Exports and economic growth: relationships and threshold analysis for the Southern Africa customs union

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ABSTRACT

This study examines the short-run and long-run relationships between exports and economic growth in the Southern Africa Customs Union (SACU), as well as the corresponding threshold level. The study used panel data covering the period 1980 to 2021 and employed the Autoregressive Distributed Lag (ARDL) Bound test for co-integration relationships, and the Generalized Least Squares (GLS) to determine the respective threshold level. Exports positively support economic growth both in the short-run and in the long-run in SACU. There is long-run bi-directional causality between exports and economic growth. The minimum threshold for exports is 59%. That is, exports only start contributing significantly to economic growth when they are above 59% of the Gross Domestic Product (GDP). SACU should put in place economic policies and regulations that are skewed towards the improvement of the competitiveness of its local products on the global market and also strategically consider export-oriented industrialization strategies. Efforts should also be channeled towards the implementation of bilateral and multilateral trade agreements and harnessing the synergic benefits through the adoption of deliberate value chain mechanisms and initiatives.

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INTRODUCTION

Since the 1950s, the Export Led Growth (ELG) hypothesis has been one of the most prominent theories in the field of international economics, especially in developing countries (North, 1955; Emery, 1967 and Maizel, Campbell-Boross, Rayment, 1968). The ELG hypothesis proposes that exports can serve as a catalyst for economic growth in developing countries by boosting foreign exchange earnings, promoting industrialization, and enhancing productivity through knowledge and technology transfers (Ee, 2016, Kalaitzi & Chamberlain, 2021 and Odhiambo, 2022). This paper seeks to validate this hypothesis considering the Southern African Customs Union (SACU).

SACU is a regional economic organization established in 1910 that comprises five countries namely Botswana, Lesotho, Namibia, Eswatini, and South Africa. South Africa is the largest member accounting for over 95% of the total GDP of the bloc. SACU seeks to promote economic cooperation and integration among its member states through the establishment of a common customs and excise system (Mapuva, 2014, Ee, 2016 and Muntschick, 2016). These countries share a common external tariff (CET) and a revenue-sharing arrangement, which is based on each country's share of intra-SACU imports. The Revenue Sharing Formula has three components, namely the customs component, excise component and development component.

Exports are a significant source of income for SACU member countries. Between 1980 and 2020, the region's exports increased from $39.5 billion to $95.9 billion, with the majority of exports being primary products such as minerals, livestock, and agricultural products (World Bank, 2021). Table 1 shows the exports of SACU member countries over the period of 1980-2020.
Table 1: SACU Trade Figures (constant at 2015)

<table>
<thead>
<tr>
<th>Year</th>
<th>Exports (USD billion)</th>
<th>Imports (USD billion)</th>
<th>Real Exports of Manufactured Goods (USD billion)</th>
<th>Real Exports of Primary Products (USD billion)</th>
<th>Terms of Trade (Index, 2000=100)</th>
<th>GDP (USD billion)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1980</td>
<td>39.5</td>
<td>30.0</td>
<td>2.7</td>
<td>6.5</td>
<td>92.5</td>
<td>41.5</td>
</tr>
<tr>
<td>1990</td>
<td>46.6</td>
<td>29.7</td>
<td>6.1</td>
<td>9.9</td>
<td>94.4</td>
<td>130.1</td>
</tr>
<tr>
<td>2000</td>
<td>77.6</td>
<td>51.7</td>
<td>13.2</td>
<td>22.1</td>
<td>100</td>
<td>258.9</td>
</tr>
<tr>
<td>2010</td>
<td>94.9</td>
<td>93.0</td>
<td>27.5</td>
<td>47.5</td>
<td>111.5</td>
<td>496.6</td>
</tr>
<tr>
<td>2020</td>
<td>95.9</td>
<td>100.7</td>
<td>29.9</td>
<td>43.4</td>
<td>104.7</td>
<td>602.2</td>
</tr>
</tbody>
</table>

Source: World Bank (2020), World Integrated Trade Solutions (WITS)

The SACU aims to develop common industrial policies and strategies to promote economic integration and upgrading of the customs territory, including the promotion of the services sector and beneficiation of mining products. Member States have agreed to use the SADC Industrialisation Strategy and Roadmap as a basis for advancing SACU’s industrialisation agenda.

It is worth noting that SACU is heavily reliant on exports of natural resources, such as diamonds, platinum, and gold. Table 1 shows that over the years, SACU has maintained its reliance on primary products, with diamonds and platinum being the top two products for the past three decades. However, there has been a decline in the share of gold in total exports. To gauge the performance of SACU’s exports over time, it is useful to look at real exports of manufactured goods and real exports of primary products. Real exports of manufactured goods increased from $6.8 billion in 1980 to $18.2 billion in 2019, while real exports of primary products increased from $17.3 billion in 1980 to $43.6 billion in 2019. The terms of trade (ToT) for SACU improved from an index value of 82.8 in 1980 to 96.1 in 2019, indicating an improvement in the relative prices of exports compared to imports. In terms of GDP, SACU’s total GDP increased from $52.1 billion in 1980 to $626.2 billion in 2019 (World Bank 2020).

SACU has generally maintained a positive trade balance over the past four decades. This can be attributed to the region's rich endowment of mineral and natural resources, which have been a major source of export earnings. However, the magnitude and stability of the trade surplus have varied over time, influenced by both domestic and global factors. For example, changes in global commodity prices and demand for exports have had a significant impact on SACU’s trade balance. The global financial crisis in 2008-2009, for instance, led to a sharp decline in SACU’s trade surplus, as demand for commodities contracted.

The manufacturing sector's performance in each Member State is measured by manufacturing value added (MVA) per capita, and the capacity to export by manufactured exports per capita. Rising shares of manufactured exports to GDP show increasing performance in industrialisation (Mlambo, 2020 and Odhiambo, 2022).

