International Trade and Growth Limitations: The case of Africa[§]

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Abstract
Africa, despite the natural wealth of its resources remains still at low development levels compared to the rest of the world. Given the importance of exports as a key factor for the economic development of African countries, we investigate whether international trade can create growth opportunities or whether there are "inherent weaknesses" that hinder this process. This paper presents and analyzes the foreign trade statistics of African countries, during the period 1995-2020. The topic is approached by analyzing recent trends and indicators of trade using the most up-to-date data from valid databases. The paper concludes that the structure of trade and in particular, the low export performance and the high export concentration in primary and natural resources (internal factors), combined with the volatility of the prices of these products in the international markets (external factors), make it extremely difficult for African economies to grow through international trade. In addition, Africa's participation in international production, as assessed by indicators that determine its position in the Global Value Chains, creates limited opportunities for technological upgrades, which is a critical factor in the development process.

Keywords: Trade Structure; Trade Impediments; International Commodity Prices; Global Value Chains, Africa

JEL Classification Codes: F14, F15, O13

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1. Introduction

A key argument regarding the debate on the issue of Third World's growth, supported by empirical evidence, is that it remains marginal to the international economy in terms of both investment and trade (Hirst and Thomson 1997). However, trade does not always create growth opportunities for involved parties. There are "impediments" that prevent trade from being beneficial to the parties involved, especially when one partner is a developing country. According to the international literature, such impediments may be either inherent (i.e. due to internal factors concerning the exporting country like poor infrastructure, low productivity high concentration degree of a country's export portfolio, vulnerability to international price fluctuations) or exogenous (due to international demand and competition, and the imposition of external rules and restrictions by the most important international players: the developed economies).Most of the world's developing countries are located in Africa. Although rich in natural resources, African countries lag far behind the rest of the world in terms of economic development. Trade is the main growth pillar of African countries where primary and intermediate products form a substantial part of their exports.

In this paper using the most updated data, we attempt on the one hand to identify the inherent limitations of African trade by analyzing all trade determinants and components (like recent trade trends, trade indexes, vulnerability of international commodity prices for Africa's exports and Africa's position in Global Value Chains) and on the other to examine Africa's potential to grow economically or to remain merely a supplier of raw materials and cheap unskilled labor to the rest of the developed world (G7, EE or/and emerging BRICS economies).The paper is descriptive and the results are indicative, based on a simple analysis of indicators and trends and are not supported by statistically significant estimates. The reason was that, due to the heterogeneity of countries in terms of, growth levels, resource endowments and export patterns it was extremely difficult to group the countries in the same sample in order to apply proper panel data analysis.

In addition to the heterogeneity of the sample countries, another problem we encountered in the sectoral distribution of exports by country was the different coding in international databases. In the sectoral analysis of exports by country we used the International Trade Center (ITC) database since it is the most detailed giving data per country and commodity group. For commodity price indices, the relevant databases (World Bank, UNCTAD, IMF-IFS) use different product classification codes, which are not in line with ITC groupings. So, for products that are key export items for many African countries, such as cocoa, tobacco fruits, nickel aluminum etc, there was no relevant commodity price index, so we have to embody these products into broader groups for which price indicators were available. For this reason, the results concerning the relationship between the export patterns, commodity price fluctuations, and growth, are only indicative and should be interpreted with caution.

In our view, what makes this paper interesting compared to existing studies in Africa is that, using an expanded sample of African countries, it presents in more detail many perspectives on African exports, analyzes the relationship between the export pattern and international fluctuations of commodity prices and its impact on economic growth. In addition, it analyzes the growth prospects created for Africa by its participation in international production through its position in the global value chains. The results largely agree with those of the survey so far and reveal that the situation regarding the

role of international trade in Africa's economic development has not improved over time.

The paper is organized as follows: Section 2 Literature Review, Section 3 Data and Methodology, Section 4 Analysis of Trade Performance Indicators, Section 5 Trade Structure: Sectoral Distribution of Exports by Product Group, **S**ection 6 Commodity Price Instability of African Exports and its Impact on Growth, Section 7 Analysis of Africa's position in the Global Value Chains, Section 8 Summary and Conclusion.

2. Literature Review

International trade creates development opportunities for the involved parts. Classical international trade theories, such as absolute advantage (Smith,1776) comparative advantage (Ricardo,1817) and Heckscher-Ohlin's factor endowments (Heckscher, 1919, Ohlin, 1933). argue that countries involve in cross border commerce largely because of the relative costs of production or factor endowments over other nations). These theories partly explain why African countries largely export primary commodities and import processed or manufactured goods. On the other hand, modern theories of trade (Leontief, 1953, Linder, 1961, Raymond, 1996, Grubel and Lloyd, 1971, Helpman and Krugman, 1986, Porter,1990, Collier and Goderis, 2008) emphasize that there are many factors beyond the relative cost of production or factor endowments. They argued that the gains from trade are heavily determined by imperfect competition, increasing economies of scale, technological advancement, tastes, and the levels of per capita income in countries. That is, trade can benefit both parties involved, under certain conditions. Research on the existing literature shows that Africa faces inherent impediments and constraints that prevent it from reaping the benefits of its participation in international trade. A common finding of all relevant researches is the marginal and declining role of Africa in world trade and it's low international integration rate (Verter, 2017; Wenjing *et al* 2012) .

A sufficient number of studies show that Africa faces inherent obstacles and constraints that prevent it from reaping the benefits of its participation in international trade. These barriers concern either the structure of trade (ie the high concentration of exports in a few product groups, which makes them vulnerable to international price and demand fluctuations) or to the trade policy of local governments (tariff and non-tariff barriers etc, (Rodrik, 1998)

In particular, Wenjing *et. al* (2012) argues that barriers to growth through trade are the Africa's high dependence on primary commodity exports. Verter (2017) ascertains for Africa two types of trade constraints; external (market access which is determined by tarrifs and non-tarrifs trade barriers, and volatility of commodity prices) and internal constraints (low productive capacity and inadequate infrastructure). Ancharaz *et al* (2011) indicates as trade constraints, the low trade complementarity among African countries, the poor transport and communication infrastructure the lack of product diversification, the lack of trade facilitation instruments, and the complex custom arrangements. Collier and Gunning (1999), consider that the slowdown in Africa's economic growth is largely due the deterioration of terms of trade in the commodities to which its exports are concentrated. However, they identify domestic factors as well.

The "tropical curse" (tropical diseases, hostile environment for the development of the agricultural sector), the fragmentation of the region into small countries and the trade policy of local governments are domestic factors that contribute significantly to Africa's economic backwardness. Ndulu and Ndung'u (1998) attribute the poor trade performance of Africa in two factors: low trade share in world markets and wrong trade-policy of African countries regarding tariff barriers and exchange controls. Also an important obstacle is the structural bottleneck especially the low level of human capital that prevents the positive interaction between openness and FDI .In line with the above authors, are the findings of UNCTAD -Report on Africa, 2019) where there are identified as key impediments to trade , the weak productive capacity, the tariff and non-tariff barriers, the low level of infrastructure, the deficit in energy, the low level of intra-regional trade , the low share of Africa in international trade and the high dependence on exports.

However another group of researchers argues that it is the partners of Africa and the international rules as defined by the powerful world players, that kept Africa at a low level of development and not the inherent factors , In other words, they refer to geopolitical and economic alliances (De Angelis, 2008; Odhiambo, 2007).

Mutume ,(2006) claims that it is the technical regulations on imports (which replaced the tariffs-barriers) imposed by developed countries that hinder African exports. The author considers that the traditional trade barriers (tariffs, quotas) that were removed through the recent WTO agreements, have simply been replaced by the introduction of high technical standards for imported products, which developing exports countries cannot meet. Finally, Faizel, (2016) considers that Africa can seize the opportunities given of the rise of new emerging economies of BRICS , to develop further its relations especially with China and the EU and strengthen its position in the Global Value Chains and its presence in international WTO negotiations.

3. Data and Methodology

In the international databases (OECD, World Bank, IMF) from which we obtained statistics on Africa's international trade, the grouping of countries into sub-groups is based on the criteria of geographical location, development, economic and institutional status. There are at least 5 economic coalitions[1] and five regional subgroups [2]of African countries, which comprise economies at different development level. For example, North African countries belong to the MENA[3]group, South Africa belongs to the emerging economies of BRICS[4].Based on the availability of statistics and in order to have a concise picture of the main dimensions of Africa's commodity trade we chose the UNCTAD-UN geographical / regional classification. (Eastern, Middle, Southern and Northern Africa -excluding South Africa since it belongs to the emerging economies of BRICS). The analysis of statistical data is carried out by geographical area and at country level, upon data availability. For better and more comprehensive

[1] East African Community (EAC), Economic Community of Central African States (ECCAS), Southern African Development Community (SADC), and Economic Community of West African States (ECOWAS)

[2] Eastern , Middle, Southern , Western and Nothern Africa

[3] Middle East and North Africa,

[4] Brasil, Russia, India, China, South Africa

presentation of the results, detailed country-tables are not mentioned, due to the large number of involved countries, but are available upon request.

4. Analysis of Trade Performance Indicators.

For Africa as a whole, the exports' share to world total trade ranges from 2.5% to 1.64%, in the period 2005-2019. This rate for individual regions ranges at much lower levels , showing a downward trend after 2009. This is indicative that Africa still remains marginal in international trade. Regarding the growth rate of exports , for Africa as a whole and for individual countries as well, it does not exceed the 12% compared to the previous year, while for some regions this rate falls to 9%.According to UNCTAD statistics, the exports' growth rate during the period 2010-2015 marked a significant decrease, while in 2015-2020 it seems to be recovering for the all regions except for Middle Africa (App B figure 3A) On the contrary, imports' growth rate has been increasing in the last five years (2015-2020) (App B , figure 4A).

