Assessing Algeria's Trade Performance within the African Continental Free Trade Area: Indicators-Based Approach

Samia ABID[1]

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ABSTRACT

In the evolving economic and geopolitical landscape, regional integration serves as a strategy for countries to enhance global influence and optimise trade relations. The present study assesses the impact of trade liberalisation under the African Continental Free Trade Area (AfCFTA) on Algeria's exports, contributing thus to the debate on the potential effects of trade agreements involving developing countries. The study relies on official data gathered from international institutions to compute essential trade indicators, particularly those related to concentration and regional orientation. Our analysis enabled us to categorise products based on the possible effects they are likely to encounter. The results show that only four natural resource-based products will continue to enjoy a trade expansion. More importantly, a large number of non-hydrocarbon products are not likely to increase despite tariff reductions. According to our findings, the effects of the AfCFTA on trade creation are limited. The analysis revealed that Algeria currently lacks the essential prerequisites for a successful integration into the African market. To facilitate its integration process, a series of complementary measures must be implemented.

KEYWORDS: *African integration, Algeria, regional orientation, trade creation, trade liberalisation.*

JEL CLASSIFICATION: *N97, F13, F14, F15*

1. INTRODUCTION

In recent years, regional trade agreements (RTAs) have experienced a rapid proliferation, with developing countries becoming increasingly involved. Currently, 592 RTAs have been notified to the WTO (previously GATT), of which 360 are in force (according to the RTA database). Hence, almost all WTO members are participating in at least one RTA. The increasing interest in RTAs is motivated by the pursuit of both geopolitical and economic objectives, among which increasing bargaining power, protection against external threats, enabling more efficient resource allocation, fostering economic growth, and increasing economic resilience (Whalley, 1998; Mattli, 1999).

An abundant literature has been devoted to regional trade integration, with a special focus on its potential costs and benefits. Results seem to be highly controversial. While some authors consider such agreements as welfare improving or stepping-stones towards worldwide free trade, others put forward their second-best nature, asserting that they may be stumbling blocks by increasing protectionism and diverting trade from third countries towards those enjoying preferential treatment (Krugman, 1989; Baldwin, 1993; Bhagwati, 1993; Frankel et al., 1997; Viner, 2014; Lewis, 2023).

[1] Research Center in Applied Economics for Development, Algeria, abid.samia@hotmail.fr

Throughout the years, RTAs have evolved through three main waves reflecting their adjustment to the evolving global order. The first wave emerged in Europe during the 1950s and 1960s, with subsequent expansion to developing countries who adopted it as part of their import substitution (IS) strategy. This wave was, however, limited in size and did not attain substantial success (Das, 2004). The second wave, known as open regionalism, started in 1988-1989 and witnessed a rapid increase in the number of agreements being negotiated, along with broader scope and geographical coverage. The 20th and 21st centuries witnessed the emergence of a third wave and the appearance of the so-called Mega-Regional Trade Agreements (MRTAs). These agreements are deep integration partnerships negotiated by non-neighbouring states with major share of world trade and foreign direct investment (FDI).

The recent African Continental Free Trade Area Agreement (AfCFTA) is considered as MRTAs, given its size and scope. The AfCFTA brings together 54 countries with a population of 1,4 billion people and a combined GDP US$ 3.4 trillion, through the elimination of tariffs on 97% of goods traded within the continent over a transition period that varies according to countries' level of development. Moreover, the AfCFTA agreement goes beyond trade liberalisation and, in accordance with WTO agreements, encompasses trade in services, non-tariff barriers, dispute settlement, and intellectual property rights. The AfCFTA is essentially governed by principles of variable geometry, flexibility, and differential treatment.

In 2018, Algeria signed the AfCFTA agreement and ratified it in 2021. This is the third agreement that Algeria has ratified, with the first being the EU association agreement in 2005 and the second being the GAFTA agreement in 2009. The AfCFTA agreement is expected to diversify Algeria’s trading partners and enhance its trade relations with the rest of the continent. This is of greater importance given the consistently low level of trade between Algeria and African countries, which currently accounts for no more than 4% of Algeria's total trade, according to the UNCTAD database.

