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South Africa-Africa trade: Continental Free Trade Area

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South Africa-Africa trade: Implications for South Africa's role in intra-Africa trade with the African Continental Free Trade Area in place

Abstract

South Africa-Africa trade was examined for 2001-2021 and results show that Africa is an important market for South Africa's manufactured products and there is ease of market access for these products; its trade with Africa is highly complementary; and it has strong trade linkages with Africa's regional groups. Current South Africa-Africa trade is a foundation South Africa could utilise to consolidate, broaden and strengthen its role in intra-Africa trade with the AfCFTA in place as more complementary trade opportunities emerge; markets open more and current trade linkages with regional groups strengthen as trade barriers are reduced further; and regional value chains and production clusters initiatives emerge as market access improves with new and dynamic comparative advantages emerging.

Trade in goods and services is a channel through which developments in one country can spillover to other countries. This is through, among other things, (i) access to cheaper inputs which improve productive capacities of domestic industries; (ii) providing a wider variety of goods to domestic consumers; (iii) motivating the development of production linkages through value chains as different products bring with them different richness or rare qualities to production linkages; and (iv) developing new and dynamic comparative advantages. To this end therefore, efforts have been made to promote linkages between countries in Africa through various forms of economic integration arrangements. Although Africa's trade links with Europe, the United States and increasingly with Asia, still far outweigh trade links inside the

region, intra-Africa trade and linkages have been expanding rapidly in recent years, as shown by trade data available from trade databases available at http://www.trademap.org, http://www.UNCTAD.org as well as http://www.statssa.org. Improved regional infrastructure and intensified implementation of existing free trade agreements as well as new ones like the proposed Tripartite Free Trade Area (TFTA) Agreement and the African Continental Free Trade Area (AfCFTA) Agreement would help to increase the scale and importance of intra-Africa trade.

South Africa is the largest economy in southern Africa and its linkages with sub-Saharan Africa are large and steadily intensifying through the expansion of investment by its companies and institutions into various sectors in sub-Saharan Africa, as shown in various research articles, including Ramkolowan et al. (2018), UNCTAD (2018), FDI Intelligence (2016), Sandrey (2015), Loots and Kabundi (2012), Mutambara (2007) and Thomsen (2005). Membership in the Southern African Development Community (SADC) and the Southern African Customs Union (SACU) has caused a deepening of South Africa's trade and other linkages within the sub-Saharan region. This has enabled South Africa to diversify the market orientation of its exports, thus, playing a significant role in the structure of intra-sub-Saharan Africa trade. As a well-developed economy in the region, South Africa is often strongly regarded as an important intra-regional import source than as an export destination, as evidenced by its huge and increasing trade surplus with the African Continent, which rose continuously from US$3.3billion in 2001 to US$17.0billion in 2021[1]. Being regarded as an important intra-regional import source has implications for South Africa to utilise more fully its current industrial base to try and meet some of Africa's import demand.

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[1] Based on trade data from the International Trade Centre available at http://www.trademap.org

The African Continental Free Trade Area, of which South Africa is a member, is now in place[2]. This presents a bigger and more accessible market for South Africa and by becoming a member, South Africa is signalling that it intends to play a meaningful role in intra-Africa trade. South Africa's participating in intra-Africa trade in the context of the African Continental Free Trade Area, would give it more opportunities to (i) develop and strengthen more its role as an intra-regional import source; (ii) to use its relatively more developed economic infrastructure (compared to most African countries) to initiate and foster regional value chains and promote joint production; and (iii) to utilise more fully its current industrial base as well as to develop it further.

This research article examines the current nature of South Africa-Africa trade and the implications this has on South Africa's role in intra-Africa trade with the AfCFTA in place. This is done by analysing its current trade with Africa regarding (i) products traded; (ii) extent of trade complementarity; (iii) bilateral trade intensity with regional economic integration arrangements in Africa which gives insights into the extent and strength of its trade linkages with these regional group; and (iv) its trade integration dimension with Africa. All these aspects have implications for its role in intra-Africa trade with the AfCFTA in place.

2. Methodology, Techniques and Procedures

Trade data for empirical analysis in this research paper are obtained from the International Trade Centre trade database available at http://www.unctad/org and http://www.trademap.org. Indexes that are derived to provide empirical evidence for this research are explained below.

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[2] On 30 May 2019, the African Continental Free Trade Area entered into force, 30 days after the deposit of the 22nd instrument of ratification, as specified in Article 23 of the Agreement (Tralac, 2019).

2.1 Trade Complementarity Index

Trade Complementarity Indices (**TCI**) provide useful information on the prospects for intra-regional trade by showing how well the structure of a country's exports match or complement the import requirements of another country. Thus, this can be used to determine the extent to which countries are natural trading partners in the sense that one country's imports overlap with another county's exports. TCI approximate the adequacy of country **j**'s export supply to country **i**'s import demand by calculating the extent to which country **i**'s total imports match country **j**'s total exports. The trade complementarity index is given by the equation below.

$$\textbf{TCI}_{ij} = 100 \ [1-(\textstyle\sum|\textbf{Y}_{ki} - \textbf{X}_{kj}|)/2] \ \text{---} \quad [1]$$

Where:

$\textbf{Y}_{ki}$ is the share of good **k** in all imports of country **i**; and $\textbf{X}_{kj}$ is the share of good **k** in all exports of country **j**. $\textbf{TCI}_{ij} = 0$ if there is no overlap at all; $\textbf{TCI}_{ij} =100$ if imports and exports match perfectly (Hosein et al., 2021; WITS, 2018; Ibrahim & Shehu, 2016; Mathur et al., 2016; Vahalik, 2014; UNCTAD & WTO, 2012).

The Trade Complementarity Indices can be calculated from the perspective of each country to a trade agreement because while country **i**'s import structure may not match country **j**'s export structure, country **j**'s import structure may match country **i**'s export structure, thus indicating trade complementarity from country **j**'s perspective. Analysing TCIs for a period of years helps to determine whether countries' trade profiles were becoming more compatible.

