

INDIA'S BILATERAL TRADE WITH AFRICAN LDCS: AN EMPIRICAL ANALYSIS

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ABSTRACT

The Indian economy has widened its economic partnership with African LDCs during the last decade especially after the implementation of the Duty Free Tariff Preference (DFTP) scheme by Government of India in 2008. The present study gives an overview on trade relations between India and African LDCs in two separate analyses. First, it analyzes the trend and pattern in the trade relations between the countries from the year 2002-2017. It is found that the trade volume of both the reporter and partner countries has been increased over the years up to 2014 and thereafter it has shown a downfall. Secondly, this study uses Trade Intensity Index (TII) and Revealed Comparative Advantage (RCA) index to identify the complementary and competing sectors of trade between India and African LDCs. Results from the TII shows that trade between India and African LDCs are more intense as compared to rest of the world. In addition, the result of the Bilateral Revealed Comparative Advantage (BRCA) shows that India possesses a high comparative advantage in a wide variety of products including, machinery, manufacturing and highly demanded primary products, whereas African LDCs possess comparative advantage in a limited range of products including some low costs primary and industrial products. Overall, the trade relationship between the countries is intensive and stable. However, like India has been enjoying bilateral comparative advantage extensively, African LDCs too need to seek more products including manufacturing and machinery in order to expand its export basket.

Keywords: Bilateral Trade, Trade Intensity Index, Revealed Comparative Advantage

1. INTRODUCTION

Trade openness is a necessary condition to drive economic growth and most of the emerging economies like India have witnessed a trade-driven growth over the last decades. As the developing countries are trading more often with the developed and developing countries, the gains from trade have been confined with the emerging nations only leaving the Least Developed

Countries (LDCs) overlooked. By realizing the trade potentialities of LDCs particularly the LDCs of Africa, the Indian economy has widened its economic partnership with Africa during the last decades. Whenever there is a talk about Africa, the general vision for Indians inclines toward South Africa and it takes the people back to Mahatma Gandhi's fight against racial discrimination. But Africa is incredibly huge and beyond just South Africa. It consists of 54 countries and as per the World Population Prospects 2017; its population touches 1.25 billion that is almost equal with India's population. A country enveloped with abundance of natural resources, huge land area, forests and fresh air, but yet having negligible weight across the world as backward due to its economic constraints has pushed the Indian economy to think about a mutual partnership with Africa. In this ground, India Africa Forum Summit (IAFS) has stood as one of the important official platforms to promote the partnership between India and the African continent. The first IAFS was held in New Delhi on 4th April 2008 where 14 African countries took part. At the summit, the historic ties between India and Africa were highlighted and a sense of Africa's cooperation and multicultural engagement was acknowledged. In the inaugural address, the then prime minister Dr Manmohan Singh stated that "No one understands better than India and Africa the imperative need for global institutions to reflect current realities and to build a more equitable global economy and polity". Subsequently, the second IAFS was held at Addis Ababa, the Capital of Ethiopia, on 25th May, 2011 where 15 African countries participated. In this forum, the partner countries continued their dialogues with the objective to deepen their friendship and to enhance co-operations under the theme- "Enhancing Partnership: Shared Vision".¹ However, unlike the previous two summits, the third IAFS invited more member countries where at least 41 African countries' leader including the president of South Africa, Egypt, Zimbabwe and Nigeria were present on 26th-30th October, 2015 in New Delhi. In this summit, both the sides committed to open investment opportunities to boost the socio-economic development of their people.² The IAFS created an atmosphere of partnership where the emerging Indian economy could successfully linked with the rapidly growing economies of Africa on a remarkable extent. India has made necessary contribution through its development cooperation programme. As per the agreement, India is supposed to offer a grant assistance worth \$600 millions which includes \$100 millions for India-Africa development fund and \$10 million for India-Africa health care. India has also announced 50,000 scholarships to African students to pursue their studies in India.

According to a report published in 'The Indian Express' on 23rd July, 2017, India's trade with African countries is likely to touch \$117 billion by 2020-21 on account of improved economic

¹ Second India Africa Forum Summit 2011 : Addis Ababa Declaration. Ministry of External Affairs Government, of India.

² "The future we want for Africa", Agenda 2063, African Union.

ties and strong business opportunities. “India has been able to intensify its presence in African countries through a significant line of credit worth \$10 billion for development projects in Africa over a five-year period,” PHD Chamber President Gopal Jiwarajka said. He further added that with consistent expansion in trade, diversification and widening of products should also be focused on while trading with African nations in the coming years. As per the report on “India-Africa Facts and Figures 2015” by the Confederation of Indian Industry (CII) in collaboration with the United Nations Economic Commission for Africa (ECA), the annual trade between India and Africa stands at \$ 75 billion.³ Leaving behind the major economies like the United States of America, India has been appeared as the third largest trading partner of Africa just after the European Union and China in 2014. In addition, as per the recent report by CII, India’s exports to Africa has been increased from US\$ 14 billion in 2007-08 to US\$ 23 billion in 2016-17, registering an impressive compound annual growth rate of 5.6 per cent. On the other hand, Indian imports from Africa, has been increased from US\$ 20 billion in 2007-08 to US\$ 28 billion in 2016-17 accounting for 7.5 percent of total Indian imports. Indian imports from Africa grew at a compound annual growth rate of around 4 per cent, reaching a high in 2011-12 at US\$ 44 billion.⁴ As per the information, South Africa (US\$ 3.55), Kenya (US\$ 2.19), Egypt (US\$ 2.07), Tanzania (US\$ 1.78), and Nigeria (US\$ 1.77) have been the top five African export destinations for India in 2016-17. In the same time, Nigeria (US\$ 7.65), South Africa (US\$ 5.81), Angola (US\$ 2.59), Gnaa (US\$ 1.93) and Botswana (US\$ 1.3) have been India’s five key import destinations. In an article titled “India Africa- A New Story”, Harshe (2015) stated oil as an essential part for an energy hungry economy like India that has driven up India’s relation with oil rich countries like South Africa, Egypt, Sudan, Nigeria, Morocco and Angola.⁵ Moreover, it is further mentioned that Africa’s Key minerals such as Uranium, gas, copper, iron ore, phosphates and platinum as well have been crucial for India’s growth. Further, India’s aid and investment in Africa are found essential for development purposes of both the sides. Having aware of the fact that majority of the population between India and Africa comes under the most productive age, India seems to have an immense potentiality to foster its linkage with the continent.