This paper aims to analyse the effectiveness of trade barriers reduction under the AfCFTA on Algeria’s trade flows. In other words, we try to examine to what extent tariff reduction under the AfCFTA agreement will promote Algeria's bilateral trade with the rest of the continent. To this end, a trade indicators-based approach is used to determine the expected effects (trade creation or trade diversion) arising from this agreement. The findings can guide efforts to formulate the appropriate measures to enhance the competitiveness of Algerian exports and maximise the benefits from this agreement.

Our analysis is based on the assumption that the development of bilateral trade within the AfCFTA depends on the supply and demand conditions and more specifically, on the degree of diversification of Algerian exports, their competitiveness and their complementarity with the import demand of trading partners. Then, our research uses indicators such as revealed comparative advantage, diversification index, complementarity and similarity indexes, etc. These indicators are recognised for their ease of calculation, minimal data requirements, and clear understanding. Although not free from limitations, these indicators, when combined, provide important inference about the potential effects of the AfCFTA.

The remainder of this paper is structured as follows: section (ii) provides a literature review on the theoretical effects of RTAs, section (iii) briefly reviews the past initiatives of regional integration in Algeria, section (iv) presents the methods and data used to assess the AfCFTA effects, section (v) provides the results, which are subsequently discussed in the section (vi). The final section draws conclusions based on our findings.

2. THE EFFECTS OF REGIONAL TRADE AGREEMENTS: LITERATURE REVIEW

This section will provide an overview of the theoretical background related to our research. The primary focus of theories of trade integration is the analysis of the static and dynamic effects generated by trade agreements.

The analysis of static effects was first conducted by Viner (1950) who developed a model to assess the immediate effects resulting from the establishment of a customs union. Viner argued that a customs union enhances trade among member countries, but its desirability depends on the source of the trade created. In this framework, the author distinguishes between two opposing effects: the trade creation and the trade diversion effect. Trade creation refers to a situation where countries move from a high-cost producer to a lower-cost producer following tariff reduction. Trade diversion, on the other hand, occurs when, after the formation of a customs union, trade is diverted from non-member countries that are more efficient producers to member countries that are comparatively less efficient. According to this author, the net effect of the union for a country depends on the relative importance of the positive effects compared to the negative effects.

The theoretical extensions of his work have shown that regional integration can produce more substantial effects, referred to as dynamic effects. The first effect is (i) economies of scale and product variety. According to Corden (1972), integration allows companies to attain greater economies of scale and lower production prices through cost reduction and internal demand stimulation. By operating within regional trade agreements (RTAs), these firms can access larger markets for their products and introduce new varieties that were previously costly and unprofitable. The second effect concerns (ii) foreign direct investment (FDI). According to Kindleberger (1969), the formation of regional agreements enables to attract long-term, risk-sharing investments that will benefit from the regional division of labour, economies of scale, and low transaction costs. In the same way as trade creation and diversion effects, the establishment of trade agreements leads to investment creation and investment diversion. The third effect is (iii) structural change and reform. Apart from the traditional areas of negotiations, free trade agreements have broadened their scope to encompass behind the border measures, such as quality standards, customs procedures, and competition policy. The inclusion of these measures shows the importance of free trade agreements in shaping and aligning the economic policies of member countries and in encouraging the adoption of reforms (Plummer, Cheong, & Hamanaka, 2011). The final effect relates to (iv) competitiveness and economic growth (Balassa, 2013). Regional trade openness increases exposure to competition, leading to positive effects on firms' productivity, specialisation, and resource allocation. These competitive forces increase long-term growth prospects.

