food and live animals, oil and chemical products, aircraft and ship products, and mineral products.

A similar situation is found for the Botswana's economy: the country's trade relationship is highly concentrated in a limited number of countries. The RSA is the largest supplier of imports. Botswana's imports are predominantly vehicles and transport equipment, machinery and electrical equipments, beverages and tobacco, metal and metal products. In terms of direction of trade, imports of the country amounted to P24.9 billion in 2007. Out of these, imports from CCA (mainly RSA) amounted to P20.9 billion, thus constituting 84% of total imports of Botswana (CSO, 2007). On the other hand, The RSA is not the major destination of Botswana's exports. Only 11% of Botswana's exports went to CCA during that period. Diamonds are the major export commodity of Botswana. They constitute about 62% of the total exports. These are destined for the United States and Japan.

The economy of Lesotho is based on subsistence farming and animal husbandry. There is also small-scale industries that include clothing, footwear, textiles, food processing and construction. Lesotho's imports are sourced from the RSA, which completely surrounds the country. These include various items used

²⁸ Emalangenzi is pegged 1:1 to South Africa's rand

for immediate consumption, especially food items. About 82% of Lesotho imports originate from the SACU region, but largely reflects imports from the RSA. Lesotho's imports from the RSA have experienced a growth rate of 21.7% during the periods 1999-2003. On the other hand, export growth to the RSA was 17.1% for the same period. From the above, it is noticeable that the BNLS countries depend on the RSA for their imports, and to a lesser extent exports, in particular, non-traditional exports.

REVIEW OF PREVIOUS STUDIES

When countries enter into a free trade agreement, changes in trade flows arise due to changed conditions of competition. Viner (1950) classified these processes as trade creation and trade diversion. In his classical consideration, when a developing country enters into an FTA with an industrialized country, trade diversion effects are likely to dominate in the third countries due to complementary production and trade structures. This is due to the fact that third countries export predominantly primary and low skilled, labour intensive goods, while the import is dominated by high-skilled, capital intensive commodities. However, this theory was criticized on the basis that developing countries would benefit from an FTA with an industrialized country due to their different factor endowment. This would then enable developing countries to import cheap, capital-intensive goods and export labour intensive manufactures, thus, stimulating division of labour. Also, it might help them to develop their industrial capacities due to protected access to a larger market provided it is strong (Meyn, 2003).

Some authors postulate that a free trade agreement is likely to affect partners differently. Finger *et al* (1979) and later Pomfret (1986) argued that one of the determining factors is the extent of trade overlapping between the signatory and the remaining non-signatory partners. The overlapping should be measured, however, separately for imports and exports. In most cases, it appears that FTAs lead to both trade diversion and creation with the net effects determined by the structure of the FTA. Therefore, even if two or more countries are moving toward freer trade among themselves the FTA could make those countries and the world as a whole worse off. This can arise if the FTA diverts more trade than it creates, according to economic theory. This conclusion is called the General Theory of the Second Best (Cooper, 2005).

There is substantial empirical review on the estimation of FTA effects. Much of this uses econometric methods including gravity and analytical models, together with the general equilibrium models. A study by Neyapti *et al* (2003) estimated import and export functions of Turkey with the EU and non-EU countries using panel data set. The study investigated whether the custom union between the EU and Turkey affected Turkey's trade. The findings indicated that both exports and imports of Turkey had been positively affected by the custom union. They were also sensitive to income and price changes. However, the responsiveness of Turkey's trade to income and price changes differed for trade with the EU and non-EU group of countries. For the EU countries, Turkey's income elasticity of both imports and exports were lower as compared to the non-EU countries, especially for the custom union period. The effect of exchange rate on exports was found to be stronger for the custom union period. This situation was explained by the increased imports during the period of largely overvalued Turkish Lira (TL), especially for the period 1993-2000. For imports, real appreciation of TL, has had a positive impact on imports especially for the EU countries, though not in the custom union period.

Another study on EU-SA FTA was undertaken by Assarson (2005) where he investigated the impact the agreement had on the RSA's trade with Southern Africa and the rest of the world. He used trade statistics for the periods 1999-2004 between the RSA and its trading partners to symbolize trade before and after the implementation of the agreement. In this way, the study could easily compare and discover possible changes in the trade patterns since the agreement was implemented. The study showed that the RSA has increased both its exports to and imports from almost all countries, although exports to the BLNS countries declined. The RSA's exports to these countries had been sporadic so it was difficult to state if the negative trend was a result of the EU-SA FTA or not. However, the study argued that these countries had been negatively affected by the agreement when considering the negative percentage changes in RSA's exports during the period 1999-2004.