2. REVIEW OF LITERATURE

2.1 Theoretical Review on International Trade

³ AfricaIndia: Facts and Figures 2015 tralac trade law centre
<https://www.tralac.org/news/article/8371africaindiafactsandfigures2015.html>

⁴ Source: Department of Commerce, Government of India, 2016-17

⁵ India, Africa, A New Story. <http://indianexpress.com/article/opinion/columns/india-africa-summit-opened-up-space-to-reinvent-an-old-relationship/>

Theoretical literatures on international trade provide a clear picture of paradigm shift on the importance of international trade in economic growth over the periods. While the classical approach of trade developed by Adam Smith (1776) talks about absolute cost advantage in a laissez-fair economy, David Ricardo's (1817) thought illustrates the comparative advantage in cost of production as the driver of international trade. However, the neoclassical theory of trade propounded by Haberler (1936) states that it's the differences in opportunity cost of production that creates the condition for international trade. On the other hand, the Structuralists approach of trade given by Prebisch & Singer (1950) and Myrdal (1963) observe a secular deterioration of terms of trade (TOT) in Less Developed Countries (LDCs) vis-à-vis the Developed Countries (DCs) because LDCs mainly rely on exports of primary commodities having low elasticity of demand and therefore trade retards economic development in LDCs. Later on, the Export-Led Growth strategy came into force in 1970 which fostered static and dynamic gains from trade resulting from comparative advantage and increase in productivity. At present, there are a number of empirical research that focuses on the importance of trade as a driving force in stimulating economic growth where bilateral trade plays a dynamic role. In a study on effect of trade on economic growth and investment based on cross-country data, Were (2015) analyzed that trade has positively impacted economic growth in developed and developing countries, its effect is insignificant for least developed countries (LDCs), which largely include African countries. This is due to the reason that, African countries' trade largely consists of export of primary commodities that carry comparatively low prices in comparison to imports of high value products and manufactured goods. Other factors such as poor infrastructure, limited human and physical capital and poor quality of institutions also contribute to the low competitiveness of the LDCs' exports in the world markets and limit their ability to attain the maximum benefits of trade. Geda & Seid (2015) in this context examined the potential for intra-Africa trade and found an acute export supply constraint in the African export trade characterized by weak infrastructure, productivity and trade facilitation.

2.2 India-Africa Trade

India has maintained its historical journey with Africa witnessing a mutual cooperation over the period of six decades. Along with geo-political support and socio-cultural knot, India has been extended its hand to build good Economic relation with the continent particularly in the area of trade and commerce. In this context, some of the studies related to the trends and prospective of India-Africa economic partnership can be emphasized here. Mohanty & Chaturvedi (2008) in their study found that the traditional relationship between India and Africa was transformed into a dynamic trade and investment partnership and as per the evidences, India's trade with Africa increased more than doubled between 2001 and 2007, from \$5.5 billion in 2001-02 to \$12.24 billion in 2006-07. However, this progress has been supposed to contribute towards the South-

South Cooperation (SSC) model as initiated at Bandung Conference. Anwar, M.A. (2014) highlights the geography of Indian involvement in Africa in terms of its growing scale, its trade relations and new patterns and structure of Indian investments where it is analyzed that trade between the two regions is dominated by commodity exports from Africa to India, while India supplies low to medium technology products to Africa. India's engagement with Africa in terms of trade is one of the way through which south-south tie can be enhanced. Nowak (2016) in this context, presented a picture of trade between China and Africa and between India and Africa for the period 2000-2014. By relying on the annual data from UN Comtrade database, this study examined the trend and scale of merchandise trade of China and India with 54 African countries. As per the analysis, India's bilateral trade with Africa has been increased by 13% over the years 2000 to 2014 where India's top seven trading partners are Nigeria (23.4% of India-Africa total trade) followed by South Africa (20.2%), Angola (8.2%), Egypt (7.9%), Kenya (4.8%), Tanzania (3.9%) and Algeria (3.5%). Similarly, Jenkins & Edwards (2006) in their study examined the economic impact of China and India on sub-Saharan Africa for the time period from 1990-2003 and found that the way in which Africa has been affected by China and India differs from country to country. Moreover, broadly they found that countries like Angola, Nigeria and Sudan are important exporters; whereas, Ghana, Ethiopia, Kenya, Tanzania and Uganda are mainly importers from Asia. Beri (2003) talked about an assessment on India's Africa Policy in the Post Cold War Area based on a number of initiatives taken by both the Government and private sectors that recognized Africa as a home of potentialities and launched various programmes to promote economic and business cooperations after the mid-1990s. This study also identifies the increased volume of India's bilateral trade with Sub-Saharan Africa where Nigeria, Mauritius, Kenya, Tanzania and Ghana were the major trading partners. Further, it points out Africa's goodwill towards India and its attractiveness towards the new image of India in the 21st century as the new centre for technology and commerce in Asia. In the same way, Nayyar & Aggrawal (2014) explored the increasing trade and investment relation between India and Africa for the period 2005-06 to 2012-13. According to the study, trade and Investment flows between India and Africa have grown massively over the recent period. The bilateral trade between the two regions recorded US\$3 billion in 2000, reached up to the level of US\$ 36billion in 2007-08 and climbed up high to the current level of US \$ 70 billion during 2012-2013. Further, "The period beginning with mid-2008 has witnessed a remarkable shift in India-Africa cooperation-a development that the world has been watching with interest and intension"- said by Vatia (2014) in a debate on India and the New 'Resurgent Africa'.