However, these potential gains do not occur systematically, particularly in developing countries. According to Nagy et al. (2018), the effects of free trade agreements have been diverse, particularly in Africa, where some regional economic communities (REC) (such as SADC, ECOWAS, COMESA, etc.) have shown relatively greater success in promoting intra-regional trade. In this context, some authors have identified the conditions under which integration will be beneficial for its member countries. Baier & Bergstrand (2004) suggest that trade creation is more significant when the economies' size is large and similar, and the difference in factors' endowments between countries is substantial. Siroën (2004) shows that trade agreements produce positive effects when the initial level of trade protection is high. Furthermore, advocates of geographical economics (Krugman, 1991; Summers, 1991) argue that integration tends to be beneficial when its member countries are "natural trading

partners". The latter refer to countries that are geographically close, and the intensity of their trade is high.

3. A BRIEF BACKGROUND ABOUT REGIONAL INTEGRATION IN ALGERIA

In this section, we present a concise historical overview of the experience of regional integration in Algeria. The objective is to place our analysis in a historical perspective in order to identify the motivations behind the country's involvement in the integration process and provide a more comprehensive understanding of its integration trajectory before focusing on its latest integration initiative, namely the African continental free trade area.

In comparison to other North African countries, Algeria shows little interest in bilateral and regional trade agreements. This country differs in the limited number of agreements signed and in the fact that it began negotiating these agreements before joining the WTO. The table 1 provides a summary of the different regional and preferential trade agreements signed by Algeria.

The first initiative of integration was the Arab Maghreb Union (AMU). The accession of Algeria to this union occurred at a time when diplomatic relationships between the Maghreb countries were being re-established and eased, following the border conflicts that characterised these countries since their independence. Formed in 1989, the primary objective of the AMU was to establish a common market and adopt a common policy in various domains. However, these goals have not been fulfilled. In fact, since its creation, intra-Maghreb trade has not exceeded 5% (UNCTAD). Algeria accounted for 28% of intra-AMU trade in 2021 (the equivalent of 1.9 billion dollars), with the predominant share of trade being realised with Tunisia and concentrated on exports of hydrocarbons and imports of manufactured goods (UNCTAD).

The second integration initiative was the Association Agreement with the EU, which came into effect in 2005. This agreement represents the shift from assistance-based relations (such as the MEDA program and the Generalised System of Preferences (GSP)) to free trade and reciprocity-based relations. The agreement provides for the gradual elimination of customs duties and taxes with equivalent effects, which leads to the establishment of a free-trade area after a transitional period. Many gains were expected from this zone in terms of the development of balanced economic relations, the creation of a favourable climate for investment flows, and the transfer of new technologies, as stated in the treaty. However, nearly 20 years after its implementation, the outcomes of this agreement have not met the initial expectations. That is due to both the conditions of implementation of the agreement and the structural problems characterising the Algerian economy. The Association Agreement was signed and came into force in a particular context. Having just emerged from the structural adjustment plan (1998), the government's priority was to re-establish Algeria's reputation on the international stage and to gain legitimacy. At the time of signing the agreement, the Algerian economy was characterised by numerous challenges, notably the predominance of the hydrocarbons sector and the low weight of industry and the private sector in the economy. According to the National Office of Statistics (ONS), in 2005, hydrocarbons accounted for 98.1% of total exports, the industry's share of GDP was 6.5%, and the EU already accounted for 55.6% of Algeria's total exports. The Association Agreement has thus brought together, on the one hand, the European Union, composed from developed, industrialised countries that are highly integrated into the global economy and, on the other, Algeria, which is facing development challenges and whose economy is heavily dependent on hydrocarbons. As a result, the relationship between Algeria and the EU has shown significant asymmetries. In

terms of trade, the EU has long represented more than half of Algeria's total trade. Although Algeria's share in the EU's external trade has historically remained low (not exceeding 1% since 2005). Exports to the EU are predominantly composed of hydrocarbons (97% in 2021, UNCTAD), which have allowed the country to maintain a trade surplus from 2002 to 2022. However, for non-hydrocarbon products, the balance predominantly remains in deficit. Due to these perceived imbalanced relations, Algeria has implemented a series of measures to protect its national economy, such as import licenses, the list of prohibited imports, and temporary additional safeguard duties.