METHODOLOGY

This study adopts the methodology used by Neyapti *et al* (2003) on Turkey to estimate the impact of EU-SA TDCA on the BNLS countries. They investigated whether custom union between the EU and Turkey affected Turkey's trade. This paper however, uses different variables of demand for exports and imports of the BLNS countries.

Several hypotheses about the import and export demand have been tested by the empirical studies reviewed. The two variables or determinants remained central, income and price effects. This is due to the fact that policy makers are often concerned with the magnitude of these effects because of their macroeconomic impact (Cedepa, 2002).²⁹ According to Mervar (1993), the conventional model for estimating export demand equation suggests the following relation:

$$EX = g(Y(f), p(ex), p(f)) \quad (1)$$

Where: EX stands for quantity of exports,

$Y(f)$ = income of the importing region (+)

$p(ex)$ = price of the exported good's own price (-)

$p(f)$ = price of imperfect substitutes on the foreign market (+)

and signs in parentheses represent the respective hypotheses.

Equation 1 can be linearized and expressed as follows:

$$EX = \alpha_1 + \alpha_2 Y(f) + \alpha_3 p(ex) + \alpha_4 p(f) + \mu \quad (2)$$

Traditional aggregate demand function for imports is, therefore, represented by the following relation:

$$IM = f(Y(d), p(d), p(im)) \quad (3)$$

Where: IM represents quantity of imports,

$Y(d)$ = income of the importing (domestic) country (+)

$p(d)$ = price of the imperfect substitutes on the domestic market (+)

$p(im)$ = price of the imported good (-)

The linear function of the above model is specified as follows:

$$IM = \beta_1 + \beta_2 Y(d) + \beta_3 p(im) + \beta_4 p(d) + \varepsilon \quad (4)$$

Although the above approach has been predominant in the empirical literature, it has remained controversial. This is due to the fact that prices of

²⁹ Fundamental assumption underlying the imperfect substitute model is that neither imports, nor

exports/imports and domestic prices are expected to be correlated. Due to this limitation, some studies such as those by Khan (1974) used the relative prices, which are expected to eliminate any multi-collinearity problems that might arise due to correlation between these variables. However, the use of relative prices has also posed some problems. Specially, when dealing with bilateral trade. Bahmani-Oskooee and Goswani (2004) argued that when considering bilateral trade, import and export prices are not available on bilateral basis to be included in export and import demand functions. This is an important issue due to the fact that a country exports and imports different commodities to different trading partners. The remedy here is to consider exports and imports value, and try to determine how sensitive they are to a change in exchange rate. This is a direct method of determining whether currency depreciation is effective in increasing or decreasing trade with the trading partner. Thus, the country's exports and imports functions, in value can be re-written as follows:

$$\log IM = \beta_1 + \beta_2 \log Y(d) + \beta_3 \log RER + \mu \quad (7)$$

$$\log EX = \alpha_1 + \alpha_2 \log Y(f) + \alpha_3 \log RER + \varepsilon \quad (8)$$

Where: RER = Real bilateral exchange rate and is calculated as follows:

$$RER = e * p_i / p_j$$

e = domestic currency per country i's currency

p_i = price level of country i

p_j = price level of the domestic country

According to Doroodian *et al* (1994), the log-linear formulation for these demand functions is deemed to be more appropriate than the linear one. This is due to the fact that the parameter estimates can be directly interpreted as elasticities without further computations

The model shown above (equations 7 and 8) is what the paper adopts for analyzing the impact of EU-SA TDCA on BLNS countries. It is similar to the methodology used by Neyapti *et al* (2003). They used both import and export demand functions to determine whether Turkey's trade had been affected by the European Union Agreement. Their analysis involved more than 150 EU and non-

EU countries who are Turkey's trading partners. Their study covered the period between 1980 and 2001, yielding an unbalanced panel data set comprised of 2000 observations. Their estimated model is as follows:

$$\ln MT_{it} = \alpha_{0i} + \alpha_1 \ln gdp_t + \alpha_2 \ln(rer)_{it} + \alpha_3 (deu * cu)_{it} \quad (9)$$

$$\ln XT_{it} = \beta_{0i} + \beta_1 \ln(gdp)_{it} + \beta_2 \ln(rer)_{it} + \beta_3 \ln(deu * cu)_{it} \quad (10)$$