3. INDIA-AFRICA LDCS TRADE : A TREND ANALYSIS

India's tie with Africa can be understood as a strong shared history date back from the ancient civilization including the trade ties between the Nile and Indus valleys. The bond could be

persuasive because both the partners accomplish the principles of South–South cooperation, people-to-people linkages and common development challenges. Collaboration with Africa has been crucial for India for building its role as an international player and Indian policy makers aimed to achieve this goal by contributing in international peace and security, participating in mutual grouping where Africa has been a key support base. In addition to security and defense cooperations, India's engagement with Africa is of strategic importance in terms of trade and commerce. Africa as a continent including 34 least developed countries, though stands toward the back in terms economic progress, it is rich in natural and mineral resources with many regions yet to be explored. Taking all these into account, the present study analyses the patterns and trend of India's trade with Africa over the period 2002-2017.

The data have been collected from the UN Comtrade statistics based on the HS 2 digit selection criteria of 1996. Accordingly, the annual data on trade flows of gross exports and gross imports for African Least Developed Countries (including 34 LDCs of Africa) and for India has been collected and put in a three years interval scale. As there is a substantial increase in the absolute trade volume among the reporter and partner countries over the 16 years, the percentage increase of the volumes of exports and imports have been calculated for a better understanding. The Following Table-1 and Table-2 presents some information about India's Trade with African LDCs and African LDCs' trade with India respectively for the period 2002-2017.

Table 1: India's trade with African LDCs (Value in 1000 USD)

Years	Export (1000 USD)	Inc Rate (%)	Share of Export (%) with World	Import (1000 USD)	Inc Rate (%)	Share of Import(%) with World
2002	836314	80.4	1.67	525597	27.0	0.91
2005	1617898	93.5	1.61	867577	65.1	0.61
2008	4153278	156.7	2.28	3268588	276.7	1.03
2011	6810016	64.0	2.26	7971435	143.9	1.72
2014	13217551	94.1	4.16	10661967	33.8	2.32
2017	7092072	-46.3	3.27	8995371	-15.6	2.66
Average		73.7			88.5	

Table 2: African LDCs’ trade with India (Value in 1000 USD)

Years	Export (1000 USD)	Inc Rate (%)	Share of Export (%) with World	Import (1000 USD)	Inc Rate (%)	Share of Import(%) with World
2002	370681	9.1	4.67	595992	86.1	3.95
2005	411710	11.1	2.93	1217410	104.3	4.04
2008	636583	54.6	2.33	3112314	155.7	5.21
2011	7771355	1120.8	7.39	5058793	62.5	5.56
2014	6906085	-11.1	6.62	8783362	73.6	7.08
2017	306519	-95.6	0.48	326547	-96.3	4.44
Average		181.5			64.3	

Source : Author’s calculation from UN Comtrade data

India has been one of the top trading partners of Africa since 2000 and in 2015, it was the second largest trading partner after China as per the report by African Economic Outlook, 2017. In the year 2014, India’s export to African LDCs was 1,32,17,551 thousand USD showing an increase rate of 94.1 percent over the year 2011 sharing 4.16 percent of world’s export. Likewise, African LDCs export to India was highest in 2011 showing a figure of 77,71,355 thousand USD with an increase rate of 1120.8 percent over 2008 sharing 7.39 percent of world export. During the year 2014, India’s import volume from African LDCs was at pick recording 1,06,61,967 thousand USD and similarly African LDCs too imported 87,83,362 thousand USD from India in 2014 sharing 73.6 percent of world import. It shows African LDCs’ rising potentiality to trade with the emerging market economy like India after the Duty Free Tariff Preference (DFTP) scheme introduced by the Government of India in 2008 with the objective of providing duty free access to least developed countries including 34 LDCs from Africa. But, it is observed that there has been a sharp decline in the bilateral trade volume between the countries in after 2014 showing negative increase rates in export and import volume in both India and African LDCs. But as the trade share with world is more or less constant for the years, this decline in trade volume is sought due to the global slowdown in world in recent years backed by weak demand concentrated in highly-traded products, a deceleration in the pace of trade liberalization, the slowing of cross-country supply chain formation. The figure 1 and figure 2 represent India’s trade (export and import) with African LDCs and African LDCs’ trade with India respectively as percentage share with world.

