LUND UNIVERSITY
School of Economics and Management

Master's Programme in Economic Growth, Population and Development

Examine Evidence of Shifting Revealed Comparative Advantage from Asia to Africa (1995-2017)

by

Bezawit Abebe

be2074ab-s@student.lu.se

The objective of this study is twofold. First, the research tries to address whether the selected 13 African countries have gained a comparative advantage on labour-intensive industry (i.e. textile and apparel sector) for the period 1995-2017. The study employs Balassa's Revealed Comparative Advantage (RCA) indices to address this objective. Second, it attempts to investigate whether there is an evidence of shifting comparative advantage from the Asian drivers (China & India) to African economies. The Spearman Rank Correlation (SRC) coefficient has been deployed to handle the second objective. Based on Balassa's RCA indices, countries like Egypt, Kenya, Morocco, Madagascar, Mauritius reveal indices greater than 1. That implies those identified countries had gain comparative advantage on the apparel sector. Balassa's RCA indices further identifies African countries that had gain comparative advantage on the textile sector; these countries include Egypt, Morocco, Madagascar, Mauritius, Tunisia, and Tanzania. The SRC coefficient estimation finding on the apparel sector depicts that there has been an evidence of shifting revealed comparative advantage from the Asian drivers to Kenya, Madagascar, Morocco, and Tunisia. The finding also indicates that Kenya become the "leading goose" and Madagascar, Tunisia, and Morocco followed respectively. Regarding to the estimation of SRC coefficient on the textile sector, the finding identifies Mauritius as a "leading goose" followed by Tunisia, Morocco, and Tanzania respectively. Based on RCA indices and SRC finding, it is possible to conclude that African countries labour-intensive industry (both textile and apparel) have been competing in the global market and able to maintain comparative advantage. It also implies that the late comer (Africa) penetrate in global market in which they have comparative advantage by adopting production method and technology from the former countries (Asian drivers).

Keywords: revealed comparative advantage, textile and apparel, and SRC coefficients

EKHS22
Master's Thesis (15 credits ECTS)
June 2020
Supervisor: Ellen Hillbom
Examiner: Erik Green
Word Count: 14828

Acknowledgements

I am thankful to all who have contributed to the completion of this thesis. First of all, I am grateful to Almighty Lord for bringing me to this far. I am thankful for the strength to carry on even when the going seemed tough since his faithfulness, provision and protection never ceases. His guidance and love never comes to end.

I extend my special appreciation and my sincere gratitude to the Swedish Institute Scholarship for funding this publication which has been produced as part of my research work at Lund University.

I am also thankful to my supervisor Ellen Hillbom for the thoughtful comments and recommendations through the process of the thesis writing. All the meetings and conversations with her had been indispensable, and motivates me to think outside the box, from different perspectives to have a comprehensive view and objective critique. I am also grateful to Economic Growth, Population and Development Programme and its staff for all support and guidance.

A very special thanks goes to my husband, Dawit Tilahun, for his love and support during my study. My thanks also are extended to my lovely children Maraky Dawit and Barkot Dawit who make my life meaningful and it is always a pleasure to be with you. I am also indebted to my mother who takes the credit for who I am now, and sisters, brothers and friends.

Table of Contents

Acknowledgements ii
1. Introduction 2
1.1. Research Problem 4
1.2. Aim 5
1.3. Scope 6
1.4. Outline 6
2. Structural Transformation 7
2.1. New Structural Economics 7
2.2. Revealed Comparative Advantage 11
2.3. Flying Geese Model 13
3. Empirical Studies 15
4. Data 19
4.1. Data Description 19
4.2. Source Material 21
4.3. Data Limitation 22
5. Methods 23
5.1. Revealed Comparative Advantage (RCA) 23
5.2. Spearman's Rank Correlation (SRC) 25
6. Results and Discussion 26
6.1. Export Share 26
6.1.1. Textile Sector Export Share 26
6.1.2. Apparel Sector Export Share 27
6.2. Export, Import and Trade balance 29
6.2.1. Export Performance of Textile Sector 29
6.2.2. Export Performance of Apparel Sector 29
6.3. Descriptive Statistics 30
6.4. Revealed Comparative Advantage Index Results 31
6.4.1. RCAI for Apparel and Clothing 31
6.4.2. RCAI for Textile 34
6.5. Spearman Rank Correlation Coefficient Result 37
6.5.1. SRC coefficients for Apparel and Clothing 38
6.5.2. SRC coefficients for Textile 40
7. Conclusion 42
Reference 44
Appendix A: Textile Export, Import and Trade Balance 51

Appendix B: Apparel Export, Import and Trade balance.....53
Appendix C: RCAI for Apparel and Clothing Sector.....55
Appendix D: RCAI for Textile Sector.....56

List of Tables

Table 1: Categories of textile and clothing products two-digit product 20

Table 2: Descriptive statistics of analytical samples 31

Table 3: RCAI for Apparel and Clothing Sector 34

Table 4: RCAI for Textile Sector 37

Table 5: SRC coefficients for Apparel and Clothing Sector 40

Table 6: SRC coefficients for Textile Sector 41

List of Figures

Figure 1: Illustration of the Asian Wild-Geese-Flying Pattern, Lin (2011, p.9) 15

Figure 2: Textile Sector Export Share 27

Figure 3: Apparel Sector Export Share 28

Figure 4: Textile Export, Import and Trade Balance, 2013-2017 (in USD million) 29

Figure 5: Apparel export, import and trade balance 30

1. Introduction

In the late 1950s, the newly independent African countries had enjoyed a higher economic growth than the rest of the developing countries (Thorbecke and Ouyang, 2016, p.241). The average per capita Gross Domestic Product (GDP) for the region in the 1960 estimated in constant US dollars 2.9 and 3.8 times higher than that of South Asia and the emerging economies in East Asia and the Pacific region respectively. Despite witnessing growth in the early post-independence period, the region could not exhibit sustainable growth rather stagnated and started diverging from the rest of the developing countries in the following decades (McKay, 2014). A mid early 1980s till 2000, the region experienced a steady and significant decline in per capita GDP. After four decades of stagnation, the region's economic performance began recovering and exhibited the ascending curve since the new millennium (Arbache et al, 2008; Thorbecke and Ouyang, 2016, p.243).

The period between 2001 and 2010, the region's GDP and per capita income grew at an average of 5.2 percent and 2 percent per year respectively (World Economic Forum, 2011; Dinh et al., 2012). The region's per capita GDP annual growth rate also increased from 0.3 percent to 2.6 percent between the period 1960 and 2013 (Thorbecke and Ouyang, 2016, p. 244). Most researchers attribute the region's economic growth to endogenous factors including policy amendments, good governance, foreign direct investment, and exogenous factor such as the rises of global commodity prices (Thorbecke and Ouyang, 2016, p.255-260; McMillan and Harttgen, 2014). They also suggest Africa should pass through structural transformation to lift worker from low-productivity agriculture to high-productivity activities and to maintain sustained and inclusive growth.

Most successful emerging economies exhibit development through structural transformation such as labour-intensive light manufacturing, but it has not yet taken place in Africa (Thorbecke and Ouyang, 2016, p.261). However, recently, some African nations prioritize labour-intensive light manufacturing as one of their main strategy in the catch-up process. Accordingly, these nations have been engaged in the development of Special Economic Zones (SEZs) and Industrial Parks (IPs) to promote industrialization and create massive job opportunities for the growing number of the youth population. For instance, Mauritius, a country that dramatically has transformed its economy initially through labour-intensive industry and recently, the country has become a major hub for global trade and investment (Tang et al., 2018, p.2). The exhibited rapid growth of the country attributed to the economic diversification strategy which is mainly derived by the

development of Export Processing Zones (EPZs). Most of the country's EPZ success is due to the rapid development of the EPZ-based textiles and clothing industry.

In addition, country like Ethiopia recently has been able to generate nearly 50,000 jobs within a few years through its operational Special Economic Zones (SEZs) and will expect to generate a total of 1.5 million jobs through the planned SEZs within ten to fifteen years (UNCTAD, 2019; The Ethiopian Herald, 2020). The country also has constructed twenty industrial parks, out of which sixteen have been developed by the federal government and four by regional governments while there are also privately owned industrial parks in the country. Furthermore, the country aims to increase the number of IPs to 30 by 2025 and make the Ethiopia a light manufacturing hub (The Ethiopian Herald, 2020). Industrial Parks that located in different regions of the country such as Adama, Hawassa, Kombolcha, and Mekelle, specialised in the production of textiles and apparel with the aim to stimulate industrialization and enhance structural change.

Structural transformation was the foundation of labour productivity and development in Asia (Dinh et al., 2012). During the first half of the twentieth century, labour intensive industries provided opportunities for most Asian countries to execute their competitive advantage over the rest and lift 'bottom millions' out of poverty (Dinh et al., 2012; Frankema and van Waijenburg, 2018). Japan was the first non-Western country to complete the transition from an agrarian economy towards a modern industrial economy under a labour-intensive growth path and became the feature for Asian catch-up growth (Austin and Sugihara, 2013). After 1960s, the Asian 'Tigers' such as South Korea, Taiwan, Singapore and Hong Kong followed Japan's labour-intensive industrialization path. After 1970s, China followed the Asian 'tigers' growth path and implemented an overwhelming performance through labour-intensive export-led industrialization.

Accordingly, China shows a tremendous export performance and took up 31.5 percent of the world total exports of textile & apparel in 2015 and this sector alone created employment opportunity for more than 6.7 million people (Gelb 2005; Eloot et al 2013; Hossain & Van Thi 2017). China has surprisingly grown at a rate of nearly 10 percent per annum driven by its expansion of the modern industrial export oriented sector. It was also believed that around 20 million Chinese workers migrate from agriculture to manufacturing per annum and in return contributed to the incremental trend of the global middle-sized industrial economy. In a similar fashion, countries like India have also been growing at about 6 percent per annum for the last three decades. The trade share of GDP between the period 1990 and 2002 almost double in

India and increased by more than two-thirds for China (Eichengreen et al., 2004; Geda & G.Meskel, 2007).

1.1. Research Problem

Following the phenomenal development in East Asia, several researchers and global academia started to focus on the growth path of these countries. Most African governments also show interest to follow suit the rapid economic growth of East Asian economies by implementing impressive program on the development of Industrial Parks (IPs) and Special Economic Zones (SEZs). This provides a big opportunity for the continent to attract Foreign Direct Investment (FDI) in labour-intensive export-led industrialization. In addition, it has opened a way to reallocate large numbers of young, semi-skilled, and unskilled workers from the less effective agricultural sector to more productive labour-intensive manufacturing sector (World Bank 2015; UNDP 2017).

However, whether African countries could replicate the East Asian developmental pathway in the structural transformation through labour-intensive industries has brought fierce debate among scholars (Tang, 2019). For Thorbecke and Ouyang (2016); Frankema and van Waijenburg (2018), the overall African countries growth path towards the structural transformation through labour-intensive industry is an unlikely scenario. The former argue that Africa's labour-intensive commodities cannot penetrate and gain comparative advantage because the global market has already saturated in Asian countries. The later also claim that labour-intensive industrialization seems harder to realize for Africa mainly due to the labour wage cost disadvantage over the East Asian countries. The current wage gap between Africa and late industrializing countries in Asia such as Vietnam and Bangladesh, or even China, are not nearly as large as the gap between Britain and Japan around 1900 (Frankema and van Waijenburg, 2018). The real gap of unskilled workers between Britain and Japan in the closing decades of the nineteenth century was 8 to 1. But, if we compare China's minimum wages with Africa, the unweighted Africa average exceed only by 3 to 1. As a result, it seems harder to realize for African countries to gain competitive advantage in the international trade while Asian manufacturing is still gaining prominence. Frankema and van Waijenburg (2018) strongly argue that Africa would face challenges in the transition of successful labour-intensive industrialization growth path.

On the contrary, scholars like Justin Lin, a former chief economist of the World Bank, argues that Africa has immense potential to replicate East Asian labour-intensive industry growth

pathway. Lin (2011) illuminates that Africa would have unprecedented opportunity to the dynamic manufacturing-led growth due to China's industrial upgrading and the emergence of large middle-income countries including China and India. Middle income countries are on the verge of graduating from low-skilled manufacturing jobs. As a result, lower-income countries including Africa gains a comparative advantage on labour-intensive industry (Lin, 2011). For instance, China alone will free up nearly 100 million labour-intensive jobs, compared to Japan's 9.7 million in the 1960's and Korea's 2.3 million in the 1980s. In this regard, Africa, whose total employment in manufacturing is estimated to be less than 20 million, would get the opportunity to move into light manufacturing jobs following China's graduation. This in turn would create a comparative advantage for Africa if the countries can formulate and implement a viable strategy to capture the opportunity on a dynamic path towards structural transformation; which in turn will lead most African countries to reduce poverty and exhibit inclusive growth and stable societies.

Hence, the above contending views on Africa growth pathways towards labour-intensive industrialization, therefore, calls for the present study to conduct.

1.2. Aim

Accordingly, this study attempts to address two major research objectives. First, the research tries to address whether the selected African countries gained a comparative advantage on their labour-intensive industry particularly on textile and apparel sector. Second, it attempts to investigate whether there is evidence of shifting comparative advantage from China and India to the selected African countries. To address the first research objective, the study employs Balassa's (1965) Revealed Comparative Advantage (RCA) indices. This provides the opportunity to examine and measure the comparative advantage of the textile and apparel sector of selected African countries. In addition, to address the second research objective, this study uses a flying-geese model and estimates Spearman's Rank Correlation (SRC) coefficients. This helps to examine whether the less-advanced 'wild geese' (selected African countries) initially that were appeared at the back become at the front due to the advanced 'leading dragon' (China) and India shifted from labour-intensive industries to high-tech industries.

1.3. Scope

The study measures RCA indices and estimates SRC coefficients based on textile and apparel export of selected African countries for the period 1995-2017. The period has been chosen due to the fact that most African countries achieved close to 3 percent economic growth per annum in per-capita terms following an unpleasing economic performance during the 80s and the 90s (Rodrik, 2016; Thorbecke and Ouyang, 2016. P.244). It renders the biasedness of the results thereby providing opportunity to examine the pre and post millennium trend of revealed comparative advantage in the specified sector.

To this end, 13 African countries are selected based on their export performance on the textile and apparel sector for the period. It also considers the Asian drivers (i.e. China and India) as a reference countries mainly to investigate whether the RCA is shifting from these Asian countries to the selected African counter parts. Thus, it is important to note that the study takes these two Asian countries not to compare their RCA indices with the African countries instead considers China and India as reference. Thus, it delimit its scope only on the two Asian drivers (China and India) and the 13 African countries.

1.4. Outline

The paper is outlined in seven sections. The first section explains the origin of labour-intensive industry and provides highlight on the debatable views of the Africa's economic growth pathway. This section also offers the research problem, objectives and the scope of the study. The second section provides theoretical basis of the study. The third section presents the empirical case studies and review the existing researches. The fourth section explains the secondary data sources and discusses its reliability, representation, and validity of the data. In addition, this section thoroughly discusses the data and the procedures followed to clean the original data. Section five presents the methodology and the framework employed in the present research. Then, the sixth section presents and discusses Balassa's and Spearman's Rank Correlation (SRC) coefficient result that the study uses in order to measure the country's Revealed Comparative Advantage (RCA). Finally, the sixth section provides concluding remarks and forwards recommendation for future research.

2. Structural Transformation

This section begins its discussion with the three development thinking and focuses on the third development thinking namely "New Structural Economics". The third wave of development thinking plays a basic theoretical theme that this study builds on and drives the research to consider Revealed Comparative Advantage (RCA) as one of the building block to conduct the empirical part of the study. Accordingly, this section provides brief discussion on the notion of Balassa's RCA and the RCA indices. It is also found relevant to highlight the "flying geese model" to substantiate the concept on shifting RCA from advanced economies to developing economies. Here, it is important to note that the flying geese model has been customized to fit into the purpose of this study which does not consider the entire structural transformation. Finally the model provides a theoretical foundation to identify the flying goose and follower countries.