2.2 Revealed trade barriers index

Revealed trade barriers (RTB) indexes seek to establish whether imports by country *j* of a particular commodity *k* from country *i* are more or less important compared to country *j*'s total

imports of that commodity from all sources. The index can thus be calculated using the following formula:

$$\textbf{RTB}^{\textbf{j}}_{\textbf{ik}} = \frac{M^{j}_{ik}/\sum M^{j}_{i}}{\sum M_{k}/\sum M} \quad \text{-- [2]}$$

Where:

$M^{j}_{ik}/\sum M^{j}_{i}$ = the share of commodity k in country j imports from country i

$\sum M_{k}/\sum M$ = the share of commodity k in world imports

M^{j}_{ik} = imports of commodity k from country i by country j

$\sum M^{j}_{i}$ = total imports from country i by country j

$\sum M_{k}$ = total world imports of commodity k

$\sum M$ = total world imports

If $0 < \textbf{RTB}^{\textbf{j}}_{\textbf{ik}} < 1$, then we may conclude that country i is exporting relatively more of commodity k to the rest of the world than to country j. Thus, there is possibly discrimination against commodity k originating from country i going into country j.

If $\textbf{RTB}^{\textbf{j}}_{\textbf{ik}} = 1$, there is no discriminatory trade barrier against commodity k from country i in country j.

If $\textbf{RTB}^{\textbf{j}}_{\textbf{ik}} > 1$, country j is importing more from country i than expected. There is possibly preferential treatment of commodity k originating from country i going into country j (Mutambara, 2017; Kalaba et al., 2005; Wilcox & van Seventer, 2005).

2.3 Bilateral trade intensity index

To measure and examine regional intensity of trade between South Africa and the regional economic integration arrangements in Africa, this research used the ***trade introversion index (TI_i)***, as noted by Hamanaka (2015), Iapadre and Luchetti (2010) or the bilateral ***revealed trade***

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preference index (**RTPᵢⱼ**) as noted by Iapadre and Tajoli (2013) and Iapadre and Tironi (2009:9). This is because the most widely used and well-known bilateral trade intensity index (I_{ij})[3], and its variations have some limitations, *viz.* range variability, range asymmetry, and dynamic ambiguity, which have to be corrected for as noted by Hamanaka (2015), Iapadre and Tajoli (2013), Iapadre and Luchetti (2010), Iapadre and Tiron (2009), Iapadre (2006) and Iapadre (2004). The bilateral revealed trade preference index (**RTPᵢⱼ**) or the trade introversion index **(TIᵢ)**, is thus deemed robust and free of all the three limitations which other trade intensity indexes face, because all these limitations are corrected for[4]. The bilateral revealed trade preference index (**RTPᵢⱼ**) thus shows the *relative bilateral trade intensity* between two regions, *i* and *j (*i.e. region *i*'s introversion towards region *j*), and is given by:

$$RTP_{ij} = (HI_{ij} - HE_{ij})/(HI_{ij} + HE_{ij})$$ …………………………………… [3]

Where: $-1 \leq \mathbf{RTP_{ij}} \leq +1$.

Hᵢⱼ is the *homogeneous bilateral trade intensity index* (**HIᵢⱼ**) and **HEᵢⱼ** is the homogeneous intensity to the rest of the world excluding the partner country (i.e. the *extra-regional homogeneous trade intensity* between the regions) and is the complementary indicator for **Hᵢⱼ**[5]. **RTPᵢⱼ** = -1 indicates no bilateral trade; **RTPᵢⱼ** = 1 indicates only bilateral trade (or no extra-regional trade); and **RTPᵢⱼ** = 0 indicates geographic neutrality (Hamanaka, 2015; Iapadre & Tajoli, 2013; Iapadre & Luchetti, 2010; Iapadre & Tironi, 2009). The bilateral **RTP,** unlike all

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[3] $I_{ij} = (S_{ij})/(W_j) = (T_{ij}/T_{iw}))/(T_{wj}/T_w)$
Where: $\mathbf{T_{ij}}$ = trade (exports + imports) between reporting country **i** and partner country **j**; $\mathbf{T_{iw}}$ = trade between the world and country **i**; $\mathbf{T_{wj}}$ = world trade with country **j**; $\mathbf{T_w}$ = total world trade (Hamanaka, 2015; Iapadre & Tajoli, 2013; Iapadre & Tiron, 2009).
[4] See Hamanaka (2015); Iapadre and Tajoli (2013); Iapadre and Luchetti (2010); Iapadre and Tiron (2009); Iapadre (2006); Iapadre (2004).
[5] $(HI_{ij}) = (S_{ij})/(V_{ij}) = (T_{ij}/T_i)/(T_{oj}/T_{ow})$ *and* $(HE_{ij}) = (1-S_{ij})/(1-V_{ij}) = [1 - (T_{ij}/T_i)]/[1 - (T_{oj}/T_{ow})]$
Where: $0 \leq (\mathbf{HI_{ij}}) \leq \infty$
T = total trade (exports + imports); $\mathbf{T_{ij}}$ = exports of region *i* to region *j* + exports of region *j* to region *i* [*i.e.* trade between region *i* and region *j*]; $\mathbf{T_i}$ = total exports of region *i* to the world + total imports of region *i* from the world [*i.e.* trade between region *i* and the world]; $\mathbf{T_{oj}}$ = exports of world excluding region *i* (rest of the world) to region *j* + imports of world excluding region *i* (rest of the world) from region *j* [*i.e.* trade of region *j* with the rest of the world]; $\mathbf{T_{ow}}$ = total exports of world excluding region *i* + total imports of world excluding region *i* (Hamanaka, 2015; Iapadre & Tajoli, 2013; Iapadre & Tiron, 2009).

the other trade intensity indices is perfectly symmetric, as $\mathbf{RTP_{ij}} = \mathbf{RTP_{ji}}$ independently of country size (Iapadre & Tajoli, 2013; Iapadre & Tironi, 2009; Iapadre, 2004).