Figure 1: India's Trade with African LDCs

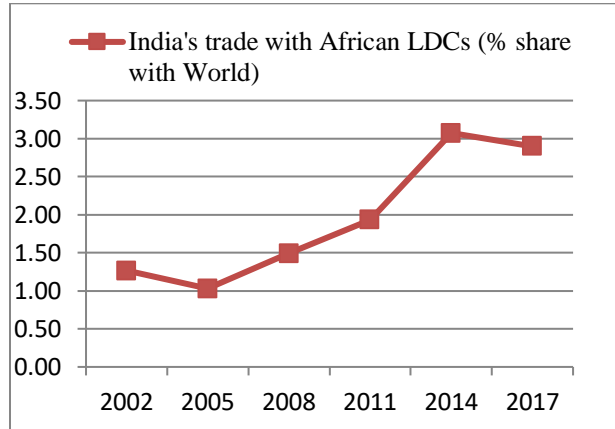
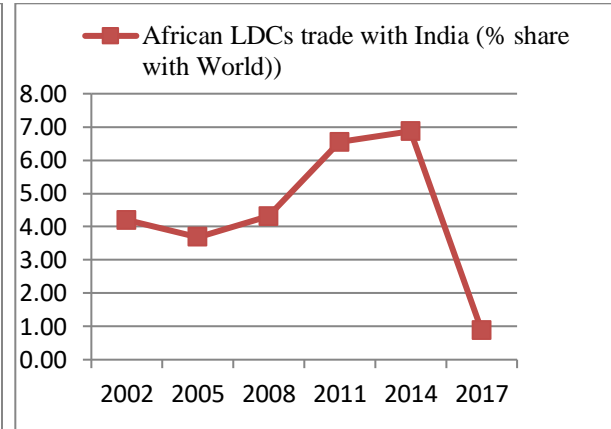


Figure 2: African LDCs' Trade with India



Regarding commodity trade, table 3 and 4 show the top 10 products of India's export to and import from African LDCs. The top 10 India's export products to African LDCs totaled around 6,11,154 thousand USD accounting for 73.08 percent of the total India's export to African LDCs. India's export to African LDCs was composed of primary products like cotton and cereals in 2002, but in 2017, it has been largely composed of mineral fuels, oils (15.18%), cereals (14.28%), pharmaceutical products (13.44%).

Table 3: Top 10 Products of India's Exports to African LDCs

2002	Value	%	2011	Value	%	2017	Value	%
			Mineral fuels, oils	1672446	24.56	Mineral fuels, oils	1076893	15.18
Cotton	155638	18.61	Pharmaceutical products	740234.4	10.87	Cereals	1012640	14.28
Pharmaceutical products	109888	13.14	Vehicles o/t railway	438121.5	6.43	Pharmaceutical products	953070.3	13.44
Cereals	79001	9.45	Nuclear reactors, boilers	428145.2	6.29	Vehicles o/t railway	434833.6	6.13
Iron and steel	58639	7.01	Cotton	349451.3	5.13	Nuclear reactors, boilers	379987.9	5.36
Vehicles o/t railway	58542	7.00	Iron and steel	336925.1	4.95	Sugars & sugar confect	357880.5	5.05
Nuclear reactors, boilers	45429	5.43	Electrical machinery	327287.6	4.81	Cotton	299041.5	4.22
Man-made filaments	33259	3.98	Sugars & sugar confect	309728.6	4.55	Plastics & articles	235770.7	3.32
Articles of iron/steel	32987	3.94	Articles of iron/steel	263398	3.87	Iron and steel	218800.9	3.09
Rubber & articles	19488	2.33	Plastics &	191409.5	2.81	Electrical	208441	2.94
Plastics & articles	18284	2.19						

	articles			machinery		
Total	611154	73.08	5057147	74.26	5177360	73.00

Note : Value in USD thousand, ‘%’ is percentage of India-African LDCS’ total export.
 Source : Author’s calculation from UN Comtrade data, HS 1996 at 2 digit level.

India’s major import products from African LDCs are predominantly Mineral fuels, oil (75.4%) in both the years 2011 and 2017 followed by Natural/cultured pearls (8.2%), copper & articles (4.09%). The top 10 import products from African LDCs to India consist of 97.28 % of total imports in the year 2017.

Table 4: Top 10 Products of India’s Import from African LDCs

	2002	Value	%	2011	Value	%	2017	Value	%
Inorganic chemicals		163624	31.13	Mineral fuels, oils	6011588	75.41	Mineral fuels, oils	4136452	75.41
Edible fruit and nuts		137406	26.14	Edible fruit and nuts	653737.9	8.20	Natural/cultured pearls	1995506	8.20
Cotton		56412	10.73	Inorganic chemicals	326061.6	4.09	Copper & articles	685682.6	4.09
Ships, boats		35608	6.77	Iron and steel	171041.9	2.15	Edible fruit and nuts	666707.3	2.15
Natural/cultured pearls		29732	5.66	Edible vegetables	143190.3	1.80	Inorganic chemicals	430031.4	1.80
Salt; sulphur		17586	3.35	Ores, slag and ash	135232.3	1.70	Edible vegetables	166679.1	1.70
Edible vegetables		16626	3.16	Copper & articles	132251.2	1.66	Cotton	162165	1.66
Pulp of wood		13743	2.61	Salt; sulphur	87205.97	1.09	Ores, slag and ash	143046.6	1.09
Raw hides and skins		11066	2.11	Wood and articles	48686.91	0.61	Coffee, tea, mate & spices	98029.65	0.61
Ores, slag and ash		10825	2.06	Coffee, tea, mate & spices	45766.46	0.57	Iron and steel	91866.14	0.57
Total		492627	93.73		7754763	97.28		8576166	97.28

Source : Author’s calculation from UN Comtrade data

Note : Value in USD thousand, ‘%’ is percentage of India-African LDCS’ total import.
 Source : Author’s calculation from UN Comtrade data, HS 1996 at 2 digit level

From the above analysis, it is quite evident that India has a long trade linkage with African LDCs and there has been a tremendous increase in trade volume after the implementation of DFTP scheme. In this context, it is important to identify the complementarity in trade structure among countries that facilitates more exports and imports. Furthermore, Trade Agreements and Trade

Facilitation will be successful only after identifying the specific products and sectors. Therefore, this study employs a comparative analysis that uses different indices to examine the trade patterns among India and African LDCs and thereby to make out whether better cooperation is possible among the countries.