2.1. New Structural Economics

Development economics is a newly emerging field in modern economics. It emerged as a subfield of modern economics after the Second World War to guide the rebuilding of the war affected countries and supporting the then newly independent former colonies (Lin, 2016, p.51; Lin, 2017, p.25). Accordingly, the first development thinking i.e. structuralism came up with a new concept in the 1950s. After the failure of the structuralist approach, the neoliberalism came up as a second development thinking after the late 70s. However, the second development approach also could not achieve its intended objective and most developing countries were unable to overtake developed countries. Thus, both failures suggest the need for a third wave of development thinking i.e. new structural economics. The following subsection discusses the three development thinking with special emphasis on the third wave; since the present study bases on the new structural economics as the main theoretical approach.

Structuralism as the First Wave of Development Thinking

In the 1950's, the initial set of structural hypothesis was formulated by authors such as Rosentsein-Rodan, Arthur Lewis, Paul Prebisch, Hans Singer, and Gunnar Myrdal. The structural hypothesis advised the developing countries to adopt an import substitution strategy with direct state intervention to create institutions, including financial representations, distortions of resource prices and administrative allocation of resources, to mobilize capital to develop capital intensive, large scale manufacturing industries similar to those in advanced countries (Lin, 2009; Lin, 2016, p. 51). The structuralists believed that structural rigidities in

developing countries would not lead to the process of industrialization and 'self-sustained' growth could not be achieved if governments do not intervene in the policies (Lin, 2016, p. 52). The structuralist import-substitution strategies led to misguided and unrealistic government interventions. Accordingly, developing countries with abundant labour supply but little capital usually engaged in capital-intensive industries that defied their comparative advantage (Lin, 2012). This led developing countries to exhibit macroeconomic imbalances, low growth, and litter or no structural transformation, especially in terms of reduction in share of employment in the agricultural sector. As a result, the countries experienced long term stagnation instead of catch up with developed economies.

However, few countries like Japan and the four Asian tigers – Korea, Taiwan, Singapore, and Hong Kong achieved accelerated economic growth and managed to overtake developed countries without implementing the structuralist approaches. These countries started rapid economic growth between the 50s and the 70s through the implementation of export-oriented development strategy that focuses mainly on labour-intensive industries and gradually shifted to more capital-intensive industries (Amsden, 1989; Wade, 1990; Chang, 2003; Lin, 2009). These countries growth path contradicts with import substitution strategy (structuralist approach) because those countries did not engage immediately in large heavy industry instead the countries gradually shift from labour-intensive to capital-intensive industries.

Neoliberalism as the Second Wave of Development Thinking

Due to the failure of the structuralist approach, there was a room for the formulation of the second wave of development thinking called neoliberalism, which was included in the Washington Consensus policy package. The Washington Consensus advised developing countries to establish strong system of property right, trade liberalization, privatize state-owned enterprises and establish free markets through deregulation. In the 1980s and 1990s, the liberalization approach (Washington consensus) withhold government intervention and allow market economies to work. This approach give due attention on the removal of all economic distortions by ending government interventions through privatization and marketization (Williamson, 1990; Lin, 2016, p. 54).

Neoliberalism approach seemed logical and sound. Yet countries that followed this approach repeatedly experienced economic collapse, stagnation, and frequent crises accompanied with huge economic gap between developing and developed nations (Cardoso and Helwege, 1995; Lin, 2016, p. 53). The Washington Consensus policy result was even worse than the

structuralist approach (Lin, 2016, p. 53). Economists including Easterly (2001) considers the structuralist approach period as the 'lost decades' for developing countries. During this period, some Asian countries followed different development approach. Between 1950s and 1970s, Japan and the four Asian tigers exhibited fastest economic growth by adopting an export-oriented development strategy, by developing initially labour-intensive, small-scale industries, and slowly shifted their industry to capital intensive sector with active government support (Amsden, 1989; Wade, 1990; Chang 2003; Lin, 2017, p.26).

During the 1980s and 1990s, under the implementation of the Washington Consensus, economists believed that market economies are more efficient than planned economies. They also believed that planned economies should transform to market economies and government intervention should be quit to exhibit economic growth. However, China's economic growth started in the 1970s with a dual-track reform, which protect and subsidize nonviable state-owned firms in the old prioritized capital-intensive industries while liberalizing the market for labour-intensive industries. This dual-track reform approach led countries like China, Cambodia, Vietnam, and Mauritius to experience stable and rapid growth. Those countries growth path have something in common. First, the countries allow market economies to work, which incorporates neoliberalism approach. Second, government of those countries also intervened actively in the economy, as emphasized by structuralism (Lin, 2017, p.27).

New Structural Economics as the Third Wave of Development Thinking

Structuralism and neoliberalism approaches failed to achieve their main objectives of helping developing countries to achieve convergence (Lin, 2016, p.54). The failures in both the first and the second development approaches led for the birth of the new structural economics, which was formulated by Justin Lin, the former chief economist of the World Bank. New Structural Economics considers a neoclassical approach to study the determinants of economic structure and its path to the country's economic development (Lin, 2011). A country's economic structure initially rely on factor endowments such as the amount of capital, labour, and natural resources during that particular period. Countries experienced different factor endowments during their development stage. Developing countries characterized by comparatively abundant in labour and natural resources however, relatively scarce in capital. On the other hand, developed countries are characterized by relative abundant of capital, while labour is comparatively scarce. It is believed that the country's factor endowment is not static instead it can change through time (Lin, 2017, p.27).

New Structural Economics considers factor endowments as initial stage for the development analysis. This is because factor endowments play crucial role in determining a country's total budget and relative factor prices, which we consider the two as the fundamental parameters in economic analysis. Relative factor prices determine a country's comparative advantage. For instance, countries with abundant labour but scarce in capital would have better comparative advantage in labour-intensive industries. This is because these countries can produce with cheap labour price against countries with relatively scarce labour (Lin, 2017, p.28). Factor endowment determined a country's comparative advantage and considered as a prerequisite to achieve a competitive advantage (Porter, 1990).

Due to relative abundant capital and advanced technologies, developed countries experience high income and labour productivity. Developing countries should first increase the relative abundance of capital if they want to catch up with developed economies. The ultimate and intermediate goal of economic development is to increase a country's income and to develop capital-intensive industries respectively. Furthermore, the immediate goal of economic development associated with the capital accumulation and then it is believed that the country can shift to capital-intensive industries. This means that industrial upgrading and a country's factor endowment shifting plays a crucial role in raising country's income (Ju et al., 2015). In order to accumulate capital quickly, a country should save economic surpluses. This has been achieved when industries operate based on a country's comparative advantage, this in turn leads to competitive advantage both in domestic and international trade.

According to Lin (2017, p.28-29) Economic development defined as a process of structural change with continuous technological innovations, industrial upgrading, and improvement in infrastructure and institutions. The changes both in factor endowments and comparative advantage require first movers to enter in new industries. It is obvious that first movers face high risks. If they perform well, they will generate high profit and other industries can follow them and if they fail, they will take all the losses. Here, the competition that emerges between the industries plays an important role in reducing monopoly profit (Romer, 1990; Aghion, 2009). There is lack of symmetry between losers and winners of the first movers (Hausmann and Rodrik, 2003).

The first movers provide important information for the public irrespective of their success or failure stories. The government should provide support and compensate first movers who face challenges or the government should provide incentive for first mover who penetrate in the market with technological innovation (Rordrik, 2004; Lin, 2009; Harrison and Rodriguez-

Clare, 2010; Lin and Monga, 2011). The first mover exhibit either failure or success due to the country's available soft and hard infrastructure. Here, it is important to consider a country's infrastructure and institution as external factors, which go beyond the individual firms. As a result, the government should play crucial role in coordinating firm's efforts in order to improve both the infrastructure and institutions, this in turn lead to economic development.

New Structural Economics clearly shows the reason behind the failures of structuralism. The structuralist approach incorporate import-substitution as one of the main strategy and the government give priority to capital and technology intensive industries irrespective of factor endowments of a country. Accordingly, this defy poor countries comparative advantage. If individual firm requires to operate in capital-intensive industry, the government provide subsidies and protect from the international market competition. This lead the individual firm to rely highly on government subsidies and protection to survive and operation both in the domestic and international market as well (Lin, 2017, p.29).

In addition, New Structural Economics also shows the reason behind the failures of neoliberalism. Government of developing countries subsidized and protect incapable firms to implement import-substitution strategies. When the government eliminates the subsidies and protection to incapable firms, a country would face challenges related with the rising of unemployment rate and social unrest. In order to mitigate those risks, governments continue to subsidise weak capital-intensive industries. The subsidies to the incapable firms could even increase because the private firms requires more subsidies and protection (Lin and Li, 2008). The subsidies and protections of the government in the neoliberalism approach were usually less efficient than the structuralist approach, especially in the transition economies of the former Union and Eastern Europe (World Bank, 2002).

2.2. Revealed Comparative Advantage

As a theoretical framework, the New Structural Economics plays a critical foundation for the present study to address the research objectives. As mentioned by Justin Lin (2017), this development thinking considers factor endowments as initial stage for the development analysis because factor endowments play significant role in determining country's total budget and relative factor prices. The relative factor prices in turn determine a country's comparative advantage. Thus, this development thinking drives this research to consider Balassa's Revealed Comparative Advantage (RCA) indices as an important tool to achieve the research objectives.

Before diving into a discussion on 'revealed comparative advantage', it is important to provide some insights on 'comparative advantage'. The theory of comparative advantage was originally developed by David Ricardo in 1817. Ricardo's theory of comparative advantage is one of the ancient and well-known theories in economics, which compares the opportunity cost of one product over other across countries. This theory assumes that the technology differences across countries lead them to gain comparative advantage. Following this, the two Swedish economist, Bertil Heckscher and Eli Ohlin came up with the second traditional theory called Heckscher-Ohlin (H-O). The theory assumes that a country gain comparative advantage over others when the country has differences on factor endowments.

The notion of 'Revealed Comparative Advantage' (RCA), which was first proposed by Balasa (1965, 1977, and 1979), emanates from Heckscher-Ohlin theory and classical theory of comparative advantage in the mid-1960s. The model illuminates that trade patterns can be explained based on post-trade situation and the indices has a range of applications including measuring the relative potential of a country in the production of certain commodities against its trading allies (Balasa, 1965; French, 2014). Of the various economic models of measuring trade flows illuminating the comparative advantage of trading partners, the 'Revealed Comparative Advantage' economic model is 'simple' and 'powerful' (French, 2014, p.2).

As one of the most commonly employed measurement, the Balassa (1965) indices of Revealed Comparative Advantage (RCA) is used to estimate country sector-specialization. Trade liberalizations triggers 'reallocation of resources' which relies on comparative advantage (Balassa 1965, p.99). Balassa (1965, p.103) emphasizes that the actual performance of trading parties with respect to manufacturing products show the 'revealed' comparative advantage where the 'commodity patterns of trade' illustrates comparative 'costs' and 'differences in non-price factors'.

Hence, Balassa proposed the revealed comparative advantage indices, most widely employed method to measure competitiveness, since it is hardly possible to measure competitiveness because of unattainability of data (Tripa et al. 2016). The indices, merely, measures specialization (Tripa et al., 2016; Bender and Kui-Wai Li, 2002). The model further illustrates the 'catch-up' phase in the 'stages of comparative advantage' as economic shift from one area of comparative advantage to another. For instance, as developed nations graduate to the stage of exporting tech-intensive product categories, the labour-intensive production line will be vacant room for developing countries to jump in (Bender and Kui-Wai Li, 2002). In this way, it provides the opportunity to measure such shift in comparative advantage of trading parties.

According to the RCA indices, the revealed comparative advantage of a particular sector in a country is measured on the basis of 'the sector's share in the country's total export compared to the sector's share in the total exports of manufactures' (Assefa, 2018, pp.39). So, when do we say a country has revealed comparative advantage on a particular industry over its trading partner(s)? This model illuminates that to obtain a revealed comparative advantage of a particular commodity, the stake of the commodity in a national exports expected to be higher compared to the commodity's total global export.

2.3. Flying Geese Model

As mentioned earlier, the concept of the flying geese model included in this study not to analyse the whole structural transformation of the countries instead the study customises the model only to consider the particular labour-intensive industry (i.e. textile and clothing) thereby to investigate if there is a shift in RCA from the Asian drivers (i.e. China and India) to the late comers (13 selected African countries). The concept of shifts in RCA mainly stem from the flying geese model and plays important role to substantiate the concept. Accordingly, this subsection first discusses the theoretical foundation and the concept of the flying geese model. Finally, it provides a brief discussion how the study customises the original model and applicable for the present study.

The "flying-geese pattern of development" (FG theorem) first developed by Kaname Akamatsu in the 1930s (Akamatsu, 1935; Akamatsu, 1937). He used the phrase "flying geese" to describe the inverted V shape of import, production, and export growth curves that a few Japanese industries exhibited before the Second World War. Akamatsu's flying geese theory and its concept translated from the Japanese to English and availed to the world academia after 1961 (see for example, Kojima 2000; Ozawa, 2001; Cutler et al., 2003). The theory has been used to explain the rapid economic development in East Asia. It assumes that late comers penetrate in the international market in which they have comparative advantage by adopting the former countries production method and technology. The former countries comparative advantage in that specific industry is decreasing; simultaneously the countries have shifted from low skilled manufacturing to production that requires advanced technology (Rana, 1990).

As noted by Kojima (2000), the FG model anticipates to comprehend the catching-up process of industrialization in latecomer economies, which appears in two different patterns. First, as

a basic pattern in which a single industry grows by passing three successive curves of import, production, and export. Second, a variant pattern in which industries are shifted from labour-intensive to capital-intensive production and/or from simple to more sophisticated products. Initially, these two patterns discovered by Akamatsu and displayed how the patterns looked like a flying geese shape through empirical analysis of industrial development in the pre-war Japanese economy. Akamatsu called the "wild-geese-flying pattern" in economic development, noting that "wild geese fly in orderly ranks forming an inverse V, just an airplanes fly in formation (1962, p.11). The "flying geese" pattern displays the sequential order of the catching-up process of industrialization by latecomer economies. The FG pattern of industrial development is shifted from a lead goose (Japan) to the Asian 'Tigers' (South Korea, Taiwan, Singapore, and Hong Kong) and then other Asian countries followed such as China.

In the wild-geese-flying pattern sequence, the underdeveloped nations follow behind the advanced industrial nations in sequential manner on the basis of their stages of economic development (Akamatsu, 1961, p.208). In industrial development, according to a wild-geese-flying pattern, the less-advanced 'wild geese' that appeared at the back become in the front with due process or quickly. On the other hand, the advanced "wild geese", which lead flying onward, and shift from low-technological industries to high-technological industries and maintain the distance from the less-advanced 'wild geese' (Akamatsu, 1962, p.17-18; Ozawa, 2001; Cutler et al., 2003).

Figure 1 is a diagrammatic summary of the concept of 'flying geese model' adapted from Akamatsu (1961). Japan, NIEs[1] and ASEAN4[2] began the structural transformation from labour-intensive industry (garment sector) and then they gradually shift to capital intensive industry. However, latecomers and latest comers are still operating under the labour-intensive industry. It is obvious that most African countries remain under labour-intensive industry instead of shifting to high-tech industry.

Hence, the present study aims to examine whether there is shifting of comparative advantage from Asian drivers (China and India) to the selected African countries particularly on the textile and garment sector. Therefore, the study takes into consideration only the pattern that the arrows follow under the garment sector (see figure 1) and disregard the rest. In addition, it

[1] Newly Industrialised Economies (NIEs) including Hong Kong SAR, China; Korea; Singapore; and Taiwan, China

[2] ASEAN4 including Malaysia, the Philippines, and Thailand

also considers the flying geese model to identify the flying goose and follower countries under the textile and garment sector.