The third initiative was the creation of the Greater Arab Free Trade Area (GAFTA). Algeria's accession to this zone was motivated by the macroeconomic stability and the desire to end the country's international isolation (Abbas, 2012). Algeria officially joined GAFTA in 2009, and since then, its trade with member states has been free of customs duties, with the exception of certain products. Nevertheless, the level of trade between Algeria and the member countries of this zone remains marginal. According to the IMF data, Algeria's share in intra-GAFTA exports was only 1.4% in 2022. Tunisia is the main partner, constituting 59% of total exports to the GAFTA. However, it is important to note that Algeria's trade balance with Arab countries has consistently shown a deficit since 2015, primarily due to the lack of diversification in its export structure.

Algeria's latest and most recent integration experience is the African Continental Free Trade Area (AfCFTA). Its accession to this zone comes at a particular time, marked both by the fall in hydrocarbon prices and the COVID-19 pandemic. The AfCFTA differs from previously signed agreements in its scope and content. The AfCFTA is the largest in terms of participating countries after the WTO. As stated previously, it is a new generation of trade agreement as it goes beyond the simple liberalisation of goods and services to cover new areas (such as intellectual property, investments, competition policy, and digital trade). The aim is to reduce or eliminate various obstacles hindering intra-African trade, production, and investment. For Algeria, joining this zone has significant implications for the institutional framework that governs its foreign trade. The implementation of this agreement would enable the country to comply with a large proportion of the provisions adopted in the WTO agreements. According to the public authorities, the AfCFTA can be a source of numerous trade opportunities. In this context, it is also worth noting that certain countries are ahead in terms of integration due to the progress made within the Regional Economic Communities (RECs) and the guided trade initiative, which operationalises the AfCFTA agreement among certain countries.

Table 1. Overview of regional and bilateral trade agreements in Algeria

Agreements	Type	Signed in	Effective since	Member states	Main objectives
Association Agreement	FTA	2002	2005	EU members	- Gradual liberalisation of trade in goods, services and capital - Promote economic, political, social, cultural and financial cooperation
Greater Arab Free Trade Area (GAFTA)	FTA	1981	2009	18 Arab countries	- Facilitate and Develop inter-Arab Trade with a view to establishing a pan-Arab Free Trade Area

Agreements	Type	Signed in	Effective since	Member states	Main objectives
African Continental Free Trade Area (AFCFTA)	FTA	2018	2021	54 African countries	- Create a single market to deepen the economic integration of the African continent and fulfil the Pan African Vision
Maghreb Arab Union	FTA	1989	-	Libya, Mauritania, Morocco and Tunisia	- Progressive liberalisation of goods, services, capital and of people with a view to establishing a Maghreb economic union
Preferential trade agreement with Tunisia	PTA	2008	2014	Algeria/Tunisia	- Facilitate and foster economic and commercial between the two countries
Commercial cooperation agreement with Jordan	PTA	1997	1999	Algeria/Jordan	- Expand trade between the two countries through the elimination of administrative obstacles to bilateral trade flows

FTA: free trade agreement; PTA: preferential trade agreement
Source: own elaboration

4. DATA AND METHODOLOGY

The literature provides a wide range of trade indicators that serve as tools for assessing the effects of implementing regional trade agreements and examining the degree to which member countries within the free-trade area are compatible as trading partners (namely, "natural trading partners"). These indicators encompass criteria that are considered as crucial in determining the outcomes of a free-trade area (competitivity, complementarity, export diversification, etc.).

Several indicators were applied in this study. The first indicators are export diversification (1) and the concentration index (2). The export diversification index (EDI) measures the extent to which the structure of exports of a country (C) by product (i) differs from the structure of exports by-product of the world:

$$EDI_{Ci} = \frac{(\sum_i |h_{Ci} - h_i|)}{2} \quad (1)$$

Where h_{ci} is the share of the product i in country C's total exports and h_i is the share of the product i in world exports. The values range from 0 to 1. The higher the index, the more concentrated is the structure of the exports.