Calculating the export shares in GDP for the period 2005-2020, it is observed that for all African regions this share exceeds 30% of GDP while for most cases of individual countries it exceeds 50% of GDP (Appendix B, Figure 1A). Given the important role of exports for the GDP and at the same time the growing trend for imports, it is important to notice how trade conditions are shaped, using as an index, the terms of trade , which measures the change in purchasing power of exports relative to imports for a given country/region. Increase in the value of that index indicates a rise in the price of exports relative to imports and vise versa. The evolution of this index during the period 2005 -2019) is presented in Figure 1 below). The downward trend after 2012 implies a deterioration in trade conditions for Africa.

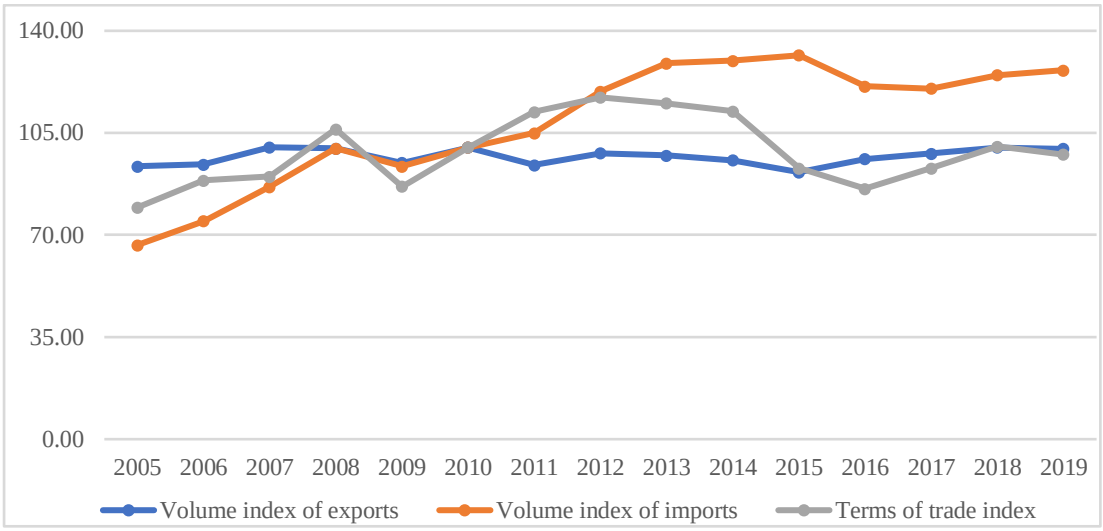

Figure 1: Africa: Volume Index-Exports-Imports- Terms of Trade, 2010=100

Source: UNCTAD-stat data (2020) and authors' calculations (data processing table available upon request)

Completing the analysis of trade performance, we present the evolution of the Export Product Concentration index (EPCI)[5] a measure for the degree of concentration of exported goods. The index value ranges from 0 to 1. A value closer to 1 indicates that an economy is concentrated in few goods and/or trade sectors, an indication that the economy is vulnerable to external trade shocks, whereas and index value close to 0 indicates a completely diversified trade "portfolio". Figure 2 presents the evolution of EPCI for 259 for developing countries by continent for the period 2005-2019 (as shown below). Comparing the EPCI values, we observe that among the developing countries of the world, Africa has the highest export concentration indices (the value of the index is between 0.40 and 0.30 while for the remaining countries it moves at significantly lower levels, around 0.10). However, it shows a downward trend.

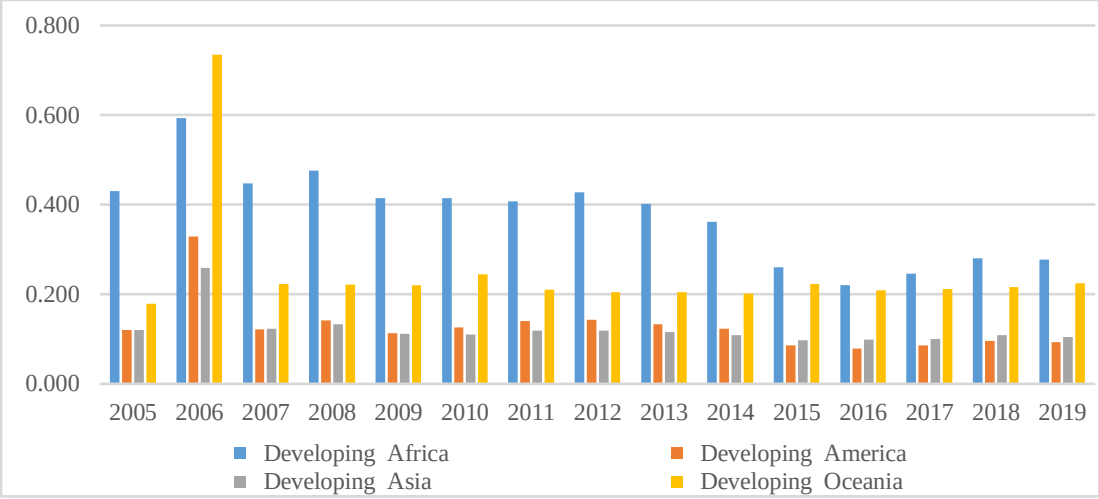

Figure 2: Export Product Concentration Index -Developing countries-Africa: 2005-2019 (price range 0-1)

Source: UNCTAD-stat-Trade Indices 2020) and authors' calculations (data-processing table available upon request)

If we look at the individual African regions, we will notice that the value of this index varies significantly but, still shows a downward trend (Figure 3) North Africa has the lowest concentration index moving at the levels of 0.2 in the period 2005-2012 while the highest concentration index is presented by Middle Africa ranging from 0.8 to 0.6. This is to be expected, as the sub-regions of Africa are not homogeneous in terms of either volume or composition of their exports.

[5] This index is calculated by UNCTAD and measures, for each country, the degree of concentration of goods exported (it does not include services). It tells us if a large share of a country's exports is accounted for by a small number of commodities or, on the contrary, if its exports are well distributed among many products

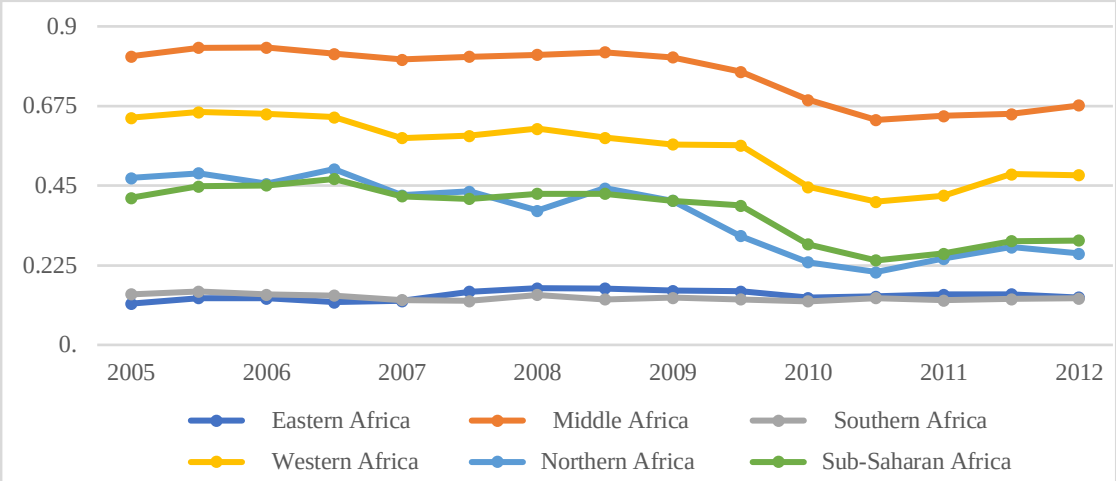

Figure 3: African Regions: Export-Product Concentration Index

Source: UNCTAD-stat-Trade Indices 2020 and authors' calculations (data-processing table available upon request)

The analysis of EPCI shows a high concentration of African exports in a small group of products, which makes them vulnerable to changes in international demand and commodity prices fluctuations, with further negative effects on economic growth. However, as the price of this index shows a downward trend, we believe that the structure of exports is improving in terms of vulnerability to external shocks.

5. Trade Structure: Sectoral Distribution of Exports by Product Group

Having noticed from the analysis of the previous section, the high concentration of exports, in this part we will determine in detail the export concentration sectors per country. To classify the exportable products per country we follow two different classification methods, Standard International Trade Classification (SITC) and Lall classification which is a SITC3 revision, Lall (2000) classification ranks the traded goods by technological levels into primary products, plus four types of manufactured exports (resource-based, low-tech, medium-tech and high-tech).Analyzing the structure of trade in terms of technological level is very important because it has important implications for growth and development. Low-technology products (which have the least beneficial learning and spillover effects) tend to grow the slowest, and technology-intensive products (which have the most beneficial effects) the fastest in world trade. According to the Lall classification, for the period 2005-2019 Africa's exports are dominated by primary products at an average export rate of 60% while the second largest category is "other resource -based manufactures» at an average rate of 13% of total exports. The shares of the rest categories are negligible. (Detailed data in App B, Table 2A) .The following figures 4 and 5 describe in brief , the composition of African exports by product category.