2.4 The trade integration dimension

The trade integration dimension of regional integration measures/assesses the extent to which a country trades with others in the region. It also estimates the potential for integration at a deeper level by noting whether a country has signed or ratified the agreement establishing the Free Trade Area. As noted by African Union et al. (2020; 2019; 2016) and United Nations Economic Commission for Africa (2019), the Africa Regional Integration Index (ARII) uses four indicators to assess trade integration, viz: (i) Share of intra-regional exports over GDP which measures the value of the goods that a country has exported within the region as a percentage of that country's gross domestic product; (ii) Share of intra-regional imports over GDP which measures the value of the goods that a country has imported from within the region as a percentage of that country's gross domestic product; (iii) The share of intra-regional trade which is defined as the sum of a country's exports and imports within the region as a proportion of all of the region's intra-regional trade; (iv) Average intra-regional import tariffs which seeks to capture the effect of policies that enhance or inhibit trade openness. It measures the *ad valorem* equivalents of the minimum rates of the tariffs that a country has levied on its imports from the other countries in its region; and (iv) The AfCFTA indicator[6] which reveals whether countries have signed or ratified the African Continental Free Trade Area agreement. This is measured for countries, not for regional economic communities.

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[6] This qualitative indicator measures whether the country has ratified, signed, or not signed the Protocol on the Agreement establishing the African Continental Free Trade Area (AfCFTA). Ratification = 2; Signed = 1, not signed = 0 (African Union et al., 2019).

3. Results and Discussions

3.1 Structure of South Africa's products traded with Africa

Table A-1a (Appendices) shows that South Africa's major exports to Africa are manufactured goods (SITC 5 to 8 less 667 and 68), which constitute 62.2%-74.6% of its total exports to Africa in 2001-2021. Table A-1c (Appendices) shows that these products are of various levels of skill and technology intensity, *viz.* (i) high value-added manufactures composed of medium skill & technology-intensive manufactures and high skill & technology-intensive manufactures, which jointly made up 58.5%-70.1% of South Africa's manufactured exports to Africa; (ii) low skill and technology-intensive manufactures, which contributed 15.9% - 33.8% of South Africa's manufactured exports to Africa; and (iii) labour-intensive and resource-intensive manufactures, whose share was 7.7%-15.0% of manufactured exports to Africa.

By having high value-added manufactured goods as its major exports to Africa shows that Africa serves as an important market for South Africa manufactured products with greater skill and technology content. This is beneficial to both South Africa and the African countries as this has developmental potential for both. South Africa benefits from having a geographically near testing ground and market for its manufactured products, while African countries benefit from a nearby source for high value-added products which they cannot produce more efficiently compared to South Africa. While Africa may be a smaller market in consumer terms, given the generally lower levels of income, its geographical nearness and improved infrastructure developments due to the various infrastructure projects in place mean a nearer export destination for South Africa's high value-added manufactured goods. With the AfCFTA in place, and the African market becoming more accessible to South Africa's high value-added manufactured goods, this would give additional stimuli for South Africa strengthen its position as a key exporter of high value-added manufactured goods into African countries. Furthermore,

South Africa would be able to use its export trade in manufactured goods with Africa as a basis to utilise more fully its existing industrial capacities and capabilities as well as developing and strengthening its industrial base even further to meet some of the Continent's import demand for manufactured goods in general and high value-added manufactured goods, in particular.

Table A-1b (Appendices) shows that South Africa's major import from Africa is Fuels (SITC 3). These comprise Petroleum gases and oils, other non-Petroleum gases and oils like gaseous hydrocarbons, coal gas, and oils obtained from bituminous minerals, etc. Such imports are essential to augment South Africa's own Mineral fuels resources endowments to give further support to its industrial base. South Africa's manufactured imports from Africa are manufactured products of various levels of skill and technology intensity (Table A-1d, Appendices), but especially low value-added manufactures, like labour-intensive and resource-intensive manufactures and Low-skill and technology-intensive manufactures, which jointly contributed 28%-68% of South Africa's manufactured imports from Africa in 2001 – 2021. From 2008, the share of Medium-skill and High-skill and technology intensive manufactures which South Africa imports from Africa has been rising, and jointly contributing 31.3%-71.9% of South Africa's total manufactured imports from Africa.

The results in Tables A-1 (Appendices) are consistent with the type of products that are expected to be traded given the vast differences in the levels of industrial development between South Africa and the rest of Africa. Since South Africa has a much more developed and diverse industrial base, it is expected to export mainly high value-added manufactured products to Africa. Since most of the African countries are at much lower levels of industrial development, it is expected that South Africa's imports would mainly be low value-added manufactures. Therefore, South Africa becomes a significant market for Africa's low value-added

manufactures. This market would help African countries to develop further their respective industries for these products. Furthermore, when trade is more interconnected through infrastructure developments, Africa's high number of small economies would be able to access more easily larger markets and regional hubs sources from the region and be able to use the imports to grow. All of this would make trade integration a key element in the Continent's ongoing integration journey.

3.2 Trade complementarity in South Africa's trade with Africa

Trade complementary indices (TCI) were calculated and used to indicate the extent to which South Africa-Africa trade is complementary. Table A-2 (Appendices) shows that there is a very high match between South Africa's export offers (export structure) and Africa's import demand (import structure), as shown by $71.8 \leq \text{TCI}_{ij} \leq 81.3$ for the period 2001 - 2020. Africa's export offers (export structure) moderately match South Africa's import demand (import structure), as shown by $50.0 \leq \text{TCI}_{ij} \leq 63.7$ for the period 2001 - 2020. Therefore, South Africa's export offers complement Africa's import demand a lot more than Africa's export offers complement South Africa's import demand. However, over the years, Africa's export structure has become more compatible with South Africa's import structure, as evidenced by rising trade complementarity indexes, i.e., from $\text{TCI}_{ij} = 52.2$ in 2001 to $\text{TCI}_{ij} = 63.7$ by 2020.