Table 2: Breakdown of member performance (constant at 2004)

<table>
<thead>
<tr>
<th></th>
<th>Manufactured exports (US$ million, constant) Average growth rate (%) 2004-2018</th>
<th>Manufactured exports per capita Average growth rate (%) 2004-2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Botswana</td>
<td>5.5</td>
<td>2004-2018</td>
</tr>
<tr>
<td>Eswatini</td>
<td>16.4</td>
<td>3.8</td>
</tr>
<tr>
<td>Lesotho</td>
<td>9.1</td>
<td>14.6</td>
</tr>
<tr>
<td>Namibia</td>
<td>13.9</td>
<td>7.9</td>
</tr>
<tr>
<td>South Africa</td>
<td>8.7</td>
<td>12</td>
</tr>
<tr>
<td>SACU</td>
<td>8.3</td>
<td>7.1</td>
</tr>
</tbody>
</table>

Source: SACU, 2019

From 2004 to 2018 all SACU member states experienced an increase in the exports of manufactured products, with South Africa accounting for more than half of the region's exports. There has also been a positive performance in the industrial sector, indicated by the rising share of manufactured exports to GDP. However, the Export Propensity Index (EPI) has declined for most member states, indicating a decrease in reliance on foreign markets.
The Trade Dependency Index and the Export Dependency index have both declined for most SACU member states between 2004 and 2018, except for Namibia where the Trade Dependency Index increased. This indicates a decrease in reliance on foreign markets by domestic producers in the region. Comparison of the real exports of manufactured goods for SACU, SADC, sub-Saharan Africa, and the European Union (EU) from 1980 to 2020.

Table 3: Comparison of SACU Trade Figures with Other Regions

<table>
<thead>
<tr>
<th>Region</th>
<th>Exports (USD billion)</th>
<th>Imports (USD billion)</th>
<th>Real Exports of Manufactured Goods (USD billion)</th>
<th>Real Exports of Primary Products (USD billion)</th>
<th>Terms of Trade (Index, 2000=100)</th>
<th>GDP (USD billion)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SACU</td>
<td>116.4</td>
<td>92.3</td>
<td>29.9</td>
<td>43.4</td>
<td>104.7</td>
<td>602.2</td>
</tr>
<tr>
<td>SADC</td>
<td>676.6</td>
<td>509.2</td>
<td>72.1</td>
<td>225.1</td>
<td>102.8</td>
<td>805.7</td>
</tr>
<tr>
<td>COMESA</td>
<td>170.3</td>
<td>118.1</td>
<td>24.3</td>
<td>39.9</td>
<td>99.1</td>
<td>835.8</td>
</tr>
<tr>
<td>ECOWAS</td>
<td>121.2</td>
<td>89.9</td>
<td>12.9</td>
<td>46.1</td>
<td>88.4</td>
<td>438.5</td>
</tr>
</tbody>
</table>

Source: World Bank (2020)

Compared to other regions, SACU’s exports are relatively small and heavily concentrated in natural resources, which are in high demand globally. Table 4 shows the same in percentage terms.

Table 4: Real exports of manufactured goods as percentages of GDP (1980-2020) in Billions

<table>
<thead>
<tr>
<th>Year</th>
<th>SACU</th>
<th>SADC</th>
<th>Sub-Saharan Africa</th>
<th>EU</th>
</tr>
</thead>
<tbody>
<tr>
<td>1980</td>
<td>28.60%</td>
<td>13.40%</td>
<td>7.50%</td>
<td>22.90%</td>
</tr>
<tr>
<td>1990</td>
<td>44.20%</td>
<td>19.20%</td>
<td>9.60%</td>
<td>25.30%</td>
</tr>
<tr>
<td>2000</td>
<td>48.60%</td>
<td>21.20%</td>
<td>11.10%</td>
<td>24.20%</td>
</tr>
<tr>
<td>2010</td>
<td>47.80%</td>
<td>24.90%</td>
<td>12.60%</td>
<td>23.80%</td>
</tr>
<tr>
<td>2019</td>
<td>41.20%</td>
<td>20.20%</td>
<td>11.00%</td>
<td>23.00%</td>
</tr>
</tbody>
</table>

Source: UN Comtrade (2021)

Table 4 shows that SACU’s real exports of manufactured goods have remained relatively stagnant over the sample period, whereas other regions have experienced significant growth. Figure 2 shows a stagnation of exports as a percentage of GDP, hovering around 40%.
SACU member countries have signed on to the African Continental Free Trade Area (AfCFTA) agreement initiative that aims to promote intra-African trade and integration. The AfCFTA agreement is expected to provide new opportunities for SACU member countries to expand their exports to other African countries and promote regional integration (World Bank, 2021). Each member state of SACU has its own policies and strategies aimed at promoting and supporting trade, including exports (Engel, Winkler, & Farole, 2016 and Manwa, Wijeweera, & Kortt, 2019) and this is corroborated by the respective countries national agencies on the same. Botswana has a National Export Strategy (2019-2024) that aims to promote and diversify the country’s exports and attract foreign investment, as well as an import substitution strategy that aims to reduce the country’s dependence on imported goods (BITC, 2019). The export promotion policy for Lesotho and Namibia are similar to Botswana, seeking to increase exports and attract foreign investment. Eswatini export promotion policy focuses on measures to improve the country’s export infrastructure, such as ports, roads, and telecommunications (MCTF, 2019). South Africa: South Africa has a range of policies and strategies aimed at promoting exports and attracting foreign investment, including the National Export Strategy (NES), which was launched in 2019 (DTIC, 2019).

With that background and all the policy interventions, the specific objectives of this paper are to examine the relationship between exports and economic growth, as well as, to explore the respective conditional threshold levels. This current study is the first known study by the authors to analyse threshold levels of exports using non-linear form of quadratic functions for SACU.

The study consists of five sections. Section 1 provides the background and motivation of the study. Section 2 covers the review of related literature. Section 3 outlines the methodology. Section 4 presents the empirical findings and the analysis of the results. Chapter 5 concludes the main findings of the study and provides recommendations as well as policy implications.

**Literature Review**

**Theoretical Literature**

Trade liberalization is one of the essential features of globalization as it has allowed the flow of goods and services from excess units to deficit units in the world. Difference in technology and natural factor endowments are some of the major drivers for international trade. The emergent tides of capital across national borders could ominously contribute to economic growth and stability in the world economies. Many countries view export trade as a major factor in the formulation and drawing of their millennium development goals. Involvement in international trade and or being a part of any trade treaty brings with it a direct effect on economic growth (Abdullahi et al., 2013). Hence, this has concurred with many proponents of international trade theories, focusing on how exports may affect economic growth of the involved economies characterized of varying factor endowments.

International trade philosophies may be classified into three dimensions, reliant on their successive periods. These theories include Traditional trade theories, modern trade theories and trade implications of the new growth theories (Van Berkum and Van Meijl, 1998).

