Export Performance and Revealed Comparative Advantage of Developing and Developed Economies for Textile Fibers or Fabrics

Mulat Alubel Abtew[1]*, Annu Kumari[1] and Srinivasa Moorthy[2]

[1]Apparel and Textile Marketing and Merchandising, Ethiopian Institute of Textile and Fashion Technology, Bahir Dar University, Bahir Dar, Ethiopia

[2]Faculty of Mechanical and Industrial Engineering, Bahir Dar University, Bahir Dar, Ethiopia

***Corresponding author:** Mulat Alubel Abtew, Apparel and Textile Marketing and Merchandising, Ethiopian Institute of Textile and Fashion Technology, Bahir Dar University, Bahir Dar, Ethiopia, Tel:+251582266246; E-mail: mulat_a@yahoo.com

Abstract

The foremost aim of the present study was to disclose the comparative advantage between developed and developing economies for the years 2006-2015. After careful introspection, among the various indices, Balassa's Revealed Comparative Advantage (RCA) index was chosen and product commodities with HS code 50-55 were selected for the study to authenticate the compatibility of the textile industry of developing countries. It was found that for HS code 51 (wool, animal hair, horsehair yarn and fabric thereof) developed economies were having higher RCA over developing economies. But for silk, cotton, manmade fibers and filaments, developing economies have favorable conditions for worldwide export. It was observed that in the year 2009, RCA for developing economies was maximum for silk, cotton and manmade fibers /filaments within ten years. RCA values tend to decrease and minimum in the year of 2015 for developed economies for cotton, Vegetable textile fibresnes, paper yarn, woven fabric and manmade fiber/filaments.

Keywords: Revealed comparative advantage; International trade; Balassa index; Textiles; Developed economies; Developing economies

Introduction

The textile industry's inevitable presence in the world economy manifests itself in its marked contribution to industrial production, employment generation and foreign exchanges. Being labor-intensive, it is the backbone of many of the developing countries. Many countries like Haiti (88%), Bangladesh (79%), Lesotho (59%), Cambodia (43%) and Sri Lanka (43%) are majorly relying on the exports related to their clothing industries. As far as developed economies are concerned, their focus and aspiration is towards creation of innovative raw materials, fibers, yarns, variety of fabrics and designs, using sustainable or green approach. Globally, fiber market consumption was at about 95.6 million tons in 2015. Oil-based synthetic fibers had the largest share with 62.1%; cellulosic and protein-based fibers consisting around 25.2%, wool around 1.2%, other natural fibers around 1.5% and wood-based cellulose fibers around 6.4%, in global fiber market in the year 2015. Hence cotton and manmade fibres captured the whole textile market around the world.

According to a report in Agricultural Outlook, cotton was the most extensively used textile fiber among natural fibers in the world. Its current market share is 56% of all the products used for apparel production and home furnishings [1]. Current estimates for world production are about 110 million bales per annum, accounting for 2.5% of the world's arable land. World cotton production is expected to rise by four percent, in spite of price and income constraints on planted area. Global consumption is also expected to rise by about 1% after declining slightly in 2015/16. Based on a report in Economic Outlook, world cotton trade for 2016 was estimated at 35.8 million bales, down from 36.1 million in 2015 [2]. Every year, more than 50 million tons of man-made fibers are produced worldwide. With a lion's

share of 81%, the undisputed leader is polyester, which is generally used in clothing. By taking these facts and figures under consideration, the present study was carried out to reveal comparative advantage of natural and man-made fiber exports for developed and developing economies.

The objective of this research paper is to determine the RCA of the Textile Fibers/Fabrics between developed and developing economies. The methodology used to figure out the RCA is Balassa index (1965) utilizing the 2-digit HS code 64 which mainly focuses on six textile fiber/fabric commodities [3]. The results of this particular study will be useful to concerned regions, international traders, investors and scholars. In addition, this particular research work will serve as a reference document to researchers who work on RCA of different regions.