4. INDIA-AFRICAN LDCS TRADE: A COMPARATIVE ANALYSIS

Over the time, there has been a number of initiatives taken by both the Government and private sectors to promote India's trade with Africa. The government initiatives include agreement on Preferential Trade Area (PTA) on 1992 covering 21 countries from southern and eastern Africa which was replaced by the Common Market for Eastern and Southern Africa (COMESA) in 1994, A Memorandum of Understanding on cooperation between India and the Southern African Development Community (SADC) signed in 1997, the Focus Africa Programme which was launched as part of the EXIM Policy 2002-2003. Moreover, organizations like the Confederation of Indian Industries (CII), the Associated Chambers of Commerce and Industry (ASSOCHAM), the Federation of Indian Chambers of Commerce and Industry (FICCI) and the Federation of Indian Exporters' Organisation (FIEO) etc recognised Africa as a home of potentialities and launched programmes to promote economic and business cooperations after the mid-1990s. However, for any trade agreements to be successful, it is essential on partner countries to have complementary trade structure to be exploited for mutual benefits. In this perspective, this paper tries to identify complementary and competing sectors of trade between India and African LDCs to facilitate their strengths and to overcome the downsides. The main objective of this study is to examine the bilateral trade relation between India and African LDCs over the period 2002 to 2017. To accomplish the objective, Trade Intensity Index (TII) and Revealed Comparative Advantage (RCA) Index have been calculated between the reporter and the partner countries. This study takes into account African Least Developed Countries (LDCs) which includes a group of 34 LDCs as India's trading partner. Accordingly the data have been collected from the UN COMTRADE database using HS selection criteria for 2 digit for the period 2002-2017.

4.1 Trade Intensity Index

The trade intensity index (TTI) is used to verify whether the value of trade between two trading partners is greater or smaller or as per the expectation on the basis of their weight in world trade. An index of more (less) than one indicates a bilateral trade flow that is larger (smaller) than expected value, given the partner country's importance in world trade.⁶ This measure of trade can be classified by Export Intensity Index (EII) and Import Intensity Index (III) in order to

⁶ Trade Indicators
http://wits.worldbank.org/wits/wits/witshelp/Content/Utilities/e1.trade_indicators.htm

observe the pattern of exports and Imports. Following Kojima (1964) and Drysdale (1969), the index of trade intensity can be calculated as

$$TII = XIA / XI / MA / (MW - MI)$$

$$TII = MIA / MI / XA / (XW - XI)$$

Where, XIA is India's export to African LDCs, XI is India's total export, MA is total import of African LDCs, MW is total world import and MI is total import of India. MIA is India's import from African LDCs, MI is India's total import, XA is total export of African LDCs, XW is total world export and XI is total export of India.

As per the above formula, the TII between India and African LDCs are also calculated separately. The TII values ranges between zero to infinity. The value 'zero' means there is no bilateral trade, 'one' implies that the country is trading with no geographical difference and the value more (less) than unity indicates a bilateral trade flow as more (less) intense as compared to the world trade.

4.2 Revealed Comparative Advantage (RCA) Index

The Revealed Comparative Advantage (RCA) Index is also called the Balassa index, introduced by Balassa (1965). It is used in the international trade to calculate the relative advantage or disadvantage of a country or group of countries in a certain class of goods or services. As relative autarkic price are unobservable, the empirical study on comparative advantage lacks reliability. To overcome this problem, revealed comparative advantage measure has been a practice in trade literature which states that comparative advantage can be revealed or ranked. The RCA highlights how competitive a product is in country's exports compared to the product's share in the world trade.

$$RCA = (X_{ij}/X_{it}) / (X_{wj}/X_{wt})$$

Where, X_{ij} is country i 's export of product j , X_{it} is country i 's total export, X_{wj} is export of product j to world, X_{wt} is total world export. As per the above formula, the RCA of India and African LDCs have been calculated to view the global RCA values of the countries. Further, in order to study the Bilateral RCA between the countries, BRCA index has been calculated for both the partners separately. Like the TII, the RCA value greater than one implies that the country has a comparative advantage of the product which can be exported to the countries belonging from low comparative advantage group. Similarly, if the RCA value is less than one, it implies the country has a comparative disadvantage of the product.

4.2.1 Trade Intensity Index between India and Africa

In the following Table-5, the TTI between India and African LDCs has been depicted. It is observed from the analysis that over the period of 16 years, the export and import intensity index between India and African LDCs is more than unity. Especially, India’s export intensity with African LDCs is more intense over the years and it records a very high value (49.51) in 2017. It means India’s export to African LDCs grew much higher than rest of the world. India’s import intensity with African LDCs also shows a high and positive value. Similarly African LDCs import and export intensity to India records a moderately positive value over the years except the year 2017, where African LDCs’ export to India is less intense (0.17) as compared to rest of the world. Figure 3 and 4 respectively depict Export and Import Intensity between India and African LDCs.