Classical theory and neo-classical theory could be used to condense traditional theories of trade. Neo-classical theory, which examines relative factor endowments, contrasts with classical theories, which emphasize variations across nations that are the product of technological differences. Adam Smith's absolute advantage theory and David Ricardo's comparative advantage theory are two reputable classic theories. According to Smith, trade only occurs when there are differences in absolute costs between nations. Because trade is possible and advantageous even when one country can produce all things more effectively than another, David Ricardo demonstrated the flaws in this argument. The relative efficiency gap not being the same for all items is a prerequisite. A nation has a comparative advantage in a good when this is the case. In the Ricardian model, labor serves as the sole factor of production, and variations in labor productivity serve as the primary justification for trade. Because of differences in technological sophistication and/or in the natural environment, including natural resources, climate and geographic location, labor productivity

![Figure 2: SACU growth rates in GDP, EXP and EXP/GDP; Source: World Bank (2023) and Authors own calculations](Image)
Neo-classical theory, in contrast to classical theories, presupposed identical production practices across nations. The model considers perfect competition, consistent returns to scale, and identical customer preferences. Based on these presumptions, trade in the Heckscher-Ohlin-Samuelson (H-O-S) model can only be explained by variations in factor endowments. Trade between nations increases as factor endowment differences widen, and all of this commerce is between industries. A nation exports the goods that utilize its abundant production resources the greatest. Trade will be beneficial for the relative plentiful factor. Relative factor prices are uniform across nations in the trade equilibrium. According to conventional ideas, trade profits result from specialization and interchange (Tri-Dung, 2015).

Because of a more sensible distribution of productive resources and lower relative prices for the importing competitor goods, trade will be advantageous for all nations. The benefits of trade will increase as trade barriers decrease. Hence, unless countries can improve their terms of trade, free trade policy is considered to be the ideal trade policy (only large countries). The next best thing is to use trade policy to “fix” domestic distortions or for political ends (such the effects of trade on income distribution). The specific-factor model is a unique variation of the conventional H-O-S model in the neo-classical tradition. While some short-term specific factors are static in the short-term specific factor model, all production factors in the standard H-O-S model are mobile between sectors. For instance, this suggests that the trade implications for production factor rewards are completely different from the conventional model. Trade benefits the particular factor used to manufacture the export good and lowers the revenue of the particular factor used to produce the import good. The welfare effects of trade for the movable factor rely on the worker's purchasing habits and are unclear.

Modern theories of trade include the export base theory. According to this idea, the expansion of exports boosts regional economies through externalities and increased productivity. According to this, assuming perfect elasticity of input supply and export demand, regional growth in output and employment is a function of exogenous demand for a region's exports. Growth is produced not just by the direct sale of export commodities but also by a Keynesian income multiplier, which works as follows: when a region's exports expand, local goods are in more demand, which in turn boosts regional income (Leichenko, 2000).

Previously, North (1955) expanded on the idea that a region's rate of growth is determined by the success of its export base. This theory suggests that trade is an engine of growth because growth of exports provides externality and productivity benefits to regional economies. This advocates that regional growth in output and employment is a function of exogenous demand for a region’s exports, assuming perfect elasticity of input supply and export demand. Growth is generated not only through direct sales of export goods, but also through a Keynesian income multiplier: income growth associated with the growth of a region’s exports results in further increases in demand for local goods, which in turn, leads to further growth in regional income (Leichenko, 2000). Earlier, North (1955) extended that the success of the export base has been the determining factor in the rate of growth of regions. Therefore, the locational factors that have enabled the staples to develop need to be examined.

Local savings tend to flow into new types of activity when a region's revenue rises. These operations first meet local need, but some of them will eventually develop into export industries. The tendency for transfer costs to decline in importance supports this movement. As a result, regions tend to lose their regional identity while seeing their export bases diversify. In the end, we might anticipate greater income equality per person and a larger distribution of production with long-run factor mobility.

In response to criticism of neoclassical growth models that hold that a nation's long-run growth rate is exogenously controlled by a savings rate (the Solow model) or a pace of technological advancement, endogenous growth theory (EGT) was created in the 1980s. These factors, which were not included in the neoclassical models, turn out to be wildly improbable. Although growth in the neoclassical model can also result from increases in human capital, physical capital, or population, Leichenko (2000) argues that because these types of growth are thought to have diminishing or constant returns to scale, they are unable to produce sustained growth in per capita income.

The neoclassical model makes the important prediction that over time, the growth rates of various nations or regions will converge (Barro, 1993). The actual data, however, does not support convergence, according to research (Romer 1994), and a significant portion of economic growth cannot be explained by technical progress. Additionally, the rate of regional convergence in the industrialized world is substantially slower than the rate predicted by traditional neoclassical models, according to fresh empirical research on the topic (Martin and Sunley, 1998). Additionally, according to Martin and Sunley (1998), endogenous growth theory seeks to address some of the issues with neoclassical theory by creating models in which long-run growth rates are endogenous to the model, depending on certain assumptions about increasing returns, human or physical capital and technology investment. Endogenous broad capital models and endogenous innovation models are two types of endogenous growth theories that predict various kinds of growing returns.

According to Endogenous Growth Theory, more investments in human capital and a higher rate of innovation can both lead to increases in productivity. Additionally, it foresees advantageous spillover effects and positive externalities from the creation of a high valued-added knowledge economy, which can create and retain a competitive advantage in global economy's growing industries.

Vernon's hypothesis (1966) focuses more on the timing of innovation, the impacts of scale economies, and the roles of ignorance and uncertainty in affecting trade patterns rather than the factor-proportion theory of comparative advantage. According to the hypothesis,
there is a significant gap between understanding scientific concepts and putting them into practice to create new, viable goods. The three main stages of product development are covered by Vernon's product cycle namely Introduction stage, standardization stage and maturation.

Introduction stage: This is when developed nations create a certain product and export it to markets elsewhere. High unit prices, poor price elasticity of demand, and monopolistic control over product design are common characteristics of first-stage production. During this initial stage, producers will also export to other nations with income and demand levels comparable to the US because the need for input flexibility and the need for quick communication between producers and consumers as the product is tested-marketed are more important than production costs. At the same time, consumer demand progressively increases in emerging nations when new products are imported and launched, prompting the beginnings of domestic manufacturing. However, the low quality and high manufacturing costs make it difficult to compete with imports from elsewhere. As a result, imports remain to be high and a run on the country's foreign currency is possible.