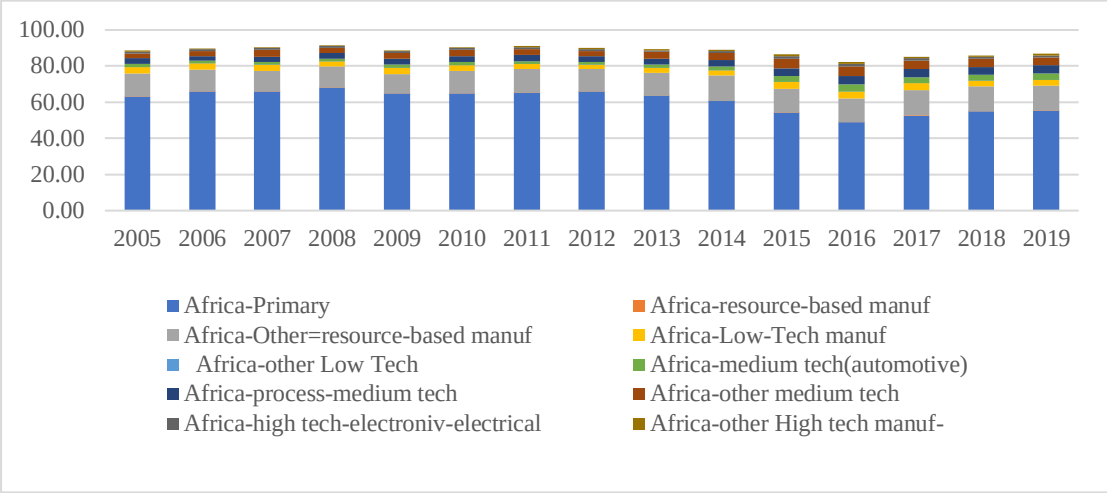

Figure 4: Africa's merchandise exports by product category (% of total exports - Lall classification
Source UNCTAD-stat 2020) and authors' calculations

SITC classification ranks trading goods in three broad categories: 1) The food and agriculture category which includes, Food Basic , Beverages and Tobacco ,Agricultural materials 2) The natural resources category which includes Fuels, Non Ferrous metals, Other ores and metals, Pearls, precious stones and non-monetary gold and 3) the Manufactured goods category (notion: the first two SITC categories belong to the primary group, according to Lall's classification) To match product groups between the two rankings we rearrange the figure 5 data and calculate again the export shares per product category by SITC .The main exports per product group for the period 2016-2020 , are presented in Figure 5 below. The main group is the primary products accounting for 75 % at average , of which 55% concern natural resources and especially fuels and 28% food products. Manufacturing exports account for 28% at average.

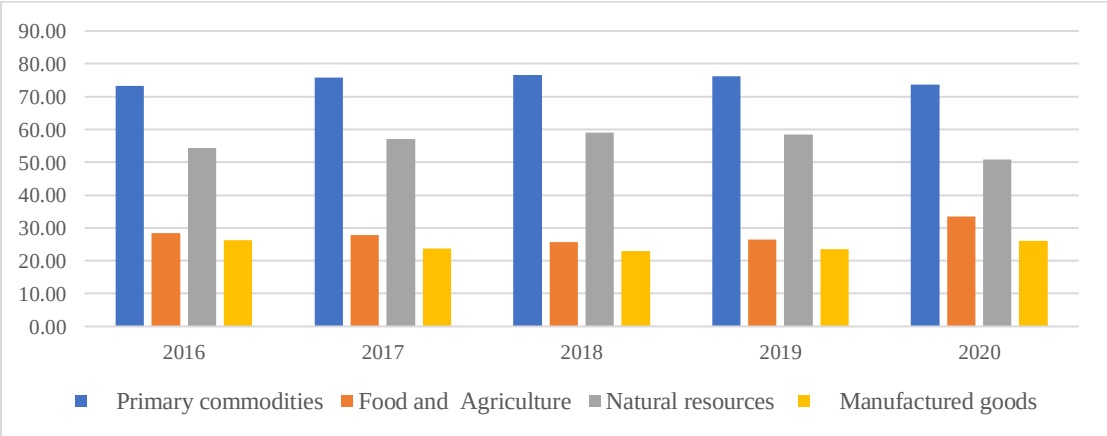

Figure 5: Africa's merchandise exports by product category (% of total exports-SITC classification)
Source UNCTAD-stat 2021 and authors' calculations

Both classification methods give the same results that African exports are concentrated mainly in primary commodities sector (food, natural resources and especially fuel) and secondarily in resource-based manufactures. Africa's imports are slightly diversified than its exports.(Figures 6 and 7 below) However, they are dominated by manufactured goods at an average rate of 65% for the period 2016-2020. In the group of manufactured goods, dominate the machinery and transport equipment and other machinery products at an average rate of 55%.

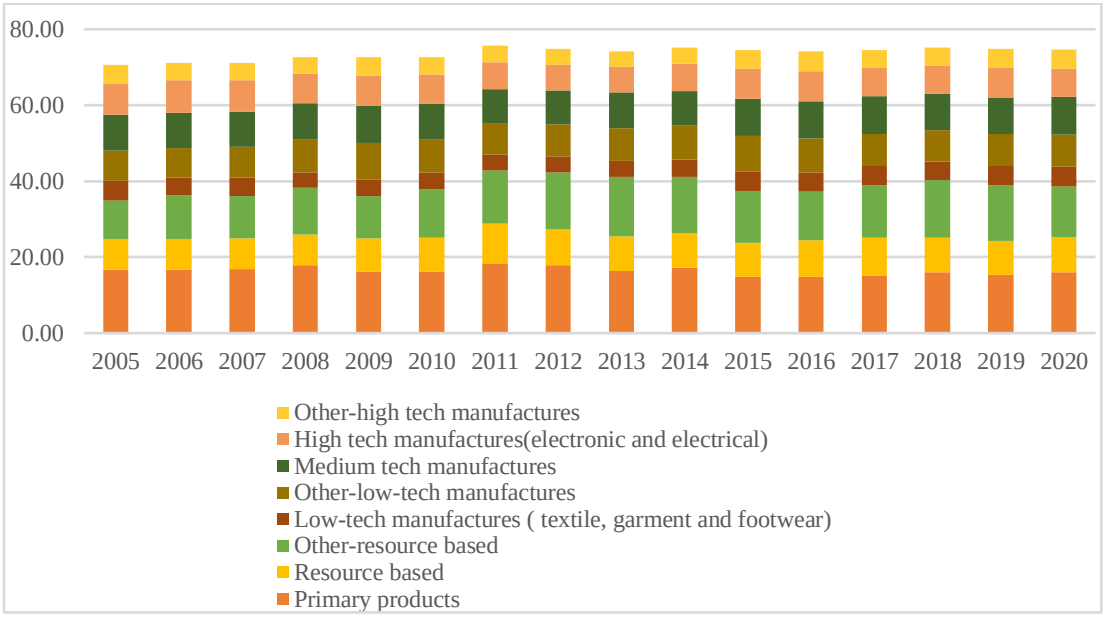

Figure 6: Africa's merchandise imports per product group , % of total imports - Lall classification, 2005-2020

Source UNCTAD-stat 2021) and authors' calculations

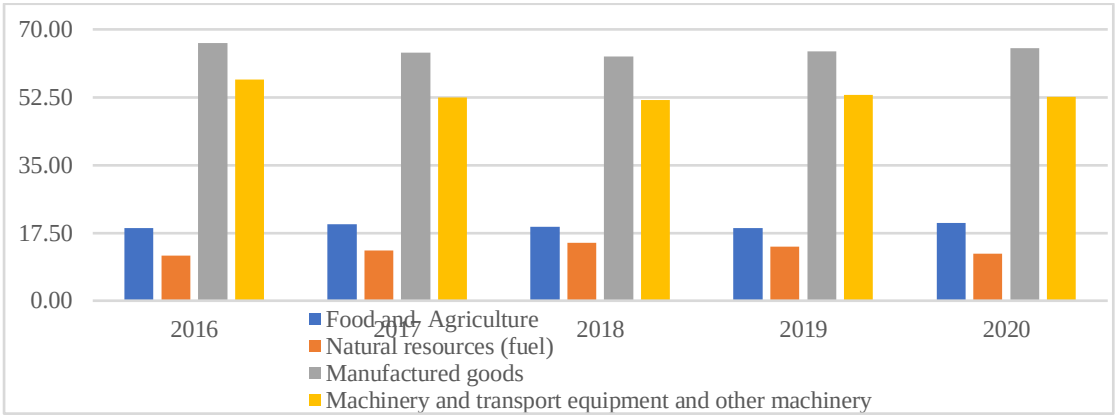

Figure 7: Africa's merchandise imports per product group, % of total imports - SITC classification, 2005-2020
Source UNCTAD-stat 2021 and authors' calculations

The above analysis shows that the composition of African exports has not been changed over time, since they are still concentrated in few primary products and natural resource sectors, which makes them sensitive to international price fluctuations. The next step

of this work, is to examine how sensitive are the prices of African exports and how it affects the growth of involved countries.

