Intra-regional spillovers from Nigeria and South Africa to the rest of Africa: New evidence from a FAVAR model

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7 April 2020

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Abstract: This paper examines the effects of intraregional spillovers propagated by Nigeria and South Africa on real economic activities and interest rates movement in three African regional blocs (i.e., ECOWAS, SADC and CEMAC) employing the factor augmented VAR (FAVAR) modelling approach over the period 1980Q2–2015Q1. Moreover, a counterfactual analysis, based on the same modelling approach, is conducted to assess what would happen to the real activities and monetary policy indicators of the three regional blocs in the absence of real and monetary shocks from the two countries. The paper finds that while the influence of Nigeria is limited to ECOWAS, South Africa plays an influential role on the real sectors and financial systems of all the regional blocs, albeit with short-lived impacts on ECOWAS and CEMAC. Moreover, the results of the counterfactual analysis show that real and financial activities in the SADC regions are highly influenced by South Africa. Our result suggests that countries with proper coordination of macroeconomic and monetary policies as well as organised financial market should be the sources of contagion and spillover, mostly at regional level.

Keywords: FAVAR, growth shocks, intra-regional spillovers, monetary policy.

JEL: C32, C55, F41

1. Introduction

In the last two decades, Africa has increasingly integrated into the world economy through trade and financial linkages with trade playing a greater role (see, e.g. Samake and Yang, 2014; Gurara and Ncube, 2013; Kose and Riezman, 2001). This development has inevitably exposed the continent to external shocks as the ongoing globalisation process increases. Over the years, few resource-rich countries have evolved into frontier markets becoming attractive destinations of private foreign capital inflows (donor funding and foreign direct investment), exposing the continent to external financial shocks. These shocks are then propagated quickly in the region through large economies such as Nigeria and South Africa (SA). These two large African countries have extensive trade and financial ties with many African countries and in most instances sources of contagion in the region (see, e.g., World Bank, 2016; IMF, 2012). In particular, Nigeria's increasing integration into the world economy via trade and financial links as well as its position as the largest oil exporter (and producer) in the SSA region makes the country a prime candidate for potential sources of intra-regional (or inward) spillover into the region (see, e.g., Arizala, et al. 2018; Giovannetti and Velucchi, 2013).

Premised on the business cycle theory, an increase in bilateral trade between Nigeria, South Africa and other African countries (in particular, members of the same regional blocs) that deepens regional integration would enhance the transmission of regional real or financial shocks and business cycle co-movements (Frankel and Rose, 1997, 1998; Kose and Yi, 2006)[1].

Empirical literature is replete with studies that mainly focus on the implications of global (external) shocks on African countries (see, e.g., Mwase et al.2016; Rasaki and Malikane, 2016; Biljanovska and Meyer-Cirkel, 2016; Dabla-Norris et al.2015; Carnales-Kriljenko et al.2014; Drummond and Ramirez, 2009; Raddatz, 2008; Ndulu and O'Connell, 2007)[2]. However, the intra-

[1] The underlying intuition is simple: existence of extensive trade link allows the transmission of shocks from one country to another. Subsequent studies have provided empirical support for this observation (see, e.g., Baxter and Kouparitsas, 2005; Inklaar et al. 2007). For evidence on African countries, see, e.g., Tabsoba (2007, 2010).

[2] In these studies, sources of macroeconomic fluctuations in many Africa countries have been attributed to, *inter alia*, external (global) shocks linked to global demand export-driven shocks, terms of trade volatility, exchange rate movement, commodity price shocks, credit supply shocks (tight global financial conditions) and economic conditions of Africa's major trading partners in both the advanced (e.g., G7 countries, the US, Euro area) and emerging markets (in particular, China) economies.

regional spillover effects from large economies, such as Nigeria or South Africa, which are regional drivers of growth, trade, investment as well as financial flows on regional economic blocs in Africa remains largely unstudied.

Hitherto, only a few studies have considered the effects of intra-regional spillover effects on African countries (see Arora and Vamvakadis, 2005; Basedvant et al. 2015; Ariazala et al. 2019; Carnales-Kriljenko et al. 2013; IMF, 2012; World Bank, 2016). Nevertheless, most of these studies mainly focus on the implication of growth shocks from either Nigeria or South Africa on a few neighbouring countries with close geographical proximity, trade and financial ties. The findings in these studies are remain inconclusive possibly due to the small sample of countries studied and the employed econometric models that suffers from well-known drawbacks attributable to curse of dimensionality, over-parametrization and endogeneity issues. In order to remedy these shortcomings, these paper provides the following contributions; first, we consider the effects of intra-regional spillovers from prominently large resource-rich economies, in this case, Nigeria and South Africa on three regional blocs (i.e., CEMAC, ECOWAS and SADC) consisting of 26 sub-Saharan Africa countries, rather than specific (small sub-set of) countries. Second, in contrast to previous studies, we employ the factor-augmented vector autoregressive (FAVAR) model to accommodate the large dataset and avoid issues related to curse of dimensionality and endogeneity (see Bernanke et al., 2005). Hence, we circumvent the shortcomings in the previous studies and expect to produce more robust inferences. Thirdly, counterfactual analyses are conducted using the FAVAR model to assess what would have happened to the three regional blocs' economic activities and interest rates in the absence of shocks from South Africa and Nigeria.

Our work is important and timely given the renewed political efforts by policymakers in Africa to increase the total share of African global trade by deepening intra-regional trade, mainly through the establishment of large free trade areas such as the Tripartite Free Trade Area (TFTA) and African Continental Free Trade Area (AfCFTA)(see, Tabsoba (2007, 2010).)[3]. Hence, the findings from our intra-regional growth 'spillover analysis' will shed more light on the important roles of large resource-rich and regional hegemonic economies such as Nigeria and South Africa as growth drivers and hence sources of internal and regional economic shocks as well as macroeconomic fluctuations in the continent.

The rest of the paper is organised as follows: Section 2 provides an overview of related empirical studies. Section 3 briefly discusses the dominance of Nigeria and South Africa on intra-African trade from sub-regional perspective. Section 4 presents the FAVAR model for open economies with a broad set of selected variables and specification of the model. Empirical results are reported and discussed in Section 5 while Section 6 concludes with summarized findings, some policy implications, and area for future research.

2. A brief literature review

A number of studies have investigated the role of large economic leaders such as Nigeria and South Africa as potential growth poles for economic development and regional integration in Africa given their growing trade and financial linkages across the continent. For instance, using a panel regression model of 47 African countries, Arora and Vamvakidis (2005b) find a significant influence

[3]The AfCFTA is the largest FTA since the establishment of world trade organization (WTO) comprising of 54 out of 55 African countries. The AfCFTA was formally ratified in 30th May 2019. While the TFTA agreement brings together three large RECs, namely: The Common Market for Eastern and Southern Africa (COMESA), Southern African Development Community (SADC) and East African Community (EAC). The TFTA was signed in 10th of June 2015 in Egypt and ratified on 15th of July 2015 in the 25th AU Summit in Johannesburg. For more discussion on the AU's objectives on the creation of these large FTAs, for example, deepen regional economic integration as well as stimulate business cycles convergence, see example, Cloete (2019), Arizala et al.(2018b) and (IMF, 2019; UNCTAD, 2015) for the AfCFTA; ECA (2016) and Hartzenberg and Erasmus (2012) for the TFTA.

of South African growth shock on the rest of Africa, where one percentage point rise in South Africa's economic growth increases economic growth in the rest of Africa by 0.5–0.75 percentage points.

But, findings in more recent studies suggest negligible impacts of growth spillovers from South Africa on economic growth (outputs) of its neighbouring countries belonging to the same regional trading bloc or those with close trade and financial ties. Among these, Carnales-Kriljenko et al. (2013) employ a dynamic panel regression (augmented with General Method of Moments) covering the period 1986-2010 to assess the effects of a positive South African real GDP shock on the economic growth of Botswana, Lesotho, Namibia and Swaziland (BLNS and find an insignificant effect of economic expansion in South Africa on economic growth in the BLNS countries. While Basdevant et al. (2015) extend the work of Arora and Vamvakidis (2005b) by keeping the original 46 countries and applying a panel regression model over the period 1960 –2009 and find no effect of growth spillovers from South Africa to the rest of the African countries during the post-and-pre 1994 periods.

The rebasing of the Nigerian gross domestic product (GDP) in 2013 that led to the former displacing South Africa as the largest economy in Africa has attracted the attention of academic researchers and policymakers keen on Nigeria's new hegemonic role as a driver of intra-trade and financial linkages on the continent and in the West African region in particular.

Based on this new development, IMF (2012) examined the effects of growth spillover from Nigeria on the neighbouring countries with close trade ties, namely Benin, Burkina Faso, Cameroon, Chad, Côte d'Ivoire, Ghana, Niger, and Togo, by estimating country-specific structural VAR (SVAR) models spanning the period 1990Q1–2011Q4, and obtained results showing negligible (and statistically insignificant) effect of positive growth spillovers from Nigeria on these West African countries. But, it is well-known that the results of SVAR models are in general sensitive to identification assumptions, and the number of shocks that can be simulated is limited. Relatedly, World Bank (2016) employs a Bayesian vector autoregression (BVAR) model consisting of Nigeria, South Africa, Botswana, Ghana and Uganda with data spanning 2007Q2-2015Q2, and find an insignificant influence of transmitted growth shocks from Nigeria and South Africa on economic activities of their neighbouring countries.

Finally, Ariazala et al. (2019) employed a dynamic panel regression analysis of 45 sub-Saharan African (SSA) countries for the period 1980–2016 and find 1% shock to an intra-regional trading partners' growth (weighted average) causes the output of other SSA countries to rise by between 0.2 and 0.5%. These authors might have identified several channels for intra-regional spillovers, still, they do not examine the implications of intra-regional shocks emanating from regional forces like Nigeria and South Africa on intra-regional trade and cross-border investments in the SSA region.

Evidently, although the panel regression analysis utilized in most of the surveyed existing studies may have accommodated large dataset, nonetheless, it is generally accepted that these large-scale macro-models are susceptible to curse of dimensionality problem, over-parametrization (i.e., the use of many lags adequately capture the effects of simulated shocks) causing significant loss of degrees of freedom and heterogeneity problems. These drawbacks tend to bias deduced inferences and drawn conclusions contradict economic theory on shock transmission via trade linkages.

3. Nigeria and South Africa as Main Drivers of Regional Trade:

In this section, we briefly discuss the influence of Nigeria and South Africa in the sub-Saharan African region and particularly in their respective regional blocs where the two countries have strong trade and financial ties. The motivation behind this analysis is informed by many factors. Firstly, trade has been found as the most important channel for cross-country growth spillovers in Africa (see, Dabla-Norris et al.2015; Tapsoba, 2010; Kose and Riezmann, 2001) and intra-African trade remains a key driver of economic development and regional integration (see, Arizala, 2018a,b; Fofack, 2018).
Notwithstanding, recent trade data from International Monetary Fund's Direction of Trade Statistics (Fig.9 in the Appendix) shows that compared to other regions in the world, total intra-Africa trade (3%) is significantly low compared to that of other regions, for example, European Union (68%), Asia (59%), North America (37%) and Latin America (20%)[4].

[4]See, Afreximbank (2018).

Similarly, intra-regional trade is dominated by a few countries (largely resource-rich). A closer look at the trade data presented in Tables 1 and 2 reveal that total African trade is concentrated to 11 out of 54 African countries, with South Africa having the largest share (29%-32%), followed by Nigeria (6.5%-7.1%) between 2014 and 2017. The total shares of South Africa, Nigeria, Namibia (the top three countries) alone accounted for over 51.2% of total intra-SSA exports during the period under review. Same dominance pattern is apparent in recent years, for example, during 2016–2017 period, the total share of South Africa, Nigeria, Namibia and Botswana[5], accounted for about 76.7% and 79.4% respectively of total SSA exports. Evidently, South Africa accounts for a disproportionately larger share of total intra-African trade of about 30% to 32%.