While the trade complementarity indexes do not say whether the amount supplied by one trading partner satisfies the import demand of the other trading partner, or alternatively whether the export amount is not too high to be absorbed by the importing partner, high and improving trade complementarities in South Africa-Africa trade opens possibilities for improved production by South Africa and the other African countries to match each other's import demand more. With both tariff and non-tariff trade barriers reduced further with the AfCFTA

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in place, current complementary trade structures between South Africa and Africa would be exploited more fully for mutual benefit. Furthermore, addressing the various tariff and nontariff barriers as well as putting in place adequate trade and investment facilitating measures, the AfCFTA would create more favourable conditions and environment for South Africa to promote its industrial base through joint production and the developing stronger regional value chains with other African countries.

With the AfCFTA in place, competition will become stiffer, and as such South Africa, just as with other African countries, would need to continuously innovative and investigate opportunities to develop new and dynamic areas of comparative advantage by using and taking advantage of regional value-chain frameworks in different sectors. Furthermore, using better technology, higher-quality inputs, and updating marketing techniques would remove bottlenecks to utilising the existing trade complementarities more fully. This would translate into improved levels of industrial development which would ensure that high value-added manufactured goods become products of comparative advantage as well as a significant part of bilateral trade complementarity between countries.

3.3 Market access for South Africa's exports

Both tariff and non-tariff barriers have implications for the ease with which markets are accessible to trading partners. Ease of market access promotes more trade which in turn helps to facilitate industrial development as countries will be motivated to produce more for the now easily available markets. Revealed trade barrier indexes (**RTB$^j_{ik}$**) for imports of commodities from one country by another are often used to indicate whether there is possibly discrimination against (or there is possibly preferential treatment to) a commodity originating from another country.

Table A-3 (Appendices) shows that South Africa's exports to Africa which have the easiest access into Africa's markets are (i) Resource-based manufactures which are agro-based; (ii) Other Resource-based manufactures which are not agro-based; (iii) Low technology manufactures other than textile, garment and footwear; and (iv) Medium technology manufactures, process. Each of these categories of exports has $RTB^j_{ik} > 1$ throughout the period 2001-2021. With the AfCFTA in place, African markets will become even more accessible, which would benefit South Africa as it would be able to access these markets even more. The ripple effects would be increased motivation for South Africa to utilise current installed industrial capacities more to produce more and export to the then more easily accessible African markets. While South Africa's high technology manufactures experienced discriminatory trade barriers throughout the period, i.e., $RTB^j_{ik} < 1$, they still accounted for 26% - 35% of South Africa's manufactured exports to the African Continent. The opening up of the African markets with the AfCFTA would help improve market access for this category of South Africa's major manufactured exports to the African Continent.

3.4 South Africa's trade linkages with Africa

Table A-4 (Appendices) shows that the share of South Africa-Africa trade in South Africa's total world trade has been growing over the years, from a mere 9.17% in 2001 to 19.23% by 2019 before the onset of the COVID-19 pandemic, which saw a general fall in global trade after 2019. South Africa's trade with Africa overtook that with the USA after 2004 and that with Germany after 2006. From 2009, China became South Africa's major trading partner after Africa.

Using trade shares to quantify trade may not on its own necessarily reflect importance, but loosely gives insights into the extent to which a market is being considered valuable or of growing in importance. Therefore, as noted in Section 2.3, bilateral trade intensity indexes are used, and Table A-5 (Appendices) shows the extent to which trade between South Africa and the various regional economic integration arrangements in Africa is biased towards each other, and thus the extent to which they regard each other as significant trading partners. Eight regional groups[7] are recognised by the African Union as crucial building blocks to establish the African Economic Community (African Union Commission, 2019; Nagar & Nganje, 2016; African Union et al., 2016). Due to overlapping memberships, only five[8] of the eight regional groups are considered here, and the results for inter-regional trade intensity ($\mathbf{RTP_{ij}}$) between South Africa and the five regional groups are presented.

The strength of trade linkages between South Africa and these regional groups varies, with South Africa's trade more closely linked with some regional groups than with others. South Africa and the Arab Maghreb Union have a negative trade bias towards each other, as shown by the negative index throughout the period considered (i.e. $-0.71 \leq \mathbf{RTP_{ij}} \leq -0.23$). Therefore, South Africa and the Arab Maghreb Union do not regard each other as significant trading partners. South Africa and the ECCAS, as well as South Africa and ECOWAS, have a moderate-to-high trade bias towards each other, as shown by the indexes $0.62 \leq \mathbf{RTP_{ij}} \leq 0.96$ and $0.54 \leq \mathbf{RTP_{ij}} \leq 0.85$, respectively. South Africa and the EAC have strong trade linkages, as shown by the high trade bias towards each other, i.e. $0.78 \leq \mathbf{RTP_{ij}} \leq 0.89$. South Africa's

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[7] These eight are CEN-SAD (Community of Sahel-Saharan States), COMESA (Common Market for Eastern and Southern Africa), EAC (East African Community), ECCAS (Economic Community of Central African States), ECOWAS (Economic Community of West African States), IGAD (Intergovernmental Authority on Development), and SADC (Southern African Development Community) UMA (Arab Maghreb Union). All 55 countries in Africa are members of the African Union, and each country is a member of at least one of these eight regional groups.

[8] These economic integration arrangements are Arab Maghreb Union (UMA), the East African Community (EAC), the Economic Community of Central Africa States (ECCAS), the Economic Community of West African States (ECOWAS) and the Southern African Development Community (SADC).

strongest trade linkages are with SADC in which it is a member, as shown by the very trade

bias index of $0.83 \leq \mathbf{RTP_{ij}} \leq 0.94$. Therefore, South Africa and the EAC as well as South Africa

and SADC consider each other as very significant trading partners. In general, South Africa

and the African Continent have strong trade linkages as shown by the indexes $0.76 \leq \mathbf{RTP_{ij}} \leq$

0.89. Therefore, South Africa still considers the African Continent as a significant trading

partner, despite its major trading partners being outside Africa, where China, France, Germany,

and the USA jointly accounted for 28.5% - 32.8% of South Africa's world trade in the period

2001-2020, with that share rising to 52.5% in 2021, as shown in Table A-5 (Appendices).