6. Commodity Price Instability of African exports and its impact on growth

In this section we examine the extent according to which fluctuations in international commodity prices for African exports affect their growth. Empirical evidence indicates a negative impact of commodity price instability in a number of macroeconomic variables such as growth, financial resources, and income distribution in developing countries which may lead to increased poverty instead of poverty alleviation. Deaton and Miller (1995) examine the relationship between commodity prices fluctuations and growth (measured by GDP and its components) in Africa, for the time span 1965-1985. By applying different methods of estimation, on individual and pooled data, we conclude that the poor performance of African countries has to do with the recent poor performance of the prices of African exports. Even though commodity prices may not be the only factors that negatively affect growth in Africa, they are part of it. Deaton A. (1999), using different sample of countries and different time span than Deaton and Miller (1995), concludes that the impact of commodity prices fluctuations on growth is ambiguous.

There is no obvious sign that high commodity prices are "more than a curse than a blessing" Deaton and Miller (1995) attribute Africa's economic backwardness to a lack of investment, rather than to an unfavorable change in international export prices for African exports. We present in detail the shares of the main export products per country and at the same time , in order to have an additional comparable element of the importance of these products for the economic development of each country we calculated the share of earnings (both merchandise and total) exports to GDP. Our data cover the period 1990 -2019 for 40 African countries (Appendix A , countries' sample) For reasons of better presentation and because it was impossible to transfer the table for the entire period here we present the export shares per country, only for 2019 Table 1 below reports the commodities that account for more than 10 in total merchandise exports per country (see commodity categories description in Appendix A, Table 1A)

Table 1: African Countries and Their Main Exports, 2019

Country	Commodities with more than 10% share in total exports per country	Merchandise Exports/GDP	Exports of goods and services / GDP
Algeria (2017)	Fuel 96%	20.93	22.79
Angola(2018)	Fuel 92%	38.84	39.34
Benin	Food 26%	21.21	29.63
Botswana	Manufactures , 96%	28.52	33.79
Burkina Faso	Food 10%, Agricultural raw materials 10%	20.26	25.37
Burundi	Food 64%	5.98	9.13
Cabo Verde	Food 80%,	3.13	50.65
Cameroon	Fuel 43%, Agricultural raw materials 43.5%	10.47	20.21
Central African Republic	Manufactures 51%,Ores and metals 14%, Agricultural raw materials 29%	6.62	16.41
Congo, Rep.	Fuel 84%, Manufactures 8.4%	43.93	74.12
Cote d'Ivoire	Food 84%, Fuel 17%, Manufacturing 10%	21.57	NO DATA
Egypt	Food 16%, Fuel 26%, Manufactures 45%	9.57	17.50
Ethiopia	Food 82%	2.86	7.94
Ghana	Food 22%, Fuel 32%	23.30	35.84
Guinea	Ores and metals 25%	29.19	29.96
Kenya	Food 44%, Manufactures 31%, Agricultural raw materials 12%	6.11	12.03
Lesotho (2017)	Manufactures 89%	44.92	45.49
Libya (2018)	Fuel 95%	49.40	64.37
Madagascar	Food 36%, Manufactures 27%	19.00	26.45
Malawi	Food 92%	8.40	NO DATA
Mauritania	Food 50%,Ores and metals 48%	29.81	40.00
Mauritius	Food 36%, Manufactures 27%	15.83	38.52
Morocco	Food 21%, Manufactures 70%	24.34	39.11
Mozambique (2018)	Fuel 46%, Ores and metals 31%	30.53	41.01
Namibia	Food 27%, Manufactures 26%, Ores and metals 28%	49.79	35.82
Niger (2018)	Food 47%,Ores and metals 14%	8.72	11.02
Nigeria	Fuel 87%	13.95	14.22
Rwanda	Food 34%	11.98	21.81
Sao Tome and Principe	Food 87%	3.04	NO DATA
Senegal	Food 32%, Fuel 20%, Manufactures 24%	17.93	24.31
Sudan (2011)	Fuel 82%	11.58	8.48
Tanzania(2018)	Food 22%, Manufactures 73%	8.19	16.01
Togo	Manufactures52%	14.61	23.06
Tunisia	Manufactures 81%, Food 10.5%	38.10	48.62
Uganda (2018)	Food 37.5%	9.89	17.20
Zambia	Ores and metals 78%	30.23	34.64
Zimbabwe	Manufactures 13%, Ores and metals 35%	25.21	11.61

Source: WTO 2020 WDI -World Bank 2020 , UNCTAD2020 and authors' calculation

A first finding from the data in table 1 is that for almost all countries merchandise exports represent a high percentage of GDP ranging from 9% to 48% in some cases. This means that exports play an important role in the development of these countries. A second finding is that in many cases exports are concentrated almost exclusively in one or two product groups

Indicatively, we mention some countries where exports are concentrated in one sector at rates of over 40% of total exports. Fuel, accounts 96% of total exports for Algeria , 92% for Angola, 95% for Libya 82% for Sudan etc. Food accounts 92% of total exports for Malawi ,84% for Cote D Ivoire, 89% for Cabo Verde, 82% for Ethiopia, 80% for Sao Tome 50% for Mauritania 64% for Burundi etc. Manufactures account 81% of total exports for Tunisia, 52% for Togo, 73% for Tanzania etc. The above data show that the exports of many of the sample countries are concentrated in very high percentages in specific product sectors and this makes their exports vulnerable to fluctuations in international commodity prices affecting subsequently their growth. More specifically, the main products, per countries' subgroup, are mineral fuels-oils and products of their distillation (13 countries) , natural or cultured pearls- precious or semi-precious stones and metals (11 countries), articles of apparel and clothing accessories- knitted or crocheted (8 countries), \fish and crustaceans-molluscs and other aquatic invertebrates (8 countries) , cotton (7 countries), coffee-tea (6 countries), tobacco (6 countries), electrical machinery and equipment and parts thereof (5 countries), Ores-slag and ash (5 countries) ,wood and articles (4 countries) , sugars and sugar confectionery (3 countries), edible vegetables-fruit and nuts (3 countries) ,cocoa (3 countries) , iron and steel (3 countries) oil seeds and oleaginous fruits-miscellaneous grains-seeds and fruit-industrial or medicinal (2 countries) copper and articles (2 countries),salt-sulphur-earths and stone-plastering materials-lime and cement (2 countries) ,inorganic chemicals-organic or inorganic compounds of precious metals- of rare-earth metals (2 countries), Nickel and articles (1 country), Aluminum (1 country) Due to the great diversity of the number of countries per product group, we rearranged the data in Table 1 by grouping the countries in wider categories and created the following graphs, (figures 8 to 12)

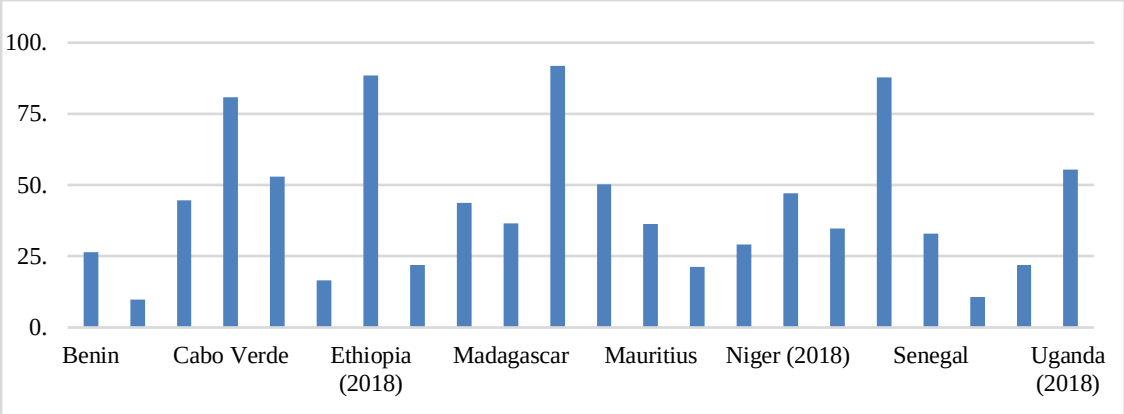

Figure 8: FOOD- Basic exports % of total exports per country , 2019
Source : WTO, WDI-World Bank 2020 , UNCTAD 2020 and authors' calculations

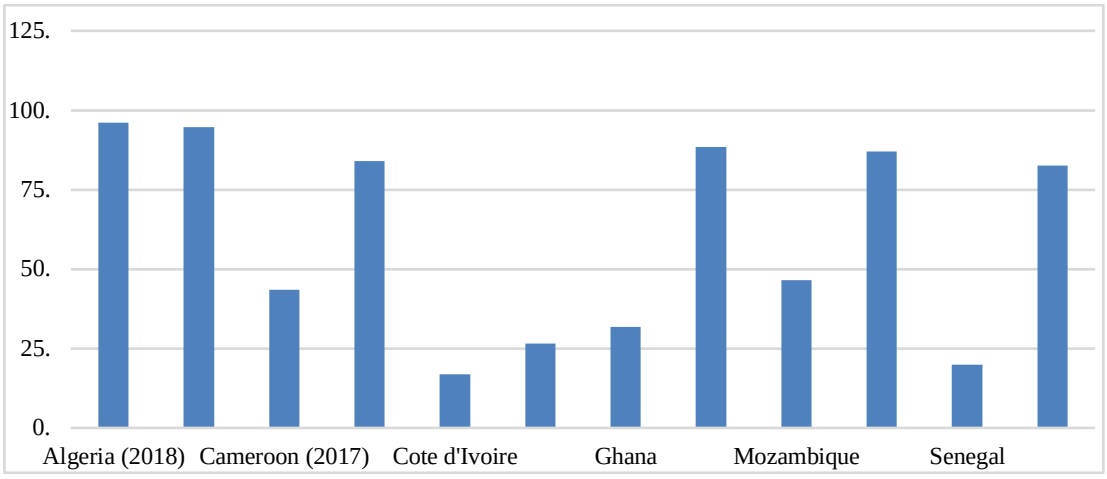

Figure 9: FUELS Basic exports % of total exports per country, 2019
Source: WTO 2020, WDI-World Bank 2020 , UNCTAD 2020 and authors' calculations