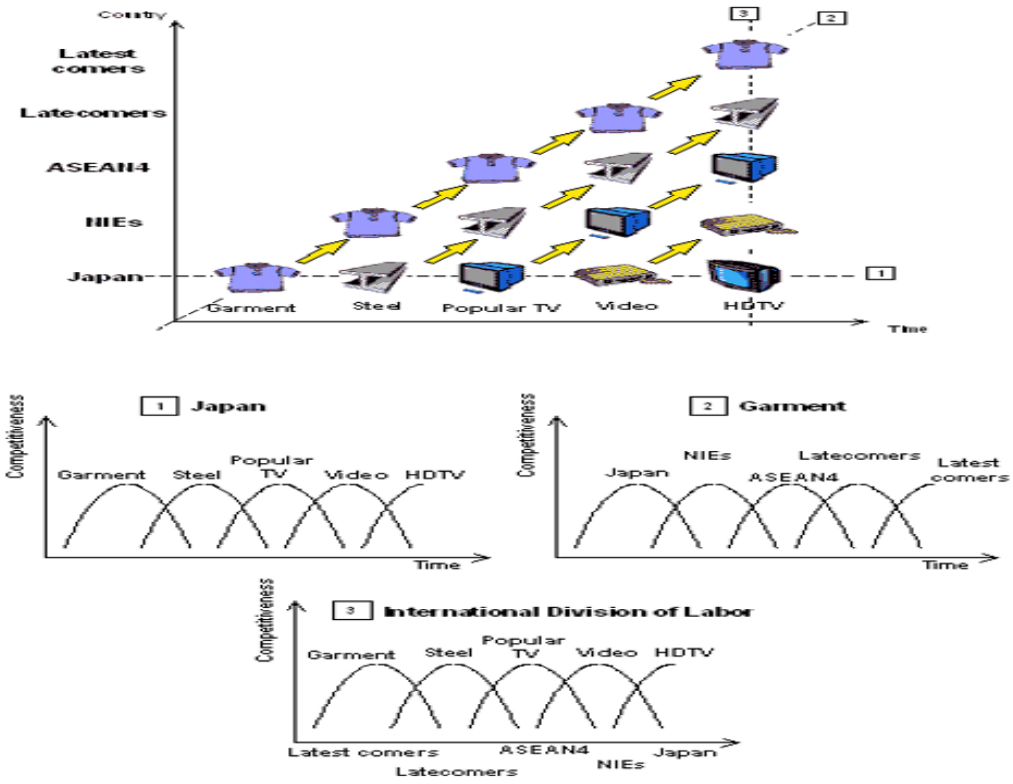


Figure 1: Illustration of the Asian Wild-Geese-Flying Pattern, Lin (2011, p.9)

3. Empirical Studies

This section reviews major existing researches that were executed on the revealed comparative advantage of textile and apparel industry of African nations. The review has given particular emphasis on African's competitiveness in the global market, and on shifts of Revealed Comparative Advantage from Asian Drivers to Africa. However, existing literature on shifts of RCA from Asia to Africa are few in number, while many studies are conducted on Latin America and Asia.

Labour-intensive industry allows emerging economies to compete by leveraging their low labour costs (Dinh and Monga, 2013, p.4). It has been playing a prominent role for most successful emerging economies, including China, India, Vietnam, and the East Asian tigers. Establishing labour-intensive industry allows countries to earn foreign exchange, create employment opportunity, increase wages for the vast pools of underemployed labour, and provide opportunity to import technology and skills. Above all, labour-intensive industry

provides the occasion for developing countries to engage in the global market which in turn supports the economic development, and it drives them to achieve export-led growth (Chenery, 1980; Commission on Growth and Development, 2008; Harrison and Rodriguez-Clare, 2010). It is believed that export-oriented economies have better opportunity to achieve rapid economic growth (Harrison and Rodriguez-Clare, 2010). This has been achieved through engagement in international trade which allows emerging economies to take advantage on the transfer of knowledge, skill, and technology which is necessary to move up the value chain (Dinh and Monga, 2013, p.7).

Labour cost advantage of Africa puts the continent in a position to showcase its potential in labour-intensive industry. Dinh et al. (2012, p.6) claim that Africa has enormous potential and the global market also provides a big room to its labour-intensive industry. For instance, in Ethiopia, wages are only a quarter of China's and a half of Vietnam's, and its overall labour wages are lower. The labour-productivity in some well-managed factories also displays almost similar levels in China and Vietnam (Dinh et al., 2012, pp.3-4). Due to the labour cost advantage and preferential trade agreements including African Growth and Opportunity Act (AGOA) and Everything But Arms (EBA), Ethiopia has expanded its apparel industry. Meanwhile, in emerging economies like China the cost advantage begun to erode in labour-intensive industry. However, Ethiopia's competitiveness in apparel has been hindered by poor trade logistics, which reverse the country's labour cost advantage. On the contrary, Rundassa et al (2019) claims that Ethiopia gained comparative advantage on the textile sector than the apparel industry until 2013 which has declined afterwards. Analysis based on Balassa's RCA indices further indicate that the comparative advantage of the apparel sector shows improvement between 2015 and 2016. The authors attributes the improvements with the advent of new entrants in apparel enterprises following the introduction of a new benefit scheme prioritizing these labour-intensive industry.

Like other emerging economies, Tanzania's textile and apparel industry has a big potential to develop a strong industrial base and attain economic transformation (Myoba and Kazungu, 2015). The mushroom of the cotton industry is one of the main factor that shows the country's potential for building a large integrated textile and apparel sector (Dinh and Monga, 2013, p.51). Even if Tanzania's apparel has access to the U.S African Growth and Opportunity Act (AGOA) and the European Union Everything But Arms (EBA) initiatives, the country has not been able to capitalize on these opportunities. Dinh and Monga (2013, p.51) associates the country's poor performance with the broken cotton-to apparel value chain; while there are several factors that make the country globally competitive in the sector. These factors include large underemployed

workforce, access to sea, favourable climate for cotton production, duty-free access to the U.S and the EU markets (Dinh and Monga, 2013, pp.51-52).

Over the past two decades, most industrial parks in Africa engaged in traditional export-processing zones that has shown poor performance with the exception of Mauritius, Kenya, Madagascar, and Lesotho (Dinh et al., 2012, p.73). Several researchers such as Alter (1991); Bheenick and Schaprio (1991); Dinh et al. (2012, p.74); Tang (2015, 2019) associates the success of Mauritius textile and apparel industry with the country's established Export Processing Zones (EPZs). The model and structure of Mauritius EPZ was initially derived by Lim Fat, after studying the structure of EPZs in Hong Kong, Malaysia, Taiwan, and Singapore in the 1970s (Robecek et al., 2012). In 1980, nearly hundred enterprises in EPZs had started operation and significantly increased and reached to six hundred after a decade. Accordingly, the country's manufacturing sector shows a tremendous improvement and the export earnings exceeded sugar exports, which was the major commodity that the economy generate foreign exchange (Bheenick and Schaprio, 1991). Thus, Mauritius economic structure has moved from a single commodity to a diversified manufacturing such as textile and apparel (Bonaglia and Fukasaku, 2003; ECA, 2007). This in turn lead the country to generate significant value of foreign exchange, create employment opportunity, and exhibit sustainable growth for the last three decades (Subramanian and Roy, 2003; Sacerdoti et al., 2005; Jommun, 2006).

Furthermore, Van Zyl and Matswalela (2017) employs RCA indices to examine the level of competitiveness of the South African textile and apparel industry from the period 1990 to 2013. The RCA indices indicates that the country has a strong comparative disadvantages in both the clothing and textile sectors. If we see the findings separately, for instance, the RCA indices of the textile industry has shown an indices far below 1. The highest indices was 0.36 in 2003 and lowest was 0.15 in 2012. Similarly, the apparel industry's RCA indices has also had less than 1. However, this finding is inconsistent with Rogerson (2000); Akinboade and Makina (2005); Geda and G.Meskel (2007). For instance, Geda and G.Meskel (2007) in their study aims to examine the export performance of clothing and accessories of 13 African countries for the period 1995-2005. Accordingly, Balassa's RCA indices revealed that South Africa's clothing sector rises significantly after 2002 and become the leading goose of the continent in the industry.

Apparel and clothing industry remains attractive for emerging economies like Egypt because the industry requires low-capital and high-labour. In 1998, the textile and apparel industry played a prominent role in Egypt by creating nearly 30 percent of manufacturing

employmentand accounts for about 20 percent of the total exports (Magder, 2006, p.393). After the expiry of Multi-Fiber Arrangement (MFA) in 2005, the country encountered fierce competition from emerging economies including China. However, the country's apparel industry can succeed in the global market and gain comparative advantage in the industry. The main reasons for the industry's success first associated with its export performance and employment opportunity that it offers to the population. In addition, the country's geographical proximity to Europe also plays a critical role to succeed in the global supply chains (Gereffi, 1999; Thun, 2000; Sturgeon and Lester, 2003). Similarly, WTO (2001) gravity model also substantiate the finding and suggests that proximity to Europe could increase trade in apparel and clothing by a factor of nine.

Magder (2006, p.393) examines further the relative strength of Egypt's textile and apparel industry by employing Revealed Comparative Advantage measures. Based on his finding, both textile and apparel industries are revealed to be highly competitive relative to other export industries in the country. The Revealed Comparative Advantage indice also confirmed that Egypt enjoys the comparative advantage in exports of both commodities. Thus, it is possible to deduce that both industries drives economic growth through global supply chains. While Magder (2006, pp.399-404) identifies various challenges that the country faces and finally proposed potential solutions to strengthen its domestic investors and to attract foreign investors. Some of the challenges include: bureaucratic procedures to set up a new business (ease of do business), regulatory frameworks, good governance (corruption), and infrastructure (ports and road).

As mentioned earlier, a remarkable number of studies focus on the shifts in the pattern of revealed comparative advantage among the Asian and Pacific countries. Rana (1990), for instance, investigates the shift in revealed comparative advantage of fourteen Asia and Pacific countries from 1965 to 1984. He indicates that a significant shift in comparative advantage from Japan to NIEs and from both Japan and the NIEs to the ASEAN-4 countries and their pattern of development supports the "flying geese" hypothesis. Likewise, Watanabe and Kojiwara, 1983; Dowling and Cheang, 2000 find evidence of shifts in comparative advantage from the NIEs to several developing countries, while Cline (1984) and Lutz (1987) find different result.

Regarding shift of comparative advantage from Asia to Africa, Geda and G.Meskel (2007) examine the export performance of clothing and accessories of 13 African countries for the period 1995-2005 to find out evidence of shifting comparative advantage from China and India to Africa. The authors employ flying-geese model and estimated Spearman's Rank Correlation

(SRC) coefficient. The study finds out that there has been a significant shift of comparative advantage from China and India to Africa as the flying-geese theory predicts. It has also indicated that South Africa become the leading goose of the continent followed by Kenya. Similarly, Rogerson (2000); Akinboade and Makina (2005) also find out that South Africa gained comparative advantage in the manufacturing sector. In addition, Akinboade and Makina (2005) finding also suggest that the South Africa become the leading goose in the region and started replicating the flying geese model.

Evidently, much of the existing research is preoccupied with primarily on competitiveness of Asian textile and apparel industry in the global market. While inadequate attention has been given to African countries both in the examination of RCA indices and shifts of RCA from the Asian drivers. Accordingly, this study has paramount significance in the field of economic development since it contributes towards a better understanding of the current level of the global competitiveness of labour-intensive industry (textile and apparel) in selected African countries. It is strongly believed that this study would make a contribution by providing a significant empirical analysis on the level of international competitiveness of Africa's textile and apparel industry. Primarily, this finding contributes to the ongoing debt on Africa growth path through labour-intensive industry and it is also useful for policymakers and industry stakeholders.

4. Data

This section attempts to provide insight on the data sources, briefly describes the study design and the procedure followed to clean the original data. It also forwards the main insights to the quality of the data and briefly explains its limitation.

4.1. Data Description

To compute the Revealed Comparative Advantage (RCA) indices and estimate Spearman Rank Correlation (SRC) coefficient, it is important to collect textile and clothing export from UN COMTRADE for the period 1995 to 2017. Accordingly, the study considers export of both textile and apparel export value data (section 6 and 8) classified according to Standard International Trade Classification (SITC) Rev.3 with two-digit code data. According to UN COMTRADE data classification, textile and clothing are categorized under section sixty five and eighty four respectively.

Author such as Leamer (1984) classified the aggregated two-digit product code 65 (textile sector) as capital intensive goods. On the other hand, Krause (1987) disagree on the factory

intensity of textiles and argues that the textile sector should be classified as labour-intensive commodities. Cutler et al. (2003) coincide with Krasue (1987) as both believe that the textile industry in East Asia have been relatively more labour-intensive than in the advanced economies. Thus, consistent with Krause (1987) and Cutler et al. (2003), the present study also classified the aggregated two-digit product code 65 (textile sector) as labour-intensive commodities. Both textile and clothing commodities (section 6 and 8) with two-digit product categories as classified by the United Nations (UN) are defined in the following table below.

Table 1: Categories of textile and clothing products two-digit product

Two-digit Product Code	Product List/Label
65	Textile, yarn, and fabric
84	Articles of apparel & clothing accessories

Source: UN COMTRADE

According to United Nations Statistical Division (UNSD), the African countries categorized in the following regions: Eastern Africa, West Africa, Central/Middle Africa, Northern Africa and Southern Africa. Initially, the study planned to include three major textile and clothing exporter countries from each regions thereby considering 15 countries in the sample (i.e. 3 countries from each 5 regions). However, due to missing data, the number of major exporter countries representing the respective regions does not show equal representation. For instance, countries like Cameroon, Gabon, and Congo are major exporter countries from the Central Africa region and most of their export value exhibit missing data for the study period. On the other hand, UNSD categorizes 18 countries under Eastern Africa region which accounts nearly half of the total 47 African countries whose export value have been found in the database for the specified period.

Accordingly, the study selects major 6 exporter countries from Eastern Africa, 3 countries from Western Africa, 3 from Northern Africa, and 1 from Southern Africa. The countries selected from Southern Africa region initially were three: South Africa, Lesotho, and Botswana. However, Lesotho and Botswana do not have registered data in SITC Rev.3 for both product categories for the period 1995 to 1999. As a result, these countries have not been considered in the present study.

Consequently, the study has deployed purposive sampling technique to choose 13 countries. It is also believed that employing purposive sampling is the best technique in selecting major textile and apparel exporter countries at continental level towards achieving the main research objective (to analyse whether a shift of RCA from Asia to African countries). Hence, the

countries included in the sample are Mauritius, Madagascar, Kenya, Tanzania, Zimbabwe, Ethiopia, Nigeria, Cote d'Ivoire, Ghana, Morocco, Tunisia, Egypt, and South Africa. These countries constitute 28 percent (in terms of number) of the African countries and take up with 93 percent of the total textile and clothing African export as classified under SITC Rev.3 for the entire study period. It is also to be noted that from the thirteen selected African countries, some of the countries' export value is zero. To reduce the null export value and missing data, the study collects data from the UN COMTRADE by considering the trading partner countries as a reporter country (i.e. mirror imaging). Besides, the study considers the "world" as a partner for the selected African exporters rather than considering major common importer countries for the particular commodities. It is believed that this helps the research to reduce the biasedness of the export value.

On the other hand, the Asian Driver (i.e. China and India) included in the sample as a reference country mainly due to their economy. For instance, the textile and apparel export share of China took up 31.5 percent of the world total export on the sector and creates employment opportunity for more than 6.7 million people. In addition, if we see India's trade share of GDP between 1990 and 2002, it was almost double and increased by more than two-thirds for China. Beyond their export share, both countries are also graduating from light manufacturing to relatively capital intensive industry due to this there is a significant labour shift from low to high productivity sectors. For example, China alone will free up nearly 100 million labour-intensive jobs and creates a vacant market for other emerging economies. Accordingly, based on their contribution in the global market and significant labour shift, therefore the present study considers both countries as reference countries.