The current trade linkages which South Africa has with the regional groups would be

strengthened by the further reduction in trade barriers with the AfCFTA in place, thus enabling

South Africa and the regional groups to trade more intensively with each other. This would

enhance and solidify South Africa's role in intra-African trade. Improvements in current

infrastructure in Africa, as well as the provision of adequate infrastructure would strengthen

the current trade linkages between South Africa and the regional groups, and thus enhance

South Africa's role in intra-Africa's trade with the AfCFTA in place. To close Africa's

infrastructure gap, the infrastructure integration Programme for Infrastructure Development in

Africa (PIDA) was launched in 2021, as noted by the African Union Commission (2019:12),

to develop a regional and Continental vision, policies, and strategies for infrastructure

development. Furthermore, when trade is more interconnected Africa's small economies will

be able to access larger markets and regional hubs in the region and thus be able to use the

imports from those markets to grow. All of this makes trade integration a key element in the

Africa Continent's ongoing integration journey.

3.5 *Extent of South Africa's trade integration in the African Continent*

As noted in Section 2.4, the Africa Regional Integration Index (ARII) uses four indicators to assess the trade integration dimension for each country. The four indicators which give insights into the extent of South Africa's trade integration in Africa are presented in Table A-6 (Appendices); as follows: (i) The share of intra-regional exports over GDP measures the value of the goods that a country has exported within the region as a percentage of that country's gross domestic product. The results show that South Africa's share of its intra-regional (intra-Africa) exports over its GDP has been on a continuous increasing, rising from a mere 1.92% in 2005 to 11.05% by 2020. Thus, the African Continent has continued to grow in significance as South Africa's export destination; (ii) The share of intra-regional imports over GDP measures the value of the goods that a country has imported from within the region as a percentage of that country's gross domestic product. The results show that South Africa's share of its intra-regional (intra-Africa) imports over its GDP has been increasing over the years, rising from a mere 0.77% in 2002 to 4.09% by 2020. Thus, the importance of the African Continent as an import source for South Africa has been improving over the years; (iii) The share of intra-regional trade is defined as the sum of a country's exports and imports within the region as a proportion of all the region's intra-regional trade. The South Africa's share intra-Africa trade has been rising from 14.43% in 2002 to its highest level of 22.86% in 2017, after which it fell slightly to 21.21% by 2020: (iv) Average intra-regional import tariffs seek to capture the effect of policies that enhance or inhibit trade openness. It measures the *ad valorem* equivalents of the minimum rates of the tariffs that a country has levied on its imports from the other countries in its region.

These four indicators which give some insights into the extent of South Africa's trade integration in Africa, show that South Africa's trade is well integrated in Africa's trade. African

Union et al., (2020; 2019) note that at the African level, South Africa is among the best/top performers in trade integration in Africa with a score of 0.627 and ranks 4th after Eswatini which ranks 1st with a score of 0.730, Namibia which ranks 2nd with a score of 0.715, and Lesotho which ranks 3rd with a score of 0.655. Trade integration on the Africa Continent tends towards the lower rungs of the score ladder with an average score of 0.383.

The AfCFTA indicator reveals whether countries have signed or ratified the African Continental Free Trade Area agreement. South Africa has ratified the AfCFTA Agreement and as such has an AfCFTA indicator of 2[9] (African Union *et al.*, 2019). Furthermore, regarding regional integration South Africa scores and ranks the highest with a score of 0.625 and ranks 1st compared to the average score of 0.327 for Africa as a whole.

4. Conclusion

Even though South Africa's major trading partners are outside Africa, trade with Africa is still very important for South Africa. South Africa could continue to strengthen its trade relations with African countries through the African Continental Free Trade Area, where further reduction in trade barriers as per Article 4 of the Agreement would improve market access into Africa's markets. South Africa's major exports to Africa are mainly high value-added manufactures, few low skill & technology-intensive manufactures, and few resource-intensive manufactures. Therefore, Africa is an important market for South Africa's manufactured products with greater skill and technology content. Such products have developmental benefits for both. South Africa has a testing ground and market for its manufactured products, and a geographical close and easier to access market; while African countries benefit from high

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[9] This qualitative indicator measures whether the country has ratified, signed, or not signed the protocol on the agreement establishing the African Continental Free Trade Area (AfCFTA). Ratification = 2; Signed = 1, not signed = 0.

value-added products which they may not produce more efficiently than South Africa. South Africa's major imports from Africa are mainly mineral fuels and non-fuel primary commodities. While South Africa imports manufactured goods from Africa, these are mainly low value-added manufactures, with high value-added manufactures contributing very little to its major imports from Africa. This structure of exports and imports is due to the significantly different levels of industrial development between South Africa and the rest of Africa.

The **RTB**$^j_{ik}$ indexes show that there is ease of market access for South Africa's products into Africa's markets. With the African Continental Free Trade Area in place, market access for South Africa's products would improve further, thus providing opportunities for developing industrial base further so as to harness more fully the wider and more accessible market. The **RTB**$^j_{ik}$ indexes also show that there is ease of market access for a wide range of Medium technology manufactured exports from South Africa into the USA and Germany markets, with France extending ease of market access to include High technology manufactures from South Africa. Thus, having easily accessible markets for its capital goods into these developed countries is significant and instrumental to facilitate industrial development in South Africa.

Trade complementarity between South Africa and Africa is high, and this provides opportunities for promoting industrial development through pursuing opportunities for joint production, harnessing regional value chains, and developing new and dynamic areas of comparative advantages. Such opportunities will become more available with the AfCFTA in place. While Africa is an important trading partner and its trade with Africa highly complementary, when it comes to intra-industry trade, this type of trade forms a very insignificant part of South Africa's trade with Africa. Opportunities for South Africa to develop its industrial base further through intra-industry trade lie in its trade with Germany and the

USA, through intra-industry trade benefits which have implications for industrial development through mutual interdependence and interchange of knowledge, innovation, technology and technology diffusion, joint research as firms share ideas, processes, and improved ways of producing high value-added manufactured goods.