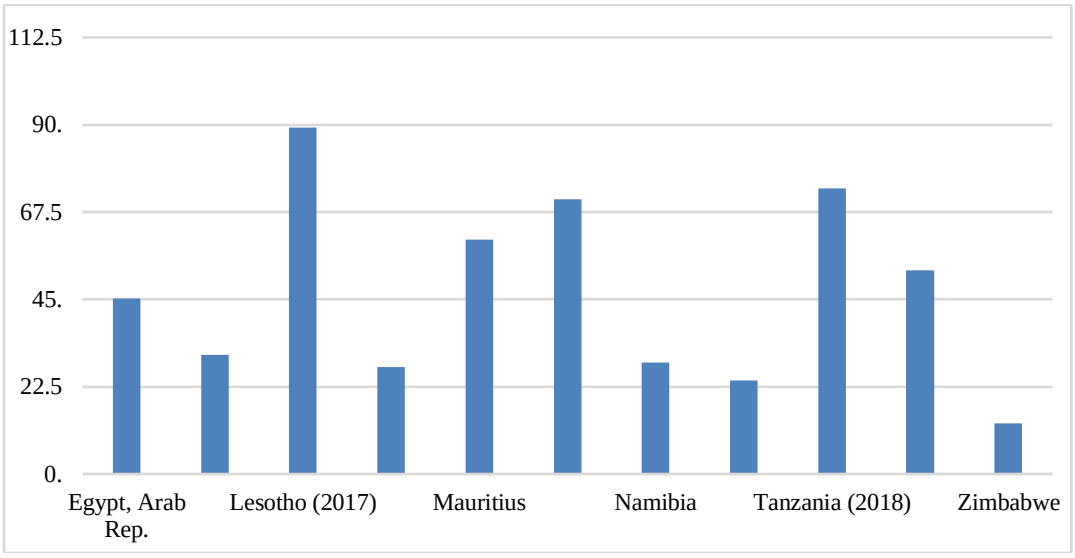

Figure 10: Manufactures-Basic exports % of total exports per country , 2019
Source: WTO 2020, WDI-World Bank 2020, UNCTAD 2020 and authors' calculations

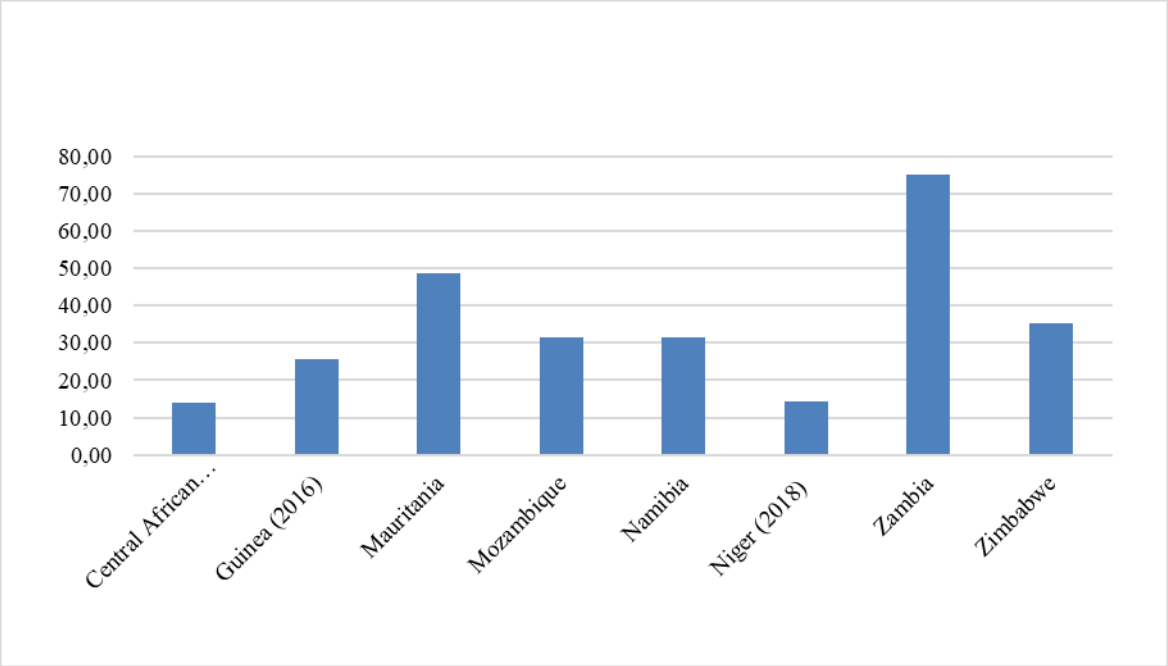

Figure 11: ORES AND METALS -Basic exports % of total county's export 2019
Source: WTO, 2020 WDI-World Bank 2020 , UNCTAD 2020 and authors' calculations

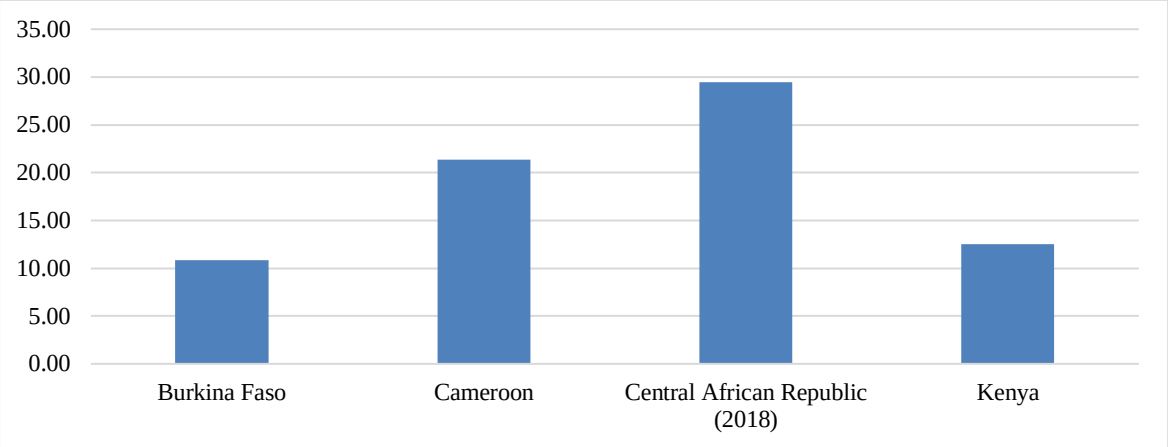

Figure 12. AGRICULTURE RAW MATERIALS-Basic Exports % of total country's exports 2019

Source : WTO, 2020 WDI-World Bank 2020 , UNCTAD 2020 and authors' calculations

After identifying the main groups of exportable products, we investigated the evolution of the international prices of these products. According to UNCTAD's Report 2020 on Commodity Price Index evolution, the prices of the main commodities exported from developing countries and Africa in our case, after 2011 have stopped rising. More specifically, the price index of food and agricultural products remains stable, at low levels, while minerals and fuels are declining (Figure 13). As these countries are heavily

dependent on exports of these commodities, it is a signal of a negative impact on their growth

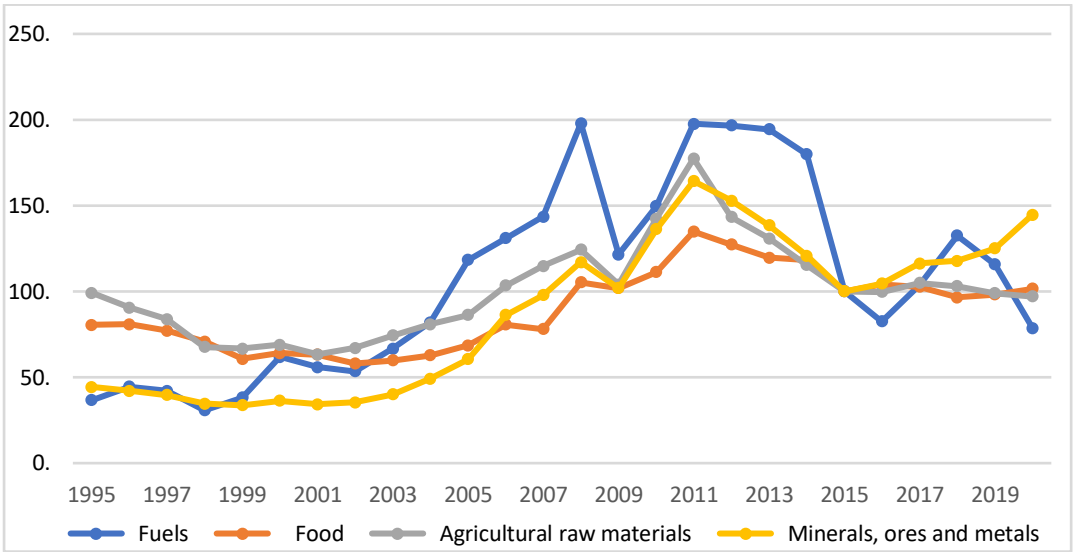

Figure 13: Evolution of Commodity Price Indices by product subgroup, annual Change , 2015=100

Source: UNCTAD-Commodity Price Index 2020 and authors' calculations. The series of commodity price indices are expressed in logarithms

In order to test the correlation between changes in international prices and growth, we present on the same charts the evolution of GDP per capita and (the unweighted[6]) commodity price index change (UNCTAD-stat, 2015 = 100)) separately for each product subcategory. Based on their main exports, the countries of our sample are classified into 4 product subcategories Fuels, Food, Minerals-Ores-Metals, Agriculture Raw Materials, Manufactures (UNCTAD classification). Below we analyse only the first three subcategories

In the product subgroups we include countries that export more than 30% of their total exports by product subcategory. The Agriculture Raw Materials category has not been analysed, because the export rates of these products are less than 10% of each country's exports. As for the manufactures category, there were no available indicators, despite the fact that for 15 countries of the sample, manufactures consist a high share of their total exports.