Standardisation stage

Nations that invent now lose export market share to nations that copy the idea. According to Dowling and Cheung (2000), this stage (second) of development from Balassa's five-stages of development is frequently to replace imports with domestic products with the goal of reversing the current account deficits that emerge from rising domestic demand. To prevent foreign competition from the indigenous sector, as was the case in the ASEAN-4 in the 1970s, the state must enact certain levels of tariffs and other import restrictions. In this stage, domestic products gradually replace imports as product quality improves and price becomes competitive. Foreign investors will start investing, but in the domestic market, which has an established and frequently protected position, as well as the acquisition of standardised production technology.

Maturation stage

Here, the nations who invented the commodity become became net importers of it. By the third stage, the rate of increase in domestic demand has decreased and the product has started to be exported. By producing more for export, output is preserved at a high level. In absolute terms, imports decline. Due to its robust exports, the nation is able to import capital goods for ongoing manufacturing expansion. As the same industry in the advanced countries begins to lose its comparative advantage and migrate to emerging nations, inward FDI becomes important. This stage in the emerging world corresponds to the third maturation stage in the nation of invention. Additionally, as the economy grows, the legal and regulatory systems, as well as the transportation and communication infrastructure, will all improve. Additionally, there will be more educated workers. Returning to the developed nation example, Vernon (1966: 196) states that “as the demand for the product increases, the process of standardization (Vernon's second stage) accordingly takes place and the need for flexibility will decline.” There will also be some demand for the goods somewhere concurrently. At this level, manufacturing methods for mature items still require important inputs from the local inventive countries, such as skilled labor, replacement parts, industrial materials processed according to stringent specifications, etc. In contrast to other affluent nations, they are not readily available in emerging nations. However, at a later point in the standardization stage, demand growth may slow down in the United States and other rich nations while picking up in less developed nations.

According to Kaldor's (1970) theory of cumulative causation, the expansion of export demand is what drives regional growth. According to Kaldor's first law, there is a clear causal link between the expansion of industrial production and the expansion of GDP. According to his second law of growth, which was published in 1966, there are significant growing returns to scale in the industrial industry. The main idea of this rule not only supports the idea that manufacturing is the "engine of growth," but it also establishes the framework for models of cumulative growth causation.

According to Verdoorn's law (1949), there is a positive association between the increase of employment and the rise of productivity, as determined by the rate of growth of output per employee. Later, Kaldor (1967) changed this logic by substituting output growth for employment growth. The ensuing connection, which came to be known as the Verdoorn-Kaldor rule, contends that both static and dynamic economies of scale lead manufacturing productivity increase to be an organic outcome of output growth.

A Review of Contemporary Global Trade Theories of expertise and knowledge, chances for open exchange of ideas and experience, and the potential for process specialization and ever-increasing differentiation are all discussed by Kaldor (1970). According to Kaldor's third law, there is a strong positive causal relationship between the growth rate of the manufacturing sector and that of productivity outside the manufacturing sector because the industrial sector will receive an excess supply of labor due to the diminishing returns in agriculture and small service sectors.

If productivity in these industries is higher than the marginal product of labor, productivity will increase even when employment is declining. With reference to Thirlwall (2002), Kaldor's ideas that the demand for agricultural products in the early stages of development and export growth in the later stages of development serve as the drivers of expansion in the manufacturing sector. In the later stages, a rapid increase in exports and output may create a positive feedback loop were rapid export growth fuels rapid output growth, which in turn fuels rapid export growth by having a positive impact on competitiveness.
**Empirical Literature**

**Exports and economic growth**

The export-led growth hypothesis (ELGH) asserts that one of the major factors influencing economic growth is export growth. Many studies have focused on the linear relationship between export and economic growth found to be a positive association. In the same vein, studies went beyond the conventional neoclassical theory with exports as a third input, which in some way gives a different method to capture total factor productivity (TFP) increase. The relationship between exports and economic growth in both developed and developing countries has been the subject of several empirical studies.

Wani and Mir (2021) investigated the connection between globalization in India, which includes foreign direct investment (FDI), exports, imports, and foreign remittances. The study's conclusion, which was reached using the Autoregressive Distributed Lag bounds testing method, was that exports and foreign remittances have a strong and adverse link with economic growth.

To test the export-led growth hypothesis (ELG) after the implementation of trade liberalization, Kurniawan and A’yun (2021) used three models in the Autoregressive Distributed Lag (ARDL) model to consider real gross domestic product (RGDP), real exports (RE), foreign direct investment (FDI), real gross fixed capital (RGFC), labor force (LF), and the World Uncertainty Index. Model 1 demonstrates that while the ELG hypothesis is demonstrated to be true in the short run, it is untrue in the long term for Indonesia. The fact that real GDP is unimportant compared to real exports is further supported by model 2 in both the short and long terms. In the long run, model 2 demonstrates that actual exports have a favorable impact on FDI, and model 3 demonstrates that FDI is not affected by actual GDP. Like Kurniawan and A’yun (2021), Saji (2021) evaluated the ELG hypothesis in the BRICS countries and shown the accuracy of this model in predicting economic growth. The prediction power is also increased by adding FDI to the model. To estimate the data from Algeria, Egypt, Jordan, Morocco, Syria, Tunisia, and Turkey from 1982–2009, Marc (2011) used a two-stage least squares regression structural model approach. According to the study, exports and human capital have the biggest positive effects on economic growth. Additionally, Ahmad et al. (2018) employs panel data from ASEAN countries from 1981 to 2013 along with a three-stage approach, co-integration tests, and causality testing. This analysis backs up the idea that FDI expansion will be driven by both export-led growth (ELG) and FDI itself in the long and short term, which Kalaitzi and Chamberlain (2020) saw the relationship being significant only in the short-run.

In South-East Asian and South Asian nations, Rao et al. (2020) investigated export economic development and foreign direct investment. According to the report, FDI and exports may help South-East Asian and South Asian nations’ economies flourish. Only exports, according to the nonlinearity panel technique, have a positive impact on economic growth. The results validate the ELG hypothesis as a plan for achieving the desired growth in Asian nations. Sulaiman, Baharin, and Al-Hadi (2018) used import and export data to use the Autoregressive Distributed Lag (ARDL) model to analyze the effects on the nation’s Gross Domestic Product (GDP) from 1980 to 2010. It was determined that Egypt's exports and imports had a substantial impact on the nation’s economic situation which conquered with Kim, Kyophilavang, Nozaki, and Charoenrat (2022); Kollie (2020); Shieh (2020).