3.1. Trade linkages: Nigeria, South Africa and Regional Economic Communities (RECs)

South Africa is the largest intra-Africa trader, followed by Nigeria which is the second largest source of regional (export) demand (Tables 1 and 2). Both economies are resource-rich with South Africa being a prominent source of non-fuel (precious metals) commodities, while Nigeria is a major supplier of crude oil. In addition, Nigeria and South Africa have significant bilateral trade with each other. Jointly, Nigeria and South Africa account for about 50% of Africa's total GDP at 29.3% and 19.1% respectively. Between 2014 and 2017, South Africa accounted for about 25% of total intra-African trade (34% in exports and 15.1% in imports), while Nigeria accounted for 12% and 4% intra-Africa exports and imports respectively. The rebasing of Nigeria's gross domestic product (GDP) from $270 billion to $510 billion in 2013 not only made it surpass South Africa as the largest economy in Africa but also increased Nigeria's share of total sub-Saharan African GDP from 21.3% to 31.7% (see, Sy, 2015; Reuters, 2014; The Economist, 2014).

3.1.1. Linkages between Nigeria and the rest of the region.

Furthermore, Nigeria is the largest oil exporter in the region. These features reinforce Nigeria's important role as a regional economic hegemony (a key source of regional demand), prominent source market of crude oil and a potential source of intra-regional economic shocks. The country belongs to two regional economic communities (RECs), namely the Economic Community of West African States (ECOWAS)[6] and Community of Sahel-Saharan States (CEN-SAD)[7], where it accounts for about 75% and 37% total GDPs in the respective RECs.

However, the contribution of Nigeria to intra-African trade has steadily declined since 2014 due to the decreasing global oil prices as oil exports comprise the largest share of Nigeria's total exports. For example, in 2014, Nigeria contributed 9.2% (US$7.1 billion) of total intra-Africa trade before recording a declining share of 5.3% (US$6.5 billion) in 2016 and 5.5% (US$7.1 billion) in 2017 (Table 1). Nevertheless, the country remains a key source of intra-regional demand accounting for about 83% to 88% of crude oil exports to other African countries, with almost half of the petroleum exports going to South Africa. Nigeria's other export products include floating structure for breaking up (3%), electric energy (2%) and petroleum gas (1%)[8].

Finally, looking at inter-regional trade, Nigeria generally accounts for the bulk of total intra-ECOWAS trade[9]. For instance, between 2014 and2017, Nigeria accounted for about 45% and 18% of

[5] In 2017, Namibia (7.5%) displaced Botswana (4.7%) among the group of top three contributors in total intra-African trade

[6] ECOWAS currently has 15 member states (Benin, Burkina Faso, Cape Verde, Ivory Coast, Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Mali, Niger, Nigeria, Senegal, Sierra Leone and Togo).

[7] CEN-SAD currently has 24 member states (Benin, Burkina Faso, Central African Republic, Chad, Comoros, Ivory Coast, Djibouti, Egypt, Eritrea, Gambia, Ghana, Guinea-Bissau, Libya, Mali, Mauritania, Morocco, Niger, Nigeria, Senegal, Sierra Leone, Somalia, Sudan, Togo and Tunisia) aspiring to the establish an Economic Union which includes the free movement of goods, services and commodities

[8] TRALAC(2019)

[9] In this paper, we refer to intra-regional trade between Nigeria, South Africa and their regional blocs interchangeably as inter-regional trade.

total intra-ECOWAS export and imports respectively. Specifically, out of the total intra-ECOWAS export and import of US$ 19.5 billion and US$ 8 billion in 2017, Nigeria's export and import accounted for US$7.8 billion and US$1.5 billion respectively. In the SSA region, Nigeria is also a key export market for agricultural products (and manufacturing goods) from neighbouring countries such as Guinea-Bissau (6% of exports), Côte d'Ivoire (3% of exports), and Niger (2.8% of exports)[10].

2.1.2 Linkages between South Africa and the rest of the region

South Africa (SA) accounts for about 21% of SSA's GDP. The country is also a key export destination for neighbouring countries in the Southern region belonging to two regional blocs: Southern African Development Community (SADC) and Southern African Customs Union (SACU), however, the former is the largest export demand market for South Africa. Resultantly, South Africa accounts for about 61% of SADC regional GDP[11], hence it is important a regional growth driver in the Southern African region. As a prominent export destination, South Africa's largest exports demand (as a % of GDP) originates from Swaziland (25% of GDP), followed by Lesotho (10% of GDP), Mozambique (10% of GDP) and Zimbabwe (5% of GDP), in contrast, exports from these countries to South Africa is generally less than 5% of the GDP of exports of crude oil producers (resource-rich countries) in West Africa, for example, Nigeria and Ghana, over the past decade.

Analysis of recent trade data on intra-regional trade affirms South Africa's role as a key source of export demand in the SSA region (Table 2). At the regional level, South Africa accounted for about 26.4% (US$41.2 billion) of total intra-Africa trade in 2014, which fell slightly to 24.2% (US$29.4 billion) in 2016, before rising to about 24.9% (US$31.9 billion) in 2017. South Africa mainly trades with its neighbouring countries. The country imports about 40%–50% of its crude oil (and energy) products mainly from Nigeria and Angola[12]. But, only approximately 10% of South Africa's total imports are from Africa and they are mainly sourced from Nigeria (20.1%), Angola (15.7%), Swaziland (14.3%), Mozambique (10.5%), Namibia (9.8%) and rest of Africa (29.6%). The top 10 products imported by South Africa from the rest of Africa accounts for 63% of its total intra-Africa imports, which mainly consists of crude petroleum oils (87% of which are imported from Nigeria and Angola), mixtures of odoriferous substances, semi-manufactured gold and petroleum gas[13].

In the SADC region, South Africa accounted for about 63% and 25% of total intra-SADC export and imports respectively and about 43% of total intra-SADC total trade between 2014 to 2017 (Table 2). In monetary terms, out of the total inter-regional export and import of about US$ 35 billion and US$ 32.9 billion in 2016, South Africa accounted for US$21.3 billion (about 33%) and US$8.1 billion (about 14.1%) accordingly. Of the total intra-Africa trade in 2017, South Africa accounted for about 26% of exports and 10% of imports. South Africa's exports are well diversified and comprise of petroleum oil (7%), vehicles and parts thereof (4%), electric energy (3%) and chromium ores (3%) to name a few (UNCTAD 2018). The main destination markets for South African exports in Africa are Botswana (16.5%), Namibia (15.34%), Mozambique (12.4%), Zambia (9.7%), Zimbabwe (8.9%) and others (37.1%).

Deductively, plausible evidence from the foregoing analysis is that a slowdown or expansion in economic activity in either Nigeria or South Africa would weaken or strengthen economic activities in these countries respective regional blocs due to these countries' relatively larger GDPs and disproportionately larger share of regional trade. However, the implications of transmitted intra-regional spillovers (or shocks) from the two largest African countries on their respective regional trading blocs remain an empirical issue that needs further examination.

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[10]. The ratification of the ECOWAS common external tariff, which became effective in January 2015 is expected to boost sub-regional trade, also in countries belonging to the Nigeria–WAEMU (West African Economic and Monetary Union) bilateral trade (World Bank, 2016).

[11] See, Carnales-Kriljenko et al. (2013). South Africa represent between 4% and 11% of SADC's total GDP.

[12] See, Afreximbank (2017, 2018)

[13] Trade data from UNCTAD (2019) shows that SA's main intra-Africa export products are broad-based and includes: petroleum oils, goods and passenger motor vehicles, electrical energy, chromium ores consumer goods, construction materials, agricultural inputs, food and coal.

Table 1: Intra-ECOWAS trade (US$ billion unless otherwise indicated), 2014-2017.

	Intra-African Exports				Country share of total intra-African exports (%)				Intra-African Imports				Country share of total intra-African imports (%)				Total Intra-African trade				Country share of total intra-African trade (%)			
Country	2014	2015	2016	2017	2014	2015	2016	2017	2014	2015	2016	2017	2014	2015	2016	2017	2014	2015	2016	2017	2014	2015	2016	2017
Angola	2.07	1.41	1.28	1.33	2.64	1.97	2.00	1.98	1.48	1.23	0.96	0.98	1.90	1.88	1.68	1.61	3.55	2.64	2.25	2.31	2.27	1.93	1.85	1.80
Benin	0.38	0.16	0.10	0.15	0.49	0.23	0.16	0.22	0.66	0.48	0.45	0.44	0.85	0.73	0.79	0.71	1.04	0.64	0.56	0.58	0.67	0.47	0.46	0.45
Burkina Faso	0.12	0.35	0.34	0.73	0.15	0.49	0.54	1.09	1.28	0.74	0.87	1.28	1.65	1.13	1.52	2.10	1.40	1.09	1.21	2.01	0.90	0.80	1.00	1.57
Cote d'Ivoire	4.24	3.30	2.82	3.27	5.41	4.62	4.39	4.87	3.25	2.19	1.79	2.04	4.19	3.35	3.12	3.35	7.49	5.49	4.61	5.31	4.80	4.01	3.79	4.14
Gambia	0.01	0.06	0.08	0.06	0.01	0.08	0.12	0.09	0.15	0.08	0.09	0.08	0.20	0.12	0.15	0.13	0.16	0.13	0.17	0.14	0.11	0.10	0.14	0.11
Ghana	1.33	1.86	1.73	1.80	1.70	2.61	2.70	2.68	3.65	0.86	0.86	1.00	4.70	1.31	1.50	1.63	4.98	2.72	2.60	2.80	3.19	1.99	2.14	2.18
Guinea	0.03	0.43	0.33	0.53	0.04	0.60	0.51	0.79	0.37	0.85	0.88	0.88	0.48	1.30	1.53	1.44	0.40	1.28	1.21	1.41	0.26	0.94	0.99	1.10
Niger	0.23	0.18	0.19	0.18	0.29	0.26	0.29	0.27	0.55	0.38	0.32	0.33	0.71	0.59	0.56	0.55	0.78	0.57	0.51	0.51	0.50	0.42	0.42	0.40
Nigeria	11.58	7.34	5.01	5.62	14.78	10.28	7.82	8.37	2.83	1.71	1.51	1.45	3.64	2.61	2.62	2.37	14.41	9.05	6.51	7.07	9.24	6.61	5.36	5.51
Sierra Leone	0.03	0.03	0.17	0.21	0.04	0.04	0.27	0.32	0.17	0.53	0.12	0.16	0.22	0.80	0.21	0.27	0.20	0.55	0.30	0.37	0.13	0.40	0.24	0.29
Togo	0.82	0.44	0.50	0.51	1.05	0.62	0.78	0.77	0.43	0.30	0.23	0.27	0.55	0.45	0.40	0.44	1.25	0.74	0.73	0.78	0.80	0.54	0.60	0.61
Total	20.84	15.56	12.55	14.39	26.60	21.80	19.58	21.45	14.82	9.35	8.08	8.91	19.09	14.27	14.08	14.60	35.66	24.90	20.66	23.29	22.87	18.21	16.99	18.16

Table 2. Intra-SADC trade (US$ billion unless otherwise indicated), 2014-2017.