Table 5: Trade Intensity between India and African LDCs

EII/III	2002	2005	2008	2011	2014	2017
India's Export Intensity with African LDCs	6.96	5.35	5.86	4.35	6.06	49.51
India's Import Intensity with African LDCs	7.27	4.40	5.86	2.90	4.05	4.67
African LDC’s Export Intensity with India	5.27	2.17	1.18	2.87	2.64	0.17
African LDC’s Import Intensity with India	5.00	4.08	4.47	3.30	4.11	2.34

Source : Authors’ calculation from UN Comtrade data, HS 1996 at 2 digit level

Figure 3: Export Intensity between India and African LDCs

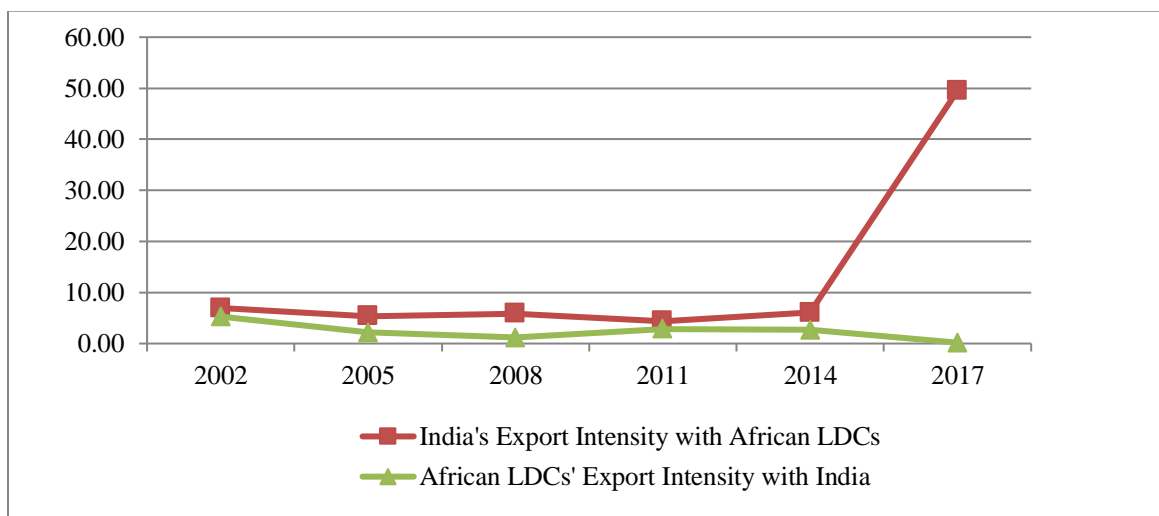
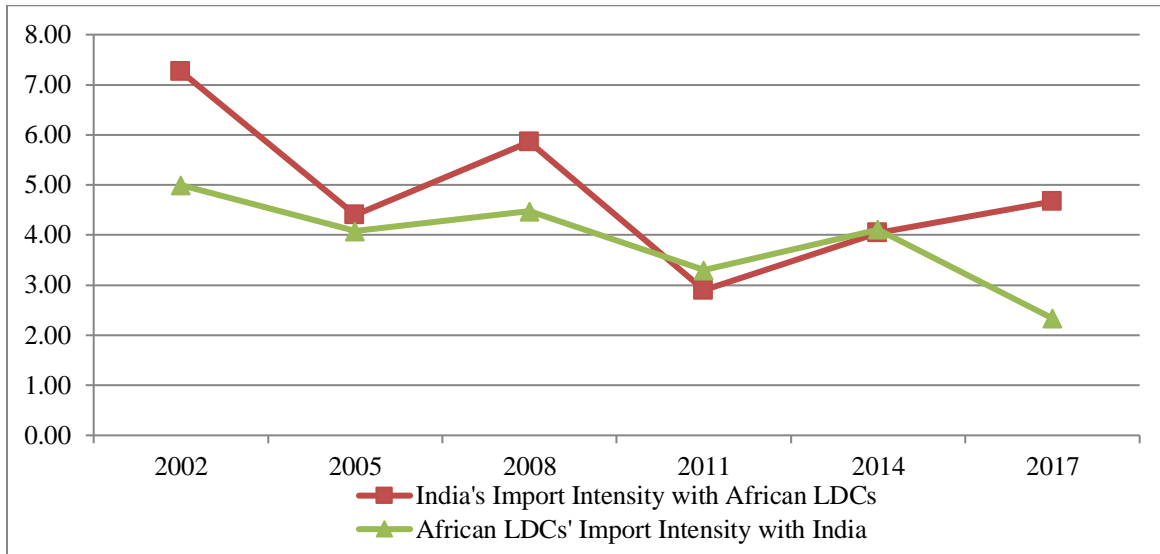


Figure 4: Import Intensity between India and African LDCs



4.2.2 Revealed Comparative Advantage between India and African LDCs:

To calculate the revealed comparative advantage between the reporters and partner countries, this study has relied on HS selection, 2 digit criteria. Table 6 represents a summary of Global RCA value of India and African LDCs respectively. Over the years, on an average around 40 product groups from India’s exports enjoyed revealed comparative advantage where in 2017, 43 product groups enjoyed comparative advantage where as 54 product groups showed comparative disadvantage out of total 97 product groups. On the contrary only 4 product groups of African LDCs’ exports had comparative advantage in the year 2017. It may be due to the decline in commodity demand backed by global turndown.