Where: MT_{it} = imports of Turkey from country i at time t

XT_{it} = exports of Turkey to country i at time t

gdp = GDP for country i at time t

rer = real bilateral exchange rate

T = Turkey

\ln = natural logarithm function

deu = dummy for EU countries, which assumes the value 1 for EU country and 0 otherwise.

cu = dummy for custom union, which assumes the value 1 for the period of CU and 0 otherwise.

$deu * cu$ = is the interactive dummy between the EU and custom union

The same methodology above is used, where both exports and imports functions of the BLNS countries are estimated. The idea is to investigate whether this agreement has affected the structure of trade of the BLNS countries with the RSA. The imports demand function estimated is as follows:

$$\ln MT_{it} = \alpha_{0i} + \alpha_1 \ln(gdp)_{it} + \alpha_2 \ln(rer)_{it} + \alpha_3 (d2000)_{it} + v_{it} \quad (11)$$

Where:

MT_{it} = imports into country i (BLNS country) from the RSA

gdp = GDP for country i at time t

rer = real bilateral exchange rate

$d2000$ = Dummy variable that takes the value one (1) for the period of EU-SA TDCA Zero (0) otherwise

\ln = natural logarithm function

v_{it} = disturbance term

α_{0i} = individual specific effects. These refer to unobservable individual specific effects which are not included in the equation because we do not know exactly how to specify them explicitly. Also, they do not have data on them, but we simply want to acknowledge their existence.

The export demand function estimated is as follows:

$$\ln X_{it} = \beta_{0i} + \beta_1 \ln \text{gdpSA} + \beta_2 \ln(\text{rer})_{it} + \beta_3 (\text{deu} * \text{cu})_{it} + \varepsilon_{it} \quad (12)$$

Where: X_{it} = country i exports to South Africa

gdpSA = GDP for South Africa

Estimation techniques for the time series-cross sectional data analysis

The model used for analysis is the time series-cross sectional (TSCS) data model. This model analyses data observed across countries or firms in which the number of cross-sectional units is relatively smaller than the number of time periods (Greene, 2003). Time series-cross sectional data set for economic research possesses several major advantages over conventional time-series or cross-sectional data. These advantages, according to Baltagi (1995) and Hsiao (1985) include controlling for individual heterogeneity, more informative data, more variability, less collinearity among variables, more degrees of freedom and more efficiency.

In estimating the model, this paper first starts by estimating the pooled ordinary least squares (POLS) model. This is a method whereby all cross sections are pooled together and then treated as one regression model. Although this model is not complicated, its estimators are likely to create complications in our estimation. According to Podesta (2000), OLS regression estimates are likely to be biased, inefficient and/or inconsistent when they are applied to pooled data. This is because errors for regression equations estimated from pooled data using OLS procedure and pooled data tend to generate certain complications. These include serial correlation, contemporaneous correlation and heteroscedasticity. Errors might also be non random across spatial and/or temporal unit because parameters are heterogeneous across subsets of units (Hicks, 1994). Thus, estimating constant-coefficient models cannot capture the causal heterogeneity across space and time.

In order to take some of these issues into consideration, the test for the Hausman is done to solve the problem of heterogeneity. As has been shown, omitting to test if the countries are heterogeneous or not could lead to problems such as heteroscedasticity and autocorrelation. Therefore by testing for either fixed effects or random effects model helps us in a way to get rid of such problems.

ESTIMATION AND EMPIRICAL RESULTS

This section presents the results of time series-cross sectional data. This is in order to assess the impact of the EU-SA TDCA on the BLNS countries. The paper uses time series-cross sectional data set that comprises of four BLNS countries. It covers the period 1990 to 2006, in order to analyze the import and export demand functions. Firstly, the pooled regression model is run with the assumption of heterogeneity being ruled out. This is likely to bring about biased results should heterogeneity exit and also if the error term does not behave as expected. To take into account the heterogeneity across countries, Hausman test is done in order to determine whether the appropriate model to use is the fixed or random effects model.