An analogous index called the Hirschman index was developed to measure the sectoral concentration of exports. The index is calculated based on the share of the product i in country C's exports:

$$EDI_{Ci} = \frac{(\sum_i |h_{Ci} - h_i|)}{2} \quad (2)$$

The next index is the complementarity index (3), that measures the overlap between a country's export composition and the import composition of its trading partners. Essentially, the index shows the extent to which a country's exports can satisfy the demand of its trading partners:

$$TCI_{CP} = 1 - \left\{\frac{\Sigma_i |m_i^C - x_i^P|}{2}\right\} \quad (3)$$

Where m_i^C is the share of the product i in country C's imports, x_i^P is the share of the product i in country P's exports. The closer the index is to 1, the greater the potential for expanding bilateral trade. However, this index should be used with caution as it does not take into account the distance between countries or the size of their economies.

Another applied index is the similarity index (4). As its name suggests, this index measures the degree of similarity between a country's export structure and that of its trading partners:

$$ESI = \sum_i min\left(\frac{X_{Pi}}{X_P}, \frac{X_{Ci}}{X_C}\right) \quad (4)$$

Where $\frac{X_{Pi}}{X_P}$ is the share of the product i in country P's exports, $\frac{X_{Ci}}{X_C}$ is the share of the product i in country C's exports.

The value of this index ranges between 0 (no overlap in the export profiles) and 1 (perfect overlap). The more similar the export structures, the more limited the gains from inter-industry trade. One shortcoming of this index is that it does not consider the level of exports, and which can be misleading when the size of the economies of interest is very different.

The analysis also includes the calculation of the revealed comparative advantage (RCA) (5). The latter was introduced by Balassa B. (1965), which is a ratio between a product's share in a country's exports and its share in reference countries (generally the world):

$$RCA_{Ci} = \frac{\frac{X_{C_i}}{\Sigma_{j\in p} X_{Cj}}}{\frac{X_{w_i}}{\Sigma_{j\in p} X_{wj}}} \quad (5)$$

Where: X_{C_i} is country C's export of product i, $\Sigma_{j\in p} X_{Cj}$ is total exports of country C, X_{w_i} is world exports of product i and $\Sigma_{j\in p} X_{wj}$ is total world exports. An index greater than one indicates the existence of a comparative advantage in a given product.

Although widely used in empirical studies (Ishchukova & Smutka, 2013) to provide a first indication of countries' specialisation, this indicator does have certain limitations. One limitation is that the index tends to be high in countries with a low share of world exports. Another drawback is its asymmetrical nature. The upper limit of the RCA is not defined, making it difficult to compare across countries. Furthermore, the RCA varies significantly depending on the level of aggregation and the selection of reference countries, as highlighted by various studies (Yu, 2009; Laursen, 2015). In an attempt to address these limitations, alternative measures have been proposed (Proudman & Redding, 1998; Hoen & Oosterhaven, 2006); nevertheless, they only partially address the identified limitations.

The study is completed with the calculation of the regional orientation index (6) which measures the importance of a country's intra-regional exports in relation to its extra-regional exports:

$$RO_{CiR} = \frac{\frac{X_{CiR}}{X_{CR}}}{\frac{X_{Ci-R}}{X_{C-R}}} \quad (6)$$

Where X_{CiR} is country C's exports of product i to region R, X_{CR} is the total exports of country C to region R, X_{Ci-R} is country C's exports of product i to countries outside the region, X_{C-r} is country C's total exports to countries outside the region R. However, this index may be affected by many factors, including geographical factors where a high regional orientation may be of little economic significance.

To compute the above cited indicators, disaggregated trade data were used (SITC Rev 3). As a source of trade statistics for Algeria and its trading partners, the UNCTAD database was used. The choice of this database is justified by the availability of data for Algeria and for a relatively recent period (2021), compared with other databases (UN Comtrade, Trademap, and WITS).

The indicators will be used and interpreted with an awareness of their limitations. Indeed, some of these indicators are not based on theoretical foundations and can only answer for a limited number of questions relating to regional trade agreements. Despite this, the importance of these indicators remains significant. When combined, they can provide useful insights into the possible effects of Algeria's membership of the African continental free trade area.