Table 6: Summary of RCA in India and African LDCs Export

Year	India's Exports (Number of Product groups)			Year	African LDCs' Exports (Number of Product groups)		
	Total	RCA<=1	RCA>1		Total	RCA<=1	RCA>1
2002	97	54	43	2002	97	65	32
2005	97	59	38	2005	97	60	37
2008	97	55	42	2008	97	62	35
2011	97	56	41	2011	97	75	22
2014	97	57	40	2014	97	71	26
2017	97	54	43	2017	85	81	4

Source : Author’s calculation from UN Comtrade data

It can be seen from table 7 and 8 that the top 10 product groups with high RCA values differ for the reporter and partner countries over the years. In the periods 2002-2017, India enjoyed a comparative advantage in products like silk cotton, Lac; gums, resins and Carpets & textile floor. In 2017, India exhibits strong comparative advantage in other textile fibers (53), followed by lac, gums, resins (13), cotton (52), Other made up textile art (63) and so on.

On the other hand, African LDCs show a comparative advantage in veg. plaiting materials (14), Coffee, tea, mate & spices (9), Copper & articles thereof (74) etc over the years. But in 2017, it enjoyed a strong comparative advantage in Ores, slag and ash (26) recording the RCA value 42.45 followed by Ships, boats (89), and some primary products including live animals (1) and Fish & crustacean (3).

Table 7: Top 10 product groups with high RCA values in India’s Export

Code	Product Name	RCA	Code	Product Name	RCA	Code	Product Name	RCA
2002			2011			2017		
50	Silk	16.64	13	Lac:gums, resins	18.52	53	Other veg. textile fibres	10.74
13	Lac; gums, resins	12.39	52	Cotton	6.82	13	Lac:gums, resins	9.33
57	Carpets & textile floor	9.53	53	Other veg. textile Fibres	5.26	52	Cotton	8.23
71	Natural/cultured pearls	9.26	57	Carpets & textile floor	4.97	63	Other made up textile art	7.05
63	Other made up textile art	8.01	71	Natural/ cultured pearls	4.93	57	Carpets & textile floor	6.96
52	Cotton	7.96	50	Silk	4.63	67	Prepared feathers & down	5.68
9	Coffee, tea, mate & spices	7.26	14	Veg. plaiting materials	4.37	9	Coffee, tea, mate & spices	4.59
10	Cereals	5.56	63	Other made up textile art	4.12	55	Man-made staple fibres	4.54
14	Veg. plaiting materials	5.29	9	Coffee, tea,	3.59	50	Silk	4.09

			mate & spices					
53	Other veg. textile fibres	4.80	55	Man-made staple fibres	3.36	54	Man-made filaments	4.08

Table 8: Top 10 product groups with high RCA values in African LDC's Export

Code	Product Name	RCA	Code	Product Name	RCA	Code	Product Name	RCA
2002								
14	Veg. plaiting materials	100.24	9	Coffee, tea, mate & spices	7.66	26	Ores, slag and ash	42.45
9	Coffee, tea, mate & spices	42.19	74	Copper & articles thereof	6.44	89	Ships, boats	9.18
26	Ores, slag and ash	21.69	14	Veg. plaiting materials	5.17	1	Live animals	3.06
81	Other base metals	18.99	24	Inorganic chemicals	4.96	3	Fish & crustacean	1.63
24	Inorganic chemicals	15.37	27	Mineral fuels, oils	3.70	71	Natural/cultured pearls	0.79
52	Cotton	14.05	25	Salt; sulphur	3.22	9	Coffee, tea, mate & spices	0.46
74	Copper & articles thereof	11.57	52	Cotton	2.95	23	Residues & waste from the food industry	0.46
3	Fish & crustacean	11.39	1	Live animals	2.76	11	Prod of milling industry	0.11
25	Salt; sulphur	8.36	6	Live tree & other plant	2.46	8	Edible fruit and nuts	0.10

	Natural/culture		Other		Animal/veg.	
71	d pearls	8.17	81 base metals	2.26	15 fats & oils	0.08

Source : Author’s calculation from UN Comtrade data

These are the comparative advantage of India and African LDCs’ export in the world market. But, in order to access the comparative advantage of the reporter countries’ export in the partner market, the bilateral revealed comparative advantage (BRCA) has been calculated. The summary of BRCA between India and African LDCs is shown in table 9. It is observed that, up to 2017, all among the 97 product groups in India’s export are marketed with African LDCs where on an average, the number of product group having comparative advantage is consists of around 20 percent of its total export products. On the contrary, so far as African LDCs’ export to India is concerned, most of the products are missing and in 2017, only 20 product groups are marked where only 5 product groups have recorded comparative advantage. It shows a clear picture that Africa’s huge growth in trade with emerging market economies like India over the past two decades has not assist in expanding its export basket.

Table 9: Summary of BRCA in India and African LDCs Export

Year	India's Exports (Number of Product groups)			Year	African LDCs' Exports (Number of Product groups)		
	Total	BRCA<=1	BRCA>1		Total	BRCA<=1	BRCA>1
2002	92	73	19	2002	58	45	13
2005	94	64	30	2005	68	47	21
2008	96	71	25	2008	76	52	24
2011	96	79	17	2011	71	62	9
2014	97	77	20	2014	78	64	14
2017	97	77	20	2017	20	15	5

Table 10 and 11 respectively represent the top 10 product groups with high BRCA values in India’s exports to African LDCs and vice-versa. Over the periods of 16 years, India’s export products having a comparative advantage with African LDCs consist of a large variety of its export basket including cotton (52), Tin and articles thereof (80), sugars & sugar confectionery (17), pharmaceutical products (30), Residues & waste from the food industry (23), Art of stone, plaster (68), Man-made filaments (54) and so on. In 2017, cotton stands as the top most exportable showing a BRCA value 5.97 followed by Special woven fabrics and Man-made filaments showing BRCA value 5.24 and 5.19 respectively.