	Intra-African Exports				Country share of total intra-African exports (%)				Intra-African Imports				Country share of total intra-African imports (%)				Total Intra-African trade				Country share of total intra-African trade (%)			
Country	2014	2015	2016	2017	2014	2015	2016	2017	2014	2015	2016	2017	2014	2015	2016	2017	2014	2015	2016	2017	2014	2015	2016	2017
Angola	2.07	1.41	1.28	1.33	2.64	1.97	2.00	1.98	1.48	1.23	0.96	0.98	1.90	1.88	1.68	1.61	3.55	2.64	2.25	2.31	2.27	1.93	1.85	1.80
Botswana	1.25	1.85	1.94	0.85	1.60	2.59	3.03	1.27	5.91	5.71	4.77	3.92	7.61	8.72	8.30	6.42	7.16	7.56	6.71	4.77	4.59	5.52	5.52	3.72
Congo, DR	1.46	1.24	1.15	1.94	1.86	1.74	1.80	2.89	3.60	2.58	2.25	2.40	4.64	3.95	3.92	3.94	5.06	3.83	3.40	4.35	3.25	2.80	2.80	3.39
Lesotho	0.02	0.34	0.37	0.39	0.03	0.48	0.58	0.58	0.01	1.05	1.03	1.20	0.01	1.60	1.79	1.97	0.03	1.39	1.40	1.60	0.02	1.01	1.15	1.24
Malawi	0.28	0.37	0.43	0.51	0.36	0.51	0.68	0.76	1.83	0.77	0.78	0.88	1.07	1.18	1.36	1.44	1.11	1.14	1.22	1.39	0.71	0.83	1.00	1.08
Mauritius	0.41	0.44	0.43	0.45	0.52	0.62	0.67	0.67	0.54	0.53	0.60	0.71	0.69	0.81	1.04	1.17	0.95	0.97	1.03	1.17	0.61	0.71	0.84	0.91
Mozambique	1.24	0.79	0.89	1.16	1.58	1.11	1.39	1.73	3.72	2.66	1.75	2.39	4.79	4.06	3.05	3.92	4.96	3.45	2.64	3.55	3.18	2.52	2.17	2.77
Namibia	4.33	2.54	2.02	3.36	5.53	3.56	3.15	5.00	5.19	5.53	4.68	4.19	6.68	8.45	8.16	6.86	9.52	8.07	6.70	7.55	6.10	5.90	5.52	5.89
South Africa	27.52	23.55	21.30	23.35	35.13	33.01	33.24	34.77	13.72	9.54	8.09	8.57	17.67	14.57	14.09	14.03	41.24	33.09	29.39	31.92	26.44	24.19	24.19	24.89
Swaziland	0.14	2.18	2.12	2.33	0.18	3.06	3.31	3.47	0.27	2.75	2.66	2.86	0.35	4.20	4.63	4.68	0.41	4.93	4.78	5.19	0.26	3.60	3.93	4.05
Tanzania	0.85	2.29	1.65	1.51	1.09	3.21	2.57	2.24	1.35	0.97	0.95	0.56	1.74	1.48	1.65	0.92	2.20	3.26	2.60	2.07	1.41	2.39	2.14	1.61
Zambia	0.77	1.70	1.43	1.59	2.73	2.38	2.23	2.36	5.85	4.86	4.39	5.12	7.53	7.43	7.65	8.38	2.76	6.56	5.82	6.71	1.77	4.80	4.79	5.23
Total	40.34	38.70	35.01	38.77	53.25	54.24	54.65	57.72	43.47	38.18	32.91	33.78	54.68	58.33	57.32	55.34	78.95	76.89	67.94	72.58	50.61	56.20	55.90	56.58

Table 3. Intra-CEMAC trade (US$ billion unless otherwise indicated), 2014-2017.

	Intra-African Exports				Country share of total intra-African exports (%)				Intra-African Imports				Country share of total intra-African imports (%)				Total Intra-African trade				Country share of total intra-African trade (%)			
Country	2014	2015	2016	2017	2014	2015	2016	2017	2014	2015	2016	2017	2014	2015	2016	2017	2014	2015	2016	2017	2014	2015	2016	2017
Cameroon	0.54	0.49	0.36	0.56	0.69	0.69	0.57	0.83	1.69	1.51	0.83	0.76	2.17	2.31	1.44	1.25	0.28	2.00	1.19	1.32	0.18	1.47	0.98	1.03
Chad	0.03	0	0	0	0.04	0	0	0	0.21	0.21	0.16	0.17	0.27	0.32	0.28	0.29	0.24	0.21	0.17	0.18	0.15	0.16	0.14	0.14
Congo, Rep	0.17	0.65	0.45	0.56	0.22	0.91	0.7	0.84	0.54	0.38	0.37	0.29	0.69	0.58	0.65	0.48	0.71	1.03	0.82	0.86	0.45	0.75	0.68	0.67
Kenya	2.27	1.93	1.95	1.83	2.9	2.7	3.04	2.72	1.33	1.17	1.09	1.56	1.72	1.78	1.89	2.55	3.6	3.09	3.03	3.38	2.31	2.26	2.49	2.64
Total	3.01	3.07	2.76	2.95	3.85	4.3	4.31	4.39	3.77	3.27	2.45	2.78	4.85	4.99	4.26	4.57	4.83	6.33	5.21	5.74	3.09	4.64	4.29	4.48

Data sources for Tables 1, 2 & 3: Afreximbank (2017, 2018). Own estimations.

Note: Exports and imports data may differ slightly because these trade data are quoted as FOB and CIF respectively.

4. The Econometric Model

Given the objective of the paper to analyse the effects of specific shocks to Nigeria and South Africa on real activity and interest rate of selected African regional blocs, we follow Helbling et al (2011) by undertaking our empirical analysis in two steps. First, we estimate the common component of real activity and interest rate of each regional bloc by making use of the GDP and interest rates of each country within the specific regional bloc to obtain the regional factor. These regional factors are obtained by extracting the first principal component of each of these series. It is worth noting that alternative approaches could have been used, such as a full-fledged dynamic factor model (DFM). However, Helbling et al (2011) show that global or regional factors obtained with DFM are quite similar to those obtained from principal component analysis. Second, we consider how shocks emanating from Nigeria and South Africa affect real activity and interest rates in each of the African regional blocs by using a FAVAR (Factor-Augmented Vector Autoregressive) model. in fact, we construct two FAVAR models, for Nigeria and South Africa with each FAVAR containing South Africa or Nigerian specific variables and the common components of the three African regional blocs, such as

$$X_t = \Lambda^f F_t + \Lambda^y Y_t + \varepsilon_t$$

where Λ^f and Λ^y are $N \times K$ and $N \times 1$ matrices of factor loadings, and ε_t is a $N \times 1$ vector of weakly correlated idiosyncratic error terms with zero mean. X_t are key policy variables from which impulse response functions are identified. F_t are the common components in the three regional blocs and Y_t are Nigerian or South African-specific variables.

We identify the shocks by making use of a set of sign restriction as proposed by Uhlig (2005) in order to produce impulse responses that are consistent with prevailing structural and theoretical predictions. For example, we identify contractionary monetary policy in South Africa by assuming that they lead to the increase in interest rate in the SADC region as literature abounds on the direct influence of South Africa in the SADC region (see Bonga-Bonga and Mabe, forthcoming). We have conducted robustness check of our results to alternative identification restrictions and horizon assumptions. All of our main results are robust to these checks.

We perform a number of counterfactual analyses whereby simulations are carried out during which structural shocks of interest rates and GDP for Nigeria and South Africa are set to zero over the relevant period. The simulation exercises aim at assessing what would happen to the real activity of SADC without GDP shocks from the South African economy, for example. The counterfactual analyses are conducted based on historical decomposition of structural shocks

5. Data, Empirical Results and Discussion

5.1 Data

We use quarterly data from 1980Q2 to 2015Q1[14], which coincides with the proliferation of regional FTAs and the creation of common currency areas among Africa countries. These regional integration efforts were aimed at fostering stronger intra-regional economic linkages and engendering business cycle convergences to reduce the adverse impact of external shocks. Our dataset consist of 412 time-series covering the real, nominal and financial sectors for the 26 African countries belonging to three blocs: CEMAC (Cameroon, Chad, the Republic of Congo and Kenya[15] ECOWAS (Benin, Burkina Faso, Cote d'Ivoire, Gambia, Ghana, Guinea, Niger, Sierra Leone and Togo) and SADC (Angola, Botswana, Congo DRC, Lesotho, Malawi, Mauritius, Mozambique, South Africa, Swaziland, Tanzania and Zambia).

On aggregate, our sample size covers approximately 70% of African GDP as measured by purchasing power parity (Table 5 in the Appendix)[16]. Moreover, our country sample size is diverse and suitable for intra-regional spillover analysis in three ways. Firstly, it comprises of middle-income, low-income and fragile economies, which are also major oil exporters and non-oil exporters (i.e., precious metal and agriculture products). Secondly, it accounts for different levels of economic development and resources endowment that requires facilitating intra-regional trade amongst RECs (which may lead to output correlation (business cycle co-movement as bilateral trade deepens). Finally, it yields a large panel dataset that satisfies the precondition for factor modelling (Stock and Watson, 2002).

Data on economic and financial series used are mainly sourced from the International Monetary Fund (which includes Direction of Trade Statistics, International Financial Statistics and the World Economic Outlook databases) and World Bank (mainly Global Financial Development, World Development Indicator and World Bank Open Data databases), as presented Table 6 in the Appendix. Where necessary, the time series are seasonally adjusted, and the nominal series are deflated using the consumers' price index (based 2010=100) to obtain real variables.

Given the need for variables to be stationary in the context of FAVAR models (see Bernanke et al., 2005), stationarity properties of the series were established using the DF-GLS unit root test proposed by Elliot et al. (1996) and the Kwiatkowski–Phillips–Schmidt–Shin (KPSS) unit root test with the null hypothesis of stationarity. We rely on the KPPS unit root test, in cases where the unit root *t*-statistics of the DF-GLS test are inconclusive. Optimal lag lengths are selected using the Schwarz information criterion (SIC) in order to remove serial correlation from the stochastic error term. The order of integration of each time-series is determined by applying the following transformations: level–no transformation (1), first difference (2), log-level (4) and log-first difference (5), as presented in Table 6 in the Appendix..

In this sub-section, we present and discuss the results of the FAVAR models as explained in section 4. Firstly, we analyse the evolution of real activities and short-term interest rate factors in each regional bloc from the principal components analysis. Next, we discuss the results of impulse response functions (IRF), especially the effects of real and monetary policy shocks to Nigeria and South African on African trading blocs. Finally, we conducted counterfactual analysis to assess what would have

[14] In cases where quarterly data is unavailable, a linear interpolation method is used to obtain quarterly series from annual timeseries.

[15] It is worth mentioning that the inclusion of Kenya in CEMAC regional bloc is due to the exclusion of countries belonging to Eastern Africa Communities, however, trade ties between the CEMAC countries and Kenya is relatively strong. Also, there is no qualitative difference between the results obtained with and without Kenya as part of CEMAC.

[16] Calculation is based on 2016 estimates from World Bank's World Development Indicators (WDI) database.

happened to the real activity and interest rates of the three trading blocs in the absence of shocks from the two leading economies.

5.2.1 Common components of real activity and interest rates.

Fig.1 plots the estimated principal components (common factors) of real activity and interest rates in the focal regional blocs. The behaviour of the real activity factors displayed coincide with some major global events, supporting the growing integration of Africa into the world economy and the ensuing large exposure to external (global) shocks as increasing trade and financial linkages drive regional economic integrations. A few patterns are apparent. For instance, all the regional blocs experienced, on average, five severe recessions in the 1980s; between 1991 and 1993; from 2001 to 2002; between 2009 to 2011; and 2015. These periods coincide with, among others: protracted recessions of the 1980s associated with tight monetary and austerity measures (and macroeconomic economic difficulties) in the advanced countries (1997-1998); the adoption of prescribed radical economic and fiscal reforms by the International Monetary Funds (IMF)[17]; the synchronized global economic downturn linked to the burst of the dot.com bubble, the global economic and financial crisis between 2007 and 2012 associated with the sub-prime crisis in the US which triggered a tight global financial condition/ financial contagion (debt crisis) in the Euro area; the sudden fall in commodity prices. Other developments were the economic rebalancing in the US and China (which are also Africa's major trading partners) which say the gradual increase in the US interest rates and the slowdown in China's real GDP to rebalance its economy[18].

Furthermore, the impressive economic performance observed in all the regional blocs between 2003 and 2008 coincides with the commodity price super-cycle largely driven by China's insatiable demand for commodities to support its export-led production model (see, Farooki et al. 2010 and Gauvin and Rebilard, 2018). The sharp fall in economic activities in the regional blocs in 2007/8 can be associated with the fall in global commodity prices, currency depreciation and crashes of stock exchanges due to the tight financial conditions the global recession created, and liquidity dry-up in the global capital markets. The subsequent recovery in economic activity levels in all the three regional blocs in 2010, despite the advanced economies experiencing a synchronised economic downturn in the same period, can be linked to the counter-fiscal measures adopted in most of the Africa countries.

Finally, a closer look at Fig.1 reveals a distinct co-movement, most notably in SADC and CEMAC, of the regional common component of interest rates characterized by a gradual rise in the 1980s and peaking in the 90s before declining steadily to its lowest value in 2014. These trends match the persistent inflationary episodes of the 80s, subsequent deflationary period associated with the adoption of radical economic reforms in Africa in the 90s and the great moderation period (1993–2007) of low global inflation, economic stability and structural decline in the volatility of business cycles (see, Kose et al.2012 and Hirata et al.2013). Furthermore, the steady rise in the short-term interest rate in ECOWAS in the aftermath of the recent global crisis is unsurprising given that the region consists mostly of oil producers facing sharp fall in commodity prices and dwindling foreign export revenue (IMF, 2015).

[17] See, e.g., UNCTAD (2001) and Camdessus (2000).

[18] See, e.g. Feldkircher et al. (2016) for the global effects of the adopted gradual rise in the US' interest rates, and Cashin et al.2017 for the policy-driven gradual slowdown in China's real GDP, in the aftermath of the recent global crisis. See, for example, Chen and Nord (2016) and IMF (2015) for similar study on the SSA region.