APPENDICES

Table A-1: Structure of South Africa trade with Africa (2001-2021)

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
(a) Structure of South Africa's exports to Africa (% of South Africa's total exports to Africa)																					
All food items	14.6	17.5	16.6	12.9	11.3	8.89	13.4	17.2	16.5	15.6	15.3	15.9	15.8	16.6	17.5	17.1	15.6	12.9	16.5	19.1	14.8
Agricultural raw materials	1.27	1.07	0.91	0.74	0.77	0.73	0.53	0.53	0.66	0.67	0.68	0.7	0.85	0.84	0.82	0.85	0.85	0.74	0.94	1.01	1.41
Ores & metals	2.00	1.71	2.2	2.6	2.66	3.82	3.62	1.69	1.56	1.57	1.36	1.49	1.32	1.70	2.91	4.71	5.01	2.6	6.09	5.98	2.18
Fuels (SITC 3)	16.5	10.3	11.9	15.5	12.4	11.8	10.9	8.96	11.6	11.9	11.6	12.6	12.2	12.1	13	12.2	12.8	15.5	13.2	9.99	14.8
Pearls, precious stones & NMG	0.10	0.21	0.23	0.03	0.02	0.01	0	0.01	0.01	0.03	1.10	1.74	2.4	2.06	2.47	2.24	1.88	0.03	1.02	1.39	0
Manuf. goods	65.2	68	68.1	68.3	72.7	74.6	71.4	71.6	69.6	70.1	69.9	67.5	67.3	66.7	63.2	62.8	63.8	68.3	62.2	62.5	66.8
Unclassified	0.45	1.09	0.06	0.04	0.01	0.10	0.14	0.09	0.01	0.06	0.13	0.09	0.06	0.07	0.04	0.07	0.07	0.07	0.05	0.06	0
(b) Structure of South Africa's imports from Africa (% of South Africa's total imports from Africa)																					
All food items	15.1	10.8	10.9	7.14	5.50	3.51	3.47	2.76	4.33	12.5	12.2	10.1	9.24	7.76	10.9	11.9	13.1	10.8	11.5	14.2	40.4
Agricultural raw materials	9.56	8.25	8.41	8.02	4.84	2.54	2.40	1.75	1.94	2.12	2.42	1.69	1.75	1.45	2.02	2.43	2.46	1.71	1.75	2.70	3.33
Ores & metals	7.36	10.4	16.6	16.7	18.9	15.5	16.5	12.4	4.29	4.93	6.60	4.60	4.82	3.22	5.92	7.10	3.83	3.25	3.31	3.36	2.15
Fuels (SITC 3)	44.9	44.2	35.7	55.2	42.5	56.3	64.9	67.4	79.1	57.7	58.0	64.1	63.9	69.4	56.9	50.8	49.3	59.2	55.3	48.7	0.76
Pearls, precious stones & NMG	0.11	1.42	2.23	0.95	18.3	12.9	6.68	6.76	3.59	1.86	1.29	1.60	2.39	1.77	1.77	3.47	5.47	4.25	5.02	8.60	4.47
Manuf. goods	22.5	24.8	26.2	12.0	9.91	8.48	5.80	8.74	6.61	20.7	19.5	17.8	17.8	16.2	22.4	24.2	25.7	20.5	22.9	22.3	48.9
Unclassified	0.46	0.13	0.01	0	0	0.72	0.34	0.08	0.13	0.05	0.05	0.1	0.09	0.11	0.08	0.1	0.11	0.20	0.08	0.10	0
(c) Structure of South Africa's manufactured exports to Africa (% of South Africa's total manufactured exports to Africa)																					
LI & RI manuf.	14.0	12.6	13.0	10.5	10.3	8.70	8.06	8.16	9.84	15.0	13.9	12.7	13.0	12.9	13.9	14.4	14.9	14.5	14.2	14.3	7.73
LS & TI manuf.	15.9	17.9	19.9	22.6	23.4	21.6	23.2	22.1	21.5	19.5	18.9	17.6	17.5	17.7	16.3	16.5	17.4	17.6	18.0	16.1	33.8
MS & TI manuf.	35.2	34.7	33.5	33.1	31.6	37.0	39.9	40.3	40.6	39.3	41.6	43.9	42.7	41.7	41.0	40.0	38.5	39.2	38.5	38.0	30.4
HS & TI manuf.	34.9	34.9	33.7	33.7	34.8	32.7	28.8	29.5	28.0	26.2	25.6	25.7	26.8	27.7	28.9	29.1	29.2	28.6	29.2	31.6	28.1

(d) Structure of South Africa's manufactured imports from Africa (% of South Africa's total manufactured imports from Africa)

LI & RI manuf.	47.7	33.5	28.8	44.9	47.1	34.6	42.6	20.5	40.8	23.0	27.2	28.2	31.2	32.1	34.1	34.5	35.6	34.5	33.4	40.4	66.0
LS & TI manuf.	16.8	11.4	8.63	12.5	11.8	17.2	8.47	7.78	7.65	5.04	6.28	6.72	7.15	7.08	6.31	6.76	6.07	7.04	6.35	6.01	2.71
MS & TI manuf.	21.3	28.9	33.6	17.9	22.8	29.5	30.6	28.5	32.1	21.3	22.5	22.3	20.4	22.7	20.3	19.3	16.9	16.6	16.6	13.7	9.08
HS & TI manuf.	14.2	26.2	29.0	24.7	18.3	18.7	18.3	43.2	19.5	50.6	44.0	42.8	41.3	38.1	39.3	39.4	41.4	41.8	43.7	39.8	22.2

Source: Own table derived using trade data available from the UNCTAD trade database available at https://unctadstat.unctad.org/

Notes:
LI & RI manuf. = Labour-intensive and resources-intensive manufactures
LS & TI manuf. = Low-skill and technology-intensive manufactures
MS & TI manuf. = Medium-skill and technology-intensive manufactures
HS & TI manuf. = High-skill and technology-intensive manufactures
NMG = non-monetary gold

Table A-2:   Trade complementarities between South Africa and Africa (2001-2021)