On the figures 14 and 15 we present on the same chart the evolution of the commodity price index (CPI from now on)) and GDP growth for food-subgroup. This group, due to the large number of countries, was divided into two subgroups for better presentation reasons. The charts show that there is a common path of GDP-per capita and COMPRINDEX fluctuations (even for the countries of the second group, the fluctuations are less intense). This is an indication of correlation between commodity price and GDP. An econometric analysis is needed to answer this comprehensively which is not undertaken in this work.

[6] This index could not be weighed, as the countries in each subgroup have different weighting factors due to different export shares (dash lines on the diagrams)

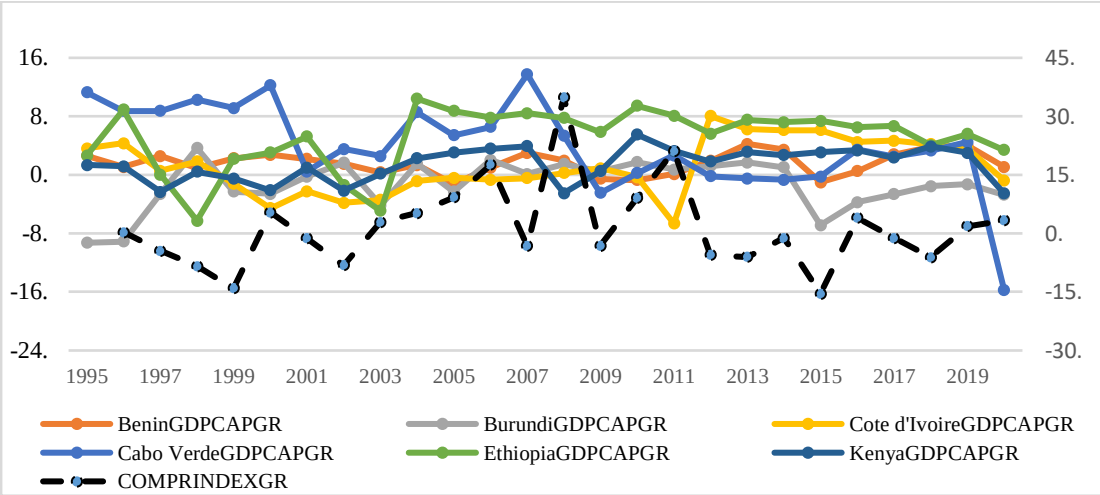

Figure 14 Food -Trends in GDP and COMPRINDEX- First country group- (1995-2020
Source: UNCTAD-IFS 2020 and authors' calculations

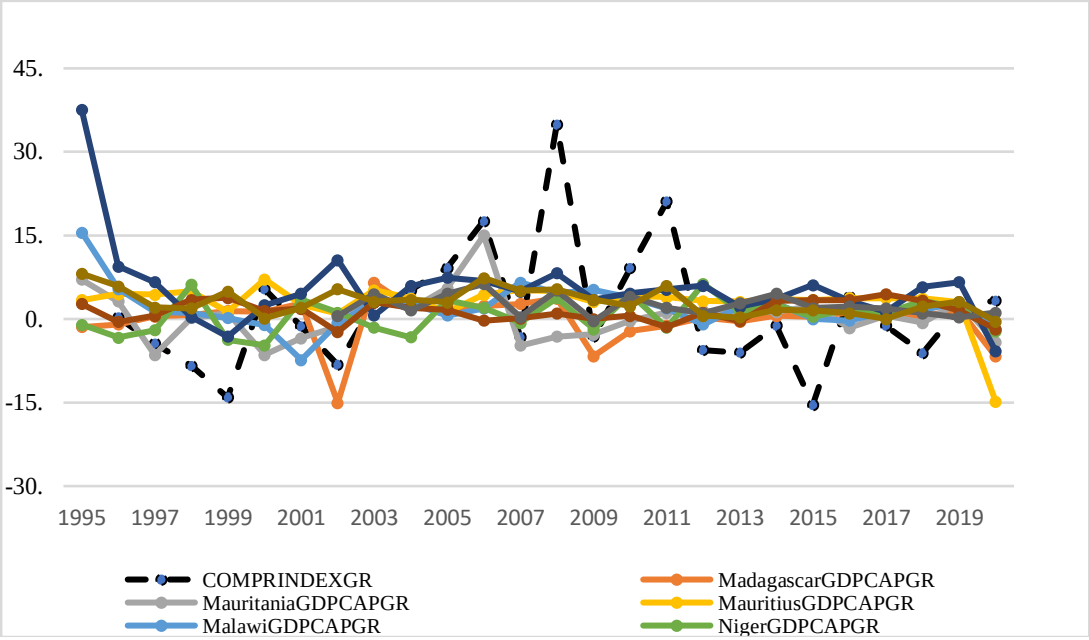

Figure 15: Food-Trends in GDP per capita and COMPRINDEX- Second country group (1995-2020)
Source: UNCTAD-IFS 2020 and authors' calculations

For fuels subgroup the price -index fluctuations seem to be followed by GDP fluctuations and more intensively in Libya's case (Figure 16 below).However fluctuations between COMPRINDEX s and GDP appear to be milder than those in Food case

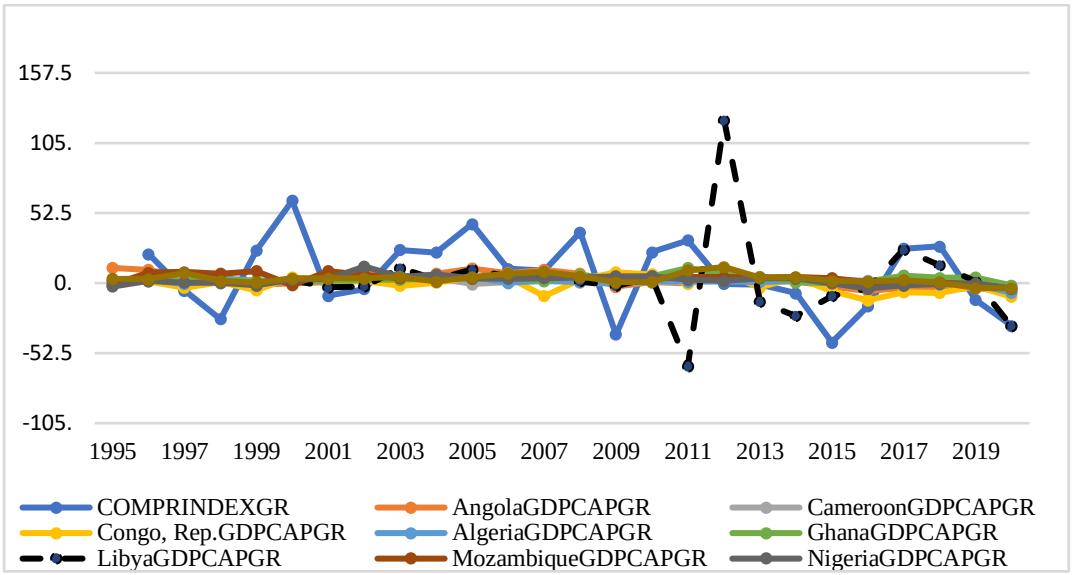

Figure 16: FUELS-Trends in GDP per capita and COMPRINDEX (1995-2020
Source : UNCTAD-IFS 2020 and authors' calculations

A similar correlation seems to apply to the subcategory of metals and ores (figure 17 below)

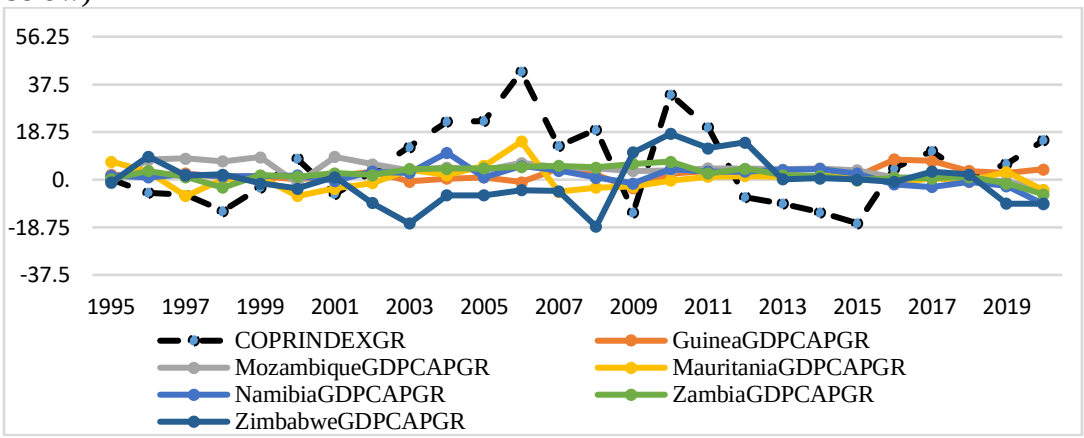

Figure 17: MINERALS-ORES-METALS-trends in GDP per capita and CPI (1995-2019 Source : UNCTAD-IFS 2020 and authors' calculations

Form the above analysis it is obvious that the change in international prices for key exports of African countries affects the growth of their economies, and given that there is a declining trend in the formation of international prices, this impact is negative. However, a thorough analysis by the use of econometric methods and models is required in order to check this relationship, which is not undertaken in this work**.**

7. Analysis of Africa's Position in the Global Value Chains (GVC)

In this section, we expand our research using data on the value-added in trade and value chains. Analyzing Africa's position in international production in terms of trade value added and participation in the Global Value Chains (GVCs from now on), we will examine the possibilities but also the perspectives that trade creates for the economic development. GVCs refers to international production sharing, a phenomenon where production is broken into activities and tasks carried out in different parts of the world. Economic growth can be driven by a country's upgrading from the relatively lower-valued (i.e. low skill, labor intensive stages) to high value-added phases (i.e. high skill,

human-capital intensive stages). (Humphrey, 2004, Brach and Kappel, 2009, Page, and Hewitt, 2001, Seric and Tong, 2019).