4.2. Source Material

The study uses RCA indices and SRC coefficient as its methods to achieve the research objectives. In order to deploy both methods and compute the empirical analysis, the study collects the data from credible international organization databases mainly from United Nations Commodity Trade (UN COMTRADE) and uses Standard International Trade Classification (SITC) Rev.3. This involves collecting the textile and clothing export and total export of the thirteen African countries, China and India, and global textile and clothing export and global total export data from UN COMTRADE database. UN COMTRADE also is known as United Nations International Trade Statistics Database (UNSD).

The United Nations Statistics Division (UNSD) receives annual international trade statistics data by commodities/service categories from more than 170 reporter countries and all export values have been converted into current US dollar. The collected data are transformed into the United Nations Statistics Division standard format with consistent coding and valuation using the processing system (UNSD, 2016). The UN COMTRADE is the biggest database for international trade data and contains over 3 billion data records since 1962.

Previous studies including Geda and G.Meskel (2007); Bezawit (2019) use Standard International Trade Classification (SITC) Rev. 3 to execute international trade related research. This SITC Rev.3 classification groups all commodities into headings in order to make the data ready for analysis. According to United Nations, it is recommended that countries gain benefit if they use SITC classification to record international trade data. One of the main benefit of the classification is that it provides opportunity to compute and compare global trade statistics. Before the implementation of SITC classification, most countries report trade related statistics using Harmonized Commodity Description and Coding Systems (HS). Now a days, the SITC classification revision reaches to the fourth edition and has got confirmation in 2006 from the United Nations Statistical Commission. This study uses SITC Rev.3 because this classification has been used by many countries since 1990 while countries have started recording trade statistic data on the recent SITC Rev.4 trade in 2007.

4.3. Data Limitation

As stated earlier, the study primarily gathers data from reliable databases as UN COMTRADE. But it is inevitable that the data are not entirely free from biasedness, and one can give no guarantee for its eminence. The UN COMTRADE (2016) remarks that nations may not provide exhaustive trade for discretions while it is incorporated at higher commodity level and at total trade value. Furthermore, some scholars claim that data quality from developing countries to be of poor quality. The problem prevails in the data originating from Africa. First and for most, the data are provided by the statistics offices of the respective nations and the statistics authorities of some nations cook the data for political and economic reasons making it erroneous and less dependable (Jerven, 2013). According to Jerven and Johnston (2016, p.2), the problem becomes catastrophic as political and financial significance of number is reflected in scholarly works among others. The study acknowledges that these limitations consequently hamper the precision of the findings to certain degree.

5. Methods

To achieve the research objectives, both descriptive and empirical analysis are undertaken. The descriptive analysis presents the selected African countries export and import values, trade balance, and export share through tables and graphs. This provides a key insight on the countries participation in the global market based on their import and export values. With regards to the empirical analysis, the study employs both Balassa's Revealed Comparative Advantage (RCA) indices and Spearman's Rank Correlation (SRC) coefficient. The former measurement helps to measure the extent of the country's comparative advantage and the later plays a prominent role in examining the shifts of RCA from Asian drivers (i.e. China and India) to Africa.

5.1. Revealed Comparative Advantage (RCA)

The present study employs RCA indices, which was originally employed by Balassa (1965) to measure and analyse countries participation in international trade. Balassa's RCA indices is the most popular and standard measurement to examine whether country's gain comparative advantage or comparative disadvantage in the particular commodities or industries. Accordingly, the method helps to analyse whether the selected African countries textile and clothing sector has gained a comparative advantage in international market or not.

It indicates the importance of the specific industry in the exports of a particular country relative to the country's total export. The indices further examines the trade pattern to identify which industry brings comparative advantage through the comparison of a country's trade profile with the world average. Several researchers including Havrila & Gunawardana, 2003; Karaalp & Yilmaz, 2012; Abtew et al., 2017; Hossain et al., 2017; Rundassa et al., 2019 have used RCA indices to compute and analyse the competitiveness of textile and apparel sectors of different countries.

The RCA measurement has gained general acceptance in the literature with several revision and alteration over the years (Karaalp & Yilmaz, 2012; Kathuria, 2013; Hossain and Thi Van, 2017; Rundassa et al., 2019). The model illuminates that trade patterns can be explained based on post-trade situation and the indices has a range of applications including measuring the relative potential of a country in the production of certain commodities against its trading allies (Balasa, 1965; French, 2014). Of the various economic models of measuring trade flows

illuminating the comparative advantage of trading partners, the RCA indices is simple and powerful to examine whether a country has comparative advantage in the specific industry (French, 2014, p.2). In addition, the Revealed Comparative Advantage indices has the following merits.

- The measurement allows to compare industry/different commodities across industries within a particular country or across countries, and
- The measurement further helps to examine how much of a comparative advantage or disadvantage a country gained through the comparison of the computed index values.

Above all, one of the main merit of employing RCA indices is that it considers the intrinsic advantage of a particular export commodity. It is also in line with the alteration of the country's relative factor endowment and productivity. However, the index cannot differentiate improvements in factor endowments and pursuit of appropriate trade policies by a country (Sanidas & Shin, 2010; Ruan & Zhang, 2014; Hanson et al., 2015).

Balassa's (1965) RCA index for country i and commodity/industry j is calculated as follows:

$$RCAI_{ij} = \frac{\frac{Xij}{Xit}}{\frac{Xwt}{Xwt}} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (1)$$

Where: $RCAI_{ij}$ is revealed comparative advantage indices of country i for commodity j;

X_{ij} represents export commodity j of country i;

X_{it} represents the total export of country i for time t;

X_{wj} represents total amount of world export of commodity j; and

X_{wt} represents total amount of world exports for time t;

Based on equation (1), the numerator represents the share of a country's total exports of a particular commodity in its total exports. On the other hand, the denominator represents the share of world exports of the same commodity in total exports of the world. The index states whether the share of a selected commodity in a country's total export is greater than that of the whole world or group of countries. The index of revealed comparative advantage takes the values between $-\infty$ and $+\infty$. The value might be equal, greater or less than 1. If the $RCAI_{ij} > 1$, indicates country i has a comparative advantage in exports of commodity j because its market

share is larger than the total exports. Besides, if $RCAI_{ij} < 1$, indicates country i has a comparative disadvantage in the export performance of commodity j.

5.2. Spearman's Rank Correlation (SRC)

The Spearman's Rank Correlation (SRC) coefficient is nonparametric technique used to measure the degree of association between two independent variables (Hossain and Thi Van, 2017). Due to its nonparametric feature, the measurement has not been affected by the distribution of the population. We consider this feature as one of the major advantage of the technique. The measurement also works perfectly when there is small sample size and easy to apply. As one of the main limitations of the approach, however the measurement loss information when the data are converted into ranks and become less powerful when the data are normally distributed.

The study, therefore, employs Spearman Rank Correlation (SRC) coefficient to investigate whether shifting of comparative advantage from the Asian drivers (i.e. China and India) to Africa. This in turn helps to identify which African countries undergone a substantial structural change in labour-intensive industry particularly on textile and apparel and behaving in line with the "flying geese" model. Accordingly, the study uses STATA 14 to compute and estimate SRC coefficient.

Several authors like Dowling and Cheang, 2000; Mahmood, 2001; Geda and G.Meskel, 2007; Hossain and Thi Van, 2017 also employed SRC coefficient in order to examine evidence of shifting comparative advantage. The SRC coefficient is extensively used to analyse the degree of association between two variables using equation (2) below.

$$SRC = 1 - \frac{6}{N(N^2 - 1)} \sum_{i=1}^{N} D_{RCAIi} \quad \text{..... (2)}$$

Where: SRC is the Spearman's Rank Correlation coefficient

N is the number of observations or product group categories

D_{RCAIi} is the difference between any pair of RCAI ranking of two countries

6. Results and Discussion

This section begins its analysis by providing a key insight on the countries' engagement in international market through import and export performance and trade balance particularly on textile and apparel sector. On top of that, the descriptive analysis, Revealed Comparative Advantage indices, and Spearman Rank Correlation coefficient results also present and examine the findings in relation to the paper's research objective and the existing literature. The descriptive analysis provides the overall insights on the data sets and the total number of observations that has been used in the present study to execute the empirical analysis. Then, it discusses the findings of Balassa's RCA indices and thoroughly examine its trend under the study period and the study estimates the Spearman's Rank Correlation (SRC) afterwards. Throughout the analysis, it is important to note that the study includes China and India not for comparison instead they are used as reference in relation to the SRC coefficient. Accordingly, to provide an insight on the issue, China's and India's engagement in global trade specifically on labour-intensive industry (i.e. textile and apparel) has been presented before the SRC estimation on Africa.

6.1. Export Share

6.1.1. Textile Sector Export Share

The value of world export of textile commodities increased at an average annual rate of 4.4 percent for the period between 2000 and 2004. The emerging economies textile exports exhibit an increasing trend and their contribution to the world exports increased by 1.5 percentage to 46.7 percent in 2004 (Madagascar Country Study Guide, 2013, pp.231). China, U.S, EU, India, Pakistan, Japan, Republic of Korea and Turkey are the major countries in international textile market. It is believed that the Agreement on Textile and Clothing (ATC) in 2004 enforced by the World Trade Organization (WTO) on the elimination of the quantitative import restrictions has an impact on the textile sector in the international market.

The export share of Africa's textile sector (see figure 2), all except Egypt performed less than 6 percent of their total export. Similarly, Magder (2006, p.393) also indicates that Egypt's textile industry plays a prominent role in the economy with 8 percent of the total national exports in 2003. The author also finds out that the industry exports have increased by 8 percent annually from 1999 to 2003.

But the textile export share of countries like Egypt, Kenya, Madagascar, Morocco, South Africa, and Zimbabwe between 1995 and 2015 exhibited a declining trend. If we take Egypt alone, its textile export share dropped from 17 to 7 percent; Kenya's from 2 to zero percent; Madagascar's from 5 to 2 percent; Morocco's from 4 to 2 percent; South Africa's from 1 to zero percent; and Zimbabwe's from 3 to zero percent. The declining trend of the export share (numerator) for all countries except Zimbabwe might be associated with the significant increase of their total export (denominator). In this regard, the total export of Egypt grew to 84 percent; Madagascar to 83 percent; Morocco to 79 percent; and 65 percent for both South Africa and Kenya.

Besides, the textile export share of Tanzania grew from 1 to 5 percent despite the country's total export share increased significantly by 90 percent from 1995 to 2015. Similarly, Ethiopia's textile export share also shows a 1 percent increment while the country's total export grew by 96 percent.

Figure 2: Textile Sector Export Share

Source: Own computation based on UN COMTRADE database

6.1.2. Apparel Sector Export Share

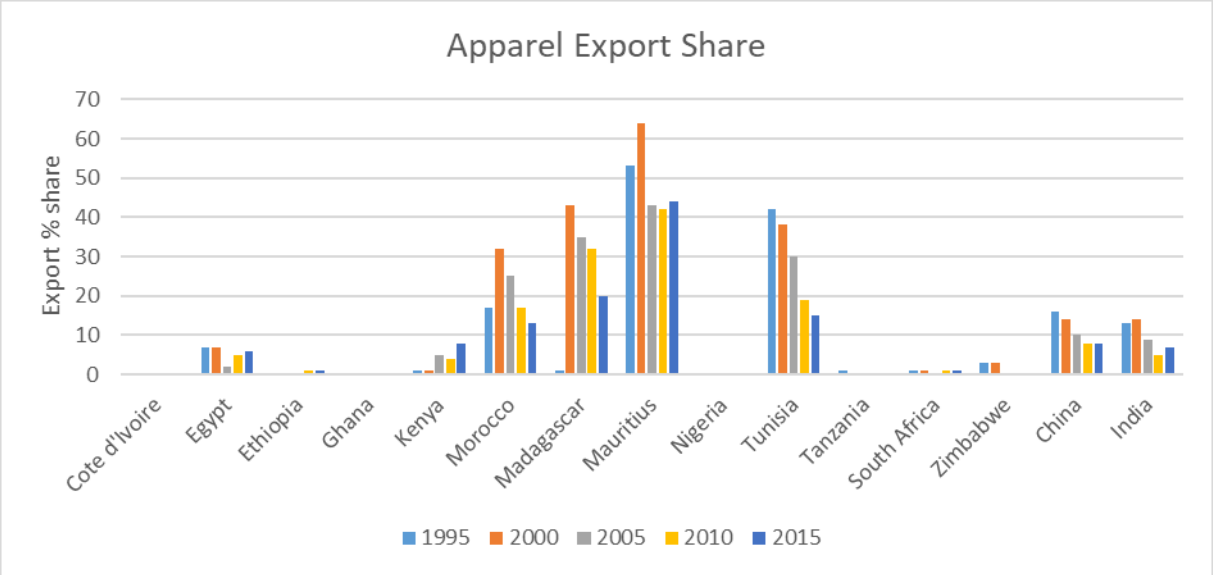
The apparel sector shows a tremendous growth in the global market for the last two decades. Developing countries significantly contributes for this growth. During 1985 developing countries contributed only 8 percent of the total world clothing exports despite their 76 percent export

contribution in 2003 (Madagascar Country Study Guide, 2013, p.232). Market leaders in apparel exports include China, EU, Turkey, Mexico, India, the US and Indonesia. The apparel industry is classified under labour-intensive and provides job opportunities for unskilled labour both in developing and developed countries. These characteristics of the sector has made it attractive as the first step towards industrialization for many poor countries in Africa thereby opening window of opportunity to gain revealed comparative advantage in the industry.

The export share of the apparel sector for Mauritius was more than half of the total export in 1995 while the industry's share declined to 42 percent to the total export in 2005. In line with this finding, Robeck et al. (2012) indicates that Mauritius exports to the U.S. decreased by 49 percent from 2004 to 2007 due to the dissolution of the Multi-Fibre Arrangement (MFA)[3] in 2005.

Countries like Kenya and Madagascar show a tremendous increase in the apparel export share between 1995 and 2015, with the percentage increase from 1 to 8 and 1 to 20 respectively (see figure 3). Besides, the three North African countries export share remain high even if it shows a slight decline from the period 1995 to 2015. The apparel and clothing exports of Egypt have increased at 5 percent annually from 1999 to 2003 (Magder, 2006, p.393).

Figure 3: Apparel Sector Export Share



Source: Own computation based on UN COMTRADE database

[3] It imposes quota on the amount developing countries could export to developed countries

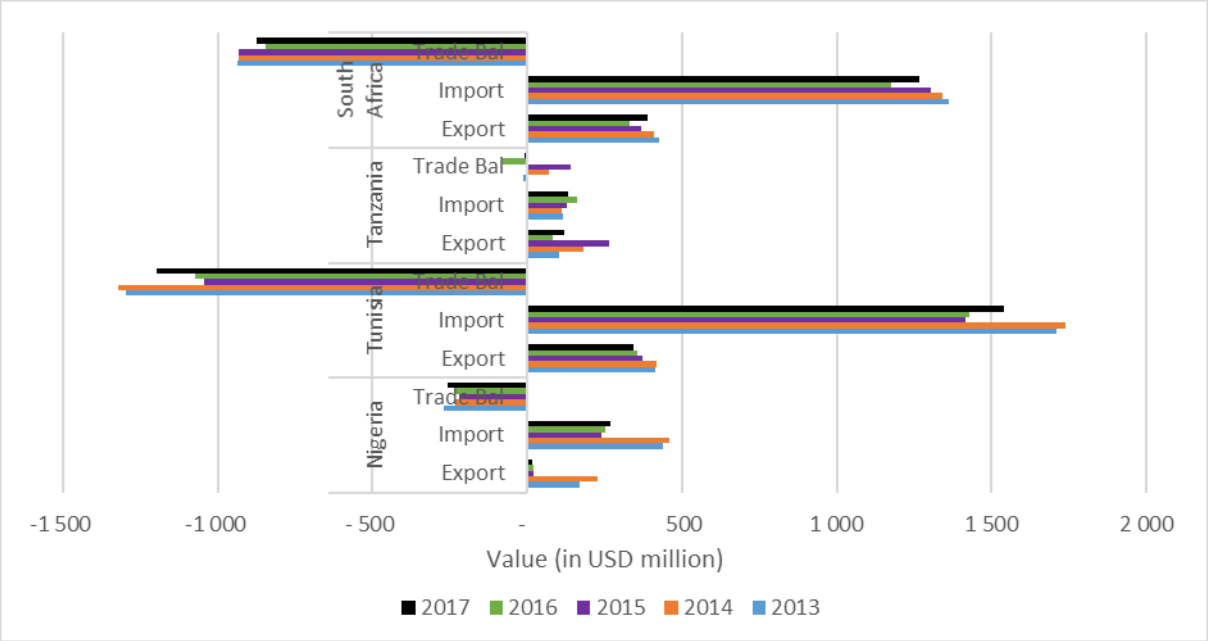
6.2. Export, Import and Trade balance

Before diving into the discussion of RCA indices and the estimation of SRC coefficients of the selected African countries, it is important to analyse and briefly overview the trends of the country's export, import and trade balance. In what follows, discussions on the export performance of the textile and apparel sector dwell.