Hausman test for presence of fixed effects

The hausman test is a useful device for determining the preferred specification of the common effects model. That is, it is a general test procedure that determines whether there is any correlation between the regressors and the individual specific effects. Should the regressors be uncorrelated with the error terms, random effects model is the appropriate model. On the other hand if, the regressors are correlated with the error terms then fixed effects model is the correct model. From Table 11, the test shows random effects model to be the appropriate model for both exports and imports.

Table 11 Hausman Test

Imports				Exports			
Test summary	chi-square statistic	Chi-square d.f	prob.	test summary	chi-square statistic	Chi-square d.f	Prob.
cross-section	2.27	3	0.519	cross-section	2.17	3	0.998

To illustrate the potential of inconsistencies arising from the use of the pooled model, we select the pooled ordinary least squares (POLS) estimation to allow for comparison with results of time series-cross sectional random effects model estimators. The time series-cross sectional model presented accounts for cross-sectional heteroscedasticity and contemporaneous correlation that may arise among the explanatory variables. Since the appropriate model was found to be random effects model, the approach that is used for random effects estimation is the generalized two-stage least squares.

Import function

Table 12 presents the regression results of demand for imports using both the pooled regression and the time series-cross sectional random effects model. When static pooled model is used, the coefficient of real exchange rate (RER) is not statistically significant while GDP is only significant at 10% level. Again, the results show presence of autocorrelation since the DW-statistic is less than 2. This is an indication that the errors are serially correlated. However, for the time series-cross sectional random effects model all coefficients become significant determinants of the demand for imports by the BLNS countries. There is no autocorrelation. These different results confirm the presence of biases and thus the inconsistencies linked to using static pooled data models. These inconsistencies may be due to the fact that POLS generate certain complications brought about by the error term.

Table 12 *Regression results of demand for imports using both the pooled regression and the time series-cross sectional random effects model*

Pooled			TSCS(REM)		
Variable	Coefficient	t-statistic	Variable	Coefficient	t-statistic
log(GDP)	0.35	1.79(0.08)*	log(GDP)	1.61	3.42(0.00)***
log(RER)	-0.45	-1.22(0.23)	log(RER)	-0.87	-2.51 (0.00)***
Dum	1.53	5.04(0.00)***	Dum	0.95	4.31(0.00)***
R-square=0.41, Adj. R-square= 0.31			R-square= 0.64, Adj. R-square= 0.62		
F-statistic= 15.13(0.00)			F-statistic= 37.07 (0.00)		
DW-statistic= 0.29			DW-statistic= 2.1		

*** indicates significance level at 1%, ** indicates significance level at 5%, *indicates significance level at 10%

The demand for imports is found to be price inelastic meaning that imports are not sensitive to price changes. This behavior could mean that commodities

imported by the BLNS countries are necessary commodities, whose demand may not be highly influenced by price changes. This implies that they may not have domestic substituting goods. Even if they have domestic substituting commodities, production domestically may be inefficient or there may be preferences for imports over domestic substitutes, so people resort to imports. While imports seem to be price inelastic, they are income elastic, which seems to reinforce the argument above that the BLNS countries are heavily dependent on imports from RSA.

Finally the dummy variable for the establishment of the EU-SA TDCA is found to be statistically significant and positive. It shows that the agreement between the RSA and the EU brought about trade creation to the BLNS countries. Trade has been created because commodities are now imported cheaply from the relatively low cost producer, the EU. Goods entering the RSA can easily find their way into the BLNS countries because of the porous nature of trade in the region.³⁰ It could also mean that domestic production (within the BLNS) has been replaced by more competitive EU products.

The results above could mean trade diversion if the EU is not relatively the lower cost producer. i.e., if the RSA previously imported from other lower cost countries but the FTA makes duty free imports cheaper. This increases imports although the EU is not the lowest cost producer. The EU could still be more expensive than other suppliers. Thus, trade is being diverted from the least cost producer to the EU.

The increase in imports could mean that the agreement has harmed domestic production. Importing from the RSA is now cheaper as compared to buying domestically and as such domestic production is stifled. i.e., demand shifts from locally produced goods to foreign ones. This would then result in local industries having to close down since they would not compete with the lower prices from the RSA. Imports from the RSA would be crowding out domestic production.