Countries can participate in GVCs by engaging in either backward or forward linkages. Backward linkages are created when country A uses inputs from country B for domestic production. Forward linkages are created when country A supplies inputs that are used for production in country B. Although the purpose of this paper is not to thoroughly analyse the Africa's GVC participation, we calculated some simple GVC indicators for individual African countries just to present the latest trends. Using updated (up to 2018) UNCTAD-EORA data we calculate a simple GVC index calculated as share of Domestic Value Added (DVA) to merchandise exports per individual country for the period 1990-2018 . Because we could not present the evolution of the index over time, due to the large number of countries, we chose to present the data of the last year, 2018[7] (figure 18, below).

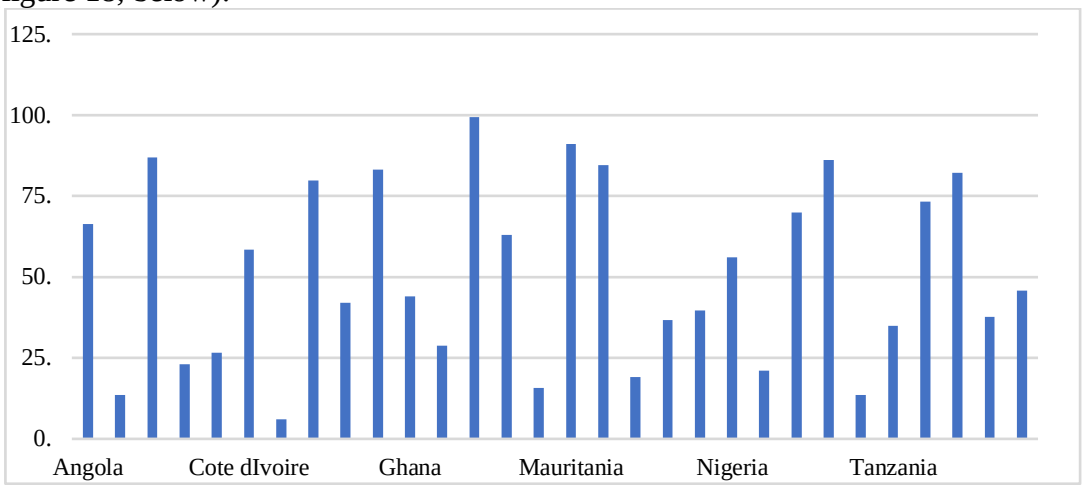

Figure 18: Simple GVC Index: Domestic Value added / total exports (percentages) 2018
Source: UNCTAD-EORA 2020 and authors' calculations

DVA is the part of exports produced domestically, so it is important for country's growth since it contributes to GDP. On figure 18 we notice that the value of this index even it varies between countries, is very high over than 50% in most cases. This means that the domestic value added as a percentage of exports is high implying the high contribution of exports to GDP growth.

On the other hand, the high value of the index means that African countries, as suppliers of third countries are focused on upstream production. This type of production is focused on primary and secondary sectors, whereby opportunities for technology upgrades and dissemination are limited. Therefore, this type of specialization and international integration asserts a weak growth impact.

8. Summary and conclusions

The purpose of this study was to investigate the inherent weaknesses of Africa that prevent it from growing through international trade. The topic was approached by analyzing recent trends and indicators of trade and by using the most up-to-date data.

[7] The following countries are excluded due to insufficient data quality:Benin, Burkina Faso, Congo, Eritrea, Ethiopia, Guinea, Libya, Sudan, Zimbabwe.

The analysis took place, both at regional and country level, and showed that there are inherent weaknesses but external factors as well that hinder the economic development of African countries through their participation in international trade.

As inherent impediments to growth we identified: 1) the low share of Africa's exports to the world trade which does not exceed in average the 3.5% of world exports 2) the export concentration in few mainly resource based products (Food agriculture and natural resources sectors) which makes African exports vulnerable to external demand and price shocks 4) The negative trade balance for all African regions which is another sign of Africa's inability to compete effectively in international markets. 5) The type of integration of Africa into global value chains through productive specialization in primary and secondary sectors where opportunities for technological upgrading and dissemination are limited confirms a weak impact on growth.

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APPENDIX A

Countries of the sample

Algeria, Angola, Benin, Botswana, Burkina Faso, Burundi, Cabo Verde, Cameroon Central African Republic, Congo, Rep., Cote d'Ivoire, Egypt, Ethiopia, Ghana, Guinea, Kenya, Lesotho, Libya, Madagascar, Malawi, Mauritania, Mauritius, Morocco, Mozambique, Namibia, Niger, Nigeria, Rwanda, Sao Tome and Principe, Senegal Sudan, Tanzania, Togo, Uganda, Zambia, Zimbabwe)

Indicator Name	**Definition**
Food exports (% of merchandise exports)	Food comprises the commodities in SITC sections 0 (food and live animals), 1 (beverages and tobacco), and 4 (animal and vegetable oils and fats) and SITC division 22 (oil seeds, oil nuts, and oil kernels).
Fuel exports (% of merchandise exports)	Fuels comprise the commodities in SITC section 3 (mineral fuels, lubricants and related materials).
Manufactures exports (% of merchandise exports)	Manufactures comprise commodities in SITC sections 5 (chemicals), 6 (basic manufactures), 7 (machinery and transport equipment), and 8 (miscellaneous manufactured goods), excluding division 68 (non-ferrous metals).
Ores and metals exports (% of merchandise exports)	Ores and metals comprise the commodities in SITC sections 27 (crude fertilizer, minerals nes); 28 (metalliferous ores, scrap); and 68 (non-ferrous metals).
Agricultural raw materials exports (% of merchandise exports)	Agricultural raw materials comprise SITC section 2 (crude materials except fuels) excluding divisions 22, 27 (crude fertilizers and minerals excluding coal, petroleum, and precious stones), and 28 (metalliferous ores and scrap).
Merchandise exports (current US$)	Merchandise exports show the f.o.b. value of goods provided to the rest of the world valued in current U.S. dollars.

Table 1A World development Indicators- Definition of product group

UN – PRODUCT CLASSIFICATION

A **commodity**, also called **primary product** or **primary good**, is a good sold for production or consumption just as it was found in nature. Commodities include crude oil, coal, copper or iron ore, rough diamonds, and agricultural products such as wheat, coffee beans or cotton; they are often traded on commodity exchanges.

The Standard international trade classification (SITC) distinguishes five main categories (sections) of commodities or primary goods: Food and live animals (SITC 0), Beverages and tobacco (SITC 1), Crude materials, excluding fuels (SITC 2), Mineral fuels (SITC 3), Animal and vegetable oils, fats and waxes (SITC 4), Sections 0 and 1 can be grouped together as 'Food and drink', 2 and 4 as 'Raw materials'.

UNCTAD-Trade Classification

For breakdowns of international merchandise trade by product, UNCTAD stat applies SITC, Revision 3, (United Nations, 1991) and various aggregates compiled on the basis of that classification.

All food items (SITC codes 0, 1, 22 and 4), Agricultural raw materials (SITC code 2 except 22, 27 and 28),Ores, metals, precious stones and non-monetary gold (SITC codes 27, 28, 68, 667 and 971), Fuels (SITC code 3),Manufactured goods (SITC codes 5, 6, 7 and 8 except 667 and 68).

For the measurement of movements in commodity prices the UCPI is disaggregated by commodity groups constructed from HS 2007 (World Customs Organization, 2006). For the correspondence between these commodity groups and HS headings and for the individual price quotations represented therein, see UNCTAD (2018).