6.2.1. Export Performance of Textile Sector

The analysis has been made based on the aggregate two-digit product category number 65. The product category encompasses textile yarn, cotton fabrics, man-made woven fabrics, knit fabrics, and floor coverings. Figure 4 presents textile export, import and trade balance from the period 2013 to 2017. The overall result displays all countries except Tanzania exhibit trade deficit (refer Appendix A to see each countries result). However, it is important to note that countries like Egypt, Morocco, Tunisia, and South Africa exhibit a negative trade balance due to the countries higher import value in comparison with other countries in the sample.

Figure 4: Textile Export, Import and Trade Balance, 2013-2017 (in USD million)



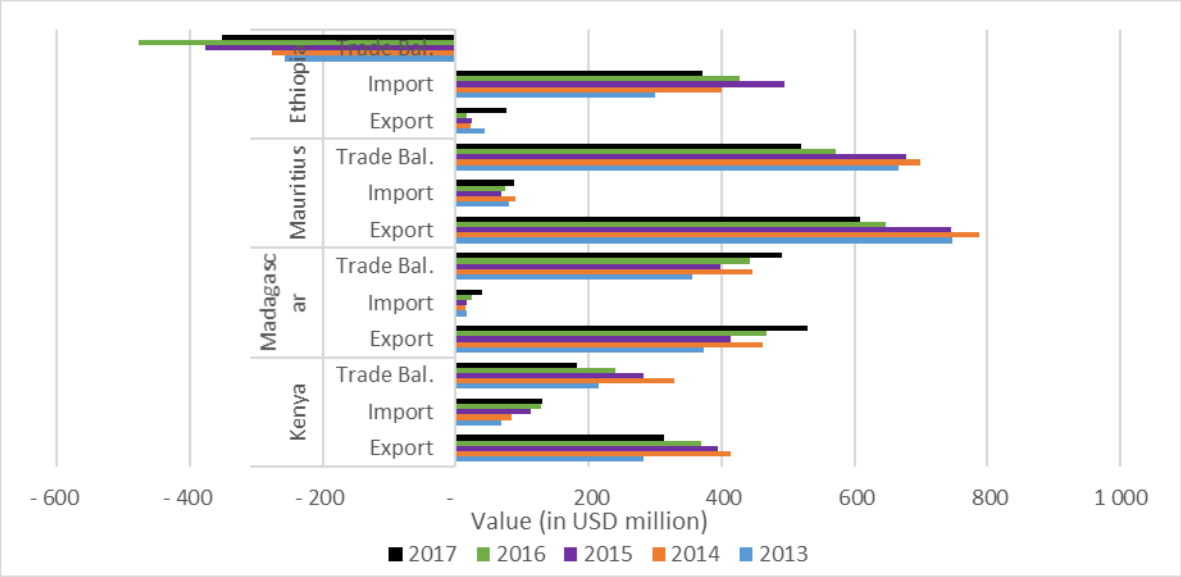
Source: Own computation based on UN COMTRADE database

6.2.2. Export Performance of Apparel Sector

The analysis has been made based on the aggregate two-digit product category number 84. This product category includes: men or women woven clothes, men or women knit clothes, articles of apparel, and clothing accessories. To depict the export trend of the selected African

countries import and trade balance, the following analysis has been executed for the period 2013 to 2017. Counties such as Cote d'Ivoire, Ethiopia, Ghana, Nigeria, Tanzania, South Africa, and Zimbabwe experienced a negative trade balance (Appendix B). The trade deficit exhibited for countries such as Ethiopia and South Africa mainly associated with their higher import value. However, due to the objective and scope of the study, the overall analysis does not give emphasis on import value of the sample countries.

Figure 5: Apparel export, import and trade balance



Source: Own computation based on UN COMTRADE database

6.3. Descriptive Statistics

This subsection primarily provides a snapshot of the selected African countries and Asian driver's descriptive statistics for the aggregate product category number 65 and 84. Table 2 shows the total number of observation, RCA indices mean, and RCA indices minimum and maximum number. The total number of observations included in the analytical sample are 345 (i.e.15 selected countries x 23 study period) for each aggregated product categories. In product category 65 (i.e. textile), RCA indices considered as an outlier's for countries such as Ghana, Madagascar, and Zimbabwe for the year 2006, 1999 and 2008 respectively. It is believed that outliers can depict misleading results and lead to a wrong conclusion. Despite all this, to drop the observations might not be a feasible solution and in return might affect the whole results of the study especially dealing with a small sample size. Meanwhile, it is also believed that Spearman Rank Correlation is less sensitive to strong outliers because Spearman limits the outlier to the value of its rank. Thus, the study did not drop any observation from the analytical samples.

Table 2: Descriptive statistics of analytical samples

Country	Prod.65 Obs. (tot.345)	Prd.84 Obs. (tot.345)	Prod.65 RCAI mean	Prod.84 RCAI mean	Prod.65 RCAI min	Prod.65 RCAI max	Prod.84 RCAI min	Prod.84 RCAI max
Cote d'Ivoire	23	23	0.4	0.1	0.2	0.6	0.0	0.1
Egypt	23	23	2.9	1.8	1.0	4.7	0.4	3.1
Ethiopia	23	23	0.5	0.7	0.1	0.9	0.1	1.3
Ghana	23	23	1.7	0.1	0.0	3.4	0.0	0.1
Kenya	23	23	0.5	1.7	0.2	0.8	0.1	3.2
Madagascar	23	23	5.7	5.5	0.7	10.7	0.2	10.7
Mauritius	23	23	1.7	16.1	0.3	3.0	11.2	20.9
Morocco	23	23	1.4	7.7	1.4	1.3	4.8	10.6
Nigeria	23	23	0.2	0.0	0.0	0.4	0.0	0.0
South Africa	23	23	0.3	0.3	0.2	0.4	0.1	0.4
Tanzania	23	23	1.4	0.4	0.3	2.4	0.1	0.6
Tunisia	23	23	2.7	9.7	0.8	1.9	5.3	14.0
Zimbabwe	23	23	1.8	0.6	0.1	3.4	0.0	1.1
China	23	23	2.7	4.1	2.4	3.0	2.7	5.4
India	23	23	4.2	3.3	3.1	5.3	2.0	4.6

Source: Own computation based on UN COMTRADE database

6.4. Revealed Comparative Advantage Index Results

6.4.1. RCAI for Apparel and Clothing

The apparel and clothing industry remain attractive for emerging economies like Africa. This is mainly because the industry requires low-capital and high-labour (Klepper and Graddy, 1990; Magder, 2006, p.390). To analyse the trend of Balassa's Revealed Comparative Advantage indices, this study considers clothing and apparel product categories under labour-intensive industries (see Owns and Woods, 1997; Cutler et al., 2012; Dinh and Monga, 2013; van Zyl and Matswalela, 2017). Thus, this subsection attempts to address the main research objective of the study i.e. examining whether the selected African countries gained a comparative advantage on the apparel and clothing industry.

According to Balassa's (1965) RCA indices, if the share of a selected product group in a country's total export is greater than that of the whole world selected product group and total exports, then it is possible to conclude that the country have a comparative advantage over

others. A country is considered to have a comparative advantage, if the RCA indices result is greater than 1 and it's disadvantaged otherwise. Consistent with Geda and G.Meskel (2007), in the period 1995-1999 the present study also finds that the RCA indices of most African exporters are less than 1, which indicates that the countries have comparative disadvantage in producing and exporting apparel and clothing commodities. While in the same period countries such as Egypt, Morocco, Mauritius, and Tunisia had gain comparative advantage in the sector. Similarly, Magder (2006, p.393) and Tang (2015) also find out that these countries gain comparative advantage on the apparel and clothing industry in the global market.

The finding further reveals that Mauritius has higher comparative advantage indices than any other country in the sample within the study period (see table 3 and Appendix C for each year). The success path of the country is primarily associated with its developed Special Economic Zones (SEZs) since the 1970s with higher RCA indices. This SEZs are a model for success, particularly in terms of export diversification and integration into the Global Clothing Value Chains (GCVC) (Tang, 2015). Recently, the country's RCA indices, on the contrary, shows a fluctuating trend followed by a slight decline (see table 3 and Appendix C).

Morocco had a higher The RCA indices which started to increase significantly since 1998. During 1995, the RCA indices of Morocco was 5.38 and reached to 10.57 in 1998. Similar to Mauritius, Morocco's revealed comparative advantage on apparel and clothing started to decrease particularly after 2015 (see Appendix C for each year RCA indices). The three Northern African countries have enjoyed comparative advantage over others due to their geographical proximity to Europe which in turn plays important role to get shorter lead times[4] (see for example WTO, 2001; Magder, 2006, p.425).

Furthermore, between 1995 and 1999, RCA indices of Madagascar was almost nil i.e. the country did not gain comparative advantage in exporting apparel and clothing products. After 2000 the country's RCA indices has shown a significant increase and has grown to 13.94 (see Appendix C). Before 2005 Kenya's RCA indices was less than 1 though it started to rise after 2005 gesturing an increasing trend until the end of the study period. Consistently, Fukunishi and Yamagata (2014, pp.25-26) finding also suggest that both Kenya and Madagascar had gain comparative advantage in the production and export of the apparel and clothing industry.

Table 3 also presents the RCA indices of South Africa's apparel sector relative to other selected countries. This table indicates that the RCA indices of South African apparel sector

[4]Lead time had direct impact on customer satisfaction and provides a competitive edge for product manufacturing companies.

shows far below 1, with the highest indices of 0.29 in 2000-2004 and lowest of 0.09 in 2005-2009. Furthermore, the RCA indices began to show incremental trend for the period between 1995 and 2004, while in the post-2005 it started to decline. This finding is coinciding van Zyl and Matswalela (2017) however it is inconsistent with Geda and G.Meskel (2007) and Rogerson (2000).

On the other hand, Tunisia exhibit higher RCA indices over others throughout the study period. Even if the country's RCA indices is higher, its trend shows a declining trend. The RCA indices of China and India decreased by half if we compare the results for 1995 and 2017. This might indicate that emerging economies including African countries have been catching up. The declining trend of the comparative advantage of successful countries in the growing industry has been due to the economy's endowments structure upgrades (Krugman 1987; Grossman and Helpman 1991; Lin and Chang, 2009; Dinh and Monga, 2103, p.5).

In general, based on table 3, it is possible to identify African countries that exhibit RCA indices greater than 1. These countries include Egypt, Kenya, Morocco, Madagascar, Mauritius, and Tunisia. For instance, Egypt has gain comparative advantage throughout the study period except for the period 2005-2009. Besides, Kenya has began to gain comparative advantage after 2005 and Madagascar has gained comparative advantage throughout the study period except for the period 1995-1999. On the other hand, Morocco, Mauritius, and Tunisia's apparel and clothing industry had gained comparative advantage over others throughout the study period. Thus, this finding would erode the pessimistic view (Thorbecke and Ouyang, 2016; Frankema and van Waijenburg, 2018) on the overall African countries growth path towards the structural transformation through labour-intensive industry. The present finding also diverge from both scholars' conclusion that portrays Africa's labour-intensive industry as being not in a position to gain comparative advantage stating that the market has already saturated with the Asian commodities.

Table 3: RCAI for Apparel and Clothing Sector

Exporter Country's	RCAI for Aggregate Apparel & Clothing Commodities				
	1995-1999	2000-2004	2005-2009	2010-2014	2015-2017
Cote d'Ivoire	0.05	0.05	0.01	0.01	0.01
Egypt	2.42	1.54	0.97	1.95	2.00
Ethiopia	0.03	0.05	0.08	0.40	0.62
Ghana	0.03	0.02	0.04	0.02	0.02
Kenya	0.18	0.13	2.16	2.26	2.53
Morocco	7.25	10.41	8.87	6.24	4.67
Madagascar	0.32	10.09	16.09	10.59	7.24
Mauritius	17.24	17.99	14.99	17.55	13.69
Nigeria	0.00	0.00	0.00	0.00	0.00
Tunisia	13.11	12.31	9.34	7.15	5.75
Tanzania	0.36	0.14	0.11	0.13	0.35
South Africa	0.22	0.29	0.09	0.21	0.20
Zimbabwe	0.77	0.36	0.47	0.05	0.10
China	5.08	4.13	3.62	3.32	2.69
India	4.13	3.79	2.82	2.09	2.43

Source: Own computation based on UN COMTRADE database

6.4.2. RCAI for Textile

Some scholars categorize the textile industry as capital intensive, and the present study conforming to Leamer (1984) and Cutler et al. (2003), classifies it as labour-intensive industry to analyse the trends of Balassa's Revealed Comparative Advantage indices. This subsection attempts to present the discussion of the main research objective of the study: to inspect whether the selected African countries gained a comparative advantage on the textile industry.

In general, if we compare the magnitude of RCA indices of the apparel sector with the textile sector, most countries' RCA indices are found to be smaller. In the initial study period, Madagascar gained comparative advantage on the textile sector over others and the country exhibited the highest RCA indices. However, for the period 2000 and 2004, the country lost its comparative advantage on the sector. After 2010 Madagascar has regained its comparative advantage on the sector although it cannot reach the maximum RCA indices that exhibited in 1995-1999.

Besides, Egypt has depicted the highest RCA indices which has slightly declined from the period 2000-2004 to 2005-2009 (see table 4 & Appendix D for each year RCA indices). Consistently, RCA analysis by Magder (2006, p.393) shows that Egypt has gained comparative advantage in exports of the textile commodities. After 2010, the country has regained its comparative advantage on the sector even though it cannot reach to the maximum RCA indices that the country displayed in the initial study period.

Similar with the apparel industry, South Africa's textile sector RCA indices also exhibit far below 1 throughout the study period, with the highest indices of 0.38 in 2000-2004 and lowest of 0.25 in 2015-2017. Based on RCA indices, it is possible to deduce that South Africa has had comparative disadvantage in both textile and apparel sectors. This finding is in line with van Zyl and Matswalela (2017). The authors also compare South Africa's RCA indices indices of textile with countries such as Egypt, Madagascar, Mauritius, and Morocco and their finding is consistent with the present study. They have also found out that South African textile sector appears to be performing the worst against fellow African countries. Barnes (2005) attributed the poor performance of the country with its trade liberalization and restructuring of the industry in the 1990s, which led to a rise in unemployment and shut down of factories.

The period between 1995-1999 and 2000-2004, Morocco lost comparative advantage on the textile sector. However, after 2005 the country gain comparative advantage throughout the study period. This finding is consistent with van Zyl and Matswalela (2017). Similarly, Tanzania also appears to have a comparative disadvantage until the period 2000-2004 and then the country started to gain comparative advantage after the year 2005.