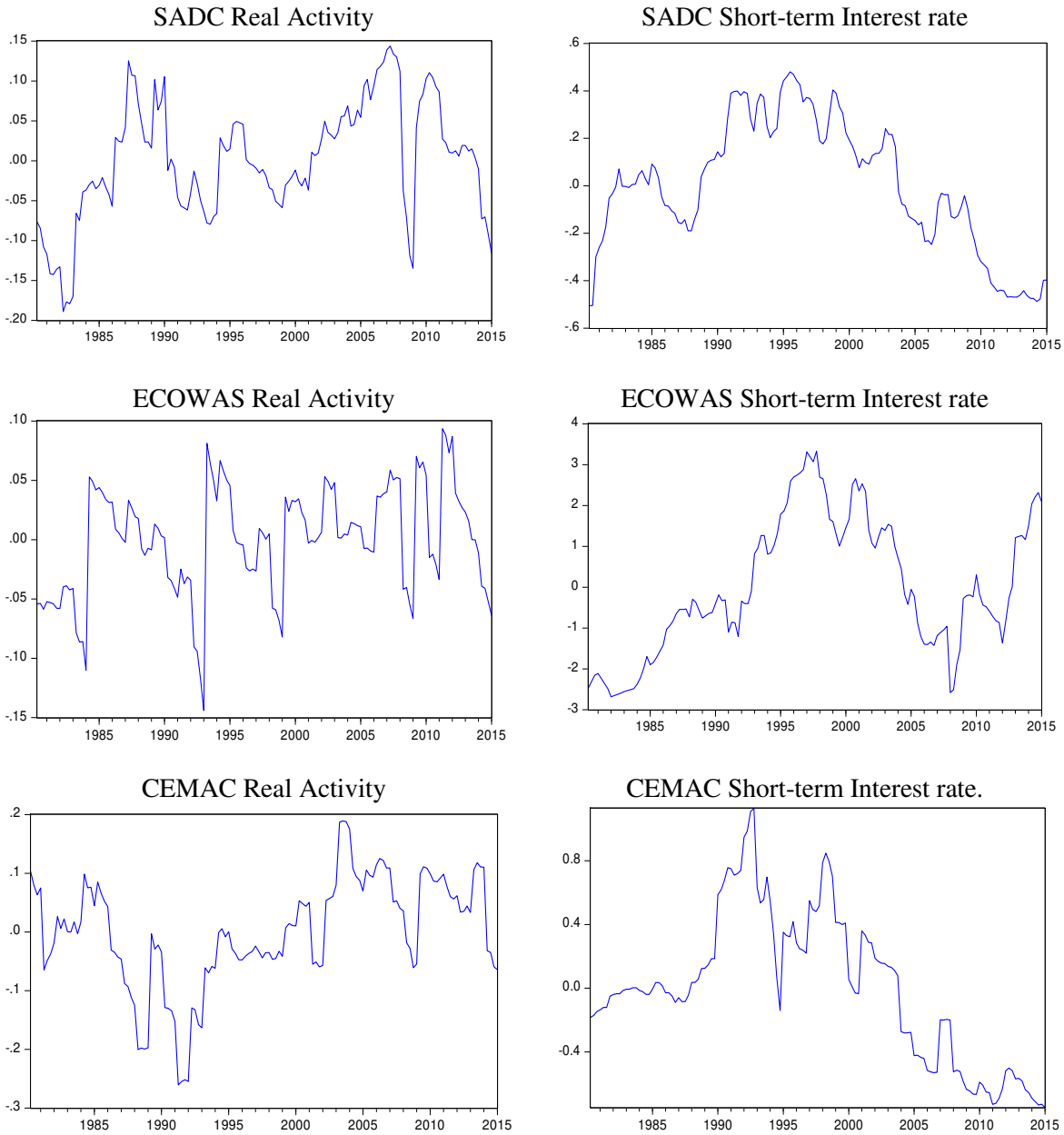

Fig.1. Identified common factors using principal component analysis.

Note: The factors (or common components) are computed using the dataset spanning 1980Q–2015Q1.

5.2.2 Impulse response functions of Nigeria and South Africa on regional growths

We begin our analysis by considering first the effects of a positive shock to the Nigerian real GDP on real activities of ECOWAS, SADC and CEMAC, presented in Fig.2. The results are obtained from the sign restriction identification discussed in section 4. It is observed that the shock leads to a long-lived and statistically significant increase in economic activities in ECOWAS and SADC but exerts no influence on CEMAC. Specifically, economic activity in ECOWAS reacts contemporaneously to the positive Nigerian growth shock expanding by almost 1.4% on impact. The expansionary effect of the Nigerian growth shock on economic activity in ECOWAS bloc is sizeable, highly significant and long-lived (up to 13th quarters) after impact, over most of the IRFs horizon.

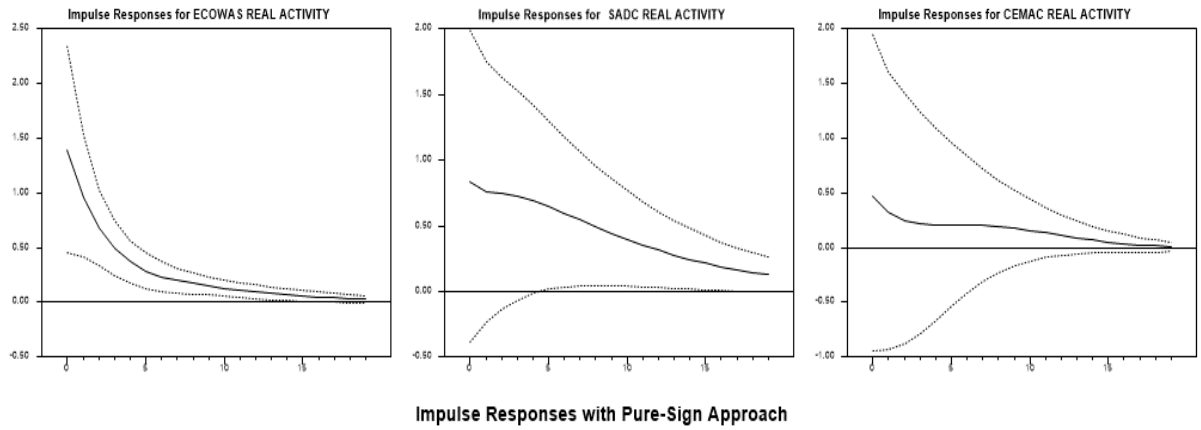

Fig.2. Impulse response function on the effects of a positive shock to Nigerian real GDP on the economic activities of focal regional blocs.

The considerable effect of growth spillover from Nigeria to ECOWAS bloc is unsurprising given the existence of strong economic linkages underpinned by direct intra-regional trade and indirect cross-border trade channels, which are potential transmission mechanisms for spillover (IMF, 2012:25). Nigeria is a key export market for manufacturing goods or agricultural goods from neighbouring countries such as Niger, Togo, Côte d'Ivoire and Benin (see, World Bank, 2016; IMF, 2012), as previously mentioned. In particular, exports to Nigeria is considerably large for Niger (6.3% of GDP), Togo (3.8%of GDP), Côte d'Ivoire (3.3% of GDP), and Benin (1.7% of GDP). Furthermore, Nigeria is the major source of petroleum products for Equatorial Guinea (11.9% of GDP), Côte d'Ivoire (7.5% of GDP), Ghana (4.6% of GDP), and Cameroon (4.2% of GDP) and the Democratic Republic of the Congo (17.5% of GDP). Given the existing strong trade links, it is plausible that a slowdown in Nigeria's real GDP would adversely affect intra-regional trade (especially exports from ECOWAS countries) and economic performance of trade partners in the region owed to the subsequent fall in import demand and production of export (i.e., agricultural and manufacturing) goods, in the former.

Also, Nigeria's subsidy on the price of some fuel products (e.g., kerosene and gasoline) together with porous border have facilitate a strong cross-border informal trade ties in the West Africa region, which account for nearly 20% of Nigeria's GDP and also unrecorded in the official statistic (World Bank, 2016; Afrika and Ajumbo 2012). This indirect (informal) trade channel enables the importation of sizable fuel and agricultural products to some ECOWAS members, most notably Benin, Cameroon, Chad and Niger (Golub, 2012a,b). Consequently, changes in the global oil price that affect Nigeria's pricing policies for fuel products would significant spillovers on the domestic economies of these neighbouring countries, directly or indirectly through the existing cross-border trade links.

The empirical results also show the Nigerian growth shock exerts a positive effect on economic activity in SADC with an increase of about 0.6%, on average. However, the transmission of the shock in the SADC bloc is delayed by almost four quarters, while the induced expansionary effect of the shock on economic activity in SADC is long-lived and statistically significant for about ten quarters (i.e., between 5th and 15th quarters) after impact. Overall, these findings are consistent with economic convention given the existing strong trade and financial ties between Nigeria and South Africa, which is the dominant economic leader in the SADC region. For instance, the total value of bilateral trade between the two large countries amounted to $32.4 billion in 2018. In addition, between, 2002 and 2012, South African imports from Nigeria grew by 750%, characterised mostly by the increase in oil imports, whereas Nigerian imports from South Africa surged by 130% during the same period (Freemantle, 2013).

Lastly, we find evidence for a negligible influence of the Nigerian growth shocks on CEMAC, which can partly be attributed to geographical distance of countries belonging to this regional bloc from Nigeria, high transportation costs, as well as tariffs levied on goods from countries outside the existing regional blocs that pose significant barriers to intra-regional trade in the continent (see, Arizala et al.2019; Fofack 2018; ECA, 2015, 2016)

Fig.3 displays the effects of a positive shock to a South African real GDP on economic activities of the three regional blocs. Generally, this shock considerably raises economic activities in all the focal regional blocs, with the positive effects being long-lived for most of the IRF horizon, but with varied specificities. As expected, the positive South African real GDP shock immediately raises economic activity in SADC by approximately 0.015% on impact. In general, the effect of the shock on SADC economic activity is large and statistically significant for most of the IRFs horizon (up to 18 quarters), after impact. The same applies to the expansionary effects of growth shocks from South Africa on real activities in the other two regional blocs, with the impact of the shock being much longer in CEMAC than ECOWAS, and lasting up to about 12 quarters (from 1st to 13 quarters) and 8 quarters (between 2nd to 10th quarter) after impact, respectively.

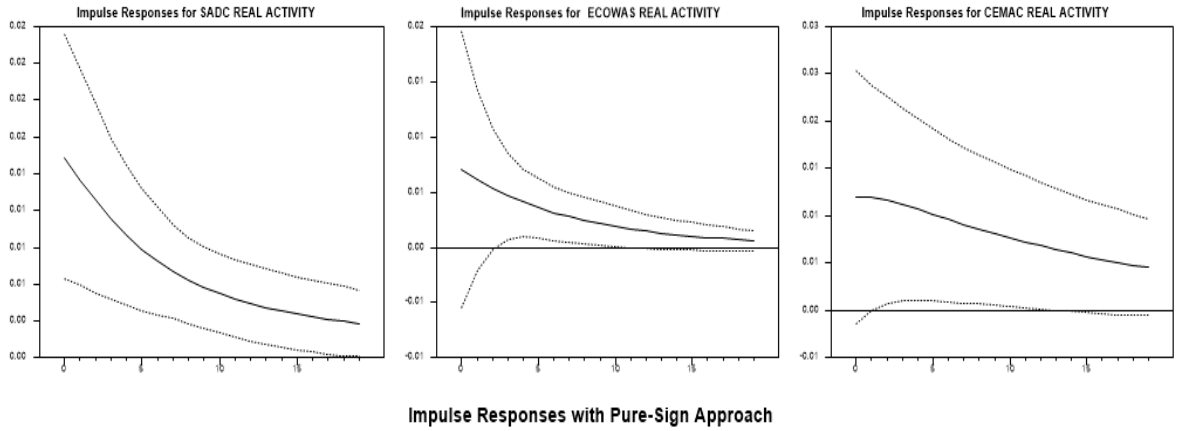

Fig.3. Impulse response function on the effects of a positive shock to South African real GDP on the economic activities of focal regional blocs

While the influence of South Africa on the SADC region is well documented. For example, Bonga-Bonga and Mabe (2019) show that South Africa continuously drives SADC factors except during the latest 2007/08 global crisis, a fact that can be attributed to the deep integration of South Africa into the global economy, while other SADC countries are less integrated[19]. On the other hand, the influence of South Africa on economic activity in ECOWAS bloc is plausible given its strong ties to Nigeria, the hegemony in the region and growing cross-border investment between the two countries. As of 2018, more than 120 South African companies (which includes MTN, Shoprite, MultiChoice, South African Airways and Game) operated in Nigeria. The South Africa-Nigeria strategic partnership is further reinforced by the dual-listing of companies in the domestic stock exchanges of the two countries. For instance, Oando, an energy conglomerate based in Lagos, is listed in South Africa's Johannesburg Stock Exchange (JSE). Similarly, South African companies have made great strides in the Nigerian market, evidenced by the recent listing of MTN (a giant telecom South African company widely recognised as Africa's leading telecoms group) on the Nigerian Stock Exchange (NSE).