5. RESULTS

This section is based on trade indicators that first enable to analyse the characteristics of trade structure of Algeria and then to examine its performance at a regional level (degree of complementarity with trading partners, competitiveness, regional orientation).

The concentration and diversification index confirms that the Algerian economy is highly dependent on hydrocarbons, which account for 94% of total exports (UNCTAD, 2021). Between 2016 and 2022, the concentration index was around 0.5, which remains well above the average recorded by developing and emerging countries, as illustrated in Table 2. The limited diversification of the Algerian economy weighs heavily in its regional integration process.

Table 2. Concentration and diversification indexes, 2021

	Concentration index (HHI)			Diversification index		
	Algeria	**Developing countries**	**Emerging countries**	**Algeria**	**Developing countries**	**Emerging countries**
2016	0,49	0,09	0,08	0,81	0,21	0,16
2017	0,48	0,09	0,09	0,81	0,20	0,16
2018	0,48	0,10	0,09	0,81	0,20	0,15
2019	0,47	0,10	0,09	0,82	0,20	0,15
2020	0,44	0,09	0,09	0,85	0,20	0,15
2021	0,50	0,09	0,09	0,83	0,18	0,15

Source: elaborated by the authors based on UNCTAD database

Regarding its performance at a regional level, the complementarity index between Algeria and its African partners is very low, not exceeding 22% in 2021. Our calculations reveal that Ivory Coast and Senegal are the countries with which the complementarity index is relatively high. For the rest of the countries, commercial structures are not very compatible. However, these results need to be interpreted with cautious, as this index is very sensitive to the level of disaggregation, which the higher it is, the lower the value of the index. Furthermore, the similarity index reveals that Algeria's export profile differs from that of most African countries, with the exception of certain hydrocarbon exporting countries (such as Equatorial Guinea, Cameroon, Nigeria and Libya).

Table 3. Similarity index of Algeria and the African countries, 2021

≥50%	40-50%	30-40%	30-10%	<10%
Equatorial Guinea	Cameroon	Angola	Southern Sudan	Rest of African countries
	Nigeria	Gabon	Senegal	
	Libya	Ghana	Ivory Coast	
		Egypt	Niger	
		Congo	Togo	
		Chad	Seychelles	
			Mozambique	
			Djibouti	

Source: author calculations based on UNCTAD database

Another key factor in regional integration is the competitiveness of goods exported. The development of trade relations between Algeria and the African partners depends largely on the country's ability to produce sufficiently competitive goods. Currently, African countries get most of their supplies from countries situated outside the continent (the EU, USA, China, India), with which Algeria may potentially have to compete.

To measure the country's competitiveness in external markets, the revealed comparative advantage index has been calculated. In 2021, Algeria exported 217 of the 261 products in the SITC REV3 classification. However, it has a comparative advantage in only 11 products (Table 4). The RTA is relatively high (> 10) in three products: natural gas (with RCA equals to 29), liquefied propane and butane (20), and inorganic chemicals (12). Most of the other products with RCA fall into the category of combustible products and raw materials. More specifically, these include residual petroleum products, crude petroleum oils, petroleum gases, crude fertilisers, petroleum oils, fertilisers; crude natural cork. The remaining products are food products, namely sugar, molasses, and honey. Likewise, a study conducted by UNCTAD (2015) revealed that Algeria's comparative advantages are all linked to nature. During the 2000s, these advantages were sporadic, reflecting the absence of a coherent export policy. In comparison with other countries, Algeria is significantly lagging behind the current suppliers to Africa in terms of the number of products with a comparative advantage and their degree of transformation, as demonstrated in the table provided below.