Zafar (2020) used the autoregressive distributed lag (ARDL) approach to co-integration along with ECM techniques to trace long-run and short-run relationships while empirically examining the relationship between exports, foreign direct investment, current account deficit, and economic growth in Pakistan between 1975 and 2016. The findings show that exports, foreign direct investment, and economic growth in Pakistan are all positively and significantly correlated throughout the long and short terms. Yilmaz and Sensoy (2022) did examine the nature of the relationship in Turkey, nevertheless. After developing the Vector Autoregressive Model (VAR), the ARDL and Toma &Yamamoto causality tests were conducted. The accuracy of the output was additionally checked using the Breusch-Godfrey Autocorrelation LM Test, Breusch-Pagan-Godfrey Heteroskedasticity Test, unit root test, normality test, and CUSUM tests. The findings demonstrated a long-term association between the ARDL Bounds test approach and the factors that, over time, negatively impact exports.

To investigate the connection between exports and economic growth in the case of South Africa between 1990 and 2014, Sunde (2017) used cointegration analysis, the ARDL model, the VECM model, and Granger causality tests in Africa. Experimental findings demonstrated that exports both short- and long-term boost economic growths. In their study of the relationship between exports and economic growth in Panama from 1980 to 2015, Bakari and Mabrouki (2017a) used the Granger Causality Test and the VAR Model. According to the results of their estimation, exports and economic growth are positively correlated. In the same view, exports also increase due to economic growth.

Bakari, Mabroukih and Othmani, (2018) reflected the idea of ELG in Algeria and saw Bakari and Tiba (2019a) again looking at factors influencing both long-term and short-term economic growth in the USA from 1970 to 2016. They discovered that exports are the main driver of economic growth over the long-term utilizing co-integration analysis and the Vector Error Correction Model (Kibria and Hossain, 2020; Dimonso and Utonga, 2019). Bakari et al. (2019c), once more, investigated the relationship between exports and economic growth for the Brazilian economy from 1970 to 2017. They used the VECM approach in their study. Empirical findings demonstrated that exports contribute to economic growth in the short run. Additionally, long-term outcomes showed that exports contribute to economic growth.
Threshold analysis

A linear relationship between exports and economic growth has been dominated many studies, overlooking a possible of non-linear relationship which may follow a threshold analysis. Zahonogo (2016), one of the first proponents of the idea, asserted that the relationship between trade openness (TO) and economic growth is depicted by an inverted U-type curve, indicating that there is a threshold value for TO and that the effects of TO on EG differ in positions before and after the threshold. The results of an analysis using the quadratic function supported the idea that trade openness and economic growth are not linear in Sub-Saharan Africa. As a result, open economies expand more quickly than closed ones (Rani and Kumar, 2018).

Seabra and Galimberti (2012) conducted another research on a panel threshold regression to re-evaluate the export-led growth theory. For a sample of 72 countries from 1974 to 2003, their model enables testing for the presence of additional variables that condition the impacts on the exports-growth nexus. The results confirmed the theory of export-led growth, according to which growth was influenced by a country's starting levels of output and human capital. Exports were found to be quite effective in advancing the process of income convergence among countries. Despite diminishing returns, exports were found to have great in accelerating the process of income convergence across countries. In another paper in Tunisia, Sami and Ridha (2018) also Re-Examine the Relationship between Export Upgrading and Economic Growth: Is there relevance Threshold Effect? The results of a dynamic panel threshold regression model (CS-ARDL) showed that there are threshold effects in the link between export upgrading and growth. The relationship between export and output growth was found to be inverted U-shaped. More complex exports for advanced countries encourage economic growth below a threshold level of 1.3 and -0.7 for underdeveloped countries. Furthermore, the findings show that when export sophistication is above and below the threshold level, it has an unequal impact on advanced and developing nations' economic growth. Excessive export complexity, however, may have negative effects on long-term economic growth.

Huchet, Moul, and Vijil (2018), researched on a panel of 169 nations between 1988 and 2014, supported Sami and Ridha's (2018) observation. A Generalized Method of Moments estimator was used in the investigation. The study discovered a non-linear relationship between the export ratio and the quality of the export basket, suggesting that trade openness may have a detrimental effect on growth for nations that specialize in low-quality goods. However, exports from nations with new types and higher-quality goods expand more hastily.

The year 2019 saw the exploration by Romyen, Jianxu, and Sriboonchitta (2019) of the connection between Thailand's export, import, and output (1990–2017). Models for threshold vector error correction (VEC) and threshold vector autoregressive (VAR) were used. The validity of the export-led growth theory has been shown. The two-threshold VAR and VEC models can be used to classify the export-output characteristics during economic cycles. These crucial parameters move closer to the long-run equilibrium. Novak (2019) in his paper found the same sentiments in Hungary. The results, which were based on data from 1996Q1 to 2016Q4, show a threshold co-integrating relationship between the chosen variables, adding greater clarity to the export led growth theory. Like Thailand, Hungary has found exports to be a long-term driver of economic expansion. Once more, the article demonstrates that the threshold co-integration approach provides richer understandings than the linear error-correction model.

In Ghana, Seyram (2020) used threshold models to investigate the export-led growth hypothesis (ELG) between 1970 and 2018. The study used threshold vector autoregressive (TVAR) analysis and linear vector autoregressive (LVAR) models in a two-tier analysis. A non-linearity test was performed using real GDP as the threshold variable to compare the threshold vector autoregressive (TVAR) model to the linear vector autoregressive (VAR) model. On the second tier, the study evaluated whether threshold co-integration models or linear co-integration models are more effective at explaining the ELG hypothesis. The findings show that the two-threshold vector autoregressive model, which has threshold values of 2.35 and 2.46, and the two-threshold vector error correction model (TVECM), which has values of -0.50 and -0.20, both support the ELG hypothesis. The TVECM's error correction term is negative and statistically distinct from zero, indicating that long-run convergence is occurring quickly. In the same view with Seyram (2020), Vianna and Andre (2021) divided the sample into two regimes based on TOTVOL thresholds generated by bootstrap techniques to examine nonlinear links between terms of trade volatility (TOTVOL) and economic development in 14 Latin American economies (1997-2014). The findings demonstrated statistically significant thresholds and greater trade-growth relationships in larger economies and during the 2000s commodity boom.