5.2.3 Effects of monetary policy shocks from Nigeria and South Africa on interest rates movement at the sub-regional level.

Next, we assess whether the regional influence of the two large economies also extends to the financial channel.Based on the sign restriction, monetary policy shocks are identified by assuming an increase in interest rate in the trading blocs from contractionary monetary policy shocks in Nigeria and South Africa.. Figs. 4 and 5 gives the IRF results of the transmission of monetary shocks from South Africa and Nigeria on the three regional blocs, respectively.

[19] See, also Basdevant et al.(2015) and World Bank (2016) for similar argument on the rapid re-integration of South Africa into the world economy compared to many SSA countries in the mid-1990s, in support of their findings on the negligible influence of South Africa on economic growth of the rest of Africa and its neighbouring countries.

Fig.4 clearly shows that a positive shock to the South African interest rate raises interest rates in the three regional blocs, but with varied impacts. The interest rate in the SADC bloc reacts contemporaneously to the positive South African interest rate shock, rising by almost 2% on impact. Overall, the shock leads to a large, long-lived and statistically significant increase in interest rates (up to 14th quarters) in the SADC bloc, after impact. The effects of the shock on ECOWAS and CEMAC causes are positive but short lived.

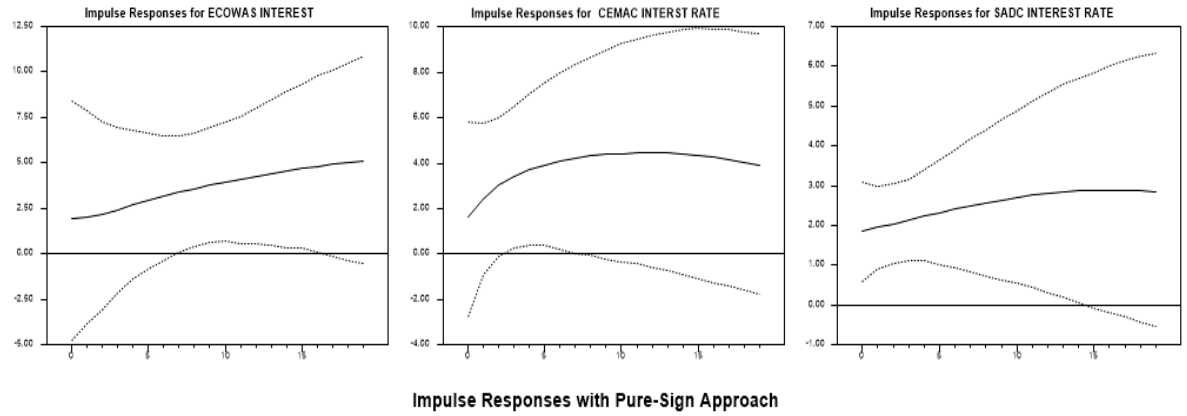

Fig. 4. Effects of monetary policy shock from the South African economy on regional blocs in SSA.

Our finding on the significant impact of the South African monetary shock on SADC is predictable given its financial dominance in the regional bloc and growing financial interlinkages. For instance, countries such as Namibia, Lesotho and Eswatini are members of both the SADC and the Common Monetary Area (CMA) that links the four neighbouring countries to strong institutional, trade and investment ties in the Southern Africa region. Also, domestic currencies of the CMA countries are pegged to the rand (South Africa's domestic currency) which is also a legal tender currency in these countries, directly exposing the CMA countries to monetary shocks emanating from South Africa[20]. In fact, a monetary policy change in South Africa could have a direct (and immediate) impact on economic activities in the CMA countries, indirectly affecting their neighbours (i.e., members of SADC and SACU) with close ties. The impact of the South African interest rate shock on the other regional blocs, that is, CEMAC and ECOWAS can be attributed to the growing financial links in the SSA region, largely driven by South Africa due to its advanced banking system and a high-capitalised stock exchange, which allows cross-border investments (especially outward foreign direct investment) as well as the increasing presence of South African banks (and local companies) in the SSA region (see, IMF, 2012 and Carnales-Kriljenko, et al.2013; Arizala, 2019)[21]

Fig.5 presents the results of the effects of the Nigerian monetary policy shocks on the three trading blocs. As anticipated, this shock immediately raises interest rate in ECOWAS bloc.. The effect of the positive shock to the Nigerian interest rate on ECOWAS is pronounced, long-lived and statistically significant (up to 8th quarters from impact) for most of the horizon. In contrast, the effect of the shock on the other regional blocs appears to be positive but mostly statistically insignificant. The results are not surprising, although one would expect the increase in cross-border expansion of Nigeria-based banks in the SSA region to be a suitable channel for financial shocks transmission in the region.

[20]For detailed discussion on South Africa's financial links in the SSA region, see, e.g., Arizala et al. (2019) and World Bank (2016). For example, South Africa is the largest source of foreign direct investment (FDI) for Botswana, Lesotho, Namibia, and Swaziland, by accounting for roughly 80% of total inward FDI (World Bank, 2016). The direct investment ties between South Africa and some members of the SADC which includes Malawi, Mauritius, Mozambique, Zambia and Zimbabwe, are potential conduits for financial contagion (IMF, 2012:33).

[21] South African large companies (e.g. MTN, Massmart and Nampak) have a strong presence in the SADC region (Mozambique, Zimbabwe), West Africa (Nigeria, Ghana) and the East African Community (Kenya, Uganda, and Tanzania). South Africa-based banks (Standard Bank, First Rand Bank, Nedbank) and other financial institutions are active across the continent (World Bank, 2016).

The Nigerian banks operate in more than 20 countries although the number of subsidiaries of these banks in SADC and CEMAC are quite few as compared to a large number of subsidiaries in ECOWAS.

These findings suggest that Nigeria's influence in the SSA region is limited to the trade channel only (real economic activities) which is supported by its abundant natural resources (particularly crude oil). However, the country exhibits relatively limited financial impacts given its weak financial system[22]. However, South Africa that plays an important role in the transmission of both growth spillovers and financial (monetary) shocks which are attributable to the country being a major exporter of precious metals, largest recipient of foreign capital (including private equity flow) and having the most extensive stock market capitalisation in Africa (Farid, 2013). Our results on the evidence of real economic activities and financial influences of South Africa on SADC bloc is consistent with Carnales-Kirljenko et al. (2013) who observe substantial spillover from SA to the BLNS countries reflecting sizeable real and financial interlinkages. Also, our findings are similar to Arizala et al. (2019), who find South Africa as the main driving force behind intra-regional spillovers, being the largest economy in the SSA region and with the largest share of regional trade.

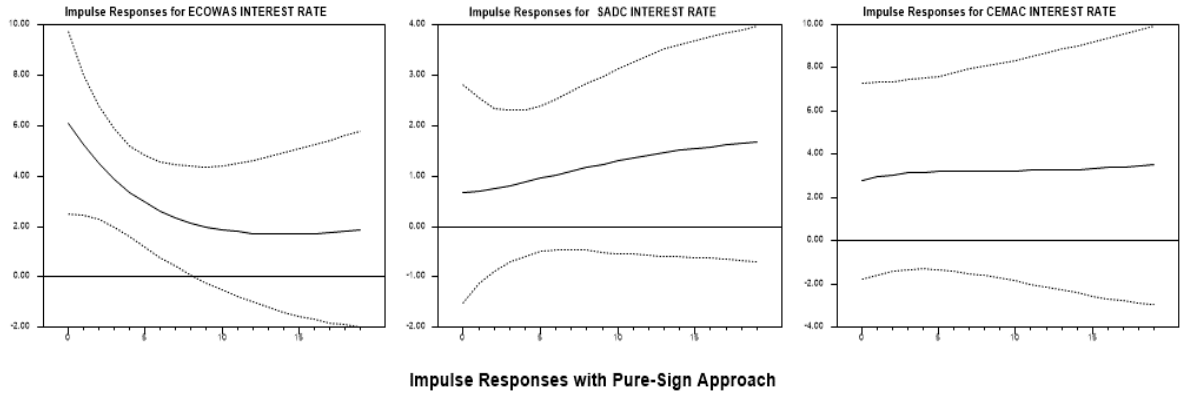

Fig.5. Effects of monetary policy shocks from the Nigerian economy on regional blocs

These results are robust with the change of the identification of shocks, for example by letting free the influence of interest rate shocks to Nigeria on the three trading blocs.

5.2.4 Counterfactual analysis

So far, the empirical results reveal that growth spillovers originating from Nigeria and South Africa significantly affect economic activities at the sub-regional level. Additionally, anecdotal evidence from the analysed intra-Africa trade in section 3, shows that Nigeria and South Africa are key drivers of trade in their respective regional blocs with South Africa accounting for nearly 29% to 32% of total intra-African trade, and Nigeria accounted for about 6.5% to 7.1%, between 2014 and 2017 (see, Table 1), while accounting for almost 24% and 5.51% respectively, in 2018 (Woofrey, et al.2019). Interpretatively, one would expect these large economies might wield considerable regional influence as main drivers of regional growth and intra-regional trade. Therefore, a key question is, how economic activities in SADC and ECOWAS would have fared with or without growth shocks from South Africa and Nigeria, respectively. To answer this question, we conduct a counterfactual analysis to assess what would the dynamics of economic activities be in SADC and ECOWAS without shocks from South Africa and Nigeria, respectively.

Figure 6 shows the levels of actual economic activities in the SADC region represented in solid line and the counterfactual economic activity of the region, in the absence of South African GDP

[22]In 2011, as a percentage of GDP, market capitalisation of Nigeria (17%) is much lower than South Africa (210%) with the value of total traded equities (in domestic stock exchanges) of about 1.8% and 91.2%, respectively (IMF, 2012:34)

shocks, represented in dashed line in panel A. It is clear from Figure 6 the South African real shocks have driven the path of economic activities in the SADC region, with their positive contributions being apparent during most of the periods (see Panel B). However, the results displayed in Figure 6 show that the contribution of the South African shocks to the SADC region becomes negative during important global crises, such as the 2000 Dot com crisis, the 2001 and 2002 Latin American economic crisis, the 2008-2009 global financial crisis, the 2014 Russian crisis and the 2015 Indian crisis (see Bonga-Bonga, 2018 for a detailed explanation the these crises). The negative contribution of the South African economy to the SADC region during periods of economic and global crises is due to the integration of South Africa to the global economy. literature abounds on the extent of the integration of the South African economy to the global economy (see Bonga-Bonga and Mabe, 2019)