Table 4 presents Ethiopia's textile sector RCA indices in relation to other selected African countries. Based on the finding, the country appears to have a comparative disadvantage in the sector. Similarly, research finding of Dinh et al. (2012) also claim that Ethiopia's competitiveness in the sector has been hindered by poor logistics which in turn reverses the country's labour cost advantage. On the contrary, Rundassa et al. (2019) Balassa's RCA indices suggest that Ethiopia gained comparative advantage on the textile sector. The Balassa's RCA indices of their study also indicate that the country gained comparative advantage on textile sector than the apparel industry until 2013 which has declined afterwards. The reason for the decline according to Dinh et al. (2012) is attributed to the capital-intensive nature of the sector.

On the other hand, Mauritius is the only country from the sample that shows the incremental trend of RCAI throughout the study period. During the initial study period, the country's RCAI was 1.69 though it significantly has increased and has reached to 2.89 during 2015-

2017. The RCA indices was less than one for Tunisia during 1995-2000 that indicates the comparative disadvantage on the textile sector. The country has regained comparative advantage with a fluctuating trend of the RCA indices in the post-2005 period.

After the period 2000-2004, India registered a declining trend of comparative advantage (table 4 and Appendix D). Consistently, Krugman (1987); Grossman and Helpman (1991); Lin and Chang (2009); Dinh and Monga (2103, p.5) suggest that the declining trend of the comparative advantage of the successful countries in the growing industry mainly is attributed to the economy's endowments structure upgrades.

According to table 4, it is important to summarize the main finding of the study by identifying the countries that exhibit RCA indices greater than 1. In general, countries like Egypt, Morocco, Madagascar, Mauritius, Tunisia, and Tanzania had gained comparative advantage in the textile industry over others. Throughout the study period, Egypt, Madagascar, and Mauritius exhibit RCA indices greater than 1. Furthermore, Morocco and Tanzania has gained comparative advantage in the textile industry after 2005. On the other hand, Tunisia's textile industry has registered comparative advantage throughout the study period except for the period 1995-1999. Similar to the apparel industry, the textile industry has confirmed that African economies have the potential to compete in the international market through its labour-intensive industry. Accordingly, the present finding is disagrees with the claim by Thorbecke and Ouyang (2016) and Frankema and van Waijenburg (2018). The present finding also presumes labour-intensive industrialization growth path might not seems harder to realize for African economies even though the Asian manufacturing is still gaining prominence.

Table 4: RCAI for Textile Sector

Exporter Country's	RCAI for Aggregate Textile Commodities				
	1995-1999	2000-2004	2005-2009	2010-2014	2015-2017
Cote d'Ivoire	0.43	0.44	0.24	0.34	0.36
Egypt	4.43	2.40	1.50	3.02	3.07
Ethiopia	0.14	0.39	0.45	0.62	0.50
Ghana	0.12	0.18	0.80	0.15	0.14
Kenya	0.64	0.60	0.70	0.40	0.28
Morocco	0.90	0.70	1.08	1.05	1.04
Madagascar	5.35	0.47	1.49	1.71	1.07
Mauritius	1.69	1.96	1.96	2.67	2.89
Nigeria	0.07	0.08	0.03	0.17	0.02
Tunisia	0.83	1.31	1.63	1.52	1.40
Tanzania	0.44	0.75	1.62	1.52	1.67
South Africa	0.36	0.38	0.29	0.27	0.25
Zimbabwe	0.81	0.63	1.18	0.34	0.18
China	2.59	2.59	2.74	2.88	2.67
India	4.80	4.82	3.67	3.29	3.39

Source: Own computation based on UN COMTRADE database

6.5. Spearman Rank Correlation Coefficient Result

To evaluate the dynamic shifts of comparative advantage, Spearman Rank Correlation (SRC) coefficient is estimated between the selected African countries and the Asian drivers (i.e. China and India). It also examines whether there is an association between the trends of RCA indices of Africa and the Asian drivers. This leads in turn to address the main research aim of the present study: to investigate whether there is an evidence of shifting comparative advantage from the Asian drivers to Africa. Several researchers (including Dowling and Cheang, 2000; Rana, 1990; Geda and G.Meskel, 2007) employed SRC as a method to analyse the degree of association between the two variables. This study selects 13 representative from Africa, on the one hand and China and India, on the other, in order to estimate SRC coefficient for the period 1995-2017. In what follows, the subsections 6.5.1 and 6.5.2 compare the findings of the present with few existing researches.

As mentioned earlier, the study considers the Asian drivers as reference country and examines the association between the selected African RCA indices vectors with the Asian drivers. In

order to examine whether RCA shifting from China and India to the selected 13 African countries, the study has identified the labour-intensive industry particularly the textile and apparel sector[5] in which the African countries gained (or increased its) comparative advantage. With regards to the interpretation on the sign of the SRC coefficients, negative sign with statistical significance indicates that the recipient countries replace the source recipient country thus it implies similar pattern of changes in comparative advantage. Accordingly, this provides support for the "flying geese" model. Besides, a positive and statistically significant coefficient implies that a pair of countries comparative advantage are moving in the same direction and there are complementary export expansion between the pair rather than a "flying geese" relationship (Dowling and Cheang, 2000, p.452).

6.5.1. SRC coefficients for Apparel and Clothing

This subsection discusses the results of the estimated coefficients of SRC in relation to China and India. In table 5, the third and the fourth columns indicate the estimated SRC coefficients for the selected African exporters with China, and the P-values respectively. Besides, the fifth and the last columns indicates the estimated SRC coefficient for African exporters with India, and the P-values respectively. The SRC result reveals that Kenya, Madagascar, Morocco, and Tunisia are African exporter with negative coefficients and statistically significant values (see table 5).

The SRC coefficient between Kenya and China is negative 0.717 and between Kenya and India is negative 0.657; and the coefficients are statistically significant at 1 percent. The estimated coefficient between Madagascar and China, and Madagascar and India show negative 0.702 and negative 0.531 respectively, and both statistically significant at 1 percent. The estimated SRC coefficient between Morocco and India exhibited negative 0.434 and significant at 5 percent. Moreover, Tunisia's RCA vector are also negatively correlated with both China and India. Thus, all the significant negative correlations indicating strongly that comparative advantages has indeed shifted from the Asian Drivers (China and India) to Kenya, Madagascar, Morocco, and Tunisia. Thus, the present finding makes Kenya the "leading goose" followed by Madagascar, Tunisia, and Morocco respectively on the apparel industry in Africa. This finding strongly supports Lin (2011), which concludes African economies would gain comparative advantage as China's and India's graduation from low-skilled manufacturing. Based on his finding, China

[5] Unlike Geda and G.Meske (2007), the present study considers the aggregate two-digit product category (i.e. textile and apparel) instead of three-digit disaggregated one product category i.e. clothing accessories. This because it is believed that the finding that rely only on one product seems to lead to a narrow conclusion and impossible to generalise the result on labour-intensive industry particularly on textile and apparel sector.

alone free up nearly 100 million labour-intensive manufacturing jobs, which in turn opens up new industrialization opportunity for low-income economies like Africa.

The findings further suggest that these countries also undergone a substantial structural change in labour-intensive industry particularly on apparel and clothing and behaving in line with the "flying geese" economic development model. In addition, those African exporter, which are latecomers in economic development, show signs of catching with the Asian Drivers. Congruent with Geda and G.Meskel (2007), the present study confirmed that there is evidence of shifting comparative advantage from China and India to Kenya. But, it diverge from Geda and G.Meskel (2007) in that it has confirmed a shift of revealed comparative advantage from the Asian driver to Madagascar.

On the other hand, Mauritius and South Africa estimated coefficients displayed a positive correlation between both the Asian Drivers. The SRC between Mauritius and China is 0.472 and statistically significant at 5 percent. Besides, South Africa and China SRC is 0.447 and statistically significant at 5 percent and the estimated SRC coefficient between South Africa and India is 0.468 and statistically significant at 1 percent. This implies there is no evidence of shifting RCA from the Asian drivers to South Africa. Here, it is also important to note that South Africa's RCA indices for the apparel industry is less than 1 for the entire study period (see table 3), reflecting that the country has comparative disadvantage in apparel and clothing industry for the past 23 years. In this regard, the present finding is disagrees with Akinboade and Makina (2005); and Geda and G.Meskel (2007), and does not indicate South Africa as a "leading goose" in the African region.[6]

Furthermore, Mauritius has also exhibit high SRC coefficient which suggest no evidence of shifting RCA from China and India, even though the country exhibited higher RCA indices over others. High SRC coefficient for Mauritius, advanced economy in sector, mainly attributed to the early development and expansion of the apparel sector in the country, which in turn did not change the structure of comparative advantage between 1995 and 2017. This supports the concept of Krugman (1987); Grossman and Helpman (1991); Lin and Chang (2009); Dinh and Monga (2103, p.5) which suggest that the declining trend of the comparative advantage of the successful countries in the growing industry mainly attributed to the economy's endowments structure upgrades.

[6] Difference in findings displayed in Geda and G.Meskel (2007) and the present study might be associated with difference in the study period covered in both and the product category used to execute the research. The former considers the study period from 1995 to 2005 and the authors used the disaggregated product category three-digit i.e. clothing accessories.

Table 5: SRC coefficients for Apparel and Clothing Sector

No.	African Exporter countries	Asian Driver			
		China		India	
		Spearman's rho	P-value	Spearman's rho	P-value
1	*Cote d'Ivoire*	0.615	0.602	0.737	0.600
2	*Egypt*	0.219	0.313	0.278	0.199
3	*Ethiopia*	-0.864	0.800	-0.878	0.700
4	*Ghana*	-0.021	0.924	0.178	0.593
5	*Kenya*	-0.717***	0.000	-0.657***	0.001
6	*Madagascar*	-0.702***	0.000	-0.531***	0.009
7	*Mauritius*	0.472**	0.023	0.300	0.164
8	*Morocco*	-0.260	0.230	-0.434**	0.036
9	*Nigeria*	0.354	0.098	0.225	0.302
10	*South Africa*	0.447**	0.033	0.468***	0.002
11	*Tanzania*	0.284	0.190	0.400	0.058
12	*Tunisia*	-0.424**	0.044	-0.599***	0.003
13	*Zimbabwe*	0.664	0.601	0.074	0.600

Note: ***, **, * represent statistical significance at 1%, 5%, and 10% level, respectively for the estimated coefficient in Spearman's Rank Correlation
Source: Own calculation based on UN COMTRADE database

6.5.2. SRC coefficients for Textile

Table 6 shows the SRC coefficient results for the textile sector. It has been indicated that there is evidence of shifting RCA from India to African exporter such as Mauritius, Morocco, Tunisia, and Tanzania in particular. Unlike the apparel and clothing sector, the SRC result does not show evidence of shifting comparative advantage from China. This might be attributed to China's RCA indices for textile does not show a declining trend rather it shows constant trend throughout the study period. While if we see the trend of RCA indices for India, it shows a slight decreasing trend from 1995 to 2017 (see table 6 and Appendix D).

On the other hand, the SRC estimated coefficients exhibited that there is a positive correlation between India and South Africa. The SRC between South Africa and India is 0.733 and statistically significant at 1 percent. If we see South Africa's RCA indices, the country has comparative disadvantage in this labour-intensive industry for the entire study period. Thus, it is possible to deduce that there is no evidence of shifting RCA from the Asian Drivers to South Africa.

The SRC coefficient between Mauritius and India is negative 0.623 and it is statistically significant at 1 percent. The estimated coefficient between Morocco and India is negative 0.44 and statistically significant at 5 percent. Furthermore, Tunisia's and Tanzania's RCA vector are negatively correlated with India and both coefficients are statistically significant at 1 percent. Hence, all the significant negative correlations indicates that comparative advantage has indeed shifted from India to Mauritius, Morocco, Tunisia, and Tanzania. Thus, this finding identifies Mauritius as "leading goose" followed by Tunisia, Morocco and Tanzania respectively on textile industry in the continent. The findings of the present study also suggests that these countries undergone a substantial structural change in labour-intensive industry particularly on textile sector and behaving in line with the "flying geese" model. The present finding is consistent with Lin (2011), which concludes African economies would gain comparative advantage due to China's and India's graduation from low-skilled manufacturing. Due to both country's graduation, African countries labour-intensive would get a room to penetrate and compete in the global market.

Table 6: SRC coefficients for Textile Sector

		Asian Driver			
		China		**India**	
No.	**African Exporter countries**	**Spearman's rho**	**P-value**	**Spearman's rho**	**P-value**
1	*Cote d'Ivoire*	-0.591	0.803	0.228	0.295
2	*Egypt*	-0.147	0.502	0.128	0.562
3	*Ethiopia*	0.509	0.613	-0.517	0.712
4	*Ghana*	-0.105	0.633	-0.138	0.532
5	*Kenya*	-0.343	0.109	0.390	0.066
6	*Madagascar*	0.194	0.382	0.053	0.809
7	*Mauritius*	0.333	0.121	-0.623***	0.002
8	*Morocco*	0.707	0.900	-0.440**	0.036
9	*Nigeria*	0.376	0.077	-0.023	0.917
10	*South Africa*	-0.702	0.902	0.733***	0.000
11	*Tanzania*	0.480	0.820	-0.067***	0.000
12	*Tunisia*	0.579	0.904	-0.537***	0.008
13	*Zimbabwe*	-0.195	0.373	0.294	0.173

Note: ***, **, * represent statistical significance at 1%, 5%, and 10% level, respectively for the estimated coefficient in Spearman's Rank Correlation

Source: Own calculation based on UN COMTRADE database

7. Conclusion

This paper has sought to bring the ongoing debate over the African development path into the structural transformation through labour-intensive industry. The contribution I have quested for in this study leads to argue that labour-intensive export-led industrialization is anticipated for Africa even if the Asian drivers labour-intensive commodities secures prominence in the global market. To contend with the main research objectives, the present study aims to examine the extent of comparative advantage for selected African countries on labour-intensive industry. It also aims to investigate whether there is an evidence of shifting comparative advantage from the Asian drivers to the African continent.

Based on both RCA indices and SRC finding, it is possible to conclude that African countries have been competing in the global market and able to maintain comparative advantage for longer periods. It also implies that late comers (Africa) penetrate in international market in which they have comparative advantage by adopting production method and technology from the former countries (Asian drivers). The former countries (Asian drivers) comparative advantage in that specific industry shows either a constant or a declining trend, because the former countries have been shifting from low-skilled manufacturing to relatively more capital intensive industry which requires high-technology and skilled manpower.

However, there are various challenges that labour-intensive industry in Africa has been facing. This in turn hinders its growth pathway towards structural transformation and affects trade competitiveness. In general, African countries gain cost advantage in labour-intensive industry due to the lower labour costs. However, microeconomic factor including logistics might offset the labour cost advantage and lead to higher total production cost. There are also other microeconomic issues that affect labour-intensive investment in Africa, such as export incentive, trade logistics, the availability of electricity, and access to land and financing. Even if the above mentioned issues are beyond the scope the study, it needs to be noted that they are crucial for Africa's growth pathway towards the structural transformation through labour-intensive industry.

In general, it is possible to conclude that the existing research is preoccupied primarily on the competitiveness of Asian labour-intensive industry. While inadequate attention has been given to Africa's labour-intensive industry comparative advantage and its competitiveness in the global market. Thus, the present study has a paramount significance in the field of

economic development since it contributes towards a better understanding of the current level of the global competitiveness of labour-intensive industry (textile and apparel) in selected African countries. It is strongly believed that this study would make a contribution by providing a significant empirical analysis on the level of international competitiveness of Africa's textile and apparel industry. Primarily, the findings contributes to the ongoing debt on Africa growth pathway towards structural transformation through labour-intensive industry and it is also useful for policymakers and industry stakeholders.