	Period of years																				
	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
(a) South Africa as the exporter (Region i) and Africa as the importer (Region j)																					
TCI$_{ij}$	75.2	77.8	74.1	73.8	75.1	76.2	76.2	74.8	73.3	76.6	78.7	81.3	78.8	79.7	76.3	75.2	75.1	76.6	74.7	71.8	57.9
(b) Africa as the exporter (Region i) and South Africa as the importer (Region j)																					
TCI$_{ij}$	52.2	53.0	52.2	52.4	50.0	51.7	52.2	54.4	55.3	53.7	54.8	55.2	56.2	59.8	60.4	63.3	60.9	61.8	61.1	63.7	45.2

Source: Own Table and calculations using UNCTAD trade data available at https://unctadstat.unctad.org/EN/

Table A-3: Revealed trade barrier indexes (RTBik) for South Africa's exports to Africa (2001-2021)

Categories* of exports to Africa	Period of years and the corresponding Revealed Trade Barrier indexes (RTBik) for South Africa's exports to Africa																				
	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Primary products	0.73	0.90	0.81	0.70	0.74	0.62	0.56	0.64	0.67	0.52	0.47	0.45	0.48	0.52	0.73	0.85	0.75	0.66	0.65	0.81	1.25
Resource-based manufactures: agro-based	2.34	2.27	2.27	1.98	1.99	1.97	1.80	1.76	2.17	2.35	2.28	2.27	2.24	2.19	2.18	2.12	2.17	2.13	2.18	2.22	1.51
Resource-based manufactures: other	2.20	1.55	1.78	1.63	1.67	1.30	1.09	1.05	0.92	1.09	1.02	1.05	1.23	1.25	1.37	1.56	1.59	1.58	1.70	1.63	0.91
Low technology manufactures: textile, garment and footwear	0.33	0.33	0.32	0.29	0.25	0.26	0.26	0.27	0.28	0.73	0.77	0.75	0.74	0.71	0.69	0.67	0.75	0.74	0.71	0.68	0.36
Low technology manufactures: other products	1.41	1.55	1.70	1.94	1.90	1.85	1.98	1.78	1.86	1.92	1.88	1.77	1.70	1.62	1.47	1.37	1.44	1.55	1.45	1.31	2.09
Medium technology manufactures: automotive	0.82	0.84	0.68	0.60	0.69	1.05	1.10	1.47	1.42	1.40	1.51	1.60	1.52	1.44	1.18	0.96	0.92	1.01	0.96	1.01	1.15
Medium technology manufactures: process	2.13	2.17	2.05	2.05	2.01	2.08	1.87	1.79	1.90	1.59	1.59	1.67	1.80	1.76	1.80	1.77	1.88	1.83	1.90	2.03	2.19
Medium technology manufactures: engineering	0.84	0.84	0.89	0.99	0.90	1.07	1.23	1.12	1.12	1.07	1.19	1.25	1.14	1.08	1.03	0.97	0.95	1.02	0.95	0.97	0.86
High technology manufactures: electronic and electrical	0.34	0.35	0.39	0.43	0.34	0.40	0.41	0.41	0.41	0.31	0.37	0.39	0.35	0.38	0.32	0.31	0.28	0.28	0.28	0.26	0.25
High technology manufactures: other	0.48	0.45	0.38	0.43	0.63	0.64	0.53	0.63	0.42	0.48	0.44	0.43	0.38	0.40	0.40	0.38	0.39	0.38	0.39	0.34	0.51

Notes: * = Lall Classification as per trade the UNCTAD trade database.

Source: Own table derived using trade data available from the UNCTAD trade database available at https://unctadstat.unctad.org/

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Table A-4: South Africa's trade with Africa compared with its major trading partners (2001 – 2021)

South Africa's trading partner	South Africa's trade with each region as a percentage (%) of South Africa's total trade																				
	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Africa	9.17	10.5	9.64	9.04	9.51	10.2	10.6	12.4	13.0	19.1	17.4	19.7	20.0	21.2	19.8	19.6	18.6	19.5	19.2	17.3	1.52
China	2.96	3.67	4.69	5.27	6.19	7.42	8.85	8.80	11.9	11.8	12.7	12.3	14.1	12.6	13.9	13.6	14.0	13.8	14.6	15.6	28.2
France	3.04	3.53	4.24	4.31	3.42	3.10	2.82	2.44	2.41	2.07	1.77	1.67	1.68	1.63	1.62	2.00	1.71	1.54	1.53	1.39	1.48
Germany	11.9	12.1	11.4	11.4	10.8	10.4	10.0	9.69	9.31	8.85	7.67	7.04	7.32	7.42	8.83	9.41	8.98	8.50	8.93	8.23	12.1
United States of America	12.9	11.2	11.0	10.0	9.06	9.31	9.52	9.30	8.34	7.95	7.67	7.54	6.79	6.80	7.36	6.95	7.08	6.39	6.79	7.50	10.7
China, France, Germany, USA	*30.8*	*30.5*	*31.4*	*31.0*	*29.5*	*30.2*	*31.2*	*30.2*	*32.0*	*31.0*	*29.8*	*28.5*	*29.9*	*28.4*	*31.7*	*31.9*	*31.7*	*30.2*	*31.8*	*32.8*	*52.5*

Notes: China, France, Germany, and the USA are South Africa's top four major trading partners.

Source: Own table derived using trade data available from the UNCTAD database available on the web link https://unctadstat.unctad.org

Table A-5: Inter-regional trade intensity between South Africa and the five regional groups that are part of the African Continental Free Trade Area