APPENDIX B

Tables and figures

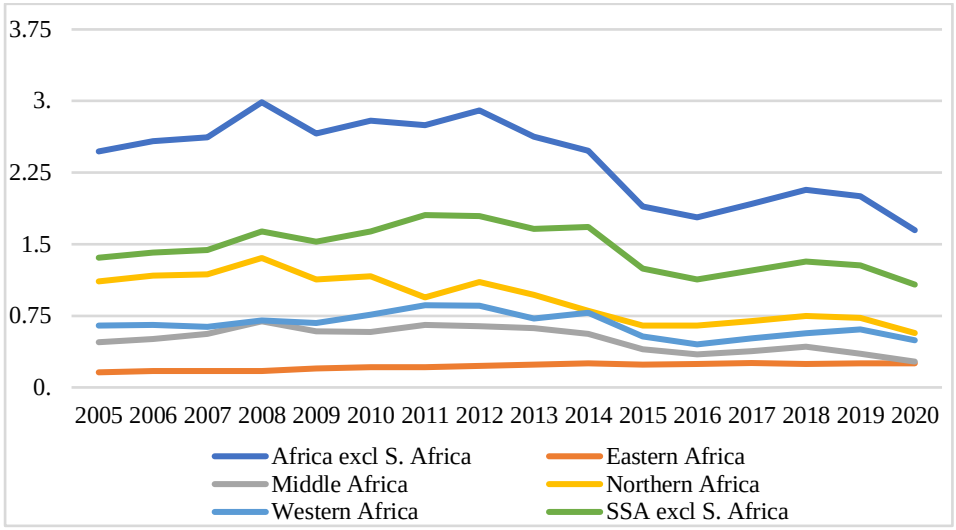

Figure 1A. Africa's merchandise exports by region-Percentages to world total

Source : UNCTAD-stat (2021) and authors'calculations

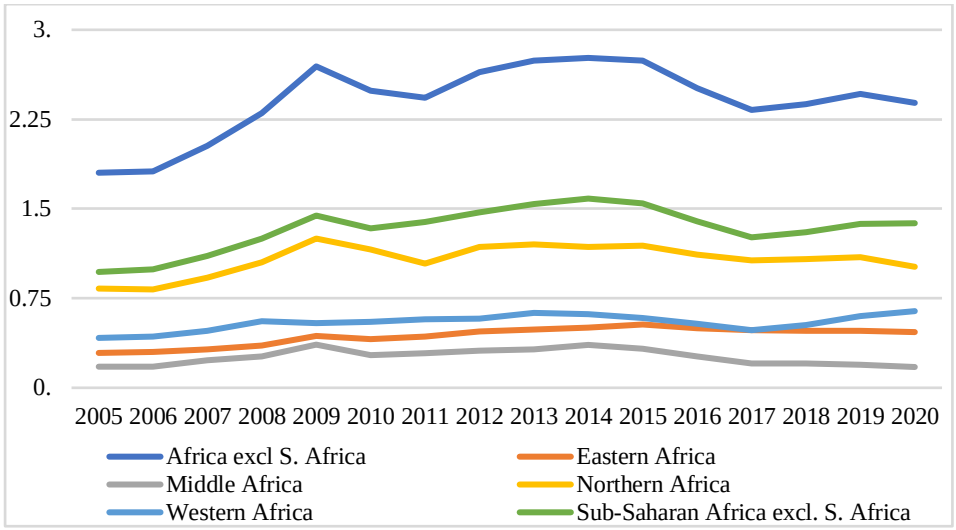

Figure 2A. Africa's merchandise imports by region-Percentages of world total

Source : UNCTAD-stat (2021) and authors'calculations

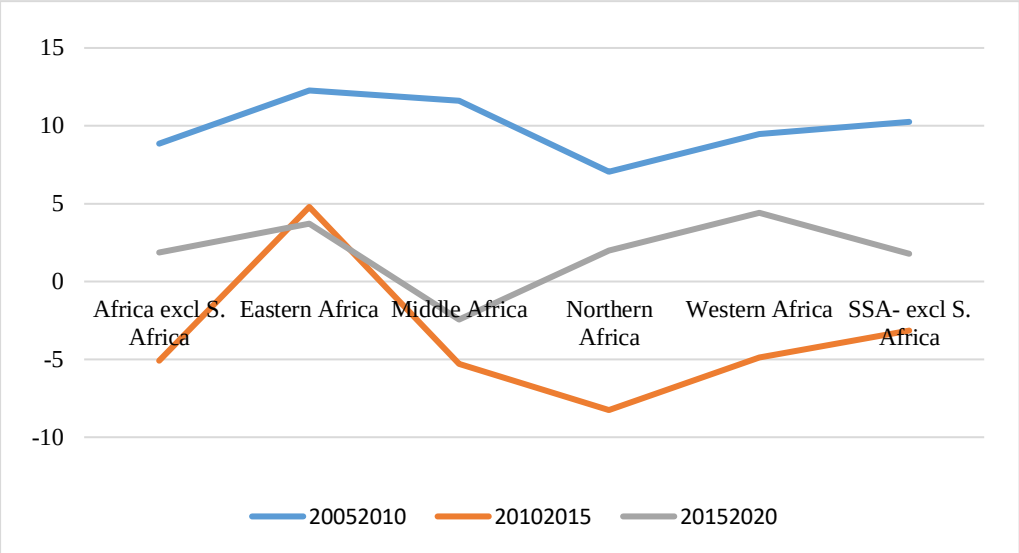

Figure 3A. Exports growth-five year averages

Source : UNCTAD (2021)-average growth rates compared to the previous year, reported every five years.

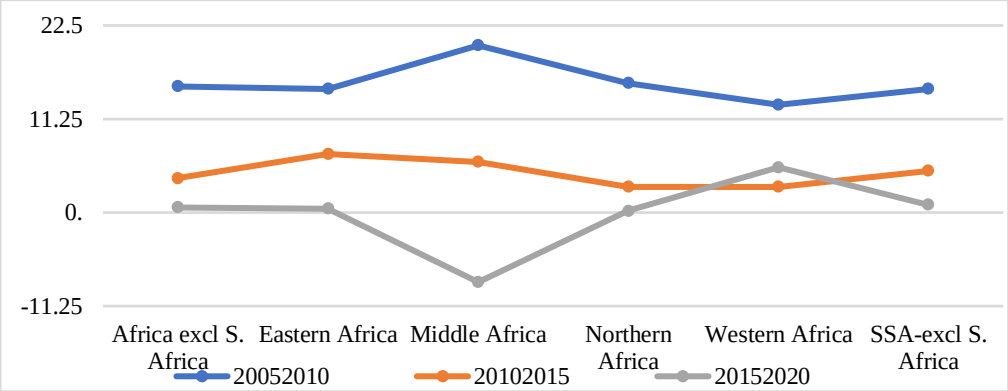

Figure 4A. Imports- growth-five-year averages

Source : UNCTA(2021) average growth rates compared to the previous year, reported every five years.

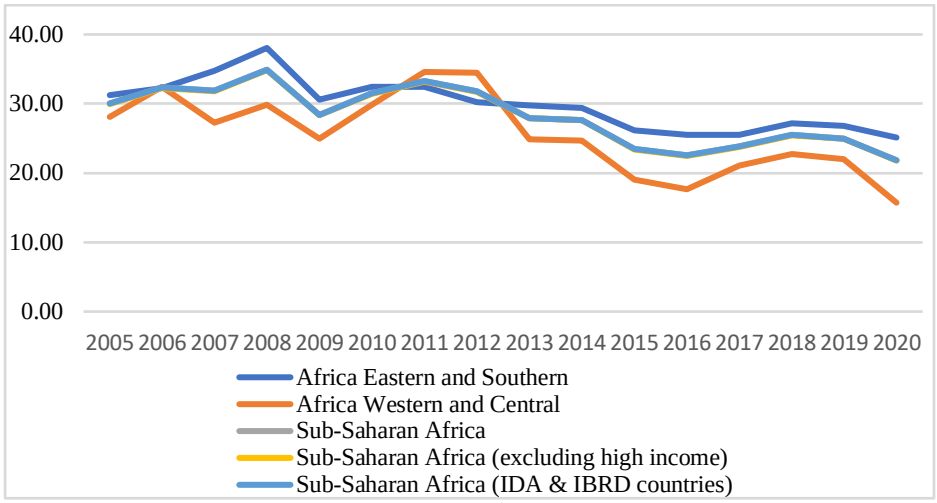

Figure 5A. Africa-Exports % GDP-per Region

Source -WDI-World Bank(2021) nd authors' calculations

Table 2A. Africa's exports per product group- Lall Classification

	Africa's exports per product group -Lall Classification									
	Primary	Resource-l	Other-reso	Low Tech	Other Low	Medium te	Process-m	Other med	High tech-	Other High
2005	63.1	0	12.6	3.9	0	1.6	3.1	2.7	0.9	0.7
2006	66.1	0	12.1	3.4	0	1.4	2.6	2.7	1	0.6
2007	66.1	0	11.4	3.5	0	1.4	2.9	3.8	0.9	0.5
2008	68	0	11.8	2.8	0	1.5	3.4	2.8	0.7	0.5
2009	64.8	0	10.9	3.6	0	1.6	3.2	3.3	0.9	0.6
2010	65.1	0	12.4	3.1	0	1.7	3.5	3.4	1	0.6
2011	65.2	0	13.2	2.8	0	1.6	3.3	3.4	0.9	0.6
2012	66	0	12.3	2.5	0	1.6	3.1	3	0.8	0.6
2013	63.4	0	13	2.7	0	1.8	3.4	3.7	0.9	0.6
2014	60.5	0	14.2	3	0	2.1	3.6	3.8	1.1	0.7
2015	54.2	0	13.3	3.8	0	3.1	4.4	5.3	1.5	1
2016	49	0	13.1	4.1	0	3.6	4.7	5.4	1.4	1
2017	52.7	0	14.1	3.6	0	3.2	4.6	4.8	1.2	0.9
2018	54.9	0	13.9	3.3	0	3.1	4.4	4.5	1.1	0.8
2019	55.4	0	13.8	3.3	0	3.4	4.5	4.4	1.1	0.9