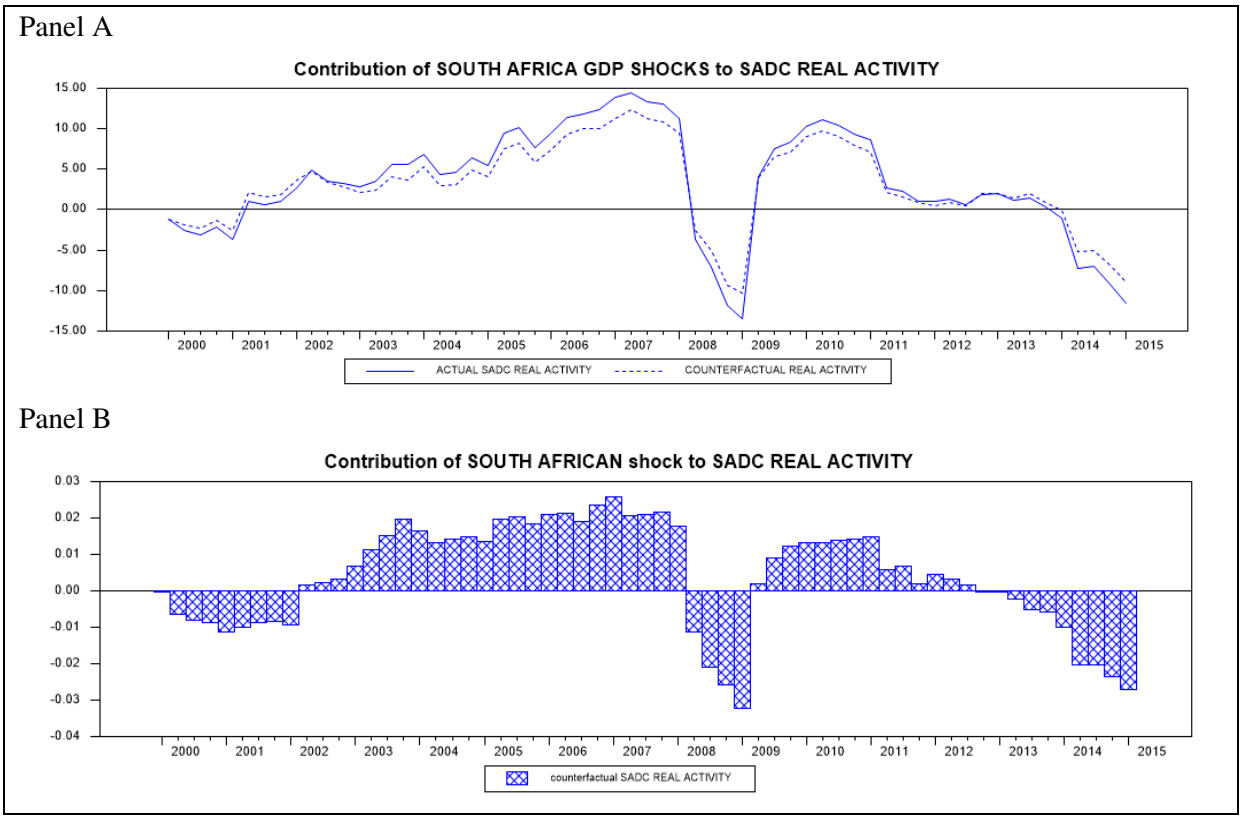

Fig.6 Actual and counterfactual level of economic activities in the SADC bloc.

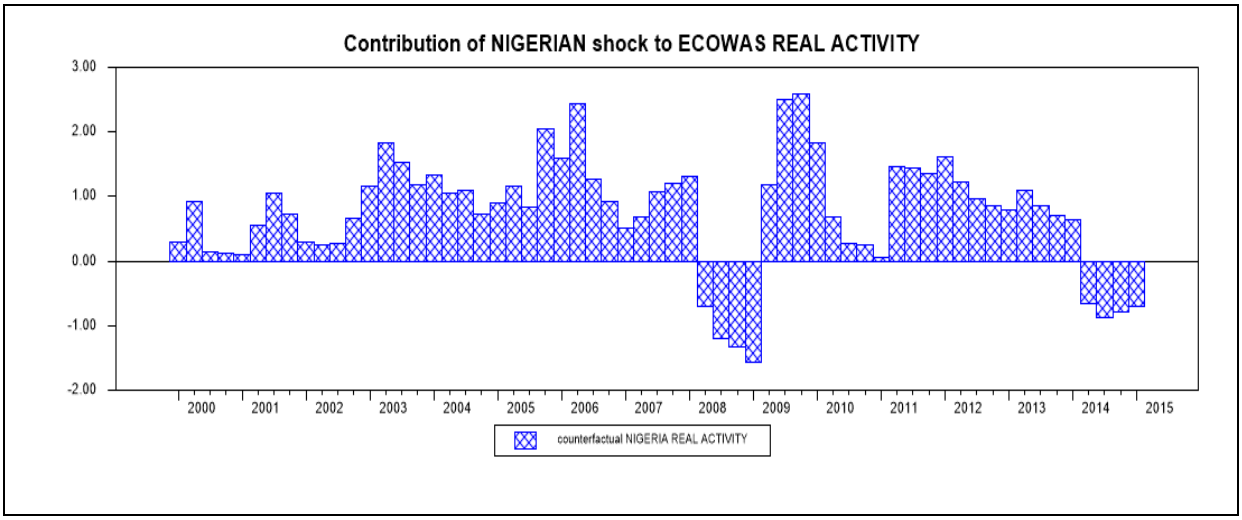

Fig.7. Contribution of the Nigerian GDP shocks to ECOWAS bloc's real activity.

Figure 7 displays the contribution of the Nigerian real GDP shocks to ECOWAS real activity. like in the case of South Africa, GDP shocks to Nigeria have negative contribution during the 2008-2009 global crisis and the 2014 period, causing a sharp contraction in economic activity in the region, which can be associated with a sharp drop of global oil prices since Nigeria depends heavily on crude oil exports. Between June and December 2014, the Brent price of crude oil dropped by 44%, resulting in one of the most dramatic declines in the price of oil in recent history[23].

Taken together, the noticeable influence of Nigeria and South Africa on the economic activities in ECOWAS and SADC respectively, especially during important global crises such as the recent 2007/08 global recession, reinforces their important role as growth drivers at the sub-regional level[24]. Overall, the results of the counterfactual simulations are indicative that economic conditions in these large countries can affect sub-regional growths and play a crucial role in shaping the business cycles of regional blocs. Meanwhile, the influence of the two large economies appeared to be intricately linked changes in global commodity prices (i.e., oil prices for Nigeria and precious metals for South Africa).

6. Conclusion.

The realization that regional economic integration is important in fostering business cycle convergence, enhancing the resilience of a region against external shocks and boosting intra-regional trade, has rekindled the institutional willingness and political support in Africa for the establishment of large free trade agreements such as the TFTA and, most recently the AfCFTA. Nonetheless, the dominance of large resource-rich hegemonic economies, most notably Nigeria and South Africa, with extensive trade and financial linkages, exposes other Africa countries to intra-regional spillovers. However, this strand of empirical analysis remains largely unstudied, as extant studies are mostly devoted to investigating the implications of external (global) shocks.

[23]As robust global production exceeded demand, crude oil prices fell sharply in 2014:Q4. After reaching monthly peaks of $112 per barrel (bbl) and $105/bbl in June, crude oil benchmarks Brent and West Texas Intermediate (WTI) fell to $62/bbl and $59/bbl in December, respectively (U.S, Energy Information Agency, 2019). Retrieved from https://www.eia.gov/todayinenergy/detail.php?id=19451

[24]This inference lend credence to Fall et al.(2014), who find evidence for a positive correlation between intra-regional trade and economic growth in both Nigeria and South Africa, to conclude that growth of these economic leaders reinforces regional trade, in an estimated panel model (with a fixed effect) for the period 1995 – 2010.

This paper contributes to the extant literature by investigating the effects of notable intra-regional spillovers, that is, real growth and monetary shocks emanating from Nigeria and South Africa, on the real economic activity (mainly the trade channel) and interest rates (financial channel) of three regional blocs: CEMAC, SADC and ECOWAS encompassing 26 countries over the period 1980Q1 to 2015Q4, employing a two-step FAVAR modelling procedure and large panel data of 412 variables covering the real, nominal and financial sectors. We also consider the influence wielded by these large economies on the fluctuations of (real) economic activities in their respective regional blocs (i.e., ECOWAS and SADC) by decomposing the historical real activities of the blocs in order to distinguish between their actual and counterfactual levels.. To the best of our knowledge, our work is the first attempt to consider the implications of intra-regional spillovers associated with growth and monetary shocks from Nigeria and South Africa to the three blocs.

Broadly speaking, our empirical results are consistent with economic theory but contradict those documented in the extant literature, as we find both Nigeria and South Africa to be important growth drivers for other countries in their respective regions and also potential sources of intra-regional spillovers in SSA region, with South Africa playing a more prominent role.

Our results can be summarized in three-fold: Firstly, we find large (and statistically) significant effects of the growth shocks transmitted from Nigeria and South Africa to their 'own' and each other's regional blocs underpinned by strong trade ties between these economic leaders. Unlike Nigeria, growth spillovers from South Africa have significant short-run (and statistically significant) positive impact on economic activity in CEMAC bloc. In addition, we empirically show that South Africa and Nigeria play important roles as drivers of intra-regional trade and regional growth. Secondly, our counterfactual simulations suggest a considerable contribution of growth shocks from Nigeria and South Africa on the fluctuations of real activities in their respective regional blocs, with larger negative impacts occurring during unfavourable global economic and financial conditions. . Finally, our results on the transmission of monetary policy shocks from the two large economies via the interest rate channel show a long-lasting, highly significant and more pronounced impact on the movement of (short-term) interest rates in their respective regional blocs. But, the financial influence of South Africa extends beyond SADC bloc to the other blocs, namely CEMAC and ECOWAS, while that of Nigeria is limited to ECOWAS only.

On the policy front, based on our findings, it is important that policymakers in Africa closely pay attention to the economic development in South Africa and Nigeria given their hegemonic role as regional growth drivers as well as the increasing financial links (mostly via cross-border investments) at the sub-regional levels. Also, since economic conditions and monetary policy in these large resource-rich economies affect regional growth, it is imperative for policymakers to intensive their efforts on promoting co-ordinated macroeconomic and monetary policy changes at regional level to drive regional economic integration, promote an inclusive regional development and ameliorate the severity of external (global) and internal (intra-regional) shocks. In this context, policymakers in Africa need to understand the different sources and transmission channels as well as the magnitude of intra-regional spillovers. In addition, policymakers should amplify the transmission of positive externalities (trade gains) associated with deepening intra-African trade by facilitating initiatives to: (i) encourage economic diversification to reduce over-dependence on few commodities for export), (ii) lower the tariffs on imported goods and services from countries that belong to other regional blocs, and (iii) increase investment in infrastructure and intra-regional transportation networks to enhance facilitate flow of goods and services across the SSA.

In a future study, we intend to build on the empirical work in this paper to investigate the asymmetric effects of growth shocks from both Nigeria and South Africa on the other African economies. A typical analysis would shed more light on whether the impact of an intra-regional positive shock from large African economies, such as Nigeria and South Africa, outweigh the spillover effect of a negative shock with similar magnitude. It would also be useful to extend the 'spillover analysis' to other recognized five RECs to grasp the extent of the influence of the two large economies beyond their respective regions.

APPENDIX

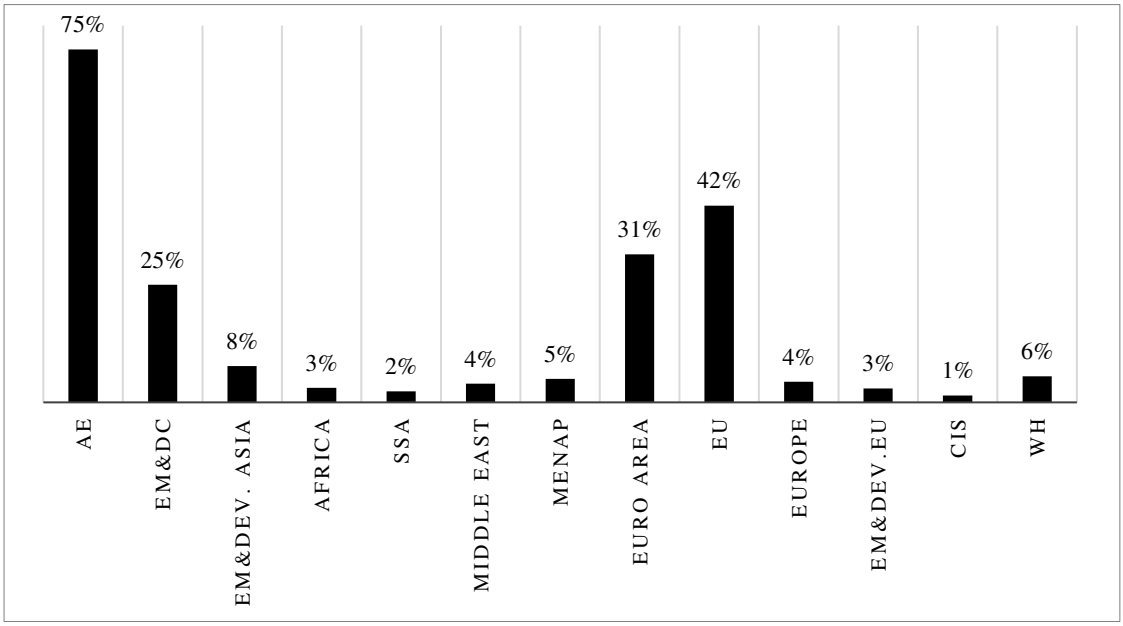

Fig.9: Share of total regional trade as a percentage of world trade.
Source: IMF's DOTS database (2019). Own illustration.