On the other hand, African LDCs' export to India includes a narrow variety of primary products like Edible fruit and nuts (8), edible vegetables (7), cotton (52), Fish & crustacean (3), cereals (10) and Oil seed, olea. Fruits (12) over the years. However in 2017, Edible fruit and nuts record a BRCA value of 6.68 followed by Natural/cultured pearls and Oil seed, olea. Fruits showing BRCA value 3.2 and 2.43 respectively.

Table 10 : Top 10 product groups with high BRCA values in India's Export

Code	Product Name	BRCA	Code	Product Name	BRCA	Code	Product Name	BRCA
	2002			2011			2017	
52	Cotton	7.56	23	Residues & waste from the food industry	5.01	52	Cotton	5.97
80	Tin and articles thereof	5.51	30	Pharmaceutical products	5.00	58	Special woven fabrics	5.24
30	Pharmaceutical products	5.14	79	Zinc and articles thereof	4.00	54	Man-made filaments	5.19
72	Iron and steel	3.78	54	Man-made filaments	3.56	62	Art of clothing, not knitted	4.86
53	Other veg. textile fibres	3.76	53	Other veg. textile fibres	3.47	53	Other veg. textile fibres	4.61
54	Man-made filaments	3.44	55	Man-made staple fibres	3.14	61	Art of clothing access, knit	4.50
10	Cereals	3.43	17	Sugars & sugar confect	2.92	30	Pharmaceutical products	3.65
29	Organic chemicals	3.33	61	Art of clothing access, knit	2.65	64	Footwear, gaiters	3.63
55	Man-made staple fibres	2.57	62	Art of clothing, not knitted	2.65	46	Manufactures of straw	2.87
71	Natural/cultured pearls	2.38	36	Explosives, pyrotec. Prod	2.61	10	Cereals	2.66

Table 11: Top 10 product groups with high BRCA values in African LDCs' Export

Code	Product Name	BRCA	Code	Product Name	BRCA	Code	Product Name	BRCA
2002			2011			2017		
8	Edible fruit and nuts	25.13	10	Cereals	6.19	8	Edible fruit and nuts	6.68
28	Inorganic chemicals	20.28	24	Tobacco & manuf tobacco	5.37	71	Natural/cultured pearls	3.60
52	Cotton	15.83	8	Edible fruit and nuts	4.91	12	Oil seed, olea. fruits	2.43
25	Salt; sulphur	4.73	9	Coffee, tea, mate & spices	4.77	26	Ores, slag and ash	2.15
7	Edible vegetables	4.51	2	Mineral fuels, oils	4.37	9	Coffee, tea, mate & spices	1.88
43	Fur skins and artificial fur	4.50	28	Inorganic chemicals	3.48	4	Dairy products	0.48
41	Raw hides and skins	3.60	7	Edible vegetables	2.86	72	Iron and steel	0.42
1	Live animals	2.97	41	Raw hides and skins	2.09	73	Articles of iron/steel	0.22
12	Oil seed, olea. Fruits	2.50	25	Salt; sulphur	1.38	31	Fertilisers	0.14
44	Wood and articles	2.48	12	Oil seed, olea. fruits	0.84	10	Cereals	0.10

Source : Author's calculation from UN Comtrade data

5. SUMMARY AND CONCLUSION

This paper studies some major issue between India African LDCs bilateral trade for the periods 2002 to 2017 and some of the important finding can be stated as follows.

First of all, though Africa is regarded as backward by some of the developed countries, it stands as one of the important trade partners for India and African LDCs too play a crucial role in determining India's trade volume. Over the 16 years, the trend of India's trade volume has been increased up to 2014, though it has shown a slight downfall thereafter. There has been an

increase trend in African LDCs trade with India up to 2014, then it witnesses a sharp decline in trade volume in 2017 due to global turndown in trade.

Secondly, the trade between India and African LDCs are more intense as compared to rest of the world. In particular, India's export intensity with African LDCs records a very high value (49.5) representing India's high export potentiality to African LDCs over rest of the world.

Thirdly, regarding the competitiveness of the trade, the result of the bilateral RCA show that India possesses a high revealed comparative advantage in a wide variety of products including, machinery, manufacturing and highly demanded primary products like cotton, silk and sugars & sugar confections. Whereas, African LDCs possess bilateral comparative advantage over India in a limited range of products which includes primary products like veg. plaiting materials, Coffee, tea, mate & spices and industrial products like Ores, slag and ash.

The above findings give a clear picture of the composition and pattern of trade between India and African LDCs over the 16 year. The trade relationship between the countries is intensive and stable where India has been a beneficiary in enjoying comparative advantage. However, African LDCs should seek more products including manufacturing and machinery in its export basket to expand its overall trade volume. In this context, in order to cater the needs of most of the African LDCs, India should have an improved development strategy including foreign aid, both public and private investment in key sectors, technology transfer and capacity building, extended lines of credit and so on. In this way, Africa, the so called 'The Hopeless Continent' regarded by the economists, can regain its image as the 'Land of Opportunity' with the needful and persistent assistance by the Indian economy.

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