Reference

Abtew, M., Kumari, A., and Moorthy, S. (2017). Export Performance and Revealed Comparative Advantage of Developing and Developed Economies for Textile Fibers or Fabrics. *Journal of Global Economics*, vol. 5, no. 3

Aghion, P. (2009). Some Thoughts on Industrial Policy and Growth. Document de Travail 2009-09. Observatoire Francais des conjonctures economiques. Scieinces Po. Paris. Access online: http://www.ofce.sciences-po.fr/pdf-dtravail/WP2009-09. Pdf [Access 14 March 2020]

Akamatsu, K. (1961). A Theory of Unbalanced Growth in the World Economy. Weltwirtschaftliches Archive, 86, pp.196-217

Akamatsu, K. (1962). A Historical Pattern of Economic Growth in Developing Countries, *Journal of Developing Economies*, vol. 1, no. 1, pp. 3-25

Akinboade, O., and Makina, D. (2005). The Flying Geese Model and Africa's Economic Development: What are the Prospects that South Africa will Play a Leading Role? *African Finance Journal*, vol. 7, issue. 7, pp. 49-69

Alla A, Yeti LP, Sri Mulatsih, Anggi M, M Si. (2015). Comparative Advantages and Export Performance of Indonesian Fiber Industry Product and Some Major Exporter Countries in the World Market. *Journal of Economics and Development Studies*, no. 3, pp. 173-191

Amsden, A. H. (1989). Asia's Next Giant, New York and Oxford: Oxford University Press

Alemayehu, Geda., and Atnafu, G.Meskel. (2007). China and India Growth Surge: Is it a curse or blessing for Africa? The Case of Manufactured Exports, Published by Blackwell Publishing Ltd

Asian Development Bank. (2015). Available online: https://www.adb.org/news/features/new-look-special-economic-zones [Access 12 March 2020]

Assefa, M. (2018). The Determinants of the Export Competitiveness of the Coffee Industry in Ethiopia. Unpublished MA Thesis: Addis Ababa University

Arbache, J., Go, D., and Page, J. (2008). Is Africa's Economy at a Turning Point? Policy Research Working Paper 4519, The World Bank, African Region

Balassa, B. (1965). Trade Liberalization and 'Revealed' Comparative Advantage, *The Manchester School of Economics and Social Studies*, vol. 33, no. 2, pp. 99-123

Balassa, B. (1977). Revealed Comparative Advantage Revisited an Analysis of Relative Export Shares of the Industrial Countries, 1953-1971, *Manchester School of Economics and Social Studies*, vol.43, pp.327-344

Balassa, B. (1979). The Changing Pattern of Comparative Advantage in Manufactured Goods, *The Review of Economics and Statistics*, vol.61, pp.259-265

Bangladesh Garments Manufacturers Association (BGMEA). (2016). About garment industry of Bangladesh. Available online: http://www.bgmea.com.bd/home/about/AboutGarmentsIndustry [Accessed 13 March 2020]

Bender, S. and Kui-Wai Li. (2002). The Changing Trade and Revealed Comparative Advantages of Asian and Latin American Manufacture Exports. Center Discussion Paper No. 843 Yule University: Economic Growth Center

Bezawit, A. (2019). An Assessment of Factors Determining Intra-Industry Trade between Ethiopia and Sub-Saharan Africa Countries. Publish MA Thesis, Lund University

Bheenick, R. and Schapiro, O. (1991). The Mauritian Export Processing Zones, *Public Administration and Development*, vol. 8, no.3, pp. 263-267

Bonaglia, F. and Fukasaku, K. (2003). Export Diversification in Low-Income Countries: An International Challenge after Doha. OECD Development Centre

Cardoso, E. and Helwege, A. (1995). Latin America's Economy. Cambridge, MA: MIT Press

Chang, H. (2003). Kicking Away the Ladder: Development Strategy in Historical Perspective, London: Anthem Press

Chenery, Hollis B. (1980). Interatctions between Industrialization and Exports. *American Economic Review*, vol.70, no. 2, pp.281-287

Cline, W. (1984). Exports of Manufactures from Developing Countries: Performance and Prospects for Market Access, Washington, DC: Brookings Institution

Commission on Growth and Development. (2008). The Growth Report: Strategies for Sustained Growth and Inclusive Development. Washington, DC: World Bank. https://openknowledge.worldbank.org/handle/10986/6507

Cutler, H., Berri, David J., Ozawa,T. (2003). Market recycling in labour-intensive goods, flying-geese style: an empirical analysis of East Asian exports to the U.S. *Journal of Asian Economics*, vol.14, pp. 35-50

Dani, Rodrik. (2016). An African Growth Miracle? *Journal of African Economies*, pp. 1-18

Dinh, H., and Monga, C. (2013) Light Manufacturing in Tanzania: A Reform Agenda for Job Creation and Prosperity. World Bank, Washington, DC

Dinh, H., Palmade, V., Chandra, V., and Cossar, F. (2012). Light Manufacturing in Africa. World Bank, Washington, DC

Dowling, M., and Cheang, C.T. (2000). Shifting comparative advantage in Asia: new tests of the "flying geese" model. *Journal of Asian Economics*, vol. 11, pp. 443-463

Easterly, W. (2001). The Lost Decades: Explaining Developing Countries Stagnation in Spite of Policy Reform 1980-1998. *Journal of Economic Growth*, vol. 6, no. 2, pp. 135-57

Economic Commission for Africa ECA. (2007). Accelerating Africa's Development through Diversification. United Nations Economic Commission for Africa, Addis Ababa, Ethiopia

Eichengreen, B., Ree, Y., and Tong, Y. (2004). The Impact of China on the Exports of other Asain countries. NBER Working paper series

Eloot K, Huang A, Lehnich. M. (2013). A new era for manufacturing in China. McKinsey Quarterly, vol.1, no.8

Frankema, E., and van Waijenburg, M. (2018). African Rising? A Historical Perspective. *African Affairs, vol. 117, no. 469, pp. 543-568*

French, S. (2014). Revealed Comparative Advantage: What Is It Good For?

Fukunishi, T. and Yamagata, T. (2014). The Dynamism of the Garment Industry in Low-income Countries, in Fukunishi, T. & Yamagata, T. (eds), *The Garment Industry in Low-Income Countries. An Entry Point of Industrialization*, Macmillan Publishers Limited, pp.1-37

Gareth Austin and Kaoru Sugihara (eds). (2013). Labour-intensive industrialization in global history Routledge, New York, pp. 85–106

Gelb BA. (2005). Textile and apparel quota phase-out: Some economic implications. CRS Report for Congress. Order Code RS20889, Updated June 10; 2005

Gereffi, Gary. (1999). International Trade and Industrial Upgrading in the Apparel Commodity Chain, *Journal of International Economics*, vol.48, pp.37-70

Grossman, G. and Helpman, E. (1990). Comparative Advantage and Long-Run Growth, *The American Economic Review*, vol.80, no.4, pp.796-815

Haider MZ. (2007). Competitiveness of the Bangladesh ready-made garment industry in major international markets. *Asia-Pacific Trade and Investment Review*, vol. 3, no. 1

Hanson, G., Lind, N. and Muendler, M. (2015). The Dynamics of Comparative Advantage: National bureau of economic research

Harrison, A., and A. Rodriguesz-Clare. (2010). Trade, Foreign Investment, and Industrial Policy for Developing Countries'. D. Rodrik (ed), *In Handbook of Economic Growth*, vol.5, North Holland, pp. 4039-4213

Hausmann, R., Rodrik, D. (2003). Economic Development as Self-Discovery, *Journal of Development Economics*, vol. 72, no. 2, pp. 603-633

Havrila, I., and Gunawardana, P. (2003) Analysing Comparative Advantage and Competitiveness: An Application to Australia's Textile and Clothing Industries. Australian Economics Papers, no. 42, pp. 103-117

Hossain, E. and Van Thi, V. (2017) Dynamics of Comparative Advantage and Competitiveness of Textile and Apparel Industry: An Empirical Analysis for China and Bangladesh, *British Journal of Economics*, Management & Trade, vol.16, no.1, pp. 1-19

Jerven, M. (2013). Poor numbers: How we are misled by African development statistics and what to do about it. Ithaca, NY: Cornell University Press

Jerven, M. and Johnston, D. (2016). Statistical Tragedy in Africa? Evaluating the Data Base for African Economic Development. Routledge: UK

Joomun, G. (2006). The Textile and Clothing Industry in Mauritius, in Jauch, H., and Traub-Merz, R. (eds), *The Future of the Textile and Clothing Industry in Sub-Saharan Africa*, pp.193-211

Ju, J., Lin, J. Y. and Wag. Y. (2015). Endowment Structures, Industrial Dynamics, and Economic Growth, *Journal of Monetary Economics*, no. 76, pp. 244-263

Karaalp HS, Yilmaz, ND. (2012). Assessment of Trends in the Comparative Advantage and Competitiveness of the Turkish Textile and Clothing Industry in the Enlarged EU Market. Fibres and Textiles in Eastern Europe, no. 20, pp. 8-11

Kathria, M. (2013). Analysing Competitiveness of Clothing Export Sector of India and Bangladesh, *Journal of Global Competitiveness*, vol.23, no.2

Khurram, S. (2015). An RCA Analysis of Textiles and Clothing in Pakistan, India, and Bangladesh. *Lahore Journal of Economics*, no. 20, pp. 157–168

Klepper, S. and Graddy, E. (1990). The Evolution of New Industries and the Determinants of Market Structure, *RAND Journal of Economics*, vol.21, pp.27-44

Kojima, K. (2000). The flying-geese model of Asian economic Development: Origin, theoretical extensions and regional policy implications. *Journal of Asian Economics*, vol.11, pp. 375-401

Krause, L. (1987). The Structure of Trade in Manufactured Goods in the East and Southeast Asian region. In C. Bradford Jr. and W. Branson (Eds.), Trade and Structural Change in Pacific Asia, pp. 205-225, Chicago: University of Chicago Press

Krugman, P. (1987). The Narrow Moving Band, the Dutch Disease, and the Competitive Consequences of Ms. Thatcher: Notes on Trade in the Presence of Dynamic Scale Economies, *Journal of Development Economics*, vol.27, pp.41–55

LA, Rahman MM. (2009). The competitiveness and future challenges of Bangladesh in international trade. Tokyo, Japan: Aoyama Gakuin University

Leamer, E. (1984). Sources of International Comparative Advantage: theory and evidence. Cambridge, MA: MIT Press

Liesner, H.H. (1958). The European Common Market and British Industry. *The Economic Journal*, vol. 68, pp. 302-31

Lim Fat, E. (2010). From Vision to Miracle, Mauritius, T-Printers Co, Ltd

Lin, J.Y. and Li, Z.Y. (2008). Policy Burden, Privatization and Soft Budget Constraint, *Journal of Comparative Economics*, vol.36, pp.90-102

Lin, J. Y. (2009). Economic Development and Transition: Thought, Strategy and Viability (Marshall Lectures), Cambridge University Press

Lin, J. Y., and Chang, J. (2009). DPR Debate: Should Industrial Policy in Developing Countries Conform to Comparative Advantage or Defy It? A Debate between Justin Lin and Ha-Joon Chang. *Development Policy Review*, vol. 27, no.5, pp.483–502

Lin, J. Y. (2011). New Structural Economics: A Framework for Rethinking Economic Development. World Bank Research Observer, vol. 6, no. 2, pp. 193-221

Lin, J. Y. and C. Monga. (2011). DPR Debate: Growth Identification and Facilitation: The Role of the State in the Dynamics of structural Change. Development Policy Review, vol. 29, no. 3, pp. 259-310

Lin, J. Y. (2012). Demystifying the Chinese Economy. Cambridge, UK: Cambridge University Press

Lin, J. Y. (2016). The Latecomer Advantage and Disadvantages, in Andersson M., & T. Axelsson (eds), *Diverse Development Paths and structural Transformation in the Escape from Poverty*, Oxford University Press, pp.43-64

Lin, J. Y. (2017). New Structural Economics and Industrial Policies for Catching-up Economies, in Justin Yifu Lin and Alojzy Z. Nowak (eds), *New Structural Economics for Less Advanced Countries*, University of Warsaw Faculty of Management Press, pp.23-40

Lutz, J. (1987). Shifting Comparative Advantage, the NICs and the Developing Countries, *The International Trade Journal*, vol. 1, no. 4

Madagascar Country Study Guide. (2013). Strategic Information and Developments, vol. 1 International Business Publications, USA Washington DC

Mahmood, A. (2001). Shifting Export Specialization and the Competitiveness of the Malaysian Manufacturing: Trends and Analysis. *The International Trade Journal*, vol. 14, no. 2, pp.87-219

Magder, D. (2006). Egypt After the Mult-Fiber Arrangement: Global Apparel and Textile Supply Chains as a Route for Industrial Upgrading. Working Paper, vol.1, Peter G. Peterson Institute for International Economics, Washington, DC

Mckay, A. (2014). Recent Evidence on Progress on Poverty Reduction in Sub-Saharan Africa since 1990, in Mckay, A. & Thorbecke, E. (eds). Economic Growth and Poverty Reduction in Sub-Saharan Africa: Current and Emerging Issues. Oxford University Press

McMillan, M.S. & K, Harttgen. (2014). What is driving the African Growth Miracle? Working paper, No. 20077, National Bureau of Economic Research, Inc.

Myoba, J. and Kazungu, K. (2015). Determinants of Competitive Advantage in the Textile and Apparel Industry in Tanzania: The Application of Porter's Diamond Model, *British Journal of Economics, Management and Trade*, vol.7, no.2, pp.128-147

Ouyang and Thorbecke. (2016). Is Sub-Saharan Africa Finally Catching up? in, Andersson M., & T. Axelsson (eds). Diverse Development Paths and structural Transformation in the Escape from Poverty, Oxford University Press, pp.236-265

Ozawa, T. (2001). The "hidden" side of "flying-geese" Cutch-Up model: Japan's dirigiste institutional set up and deepening financial morass. *Journal of Asian Economics*, vo. 12, pp. 471-491

Porter, M. E. (1990). The Competitive Advantage of Nations. New York: Free Press

Ramesh Kurpad M. (2014). Made in Bangladesh: Challenges to the ready-made garment industry. *Journal of International Trade Law and Policy*, vol. 13, no.1, pp. 80-96

Rana, P. B. (1990). Shifting Comparative Advantage in Asian and Pacific countries. *The International Trade Journal*, vol. 4, no. 3, pp. 243-259

Robeck, J., Rosunee, S., and Pattison, J. (2012). The Mauritius Apparel Manufacturing Industry: Explorations of the Past to the Present, *International Journal of Trade and Commerce*, vol. 1, no. 2, pp.163-174

Rodrik, D. (2004). Industrial Policyfor the Twenty-First Century. Harvard University, Cambridge, MA

Rogerson, Christian, M. (2000). Successful SMEs in South Africa: The case of clothing producers in the Witwatersrand. *Development Southern Africa*, vol. 17, no.5, pp. 687-716

Romer; P.M. (1990). Endogenous Technological Change. *Journal of Political Economy*, vol. 98, no. 5, pp. S71-S102

Ruan, J. and Zhang, X. (2014). "Flying geese" in China: The textile and apparel industry's pattern of migration, *Journal of Asian Economics*, vol. 34, pp. 79-91

Rundassa, M., Azene, D., and Berhan, E. (2019). Comparative Advantage of Ethiopian Textile and Apparel Industry. RJTA, vol. 23, no. 3, pp. 244-256

Sacerdoti, E., EL-Masry, G., Khandelwal, P. and Yao, Y. (2005). Mauritius: Challenges of Sustained Growth, International Monetary Fund, Washington, D.C

Sanidas, E. and Shin, Y. (2010). Comparison of Revealed Comparative Advantage Indices with application to trade tendencies of East Asian countries. Paper presented at: 9th Korea and the World Economy Conference

Sturgeon, T. and Lester. R. (2003). The New Global Supply-Base: New Challenges for Local Suppliers in East Asia. MIT Industrial Performance Center Working Paper 03-001. Cambridge, MA: Massachusetts Institute of Technology

Subramanian, A. and Roy, D. (2003). Who Can Explain the Mauritian Miracle? Meade, Romer, Sachs or Rodrik? In Rodrik, D. (ed) In Search of Prosperity: Analytic Narratives on Economic Growth, New Jersey: Princeton University Press, pp. 205-243