Nguyen, Ho, Nguyen and Pham (2023) employed the fixed-effect panel threshold approach to analyze the nonlinear effects of trade openness (TO) on economic growth in Indonesia, Malaysia, Thailand, Singapore, Philippines, and Vietnam. It was found that TO do not promote high efficiency if it rises to a high level that is above the threshold value without combining with other complementing policies. A nonlinear autoregressive distributive lag (NARDL) was utilized in a related study by Mosikari and Eita (2020) to examine the asymmetric link between Namibia's main export industries and economic development. It was established that their relationship is asymmetrical. Economic policies should therefore be sector-specific rather than at the overall level.

Research and Methodology

The study used a panel regression method, considering all the 5 SACU member states. Fisher (ñ_ë) panel unit root test by Maddala and Wu (1999) was used to examine the null hypothesis of non-stationarity against alternative hypothesis that the series was stationary. After the unit roots test in the series were examined, the autoregressive distributed lag bounds testing approach were
specified. The ARDL technique was used to test for both the long-run and short-run relationships and the Generalized Least Squares (GLS) was used for the determination of the respective threshold levels.

**ARDL bounds testing method**

The ARDL bounds technique promulgated by Pesaran and Shin (1999) and extended by Pesaran et al., (2001) was used due to its numerous advantages compared to other co-integration techniques like Johansen and Juselius (1992) and Engle and Granger (1987). Some of the advantages of the ARDL bounds technique are that it is relatively more efficient in either small or large sample sizes and, even in the presence of endogeneity, it yields unbiased results (Harris and Sollis, 2003).

The ARDL bound testing for Exports (EX) and economic growth (Y) along with other variables (Z) was specified as follows:

\[
\ln EX_{it} = \hat{a}_0 + \hat{a}_1 \ln EX_{i,t-1} + \hat{a}_2 \ln Y_{i,t-1} + \hat{a}_3 \ln Z_{i,t-1} + \sum_{j=1}^{p} \hat{a}_{1j} \Delta \ln EX_{i,t-j} + \sum_{j=0}^{q_1} \hat{a}_{2j} \Delta \ln Y_{i,t-j} + \sum_{j=0}^{q_2} \hat{a}_{3j} \Delta \ln Z_{i,t-j} + \delta_{it} \tag{1}
\]

\[
\Delta \ln Y_{it} = \hat{o}_0 + \hat{o}_1 \ln Y_{i,t-1} + \hat{o}_2 \ln EX_{i,t-1} + \hat{o}_3 \ln Z_{i,t-1} + \sum_{j=1}^{p} \hat{o}_{1j} \Delta \ln Y_{i,t-j} + \sum_{j=0}^{q_1} \hat{o}_{2j} \Delta \ln EX_{i,t-j} + \sum_{j=0}^{q_2} \hat{o}_{3j} \Delta \ln Z_{i,t-j} + \theta_{it} \tag{2}
\]

Where, \(\hat{a}_0\) and \(\hat{o}_0\) are intercepts in equations (1 and 2). \(\delta_{it}\) and \(\theta_{it}\) are the error terms for \(\hat{a}_1, \hat{a}_2\) and \(\hat{a}_3\); \(\hat{o}_1, \hat{o}_2\) and \(\hat{o}_3\) which are related to the long-run coefficients. \(\Delta\) is the first-difference operator and \(p\)’s and \(q\)’s are optimal lag length. It means that the models can either take the same or different lag length for the variables. The \(Z\)’s variables include other variables.

The long-run ARDL coefficients are obtained by estimating equations 3 and 4.

\[
\ln EX_{it} = \hat{a}_0 + \sum_{j=1}^{p} \hat{a}_{1j} \ln EX_{i,t-j} + \sum_{j=0}^{q_1} \hat{a}_{2j} \ln Y_{i,t-j} + \sum_{j=0}^{q_2} \hat{a}_{3j} \ln Z_{i,t-j} + \delta_{it} \tag{3}
\]

\[
\ln Y_{it} = \hat{o}_0 + \sum_{j=1}^{p} \hat{o}_{1j} \ln Y_{i,t-j} + \sum_{j=0}^{q_1} \hat{o}_{2j} \ln EX_{i,t-j} + \sum_{j=0}^{q_2} \hat{o}_{3j} \ln Z_{i,t-j} + \theta_{it} \tag{4}
\]

The short-run dynamic parameters are obtained by estimating the error-correction-models specified as.

\[
\Delta \ln FX_{it} = \hat{\delta} + \sum_{j=1}^{p} \hat{\delta}_{1j} \Delta \ln FX_{i,t-j} + \sum_{j=0}^{q_1} \hat{\delta}_{2j} \Delta \ln Y_{i,t-j} + \sum_{j=0}^{q_2} \hat{\delta}_{3j} \Delta \ln Z_{i,t-j} + \hat{e}ECM_{i,t-1} + \delta_{it} \tag{5}
\]

\[
\Delta \ln Y_{it} = \hat{\theta} + \sum_{j=1}^{p} \hat{\theta}_{1j} \Delta \ln Y_{i,t-j} + \sum_{j=0}^{q_1} \hat{\theta}_{2j} \Delta \ln FX_{i,t-j} + \sum_{j=0}^{q_2} \hat{\theta}_{3j} \Delta \ln Z_{i,t-j} + \hat{\theta}ECM_{i,t-1} + \theta_{it} \tag{6}
\]

In equations 5 and 6, \(\hat{\delta}_{1j}\)’s and \(\hat{\delta}_{2j}\)’s are short-run dynamic coefficients of the model and \(\hat{e}\) and \(\hat{\theta}\) are associated with error-correction terms lagged once \((ECM_{i,t-1})\) for exports and economic growth models, respectively.

The next subsection presents the Threshold Effect using the GLS.

**The Threshold Effect using the GLS**

The GLS technique was used to study the non-linear effects of exports and economic growth. One of the benefits of this approach is that it avoids heteroscedasticity complications. The non-linear effect relationship is examined by adding quadratic terms of financial development, integration, and inclusion to the economic growth model (Sarel, 1996; Khan and Senhadji (2001). The non-linear model for exports and economic growth were specified as follows:

\[
\Delta \ln Y_{it} = c_0 + c_1 EX_{it} + c_2 EX^2_{it} + c_3 Z_{it} + \hat{a}_{it} \tag{7}
\]

Where \(\Delta \ln Y_{it}\) is growth rate of real GDP, \(\Delta\) is the first-difference operator, \(c_0\) is an intercept. \(c_0, c_1\) are coefficients, \(EX_{it}\) and \(EX^2_{it}\) are linear and non-linear terms of exports and \(\hat{a}_{it}\) is the error term.