Literature Review

Various measures of comparative advantage have been suggested in the international trade literature and are being used. The Revealed Comparative Advantage (RCA) has been extensively used in various studies. However, trade economics have been analyzed even before the theoretical and empirical measures of comparative advantage. Liesner [4] introduced RCA measurements and Balassa [3,5,6] developed it further for analyzing and measuring comparative advantage across manufacturing industries. The Balassa [3] Index of Revealed Comparative Advantage (RCA) is widely used to approximate countries' sector-specialization, though it lacks the theoretical base as well as empirical symmetry [3]. On the other hand, Ricardian theory of comparative advantage is a useful analytical tool though it lacks empirical tests due to its inconsistent theoretical foundation. This theory presumes that a country/region should produce and/or export relatively more in those industries in which it is relatively more productive. Hecksher and Ohlin made considerable efforts to examine

the effect of different factor endowments on international trade [7,8]. Kowalski [9] proved that comparative advantage remains an important causal element of trade whereby the capital-to-labor and geographics are important in explaining industry trends of trade. It was found that other factors like credit and energy supply also have their influences on the comparative advantage.

Owing to the fact that RCA is one of the sensitive areas of research, wide spread literature is available, particularly in the field of food and agriculture. Perhaps, only a few researches were found in the context of textiles and clothing area, which are all country-specific. This section distinctly demonstrates the previous research work on RCA, with a specific focus on fibers including manmade and vegetable ones. Regional study between sub-Saharan Africa (SSA) and Latin America and Caribbean (LAC) during 1995 to 2010 for the export of five merchandise sub-sectors has been done by using RCA. According to Hailay [10], the result showed low economic integration between the regions. Moreover LAC has stronger RCA than SSA in export of food items and SSA region has higher RCA in export of agricultural raw materials, fuel, and ores and metals than LAC. An empirical study by Gonel [11] tried to investigate the comparative advantage of Turkish trade with European Union over 1990-1997 period and compares the RCA to other measures of comparative advantage to identify whether all of them indeed measure the same trend or not Akhtar et al. [12] have also studied the revealed comparative advantage and its competitiveness in the global perspective and its potential for growth of Pakistan footwear industry. Using RCA methodology and a 2-digit and 4-digit levels of industrial classification, the analysis revealed that in the recent years, specifically in the period from 2003-06, the footwear industry has moved from a disadvantage (as compared with China and India) position to comparative advantage.

Employed flying-geese model and estimated Spearman's rank correlation coefficients on indices of the revealed comparative advantage vectors by taking 13 African exporters of clothing and accessories for the period 1995–2005. The analysis revealed the shifting of comparative advantage from China and India to Africa [13]. The flying-geese theory predicted South Africa as the leading goose followed by Kenya. Havrila and Gunawardana [14] investigated Australia's comparative advantage and competitiveness in textile and clothing industries using Balassa's revealed comparative advantage index and Vollrath's measures of competitiveness. The study by means of Balassa's indices revealed that Australia has a strong comparative disadvantage in textiles and clothing as aggregate commodity groups. However there is comparative advantage in sub-categories of 'special textile products', 'floor coverage, tapestry, etc.' and 'fur clothing'. As per Vollrath's indices, Australia is not competitive in the world market with respect to aggregate commodity groups of textiles and clothing.

Textiles and clothing sector have also great importance in the economies of the United States and developing countries as well as the qualitative changes in the dynamics of the industry. Belay [15] after looking at the history of protectionism in the industry, addresses the impact of quota elimination on developing countries' exports to the United States. He also tried to discuss the role of China as the dominant supplier. Khurram [16] has studied the revealed comparative advantage for Clothing and Textile sectors of Pakistan, India and Bangladesh using Balassa's Index (1965) for the analysis [3]. The RCA analysis showed that Pakistan has highest revealed comparative advantage for textiles over both India and Bangladesh. However, in the case of clothing, Bangladesh has very dominant revealed comparative advantage when competing with Pakistan and India. The comparative

advantage and intra-industry trade of five countries: Poland, Czech Republic, Hungary, Romania and Turkey, in the global textile and clothing markets for the period 2002-2013 [17]. The results have revealed that among the countries selected, Turkey is the only one to have comparative advantage in the global textile market; Romania joins Turkey in this in the world's clothing market. In addition, since a high intra-industry trade index is found in Czech Republic, Hungary and Poland, an inter-industry trade structure is observed in Romania for textiles and clothing. Turkey also shows intra-industry specialization in textiles, while possessing inter-industry trade structure in terms of clothing.