Table 13 *Export Function*

pooled			TSCS (REM)		
Variable	Coefficient	t-statistic	Variable	Coefficient	t-statistic
log(GDP _{SA})	1.32	0.63(0.53)	Dlog(GDP _{SA})	7.53	2.59(0.01)**
log(RER)	0.81	1.72(0.09)*	log(RER)	0.67	2.04(0.04)**

³⁰ There are no trade barriers between South Africa and the BLNS countries because of the fact that these countries are in the same custom union (SACU). The implication is that any goods entering South Africa will find their way into the BLNS countries due to free movements of goods and services between these countries.

pooled			TSCS (REM)		
Variable	Coefficient	t-statistic	Variable	Coefficient	t-statistic
Dum	1.30	2.23(0.03)**	Dum	1.41	9.37(0.00)***
R-square= 0.41, Adj. R-square= 0.39			R-square= 0.61, Adj. R-square= 0.58		
F-statistic= 15.13 (0.00)			F-statistic= 30.5 (0.00)		
DW-statistic= 0.58			DW-statistic= 2.06		

*** indicates significance level at 1%, ** indicates significance level at 5%, * indicates significance level at 10%

As with the import function, the TSCS (REM) results in Table 13 are considered consistent for the export function, and hence these are the ones discussed and analyzed. The results show that all variables are statistically significant and their coefficients yield expected signs. The variable GDPSA, which measures national income of the RSA is found statistically significant at 5% level. It depicts that a unit increase in GDPSA increases the demand for exports of the BLNS countries into the RSA. Furthermore, the demand for exports is income elastic. i.e., the demand for exports is sensitive to changes in income of the RSA. That is, not only does the demand for exports to the RSA increase with RSA's GDP, but it increases more than proportionately which means the RSA highly depends on exports of the BLNS countries. This means that exports become more competitive as they compete with the RSA products. Thus, increase in exports to the RSA as her income increases implies that domestic production within the BNLS countries is boosted by any increase in economic activity in the RSA. This may lead to increase in employment of the BLNS.

This paper also depicts that a depreciation of the domestic currency makes exports cheaper. Thus, the RSA will import more from the BLNS countries due to the fall in price of exports of those countries. For LNS countries, this variable captures only the relative CPIs with the RSA. It means when prices rise less in those countries as opposed to the RSA, the volume of exports to the RSA increase. This implies that exports of the BLNS countries to the RSA become more competitive as they compete with the RSA's commodities. The reason is most likely that BLNS commodities exported to the RSA do not have any substituting goods in the RSA. It could also be interpreted to mean that the RSA's consumers and producers prefer exported goods of the BLNS countries as opposed to the local products.

The demand for exports is price inelastic. For Botswana, whose currency is not at par with the rand, this implies that the exchange rate fluctuation is of less influence in determining the demand for exports to the RSA. For the LNS countries, on the other hand, this implies that any changes in prices of commodities in the LNS countries do not change much the demand for exports to the RSA.

Finally the dummy variable indicates that the agreement has brought about increase in demand for exports from the BLNS countries. This increase can be interpreted to mean that the RSA has a wider market now as a result of the agreement. It fulfills it by buying more commodities from the BLNS countries. The RSA is facing an increased demand for exports to the EU, so in an attempt to fulfill that demand, it imports more from its trading partners (the BLNS countries) either to export to the EU as they are or after further processing. Thus the agreement can be said to have benefited the BLNS countries since they can now export more to the RSA. Hence, this has impacted positively on their economies.

CONCLUSIONS

This study examined the impact of the European Union-South Africa Trade Development and Cooperation Agreement (EU-SA TDCA) on trade patterns between the RSA and Botswana, Lesotho, Namibia and Swaziland (BLNS). The investigation is carried out using pooled time series-cross sectional data for the periods 1990-2006. The random effects model is the method of analysis adopted. The findings show that demand for imports by the BNLS countries is income elastic and price inelastic, which implies that the BNLS countries import necessities from the RSA. The dummy variable for imports function is positive and statistically significant, This implies that the agreement between the RSA and the EU brought about increased imports to the BLNS countries. Additionally, demand for exports is income elastic and price inelastic. The dummy variable for exports function is correctly signed and significant. This suggests that the volume of exports to the RSA, from the BLNS increased after the agreement. The implications of these findings are as follows. First, imports could have led to a crowding out of domestic production, as a result of the SA-TDCA. Also, the EU-SA TDCA could have benefited the BLNS countries by increasing their exports.

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