Table 4. Revealed comparative advantage of Algeria and African suppliers, 2021

Countries	RCA> 10	RCA between 1-10	Main sectors
Algeria	3	8	Mineral fuels, lubricants and related products
China		106	Machinery and transport equipment Manufactured goods

Countries	RCA> 10	RCA between 1-10	Main sectors
France		109	Manufactured goods
Germany		105	Machinery and transport equipment
India	5	91	Manufactured goods
Nigeria	3	12	Crude materials, inedible, except fuels
South Africa	7	37	Crude materials, inedible, except fuels

Source: own compilation based on UNCTAD database

The Revealed Comparative Advantage (RCA) index, when combined with the Regional Orientation Index (RO), can provide insights into potential effects (trade creation or diversion) that may arise from the reduction of trade barriers. The results of this combination can be summarised as follows:

- **Products with RCA and RO greater than 1:** this group includes products for which the reduction of trade barriers could enhance bilateral trade and be beneficial to both partners. These products already account for 93% of Algeria's exports to Africa (UNCTAD, 2021). Algeria is among the main suppliers of some of these products in Africa, such as natural gas, liquefied propane, and butane;
- **RCA > 1 and RO < 1:** these are the products for which Algeria has a comparative advantage, but exports are not directed toward Africa. These products represent only 2% of exports to the continent (UNCTAD, 2021). This category of products needs to be considered by the public and private sector to increase exports to the African countries. However, in order to export, Algeria needs to compete with the current suppliers to Africa, including countries from the EU, the Middle East, and China. Therefore, it is necessary to target niche markets where competition between Algerian and foreign producers is less likely to intensify;
- **RCA < 1 and RO > 1:** theoretically, these products should experience a trade diversion effect after the establishment of the African Continental Free Trade Area (AfCFTA). However, products from African countries cannot be easily substituted by those from the countries that currently supply Algeria;
- **RCA < 1 and RO < 1:** Trade in these products is unlikely to be affected by the reduction in trade barriers. These products represent a very small portion of Algeria's exports to Africa, accounting for only 0.2% in 2021 (UNCTAD).

Table 5. Classification of Algeria's products based on RCA and RO indexes, 2021

	RCA > 1	RCA < 1
RO > 1	Sugar, molasses and honey	Food and live animals
	Liquefied propane and butane	Beverages and tobacco
	Natural gas, whether or not liquefied	Crude materials, inedible, except fuels
	Petroleum gases, other gaseous hydrocarbons	Animal and vegetable oils, fats and waxes
		Chemicals and related products
RO < 1	Cork, natural, raw & waste (incl. blocks, sheets)	Food and live animals
	Crude fertilisers (excluding those of division 56)	Beverages and tobacco
	Petroleum oils, oils from bitumin. materials, crude	Crude materials, inedible, except fuels

	RCA > 1	RCA < 1
	Petroleum oils or bituminous minerals > 70 % oil	Animal and vegetable oils, fats and waxes
	Residual petroleum products	Chemicals and related products
	Inorganic chemical elements, oxides & halogen salts	Manufactured goods
	Fertilisers (other than those of group 272)	Machinery and transport equipment

Source: own elaboration

6. DISCUSSION

The results obtained from various indicators suggest that the potential for increasing bilateral trade between Algeria and African countries is very limited. These findings appear reasonable given the export structure of Algeria, which is highly dependent on the hydrocarbon sector. A large number of studies have attempted to determine the reasons behind this low diversification. Hausmann, Klinger, and Lopez-Calix (2010) challenge the conventional explanations of Dutch disease as the primary cause of oil dependence. Instead, they emphasise the impact of business climate on the private sector, the absence of transparent and consistently enforced market regulations, the combination of a heavily protected domestic market with non-tariff barriers and competition for oil rents that discourage the private sector from exploring new opportunities in external markets. Similarly, in a study published by UNECA (2017), the lack of export diversification is attributed to the conditions of creation and development of enterprises, the lack of efficiency in public policies related to promoting exports, and perceptions of the obstacles and costs of internationalisation in the African market.

Furthermore, the study reveals that Algeria and African countries show little complementarity in their trade profiles. This finding is consistent with the index of regional integration in Africa developed by the Economic Commission for Africa (ECA, 2019). In the production dimension of this index, countries receive a score based on the degree of correspondence between their production capacities and those of their region. This score, which depends, among other things, on the complementarity index, ranks Algeria below the average for all African countries (0.195 versus 0.201).