Note: AEs = Advanced Economies; EM&DC = Emerging Market and Developing Countries; CIS = Commonwealth of Independent States; EU = European Union; EM & DEV.EU = Emerging & Developing Europe; MENAP = Middle East, North Africa, Afghanistan, and Pakistan; SSA = Sub-Saharan Africa; WH= Western Hemisphere.

Table 4: Countries and regional blocs in the FAVAR model

Core Countries	**ECOWAS**	**SADC**
†Nigeria[1]	Benin[2]	†Angola[1]
‡South Africa[1]	‡Burkina Faso[2]	Botswana[1]
	Côte d'Ivoire	†Congo, Dem Rep. of[2]
	Gambia[2]	Eswatini[1]
CEMAC	‡Ghana[1]	Lesotho[1]
†Cameroon[1]	‡Guinea	Malawi[2]
†Chad[2]	‡Niger[3]	Mauritius[1]
‡Congo, Republic of[1]	‡Sierra-Leone[3]	Mozambique[2]
Kenya[1]	‡Togo[3]	‡Namibia[1]
		Tanzania[3]
		‡Zambia[1]

Note: †Net oil exporters; ‡Other commodity exporters (e.g. precious metals and agricultural products)
[1]Middle-income countries; [2]Low-income countries; and [3]Fragile countries.

Table 5: Country size (in GDP), PPP-GDP and World rankings.

GDP Rankings, 2016			2016 PPP-GDP		
World Ranking	Country	(US$, millions)	World Ranking	Country	Millions, international US$
26	Nigeria	405,083	21	Nigeria	1,092,218
38	South Africa	294,841	29	South Africa	740,661
62	Angola	89,633	63	Angola	186,327
68	Kenya	70,529	72	Kenya	153,199
81	Tanzania	47,431	73	Tanzania	150,607
85	Ghana	42,690	77	Ghana	121,311
91	Côte d'Ivoire	36,165	82	Côte d'Ivoire	87,689
92	Congo, DR	34,999	86	Cameroon	84,765
100	Cameroon	24,204	94	Zambia	65,382
108	Zambia	19,551	99	Congo, DR	63,289
114	Botswana	15,275	111	Botswana	38,231
118	Mali	14,045	116	Mozambique	35,148
122	Mauritius	12,164	120	Burkina Faso	33,087
123	Burkina Faso	12,115	125	Congo, Rep.	29,363
127	Mozambique	11,015	126	Chad	28,827
131	Namibia	10,267	128	Mauritius	26,714
134	Chad	9,601	129	Namibia	26,398
137	Benin	8,583	133	Guinea	24,422
140	Congo, Rep.	7,834	134	Benin	23,613
141	Niger	7,509	138	Malawi	21,187
148	Guinea	6,299	139	Niger	20,427
151	Malawi	5,442	146	Togo	11,360
155	Togo	4,400	147	Swaziland	11,209
158	Swaziland	3,727	149	Sierra Leone	10,940
159	Sierra Leone	3,669	156	Lesotho	6,516
179	The Gambia,	965	161	The Gambia,	3,425

Source: World Bank Database.

Table 6: Data sources and Macroeconomic Variables

No.	Timeseries	Source	*tcode
Real Activity			
1	Real GDP, SA, Index, 2010=100	IFS	5
2	Real GDP, Historical spliced, Exp. Approach, SA, Index, 2010=100	IFS	5
3	Final Household Consumption Expenditure, SA, Index,2010=100	IFS	5 & 4
4	Adjusted National Income, SA	WBOD	4 & 5
5	Real Gross Domestic Income (constant LCU), SA, Index, 2010=100	WDI	5
6	Real Gross National Income (current US$) SA Index, 2010=100	GFDD	5
7	Gross Fixed Investment (*gross capital formation plus the change in Inventories*), SA, Index,2010=100		5
8	Gross Fixed Capital Formation	IFS	5
9	Gross Savings (% of gross domestic product)	WDI	1, 2 & 5
10	Gross Savings (% of gross national income)	WDI	1 or 2
11	Gross Capital Formation, SA	IFS	5
12	Import, CIF, SA	DOTS	5
13	Export, FOB, SA.	DOTS	5
14	Export value index, 2000=100, SA	WDI	5
15	Import value Index, 2000=100, SA	WDI	5
16	Export, volume of goods & services, (% change) SA	WEO	1
17	Import Volume of goods & services, (% change), SA	WEO	1
18	Industrial Production Index, 2010=100	IFS	5
19	Total Investment (% of GDP)	WEO	4 & 5
Interest rates			
20	Deposits (%)	IFS	1
21	Money market (%)	IFS	1
22	3-Months Treasury Bills (%)	IFS	1
23	Discount rates (%)	IFS	1
24	Monetary policy related rates (%)	IFS	1
25	Repo rates	IFS	1
26	Real Interest rates (%)	WDI	1 & 2

*Note: **GFDD**= Global Financial Development Database (World Bank); **IFS**= International Financial Statistics (IMF), **DOTS**= Direction of Trade Statistics (IMF), **WDI**= World Development Indicator (World Bank), WEO= World Economic Outlook (2019, October) database (IMF), **WBOD**= World Bank Open Data.*

***tcode=Transformation code for stationarity: 1= level, 2= log level, 4= first difference and 5= log difference.*

References

Afrika, J-G., & Ajumbo, G (2012). Informal Cross Border Trade in Africa: Implications and Policy Recommendations. Africa Economic Brief 3 (10), African Development Bank. Abidjan: Côte d'Ivoire.

Afreximbank (2017). African trade report 2017: Bridging Africa's trade finance gap through domestic resource mobilization. Cairo, Egypt: African Export-Import Bank.

Afreximbank (2018). African trade report 2018: Boosting intra-African trade: Implications of the African Continental Free Trade Area Agreement. Cairo, Egypt: African Export-Import Bank.

Arizala, F., Bellon, M., & Macdonald, M (2018a). Regional spillovers in sub-Saharan Africa: Exploring different channels. *Spillover notes*. International Monetary Fund. Washington: DC. ISBN 9781484367148.

Arizala, F., Bellon, M., & MacDonald, M (2018b). "Africa Comes Together. IMF Finance and Development, 48-51. September 2018. International Monetary Fund, Washington, DC. Retrieved from http://www.imf.org/external/pubs/ft/fandd/index.htm?0918pdf

Arizala, F., Bellon, M., & MacDonald, M (2019). "Regional Spillovers in Sub-Saharan Africa. *IMF Working, WP/19/160*. International Monetary Fund. Washington: DC

Arora, V. and Vamvakidis, A. (2005a). "How much Do Trading Partners Matter for Economic Growth. *IMF Staff Papers*, 52(1), pp.24-40. International Monetary Fund. Washington: DC

Arora, V. and Vamvakidis, A. (2005b). "The Implications of South African Economic Growth for the Rest of Africa". *South African Journal of Economics*, 73(2), pp.229-242.

Bai, J., & Serena N (2007). Determining the Number of Primitive Shocks in Factor Models. *Journal of Business and Economic Statistics*, 25(1), pp. 52–60. https://www.jstor.org/stable/27638906

Basdevant, O., Jonelis, A., Mircheva, B. and Slavov, S. (2015). The Mystery of Missing Real Spillovers in Southern Africa: Some Facts and Possible Explanations. *South African Journal of Economics*, 83(3), pp.371-389.

Baxter, M. and Kouparitsas, M. A. (2005). Determinants of Business Cycle Co-movement: A Robust Analysis, *Journal of Monetary Economics*, 52, 1, 113–57. https://doi.org/10.1016/j.jmoneco.2004.08.002

Bernanke, B. S., Boivin, J. and Eliasz, P. (2005). Measuring the effects of monetary policy: a factor-augmented vector autoregressive (FAVAR) approach, *The Quarterly Journal of Economics*, 120(1), pp.387 – 422

Biljanovska, N., & Meyer-Cirkel. A. (2016). Testing Shock Transmission Channels to Low-Income Developing Countries. *IMF Working Paper WP/16/102*. International Monetary Fund: Washington DC.

Bonga-Bonga, L., & Mabe, Q.M. (2019). How financially integrated are trading blocs in Africa? The *Quarterly Review of Economics and Finance,* (forthcoming). https://doi.org/10.1016/j.qref.2019.05.013

Brookings (2012) Accelerating Growth through Improved Intra-African trade. Africa Growth Initiative, Brookings Institute, Washington, DC.

Camdessus, M (2000). Looking to the Future: The IMF in Africa. pp. 677-738. Retrieved from https://www.imf.org/external/pubs/ft/history/2012/pdf/c14.pdf

Canales-Kriljenko, J., Gwenhamo, F., & Thomas, S. (2013). Inward and outward spillovers in the SACU area. *IMF Working Paper No. WP/13/31*. International Monetary Fund. Washington: DC. Retrieved from https://www.imf.org/external/pubs/ft/wp/2013/wp1331.pdf

Canales-Kriljenko, J., Hosseinkouchack, M., & Meyer-Cirkel, A. (2014). Global financial transmission into sub-Saharan Africa–A global vector autoregression analysis. *IMF Working Paper, WP/14/241*. International Monetary Fund, Washington, DC: Retrieved from https://www.imf.org/en/Publications/WP/Issues/2016/12/31/Inward-and-Outward-Spillovers-in-the-SACU-Area-40286

Cashin, P, Mohaddes, K, Raissi, M (2017). China's slowdown and global financial market volatility: Is world growth losing out? Emerging Markets Review 31, pp.164–175. http://dx.doi.org/10.1016/j.ememar.2017.05.001

Chen, W., & Nord, R. (2017). A Rebalancing Act China and Africa: The Effects of China's Rebalancing on Sub-Saharan Africa's Trade and Growth. *African Departmental Paper Series*, 1-26. International Monetary Fund, Washington: DC.

Cloete (2019). Africa's New Free Trade Area is Promising, yet full of Hurdles. *World Economic Forum on Africa: Africa: Rising Continent in a Fractured World*. 06 Sept 2019. https://www.weforum.org/agenda/2019/09/africa-just-launched-the-world-s-largest-free-trade-area/

Dabla-Norris, E., Espinoza, R., & Jahan, S. (2015). Spillovers to low-income countries: Importance of systemic emerging markets. Applied Economics, 47(53), 5707–5725. https://doi.org/10.1080/00036846.2015.1058903

Deléchat, C., Ramirez, G., Wagh, S., & Wakeman-Linn, J. (2010). How global financial markets affect sub-Saharan Africa. IMF Staff Papers, 57(1), 172–208. https://doi.org/10.1057/imfsp.2009.29

Drummond and Ramirez (2009). Spillovers From the Rest of the World into Sub-Saharan African Countries. *IMF Working Paper WP/09/155*. International Monetary Fund, Washington. DC.

ECA (2015). Industrializing through trade. Economic Commission for Africa. Addis Ababa, Ethiopia: United Nations Economic Commission for Africa.

ECA (2016) Assessing Regional Integration in Africa (ARIA VII): Innovation, Competitiveness and Regional Integration. Addis Ababa, Ethiopia: United Nations Economic Commission for Africa.