The threshold level of exports: Derivative of equation 7 with respect to \(EX_{it}\) that is set equal to zero.

\[
ln EX^*_{it} = \frac{c_1}{2c_2} \tag{8}
\]

The next sub-section presents data, data source and variable description.
Data and Variable Description

The study covered 5 SACU member states over a period of 1980 to 2022.

Real Gross Domestic Product (RGDP) growth rate was used to proxy Economic growth in order to control for inflation and also to obtain more superior estimations (Ariuna and Gibson, 2016; Altaee and Ai-Jafari, 2015; Araç and Özcan, 2014).

Exports (EX) is measured by total exports as a percentage of GDP. This approach was also considered by Odhiambo (2022) and Egbetunde and Akinlo (2014). A set of control variables, conventional variables in the endogenous models of economic growth, is included to account for other factors that are likely to influence economic growth. These include gross fixed capital formation (GFCF) as a percentage of GDP, imports (IMP) as a percentage of GDP and population growth (POPG) (Akimov, Wijeweera and Dollery, 2009). GFCF is the outlays in addition to fixed assets plus changes to the level of stock or inventories. Gross fixed capital formation supports investment and eventually promotes economic growth (Solow 1956; Hicks, 1969). The modified Romer model by Jones (1995) states that the long run economic growth is dependent only on exogenous parameters which includes population growth.

Data was obtained from the World Bank’s World Development Indicators (WDI).

ADF-Fisher panel unit root test

The ADF-Fisher panel root test results show mixed order of integration, I(0) and I(1), for economic growth, exports and control variables. The mixed order of integration justifies the use of the ARDL model. The ARDL approach is only applicable for the analysis of variables that are integrated of an order not more than one.

Therefore, given the confirmation of the order of integration to be at most 1, the next section presents the ARDL bounds test for co-integration to check for both the long-run and the short run relationships.

ARDL bounce test for co-integration approach.

Table 5 gives the empirical results of the ARDL bounds test for co-integration whilst Table 6 gives the estimated short-run and long-run coefficients. The respective diagnostic tests are presented in both tables. There are two models estimated: Model 1 and Model 2 with dependent variables of economic growth and exports respectively.

The results indicate that the computed F-statistics, using the Wald test, are greater than the upper critical bound at the 5% level of significance for both models and all categories. Thus, there is evidence for the existence of a long-run relationship between economic growth and exports along with some selected macroeconomic variables.

Table 5: ARDL Bounds F-Test for Co-integration.

<table>
<thead>
<tr>
<th>Models</th>
<th>Model 1: Dependent variable is LNRGDP</th>
<th>Model 2: Depended variable is LNEX</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regressor</td>
<td>LNX, LNIMP, LNGFCF, LNPOPG</td>
<td>LNRGDP, LNIMP, LNGFCF, LNPOPG</td>
</tr>
<tr>
<td>Optimal lag Structure</td>
<td>(1,1,1,1,1)</td>
<td>(1,1,1,1,1)</td>
</tr>
<tr>
<td>F-statistics</td>
<td>4.351076*</td>
<td>2.043358*</td>
</tr>
<tr>
<td></td>
<td>Lower bounds I(0)</td>
<td>Lower bounds I(0)</td>
</tr>
<tr>
<td></td>
<td>Upper bounds I(1)</td>
<td>Upper bounds I(1)</td>
</tr>
<tr>
<td>1 per cent level</td>
<td>3.29</td>
<td>4.37</td>
</tr>
<tr>
<td>5 per cent level</td>
<td>2.56</td>
<td>3.49</td>
</tr>
<tr>
<td>10 per cent level</td>
<td>2.20</td>
<td>3.09</td>
</tr>
</tbody>
</table>

Note: The 1%, 5% and 10% significant are represented as ***, ** and * respectively.
Table 6: Estimated Long-Run and Short-Run Coefficients

Panel A: Long-run coefficients:

<table>
<thead>
<tr>
<th>Models</th>
<th>Model 1 (dependent variable is LNRGDP)</th>
<th>Model 2 (dependent variable is LN(EX))</th>
</tr>
</thead>
<tbody>
<tr>
<td>Optimal lag Structure</td>
<td>ARDL(1,1,1,1) based on AIC</td>
<td>ARDL(1,1,1,1) based on AIC</td>
</tr>
<tr>
<td>LNEX</td>
<td>0.001317**</td>
<td>-0.521699*</td>
</tr>
<tr>
<td>LNRGDP</td>
<td>-0.001167</td>
<td>-0.009448</td>
</tr>
<tr>
<td>LNIMP</td>
<td>0.000873</td>
<td>0.000562</td>
</tr>
<tr>
<td>LNGFCF</td>
<td>0.000429*</td>
<td>0.018959</td>
</tr>
<tr>
<td>LNPOPG</td>
<td>0.020793</td>
<td>2.143809**</td>
</tr>
</tbody>
</table>

Panel B: Short-run coefficients

<table>
<thead>
<tr>
<th>Models</th>
<th>Model 1 (dependent variable is ΔLNRGDP)</th>
<th>Model 2 (dependent variable is ΔLNFX)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ΔLNEX</td>
<td>0.002239</td>
<td>-7.692552*</td>
</tr>
<tr>
<td>ΔLNRGDP</td>
<td>-0.002152</td>
<td>-0.053299</td>
</tr>
<tr>
<td>ΔLNIMP</td>
<td>0.001250</td>
<td>-0.054280</td>
</tr>
<tr>
<td>ΔLNGFCF</td>
<td>-0.000537</td>
<td>-0.017309</td>
</tr>
<tr>
<td>ΔLNPOPG</td>
<td>-0.302354**</td>
<td>-0.127965***</td>
</tr>
<tr>
<td>ECM(-1)</td>
<td>-0.127965***</td>
<td></td>
</tr>
</tbody>
</table>

Diagnostic tests

<table>
<thead>
<tr>
<th></th>
<th>Statistics</th>
<th>Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>R-square</td>
<td>0.190392</td>
<td>0.114641</td>
</tr>
<tr>
<td>Adjusted - R-square</td>
<td>0.145413</td>
<td>0.065149</td>
</tr>
<tr>
<td>F-statistics</td>
<td>4.232971***</td>
<td>3.563198*</td>
</tr>
<tr>
<td>DW Statistic</td>
<td>1.703097</td>
<td>1.745045</td>
</tr>
</tbody>
</table>

Note: The 1%, 5% and 10% significant are represented as ***, ** and * respectively.