In terms of competitiveness, Algeria has a small number of products with a revealed comparative advantage (RCA), i.e. 11 products, 4 of which are already oriented towards the regional market. Products with trade potential in the context of the AfCFTA are those with a comparative advantage, but are not yet oriented towards the African market (RCA>1 and RO <1). Nevertheless, these products fall into the category of raw materials and fuels. Non-hydrocarbon products (such as manufactured goods (SITC 6), food and live animals (SITC 0), beverages and tobacco (SITC 1) and machinery and transport equipment (SITC 7)) are not likely to see an increase even with the lowering of tariff barriers, as they have an ACR<1 and RO <1.

Overall, the results of indicators suggest that Algeria and African countries do not satisfy the hypothesis of "natural trading partners" as defined by Schiff (1999) who argues that FTA will be welfare enhancing if the level of trade complementarity between the member states is high (i.e, countries tend to import what their partners exports). Some authors add other criteria as the initial volume of trade (Summers, 1991) and geographical proximity (Krugman, 1993), but still, the AfCFTA is unlikely to increase bilateral trade. This result is compatible with the findings of the study conducted by Geda & Yimer (2023) who based on trade indicators analysis have demonstrated that the AfCFTA is being proposed in a continent where the

concept of natural trading partners is less applicable. According to the authors, the probability of trade creation effects in the AfCFTA appears to be small, if not negligible.

Our study adds to the existing literature by extending the current understanding regarding the expected trade effects of AfCFTA agreement on Algeria. A distinctive feature of this study lies in its use of disaggregated data, specifically the 3-digit Standard International Trade Classification (SITC) data that gives a more precise and in-depth analysis.

Our findings suggest that the AfCFTA is unlikely to significantly rise the Algerian trade, particularly the exports of non-hydrocarbon products. Hence, policy makers are called to combine the accession to the AfCFTA with strategies aiming at fostering diversification and industrialisation of the economy by reallocating resources to high-value-added sectors.

7. CONCLUSIONS

The aim of this paper was to assess the possible effects arising from trade liberalisation of Algeria under the AfCFTA using key trade indicators (namely diversification & concentration index, complementarity & similarity index, revealed comparative advantage, regional orientation index). The indicators were computed at 3-digit level to get more accurate results.

The results highlighted the high concentration and the low trade complementarity between Algeria and its trading partners. The combination of indicators has enabled the categorisation of products based on the possible effects arising from the AfCFTA (trade creation and diversion effects, etc.). Algeria continues to enjoy an increase in the exports of raw materials and fuels. Products like SITC 33 (Petroleum oils, residual petroleum products), SITC 27 and 56 (crude fertilisers, fertilisers) are among the ones in which Algeria has a comparative advantage, but they are not well positioned in the African market yet. These products may experience an increase in exports following the reduction of trade barriers, if appropriate trade facilitation measures are implemented. However, exports of products with no comparative advantage and non-hydrocarbon products are unlikely to increase.

The implication of this pattern of trade is that the possibility of trade creation through the proposed AfCFTA seems modest. Algeria lacks the necessary conditions to succeed in its regional integration process, particularly due to the concentration of its exports, low competitiveness, and low complementarity with its trading partners. When coupled with the other existing trade costs, such as non-tariff barriers and transportation costs, these factors severely limit the possibilities of bilateral trade development.

To make the most of its membership in the AfCFTA, a series of measures need to be taken by policy-makers. These essentially include designing a strategy to support the diversification of the economy, reallocation of resources to high-value-added sectors, reinforcing measures intended to promote non-hydrocarbon exports, improving the business climate, and facilitating the emergence of a dynamic private sector.

This study has increased our understanding of the possible effects that may arise from the implementation of AfCFTA in the case of Algeria. However, our study is subject to two main limitations. The first one is inherent to the trade indicators used and which are influenced by the level of products aggregation and the size of the economies under consideration. The second limitation is associated with the data used, as constraints in both quality and quantity are unavoidable when dealing with trade data concerning African countries. Future studies should investigate more advanced methods such as a partial or general equilibrium model to quantify the effects of AfCFTA on production, trade, consumption, or welfare.

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