Fall, F., Vachon, B., &Winckler, C(2014). Regional Integration: Comparison Between SADC and ECOWAS. *In* D. Seck (ed.), *Regional Economic Integration in West Africa*, *Advances in African Economic, Social and Political Development*. 213-252. DOI 10.1007/978-3-319-01282-7_9,

Farid, S. (2013). Financial integration in African emerging markets. *Paper presented at African Economic Conference*, October 28-30, 2013, 1-20. South Africa: Johannesburg. Retrieved from https://pdfs.semanticscholar.org/448e/464da67bcb9ec85d42f4afae34946b4f7ae1.pdf

Farooki, M. (2010). China's structural demand and commodity supercycle: Implications for Africa. In C. M. Dent (ed.), *China and Africa development relations*. Routledge Contemporary China Series, pp. 121–142). Abingdon, UK: Routledge. http://oro.open.ac.uk/19595/

Feldkircher, M., & Korhonen, I (2014). The rise of china and its implications for the global economy: evidence from a global vector autoregressive model. *Pacific Economic Review*, 19(1), pp. 61–89. DOI:10.1111/1468-0106.12052

Feldkircher, M., & Huber, F (2016). The international transmission of US shocks: evidence from Bayesian global vector autoregressions. *European Economic Review*, 81:167–188. http://dx.doi.org/10.1016/j.euroecorev.2015.01.009

Fofack, H. (2018). A Competitive Africa. *Finance & Development*, 55(4), 49-51. International Monetary Fund: Washington, D.C. Retrieved from https://www.imf.org/external/pubs/ft/fandd/2018/12/afcfta-economic-integration-in-africa-fofack.htm

Forni, M., Hallin, M., Lippi, M., & Reichlin, L.(2000). The Generalized Dynamic Factor Model: identification and estimation. *Review of Economics and Statistics*, 82(4), pp. 540–554. https://www.jstor.org/stable/2646650

Frankel, J. A., and Rose, A. K. (1997). Is EMU more justifiable ex-post than ex-ante?. *European Economic Review*, 41:3–5, pp. 753–760. https://doi.org/10.1016/S0014-2921(97)00034-2

Frankel, J. A., and Rose, A. K. (1998). The endogeneity of the Optimum Currency Area Criteria. *The Economic Journal*, 108(449), pp.1009-1025. https://www.jstor.org/stable/2565665

Fremantle, S. (2013). Evaluating South Africa-Nigeria commercial ties. Standard Bank. Retrieved 10 November 2019.

Giovannetti, G., & Velucchi, M. (2013). A spillover analysis of shocks from US, UK and China on African financial markets. *Review of Development Finance*, 3, pp. 169–179. http://dx.doi.org/10.1016/j.rdf.2013.10.002

Gauvin, L., & Rebilard, C (2018). Towards recoupling? Assessing the global impact of a Chinese hard landing through trade and commodity price channels. *The World Economy*. 1-37. DOI: 10.1111/twec.12631.

Golub, S. (2012a). Government Policies, Smuggling, and the Informal Sector. In Benjamin, N., & Mbaye, A.A (eds.), *The Informal Sector in Francophone Africa*, pp. 195–233(Chapter 9). Washington: World Bank. https://works.swarthmore.edu/cgi/viewcontent.cgi?article=1243&context=fac-economics

Golub, S. (2012b). Entrepôt Trade and Smuggling in West Africa: Benin, Togo and Nigeria. *The World Economy*, 35(9), pp.1139-1161. https://doi.org/10.1111/j.1467-9701.2012.01469.x

Gurara, D., & Ncube, M. (2013). Global economic spillovers to Africa: A GVAR approach. *AfDB Working Paper No. 183*. African Development Bank. Abidjan: Côte d'Ivoire.

Harvey, S.K., & Cushing, M.J (2015). Is West African Monetary Zone (WAMZ) a common currency area. *Review of Development Finance*. 5, pp. 53–63. http://dx.doi.org/10.1016/j.rdf.2015.05.001

Hartzenberg and Erasmus (2012). The Tripartite Free Trade Area-Towards A new Africa Integration Paradigm. Trade Law Centre, Stellenbosch: South Africa. Retrieved from https://www.tralac.org/publications/article/4658-the-tripartite-free-trade-area-towards-a-new-african-integration-paradigm.html

Helbling, T., Huidrom, R., Kose, M, A., & Otrok, C (2011). Do credit shocks matter? A global perspective. *European Economic Review*, 55, pp. 340–353. DOI:10.1016/j.euroecorev.2010.12.009

Hirata, H., Kose, M., & Otrok, C. (2013). Regionalization vs. globalization. *IMF Working Paper No. 13/19*, 1–65. International Monetary Fund. Washington, DC. Retrieved from https://www.imf.org/external/pubs/ft/wp/2013/wp1319.pdf

IMF (2019). Regional Economic Outlook: Recovery amid elevated uncertainty. *Is the African Continental Free Trade Area a Game Changer for the Continent*? (Chapter 3, pp. 39-53). International Monetary Fund. Washington, DC.

IMF (2015). Commodity Special Feature. World Economic Outlook: Adjusting to Lower Commodity Prices. International Monetary Fund. Washington, DC. (October 2015).

IMF(2012). Nigeria and South Africa: Spillovers to the Rest of Sub-Saharan Africa. In Regional Economic Outlook: Maintaining Growth in an Uncertain World. (Chapter 2, 25-50). International Monetary Fund, Washington: D.C. (October 2012).

Inklaar, R., Jong-A-Pin, R., & Haan, J (2007). Trade and business cycles synchronization in OECD countries— a re-examination. European Economic Review 52 (4), 646– 66. https://doi.org/10.1016/j.euroecorev.2007.05.003

Kolerus, C., N'Diaye, P.,& Saborowski, C.(2016).China's footprint in global commodity markets. *Spillover notes, 6*, 1-26. International Monetary Fund, Washington, DC. http://dx.doi.org/10.5089/9781475541.ISBN: 978-1-47554-106-9

Korobilis, D., 2009. Assessing the transmission of monetary policy shocks using dynamic factor models. T*he Rimini Centre for Economic Analysis*, WP 35_09, pp.1-30. Retrieved from http://www.rcea.org/RePEc/pdf/wp35_09.pdf

Kose, A., & Riezman, R. (2001). Trade shocks and macroeconomic fluctuations in Africa. *Journal of Development Economics*, 65(1), 55–80. https://doi.org/10.1016/S0304-3878(01)00127-4

Kose, A., & Yi, K. (2006). Can the standard international business cycle model explain the relation between trade and comovement? *Journal of International Economics*, 68(2), 267–295. DOI:10.1016/j.jinteco.2005.07.002

Kose, A., Otrok, C., & Prasad, E. (2012). Global business cycles: Convergence or decoupling? *International Economic Review*, 53(2), 511–538. https://doi.org/10.1111/j.1468-2354.2012.00690.x

Mwase, N., N'Diaye, P., Oura, H., Ricka, F., Svirydzenka, K and Zhang, Y. (2016). Spillovers from China: financial channels. *IMF Spillover Note 5*, pp.1-22. International Monetary Fund, Washington, DC. http://dx.doi.org/10.5089/978147553

Ndulu and O'Connell (2007). Ndulu, B., and S. O'Connell S. (2007).Policy Plus: African Growth Performance, 1960– 2000. (Ch.1, pp.1-122). In Ndulu, B., O'Connell, S., Bates, R., Collier, P., Soludo, C., Azam, J-P., Fosu, A., Gunning, J.W., and Njinkeu, D (ed). *The Political Economy of Economic Growth in Africa*, *1960–2000*. Cambridge, UK: Cambridge University Press.

Nellor, D.C.L. (2008). The Rise of Africa's "Frontier" Markets. *Finance & Development*, 45(3), 30-33. International Monetary Fund: Washington, D.C. Retrieved from https://www.imf.org/external/pubs/ft/fandd//2008/09/pdf/nellor.pdf

Ncube, M., Brixiova, Z., & Meng, Q. (2014). Can Intra-Regional Trade Act as a Global Shock Absorber in Africa? *Working Paper No.1073*, pp.1-29. William Davidson Institute, University of Michigan. Retrieved from https://deepblue.lib.umich.edu/bitstream/handle/2027.42/132972/wp1073.pdf?sequence=1

Nzimande, N., & Ngalawa, H. (2017). The endogeneity of business cycle synchronisation in SADC: A GMM approach. Cogent in Economics & Finance. 5, 1–14.

Omoshoro-Jones, O.S., & Lumengo, B (2020). The emergence of regional business cycle in Africa – a reality or myth? A Bayesian dynamic factor model analysis. *World Economy*, 43(1), pp.239-273. Retrieved from https://doi.org/10.1111/twec.12888

Raddatz, C. (2008). Have external shocks become more important for output fluctuations in African countries? World Bank, pp.1-32. World Bank: Washington, DC. Retrieved from http://siteresources.worldbank.org/DEC/Resources/ExternalShocksAFR022108.pdf

Rasaki, M., & Malikane, C. (2015). Macroeconomic shocks and fluctuations in African economies. *Economic Systems*, 39(4), 675–696. https://doi.org/10.1016/j.ecosys.2015.02.002.

Reuters (2015). *Nigeria surpasses South Africa as the continent's biggest economy*. (06 April 2014). Retrieved from: https://www.reuters.com/article/us-nigeria-gdp/nigeria-surpasses-south-africa-as-continents-biggest-economy-idUSBREA350CI20140406

Roache, S. K(2012). China's Impact on World Commodity Markets. *IMF Working Paper WP/12/115*, pp, 1-24. International Monetary Fund: Washington DC. Retrieved from https://www.imf.org/external/pubs/ft/wp/2012/wp12115.pdf

Samake, I., & Yang, Y. (2014). Low-income countries' linkages to BRICS: Are there growth spillovers? *Journal of Asian Economics*, 30, 1–14. https://doi.org/10.1016/j.asieco.2013.09.002

Stock, J.H. and Watson, W.M (2002). Macroeconomic forecasting using diffusion indexes. *Journal of Business and Economic Statistics*, 20(2), 147-162. http://dx.doi.org/10.1198/07350010231735192

Stock, J.H. and Watson, W.M (1999). Forecasting inflation. *Journal of Monetary Economics*, 44, 293–335.

Sy, A (2015). *Are African countries rebasing GDP in 2014 finding evidence of structural transformation*? Brookings Institute (03 March 2015). Retrieved from https://www.brookings.edu/blog/africa-in-focus/2015/03/03/are-african-countries-rebasing-gdp-in-2014-finding-evidence-of-structural-transformation/

Tapsoba, S. (2007). Bilateral Trade and Business Cycles Synchronization: African Monetary Integration Perspective. *Economics Bulletin*, 6(25), pp. 1-15. Retrieved from http://economicsbulletin.vanderbilt.edu/2007/volume6/EB-07F40003A.pdf

Tapsoba, S. (2010). Trade intensity and business cycle synchronicity in Africa. *African Development Review*, 22(1), 149–172. https://doi.org/10.1111/j.1467-8268.2009.00231.x

The Economist. (2011). *The Hopeful Continent: Africa Rising*. The Economist, pp. 3-5. (03 December 2019). Retrieved from: https://www.economist.com/leaders/2011/12/03/africa-rising

The Economist. (2014). Step change–Nigeria's GDP. (12 April 2014). Retrieved from https://www.economist.com/finance-and-economics/2014/04/12/step-change

The Economist. (2018). Intra-African Trade. *The Economist Intelligence Unit*, pp. 11-12. Retrieved from: https://www.economist.com/leaders/2011/12/03/africa-rising

UNCTAD(2001). Economic development in Africa: performance, prospects and policy issues. United Nations Conference on Trade and Development. Geneva: Switzerland. UNCTAD/GDS/AFRICA/1TD/B/48/12. Retrieved from https://unctad.org/en/Docs/pogdsafricad1.en.pdf.

UNCTAD (2015). Building the Continental free trade area: Some suggestion on the way forward. *A Policy paper*, pp.1-24. United Nations Conference on Trade and Development. New York: United Nations. UNCTAD/DITC/2015/1.

UNCTAD (2018). Handbook of Statistics. Retrieved from http://unctad.org/en/Pages/Publications/Handbook-of-Statistics.aspx

UNCTADstat(2019). United Nations Conference on Trade and Development (sourced trade data). https://unctadstat.unctad.org/EN/

UNECA (2018). African Continental Free Trade Area: Towards the Finalization of Modalities on Goods – Tool kit. Addis Ababa, Ethiopia: United Nations Economic Commission for Africa. Retrieved from https://www.uneca.org/publications/african-continental-free-trade-area-towards-finalization-modalities-goods

UNCTAD(2019). Economic Development in Africa Report 2019: Made in Africa–Rules of Origin for Enhanced Intra-African Trade. United Nations Conference on Trade and Development: Geneva: Switzerland. eISBN: 978-92-1-003974-1. Retrieved from https://unctad.org/en/pages/PublicationWebflyer.aspx?publicationid=2463

Woolfrey, S, Apika, P., & Pharatlhathle, K. (2019). Nigeria and South Africa: shaping prospects for the African continental free trade. *Discussion paper No. 242*, 1-36. ECDPM. Retrieved from https://ecdpm.org/publications/nigeria-and-south-africa-shaping-prospects-for-the-african-continental-free-trade-area/

World Bank (2016). Global economic prospects –Spillovers amid weak growth: *Regional integration and spillovers: Sub-Saharan Africa*. (Chapter 2, pp. 162–176). World Bank, Washington, DC.

World Bank (2017). An analysis of issues shaping Africa's economic future. Africa's Pulse, 15, pp.1-120. (April 2017).