Table 6, Panel A shows the long-run results while Panel B gives the short-run results. Model 1 shows that exports positively support economic growth both in the short-run (0.002239) and in the long run (0.001317) though it is insignificant in the short run. This could suggest the existence of a minimum threshold beyond which exports begin to affect economic growth statistically positively. The result is consistent with the findings by Mir (2021), Rao et al. (2020) and Zafar (2020), who concluded that exports promote economic growth.

Model 2 shows that economic growth does not promote exports in both the short-run and the long-run. The result is in line with the findings by Kurniawan and Ayun (2021).

The result of model 1 and 2 supports the exports-led growth hypothesis for SACU. The implication of this is that exports are expected to granger cause economic growth. The result is in line with Sunde (2017).

The error correction terms (ECM (-1)) of -0.302354 and -0.127965 for models 1 and model 2 respectively are negative and significant as expected, thus validating the existence of a long-run relationship between all the variables in the estimated models as well as a long run bidirectional causality between exports and economic growth. This implies that shocks or disequilibrium from the previous year converges back to the long-run equilibrium path in the current year.

The regression for the underlying ARDL models for all categories fits well, as indicated by the statistically significant F-statistics at 1% level of significance. The fact that the overall fit of the models are significant implies that the models can be used for meaningful inferences. The Durbin-Watson test shows that the variables in the models are free of autocorrelation; that is the values of the Durbin-Watson statistic are within 1.5-2.4.

The next section presents the results of the threshold effects.

Threshold Effect

Table 7 presents the results of threshold analysis. As alluded to in the introduction section, the current study is the first known study by the author to analyse threshold levels of exports using non-linear form of quadratic functions for SACU. The study hypothesised that export oriented policies start to have positive or negative effects on economic growth after a certain turning-point or threshold is realised. A positive and significant linear term in combination with a negative and significant quadratic term suggests that the effect of a specific policy variable on economic growth can be described as an inverted-U curve (maximum) relationship (Rousseau and Wachtel, 2002). On the other hand, a significant negative linear term in combination with a significant positive quadratic term suggests a U-curved (minimum) relationship between a specific policy variable on economic growth.
Table 7: Threshold Results - Generalized Linear Model (Newton-Raphson / Marquardt steps)

<table>
<thead>
<tr>
<th>Independent variables</th>
<th>Dependent variable – LNRGDP</th>
</tr>
</thead>
<tbody>
<tr>
<td>EX</td>
<td>-0.215955***</td>
</tr>
<tr>
<td>EX^2</td>
<td>0.001825***</td>
</tr>
<tr>
<td>IMP</td>
<td>-0.045693</td>
</tr>
<tr>
<td>GFCF</td>
<td>0.041016</td>
</tr>
<tr>
<td>POPG</td>
<td>-0.268674</td>
</tr>
</tbody>
</table>

**Effects Specification: Ramsey RESET Test**

<table>
<thead>
<tr>
<th>t-statistic</th>
<th>0.131603</th>
</tr>
</thead>
<tbody>
<tr>
<td>F-statistic</td>
<td>0.025729(0.8620)</td>
</tr>
<tr>
<td>Likelihood ratio</td>
<td>0.031351</td>
</tr>
</tbody>
</table>

The 1%, 5% and 10% significant are represented as ***, ** and * respectively.

Ramsey RESET Test - Ho: the functional form is correctly specified.

The threshold level of exports (equation 8) is as follows.

\[
\ln EX = 0.215955 / 2 \times 0.001825 = 59\%
\]

The result suggests that level of exports below 59% of GDP is detrimental to economic growth in SACU (U Shaped - minimum). That is exports will only start contributing to economic growth when it is above 59% of GDP. As indicated under the introduction section, Figure 2, SACU exports to GDP are below the threshold, hovering around 40%, a level detrimental to economic growth. SACU has high levels of Real Exports of Primary Products compared to Real Exports of Manufactured Goods as shown under Table 1. Thus, SACU should promote exports of manufactured goods or semi processed goods for it to realize the envisaged potential long run economic growth as presented under the ARDL results, Table 5, Model 1. This conclusion confirms the result under ARDL, where GDP growth does not statically significantly support the level of exports both in the short run and long run.

The Ramsey RESET is used to examine whether non-linear combinations of fitted values explain the response variable significantly at the 5% level. We fail to reject the null hypothesis at 5% significance level, indicating that the functional form is correctly specified. Thus, the results of the model can be used for meaningful inference.

**Conclusion**

The current study showed that exports are one of the main factors fueling SACU’s economic growth. There is evidence of a long-run relationship between economic growth and exports, using the ARDL Bounce test for co-integration technique. The Threshold analysis revealed that SACU’s exports contribution to economic growth is below the required minimum threshold of 59% as a percentage of GDP. This indicates that more export-oriented effort is required for exports to stimulate economic growth.

The study also revealed that the real exports of manufactured goods lags far below the real exports of primary products. The SACU region could increase the value of its exports by concentrating on exporting manufactured goods through embracing initiatives like value chain beneficiation and industrialization. Additionally, to promote economic growth, policies and regulations that are skewed towards the improvement of competitiveness of local products on the global market should be put in place (Okpeku and Aras, 2021). SACU member countries should also consider spearheading and implementing bilateral trade agreements such as the Botswana/Namibian Walvis Bay port initiative to unlock the inherent competitive advantage of the region. This integration policy shift will enable SACU to harness the synergy benefits amongst its member states and thus boosting the level of its exports and ultimately propelling economic growth.

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**Author Contributions:** Conceptualization, Methodology, Data Collection, Formal Analysis, Writing—Original Draft Preparation, Writing—Review And Editing by authors with equal participation: All authors have read and agreed to the published the final version of the manuscript. The authors have read and agreed to the published version of the manuscript.

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**Data Availability Statement:** The data presented in this study are available on request from the corresponding author. The data are not publicly available due to restrictions.

**Conflict of Interest:** The authors declare no conflict of interest.

**References**


Botswana Investment and Trade Centre. (2019) Revised Botswana Exporter Development Programme (BEDP) *Botswana Investment and Trade Centre*


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