Tang, V. (2015). Does Learning by Importing, Self-selection of Markets and Financial Innovation Matter for Exporting Firms in Special Economic Zones? Investment Management and Financial Innovations, vol.12, issue. 1, pp.198-206

Tang, V., Shaw, T., and Holden, M. (2018). Contemporary African Political Economy: Development and Sustainable Growth of Mauritius. Springer Switzerland AG

Tang, K. (2019). Lessons from East Asia Comparing Ethiopia and Vietnam's Early-Stage Special Economic Zone Development. China Africa Research Initiative. Working Paper, no. 26

The Ethiopian Herald. (2020). The Era of Industrial Park Development in Ethiopia. Available online: https://www.press.et/english/?p=17748# [Accessed 11 March 2020]

Thun, E. (2000). Growing Up and Moving Out: Globalization in the Taiwanese Textile/Apparel and Automotive Sectors. MIT Industrial Performance Center, Working Paper 00-007. Cambridge, MA: Massachusetts Institute of Technology

Tripa, Simona. (2016). Revealed Comparative Advantage and Competitiveness in Romanian Textile and Clothing Industry

UNDP. (2017). Understanding African Experiences in Formulating and Implementing Plans for Emergence: Growing Manufacturing Industry in Ethiopia. International Conference on the Emergence of Africa (ICEA II) from 28th to 30th March 2017, in Abidjan, Cote d'Ivoire

UCOMTRADE. (2016). Available online: https://comtrade.un.org/db/help/ureadMeFirst.aspx?returnPath=%2fdb%2fdqBasicQueryResults.aspx%3fpx%3dS3%26cc%3d845%26r%3d231%26y%3d1995 [Accessed 11 March 2020]

Van Zyl, G. and Matswalela, K. (2016). A Comparative Analysis of the Level of Competitiveness of the South African Clothing and Textile Industry, *Journal of Economic and Financial Sciences*, vol.9, no.2, pp.370-391

Wade, R. (1990). Governing the Market, Princeton, NJ: Princeton University Press

Watanabe, T, and Kojiwara, H. (1983). Pacific Manufactured Trade and Japan's Option, *The Developing Economies*, vol. 21, no. 4, pp.313-339

Williamson, J. (1990). What Washington Means by Policy Reform. In J. Williamson (ed.), Latin American Adjustment: How Much Has Happened? Washington, DC: Institute for International Economics

World Bank. (2002). Transition, the First Ten Years: Analysis and Lessons for Eastern Europe and the Former Soviet Union, Washington, DC: World Bank

World Bank. (2015). Available online: https://www.worldbank.org/en/news/press-release/2015/07/08/transforming-ethiopia-into-a-manufacturing-powerhouse-requires-skills-development-and-improved-investment-climate [Accessed 9 March 2020]

World Economic Forum. (2011). The Africa Competitiveness Report 2011. Washington, DC: World Bank; Geneva: World Economic Forum

World Trade Organization. (2001). Comprehensive Report of the Textiles Monitoring Body to the Council of Trade in Goods on the Implementation of the Agreement of Textiles and Clothing During the Second Stage of the Integration Process. Geneva: World Trade Organization

United Nations Conference on Trade and Development (UNCTAD). (2019). Available online: https://unctad.org/en/PublicationChapters/WIR2019_CH4.pdf [Accessed 9 March 2020]

United Nations Statistics Division (UNSD). (2016). Available online: https://unstats.un.org/unsd/tradekb/Knowledgebase/50075/What-is-UN-Comtrade [Accessed 18 March 2020]

Appendix A: Textile Export, Import and Trade Balance

Country	Trade Flow	2012	2013	2014	2015	2016	2017
Cote d'Ivoire	Export	72	74	82	65	81	72
	Import	113	113	334	127	129	172
	Trade Bal.	– 41	– 39	– 252	– 62	– 48	– 100
Egypt	Export	1,365	1,489	1,548	1,449	1,221	1,279
	Import	2,278	2,39	2,389	2,697	2,378	2,614
	Trade Bal.	– 913	– 901	– 841	– 1,248	– 1,157	– 1,335
Ethiopia	Export	27	47	26	23	16	25
	Import	234	310	454	635	344	357
	Trade Bal.	– 207	– 263	– 428	– 612	– 328	– 332
Ghana	Export	15	16	18	9	12	83
	Import	194	192	152	148	137	171
	Trade Bal	– 179	– 176	– 134	– 139	– 125	– 88
Kenya	Export	20	53	18	20	22	36
	Import	308	352	332	359	379	393
	Trade Bal	– 288	– 299	– 314	– 339	– 357	– 357
Morocco	Export	355	364	392	407	469	462
	Import	2,413	2,479	2,649	2,399	2,632	2,804
	Trade Bal	– 2,058	– 2,115	– 2,257	– 1,992	– 2,163	– 2,342
Madagascar	Export	34	39	58	48	47	41
	Import	269	304	350	345	353	373
	Trade Bal	– 235	– 265	– 292	– 297	– 306	– 332
Mauritius	Export	75	90	99	89	84	111
	Import	274	270	268	234	229	239
	Trade Bal	– 199	– 180	– 169	– 145	– 145	– 128
Nigeria	Export	291	168	227	19	20	15
	Import	370	438	460	240	251	270
	Trade Bal	– 79	– 270	– 233	– 221	– 231	– 255
Tunisia	Export	424	413	417	372	354	342

	Import	1,700	1,701	1,739	1,418	1,429	1,541
	Trade Bal	– 1,276	– 1,297	– 1,322	– 1,046	– 1,075	– 1,199
Tanzania	Export	106	103	180	265	82	120
	Import	111	115	112	126	161	131
	Trade Bal	– 5	– 12	68	139	– 79	– 11
South Africa	Export	426	424	408	370	330	390
	Import	1,375	1,363	1,341	1,303	1,174	1,266
	Trade Bal	– 949	– 939	– 933	– 933	– 844	– 876
Zimbabwe	Export	20	24	16	15	11	7
	Import	91	87	83	73	53	62
	Trade Bal	– 71	– 60	– 67	– 58	– 42	– 55

Appendix B: Apparel Export, Import and Trade balance

Country	Trade Flow	2012	2013	2014	2015	2016	2017
Cote d'Ivoire	Export	1	1	2	4	2	2
	Import	41	26	42	42	39	39
	Trade Bal	– 40	– 25	– 40	– 38	– 37	– 37
Egypt	Export	1,258	1,365	1,292	1,346	1,284	1,463
	Import	452	530	917	1,213	685	459
	Trade Bal	806	835	375	133	599	1,004
Ethiopia	Export	39	43	23	25	16	76
	Import	232	300	401	494	427	372
	Trade Bal	– 193	– 257	– 378	– 469	– 411	– 296
Ghana	Export	1	2	7	10	1	10
	Import	59	56	48	44	40	37
	Trade Bal	– 58	– 54	– 41	– 34	– 39	– 27
Kenya	Export	264	283	414	394	369	314
	Import	48	68	84	112	128	131
	Trade Bal	216	215	330	282	241	183
Morocco	Export	3,225	3,155	3,310	2,814	3,026	3,209
	Import	383	343	402	352	419	480
	Trade Bal	2,842	2,812	2,908	2,462	2,607	2,729

Madagascar	Export	304	373	461	414	468	529
	Import	12	17	14	16	25	39
	Trade Bal	292	356	447	398	443	490
Mauritius	Export	802	747	788	746	646	608
	Import	86	81	89	69	74	88
	Trade Bal	716	666	699	677	572	520
Nigeria	Export	13	1	1	1	1	1
	Import	69	75	88	99	110	78
	Trade Bal	– 56	– 74	– 87	– 98	– 109	– 77
Tunisia	Export	2,724	2,802	2,769	2,176	2,163	2,252
	Import	453	468	487	417	430	459
	Trade Bal	2,271	2,334	2,282	1,759	1,733	1,793
Tanzania	Export	12	17	24	22	48	60
	Import	56	71	73	61	68	66
	Trade Bal	– 44	– 54	– 49	– 39	– 20	– 6
South Africa	Export	478	503	496	466	414	456
	Import	1,812	1,894	1,864	1,881	1,741	1,806
	Trade Bal	–1334	– 1,391	– 1,368	– 1,415	– 1,327	– 1,350
Zimbabwe	Export	3	4	5	8	9	11
	Import	24	46	29	25	19	15
	Trade Bal	– 21	– 42	– 24	– 17	– 10	– 4

Appendix C: RCAI for Apparel and Clothing Sector

Year	Cote d'Ivoire	Egypt	Ethiopia	Ghana	Kenya	Morocco	Madagascar	Mauritius	Nigeria	Tunisia	Tanzania	South Africa	Zimbabwe	China	India
1995	0,00	2,33	0,03	0,01	0,17	5,38	0,46	16,73	0,00	13,50	0,36	0,18	1,05	5,15	4,13
1996	0,02	2,19	0,02	0,00	0,15	5,31	0,35	17,46	0,01	14,03	0,39	0,23	0,77	5,35	4,08
1997	0,10	1,99	0,01	0,01	0,19	4,65	0,26	16,73	0,00	12,41	0,38	0,23	0,66	5,22	3,75
1998	0,08	3,10	0,03	0,05	0,16	10,57	0,31	16,97	0,00	12,82	0,29	0,23	0,66	4,86	4,30
1999	0,08	2,47	0,05	0,07	0,23	10,35	0,23	18,32	0,00	12,76	0,40	0,24	0,69	4,80	4,37
2000	0,07	2,18	0,02	0,01	0,18	10,59	13,94	20,85	0,00	12,48	0,15	0,27	0,92	4,74	4,62
2001	0,06	1,84	0,06	0,01	0,14	10,50	11,18	18,12	0,00	12,61	0,10	0,29	0,04	4,41	4,01
2002	0,04	1,41	0,07	0,01	0,10	9,87	5,26	17,19	0,00	12,42	0,14	0,35	0,52	4,03	3,70
2003	0,05	1,22	0,01	0,03	0,10	10,44	7,86	17,41	0,00	12,16	0,14	0,32	0,19	3,82	3,42
2004	0,04	1,06	0,11	0,02	0,16	10,65	12,21	16,37	0,00	11,87	0,19	0,22	0,15	3,64	3,19
2005	0,03	0,63	0,06	0,02	1,99	9,34	12,66	15,65	0,00	10,93	0,14	0,14	0,14	3,57	3,20
2006	0,01	0,41	0,06	0,05	2,63	9,97	10,39	12,76	0,00	9,96	0,08	0,10	0,08	3,80	3,04
2007	0,01	0,44	0,07	0,04	2,32	9,45	16,28	15,63	0,00	9,25	0,19	0,07	0,19	3,72	2,67
2008	0,01	1,28	0,13	0,01	2,34	7,23	24,57	15,11	0,00	8,36	0,18	0,07	1,83	3,61	2,59
2009	0,01	2,08	0,07	0,06	1,54	8,34	16,53	15,82	0,00	8,21	0,11	0,07	0,11	3,39	2,58
2010	0,01	2,04	0,22	0,05	1,59	7,10	13,48	17,63	0,00	7,89	0,12	0,22	0,08	3,45	2,14
2011	0,01	2,09	0,56	0,00	2,30	6,43	10,54	19,50	0,00	7,90	0,10	0,19	0,05	3,44	2,07
2012	0,00	1,81	0,58	0,00	2,12	6,38	10,85	18,32	0,00	6,78	0,09	0,20	0,04	3,30	2,02
2013	0,00	1,91	0,42	0,01	2,16	5,79	9,73	15,90	0,00	6,62	0,15	0,21	0,04	3,24	2,02
2014	0,01	1,91	0,21	0,02	3,15	5,51	8,37	16,43	0,00	6,55	0,17	0,21	0,06	3,16	2,20
2015	0,01	2,10	0,20	0,03	2,61	4,32	6,71	14,92	0,00	5,30	0,13	0,20	0,08	2,63	2,35
2016	0,01	1,86	0,39	0,00	2,62	4,84	7,77	14,98	0,00	5,83	0,37	0,20	0,09	2,76	2,52
2017	0,01	2,05	1,28	0,03	2,36	4,84	7,25	11,18	0,00	6,13	0,55	0,20	0,13	2,69	2,40

Appendix D: RCAI for Textile Sector

Year	Cote d'Ivoire	Egypt	Ethiopia	Ghana	Kenya	Morocco	Madagascar	Mauritius	Nigeria	Tunisia	Tanzania	South Africa	Zimbabwe	China	India
1995	0,20	5,20	0,07	0,04	0,58	1,18	1,60	1,57	0,08	0,95	0,46	0,26	1,07	2,94	4,32
1996	0,29	4,00	0,17	0,05	0,58	1,11	2,09	1,72	0,11	0,91	0,48	0,36	0,75	2,66	4,90
1997	0,61	4,49	0,23	0,32	0,60	0,95	5,99	1,65	0,06	0,75	0,48	0,40	0,80	2,49	4,97
1998	0,58	4,74	0,09	0,05	0,76	0,62	6,34	1,60	0,06	0,75	0,50	0,40	0,75	2,40	4,73
1999	0,47	3,72	0,13	0,15	0,68	0,65	10,72	1,89	0,02	0,81	0,31	0,37	0,69	2,45	5,08
2000	0,57	3,50	0,21	0,34	0,66	0,66	0,59	2,17	0,01	1,05	0,69	0,36	0,79	2,59	5,27
2001	0,63	2,80	0,34	0,12	0,64	0,81	0,46	2,51	0,06	1,21	0,74	0,36	0,11	2,55	5,07
2002	0,43	2,18	0,35	0,20	0,54	0,72	0,33	1,57	0,30	1,34	0,63	0,43	1,13	2,57	4,71
2003	0,31	1,90	0,59	0,16	0,51	0,62	0,27	1,63	0,02	1,41	0,72	0,40	0,54	2,59	4,57
2004	0,26	1,61	0,47	0,07	0,68	0,67	0,67	1,90	0,01	1,53	0,97	0,34	0,60	2,58	4,46
2005	0,23	1,26	0,36	0,11	0,71	0,84	1,01	1,43	0,01	1,54	0,87	0,33	0,38	2,66	4,10
2006	0,23	0,97	0,45	3,43	0,83	1,04	1,36	1,80	0,01	1,61	1,11	0,31	0,21	2,71	3,95
2007	0,25	1,00	0,59	0,17	0,78	1,27	1,84	2,24	0,03	1,86	1,55	0,30	1,40	2,61	3,75
2008	0,25	1,83	0,32	0,15	0,58	1,02	1,49	2,09	0,03	1,55	2,23	0,26	3,35	2,87	3,58
2009	0,23	2,43	0,53	0,13	0,58	1,25	1,76	2,23	0,07	1,57	2,35	0,24	0,56	2,86	2,97
2010	0,24	2,87	0,61	0,08	0,71	1,11	1,44	2,21	0,16	1,59	1,73	0,29	0,41	2,86	3,41
2011	0,30	2,90	0,86	0,44	0,25	1,15	2,24	2,80	0,04	1,58	1,47	0,25	0,33	2,99	3,06
2012	0,41	2,88	0,58	0,06	0,24	1,03	1,80	2,50	0,13	1,55	1,19	0,27	0,31	2,89	3,28
2013	0,37	3,09	0,69	0,08	0,60	0,99	1,51	2,84	0,11	1,44	1,39	0,27	0,36	2,88	3,35
2014	0,36	3,34	0,34	0,09	0,20	0,95	1,53	3,00	0,41	1,44	1,83	0,26	0,31	2,76	3,33
2015	0,33	3,55	0,30	0,04	0,21	0,98	1,23	2,78	0,01	1,42	2,43	0,25	0,24	2,57	3,51
2016	0,41	2,89	0,59	0,06	0,23	1,11	1,14	2,88	0,03	1,41	0,94	0,24	0,18	2,69	3,34
2017	0,33	2,78	0,61	0,33	0,40	1,03	0,83	3,00	0,02	1,37	1,64	0,25	0,12	2,76	3,31