Regional groups	The Revealed Trade Preference indexes (RTP$_{ij}$) indexes between South Africa and the regional groups																			
	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
AMU	-0.23	-0.46	-0.59	-0.34	-0.3	-0.46	-0.49	-0.48	-0.58	-0.42	-0.4	-0.42	-0.54	-0.34	-0.52	-0.64	-0.7	-0.71	-0.71	-0.71
EAC	0.89	0.87	0.89	0.89	0.85	0.83	0.83	0.85	0.83	0.82	0.81	0.80	0.78	0.78	0.81	0.81	0.81	0.82	0.82	0.79
ECCAS	0.81	0.8	0.73	0.72	0.68	0.66	0.74	0.64	0.66	0.62	0.74	0.75	0.76	0.90	0.92	0.95	0.96	0.91	0.82	0.67
ECOWAS	0.69	0.68	0.85	0.86	0.77	0.78	0.81	0.81	0.77	0.74	0.82	0.80	0.81	0.73	0.78	0.75	0.8	0.79	0.69	0.54
SADC	0.91	0.88	0.87	0.85	0.83	0.84	0.86	0.87	0.91	0.90	0.91	0.91	0.91	0.93	0.94	0.94	0.94	0.93	0.92	0.91
Africa	**0.89**	**0.86**	**0.84**	**0.82**	**0.79**	**0.77**	**0.78**	**0.84**	**0.78**	**0.78**	**0.81**	**0.81**	**0.82**	**0.81**	**0.81**	**0.79**	**0.79**	**0.78**	**0.79**	**0.76**

Notes: The **RTP$_{ij}$** indexes are corrected for range variability, range symmetry and dynamic ambiguity. Thus, **RTP$_{ij}$ = RTP$_{ji}$** independently of country size.

Source: Own table derived using trade data available from the ITC trade database available at http://trademap.org

Table A-6: Extent of South Africa's trade integration in the African Continent using the ARII four indicators (2001 – 2021)

Table A-6(a): South Africa's trade integration dimension

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
South Africa's trade integration dimension using the Africa Regional Integration Index's four indicators																			
Share of intra-regional exports over GDP (value of the goods that a country has exported within the region as a % of that country's gross domestic product)																			
	3.12	2.66	2.54	1.92	2.06	2.53	3.75	3.27	6.19	6.76	7.80	8.84	9.87	9.85	10.24	10.06	10.56	11.05	11.05
Share of intra-regional imports over GDP (value of goods that a country has imported from within the region as a % of that country's gross domestic product)																			
	0.77	0.68	0.86	0.68	1.27	1.55	2.25	1.48	2.21	2.51	3.503	3.94	4.76	3.81	3.83	3.65	4.89	4.68	4.09
The share of intra-regional trade (the sum of a country's exports and imports within the region as a proportion of all the region's intra-regional trade)																			
	14.43	15.03	15.27	15.60	16.29	17.14	17.06	13.66	21.12	21.55	21.80	21.57	23.03	21.55	22.09	22.86	22.50	22.06	21.21

Notes: The AfCFTA indicator for South Africa = 2 because it has ratified the AfCFTA Agreement (African Union et al., 2019:103).
Source: Own table derived using trade data available from the ITC trade database available at http://trademap.org and Gross domestic product (GDP) data for South Africa from Statistics South Africa available at http://www.statssa.gov.za/publications

Table A-6(b): South Africa's import tariff rates*, Most favoured nation rate (MFN rate), on non-agricultural and non-fuel products from Developing countries (M49)**

2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Manufactured goods, ores and metals																				
5.87	8.66	5.84	5.75	8.65	8.55	8.39	8.27	8.16	8.24	8.06	7.99	7.95	7.91	7.92	8.06	7.97	8.16	8.22	8.21	8.21
Ores and metals																				
1.75	1.67	1.59	1.47	1.56	1.42	1.45	1.56	1.35	1.49	0.98	0.89	0.97	0.82	0.95	0.95	0.92	0.89	1.02	0.95	0.95
Manufactured goods																				
6.11	9.03	6.09	6.03	9.04	8.92	8.78	8.65	8.55	8.61	8.46	8.37	8.35	8.33	8.34	8.45	8.39	8.61	8.66	8.66	8.66
Chemical products																				
2.95	2.88	2.89	2.85	2.82	2.66	2.63	2.73	2.67	2.7	2.06	2.09	2.07	2.06	2.04	2.13	2.05	2.08	2.05	2.03	2.03
Machinery and transport equipment																				
3.37	3.41	3.35	3.27	3.18	3.16	3.06	3.11	3.08	3.1	2.86	2.88	2.82	2.83	2.83	2.87	2.82	2.84	2.83	2.83	2.84
Other manufactured goods																				
9.04	13.7	9.02	9.01	13.7	13.6	13.4	13.2	13.1	13.1	13.3	13.1	13.1	13.1	13.1	13.3	13.3	13.6	13.3	13.7	13.8

Notes: * = These tariff rates are Simple average of simple averages which is a simple average for a selected product group calculated from simple averages at HS 6-digit level. It has been calculated by dividing the sum of simple averages rates by the total number of products at HS 6-digit level under each product group.

** = The assignment of countries or areas to specific groupings is for statistical convenience by the Statistics Division of the United Nations Secretariat.

This list of countries or areas includes all African countries.

Source: UNCTAD market access data from the UNCTAD trade database available at https://unctadstat.unctad.org/

Table A-6(c): Revealed trade barrier indexes (RTB$^i_{ik}$) for South Africa's imports from Africa (2001-2021)

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Primary products																					
	4.76	4.38	3.80	4.92	3.46	3.76	4.28	3.69	4.78	3.57	1.57	1.57	1.53	1.71	1.88	1.93	1.80	1.83	1.87	1.90	1.96
Resource-based manufactures: agro-based																					
	0.77	0.68	0.88	0.64	0.53	0.35	0.32	0.21	0.20	1.13	1.86	1.84	1.77	1.8	1.78	1.88	1.92	1.76	1.85	1.98	1.94
Resource-based manufactures: other																					
	0.81	1.48	2.20	1.59	3.40	2.54	1.83	1.52	0.61	0.85	1.16	1.38	1.52	1.56	1.82	1.92	1.90	2.19	1.88	1.83	1.83
Medium technology manufactures: process																					
	0.09	0.31	0.14	0.08	0.09	0.10	0.05	0.10	0.07	0.57	1.05	1.10	1.14	1.11	1.18	1.23	1.30	1.16	1.26	1.37	1.09

Notes: Average intra-regional import tariffs which South Africa has levied on its imports from the other countries in Africa were not available. Therefore, **RTB$_{ij}$** for South Africa's imports from Africa were calculated.

Source: Own table derived using trade data available from the UNCTAD trade database available at https://unctadstat.unctad.org/

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