Based on increasing competition in the world market requires each country to improve the competitiveness of exported product. Indonesian fiber industry is one industry which is demanded to improve its competitiveness in the world market [18]. The purposes of this study were: (1) to analyze the trade map (2) to ascertain comparative advantages and (3) to analyze the export performance of Indonesian fiber industry product and some major exporter countries in the world market by using the descriptive analysis and Revealed Comparative Advantage. Based on the result, China and South Korea are the major exporters which tend to dominate each of world fiber products. Meanwhile, Indonesia is in the second position, by playing an important role as a major exporter for world fiber products, especially for HS 5509. Karaalp and Yilmaz [19] studied Turkey's comparative advantage and competitiveness in the textile and clothing industries by using Balassa's RCA index and Vollrath's index for the period of 1988-2008 in the enlarged EU market [3]. The outcome revealed that Turkey has a strong overall comparative advantage and competitiveness in textile and clothing in the EU market. All competitiveness indices for the period 2005-2008 showed an increasing trend for the textile industry and a decreasing trend for clothing. The decrease in the competitiveness of clothing was observed more intensively in the enlarged EU market compared to that of EU 12. These findings can be thus interpreted: Turkish textile industry responded well to the elimination of quotas, while the clothing sector has been more vulnerable to the inclusion of low-cost labor countries in the market since 2005.

Karaalp and Yilmaz [20] estimated the comparative advantage of four countries: China, Bangladesh, Germany and Turkey, with respect to US and EU-15 textiles and clothing markets by employing Balassa's RCA index for the period 2000-2010 [3]. The results indicate that Bangladesh, China and Turkey have a strong comparative advantage in both the textile and clothing markets of the world than US and EU-15, while Germany has no significant comparative advantage in any of these markets. The results show that Bangladesh clothing industry has a substantially higher comparative advantage in all markets compared to the other countries. It has also been found that Turkish textiles show the strongest comparative advantage in all the markets, whereas the comparative advantage of Chinese textiles has lion's share in all the markets. Hiwotie [21] revealed the competitiveness of Ethiopian textile sub-sector under AGOA using Michael Porter's (1990) "diamond model" as a theoretical framework for the study.

Like Sub- Saharan countries, majority of Asian countries have been beneficiaries of quota abolition for textile and clothing sector since 2005. After the implementation of the Agreement on Textile and Clothing (ATC) in December 2004, member countries of World Trade Organization (WTO) have quota-free trade, except People's Republic of China (PRC). Nawaz and Rukhsana [22] examined RCA of textile and clothing sector during the period of pre-quota and post-quota and

concluded that comparative advantage of Pakistan in textile and clothing sector has declined during 2011-12. Textile made-ups kept continuing its growth performance despite higher costs and anti-dumping duties. Many products of cotton, fabric, yarn, woven and knit apparel had faced lower prices in the market after quota abolition [23].

The Export competitiveness and Export performance of Indian textile with respect to rest of the world with duration 2009-2011 using Revealed Comparative Advantage (RCA) of ten different commodities of Textiles like silk, cotton, etc., and results show that some commodities are highly competitive in the international market - cotton, man-made filaments, vegetable textile fibers, man-made staple fibers and carpets and other textile floor coverings. The commodities that are performing well in international market are man-made filament with the highest value of RCA for the year 2009 and 2010 and man-made stable fibers for the year 2011.The export competitiveness and export performance of eleven different product groups of Textiles of Indian textile with respect to rest of the world during the period of 2010-2013 [17]. The results show that seven out of eleven products have competitive advantage whereas the rest doesn't. The commodities which are more competitive in the international market are cotton, silk, vegetable textile fibers, paper yarn, woven fabric, man-made filament, man-made staple fibers, carpets and other textile floor coverings and special woven or tufted fabric, lace, tapestry, etc. The commodities that are performing fairly well in international market with the highest value of RCA are cotton and carpets and other textile floor coverings. The Textile and Clothing exports from developed and developing countries under the Multi-fiber Arrangement and Agreement on Textile and Clothing from 1990 to 2004 and found that there existed a gradual shift of increasing Textile and Clothing exports by developing countries [24]. The scenarios for the 20 leading global Textile and Clothing exporters, which assumed 80–90% of the global export value, were analyzed separately by time-series regression modeling during the prescribed period. Results indicate that developed countries were seriously affected in the past 15 years and some developing countries would likely become potential global leaders in Textile and Clothing exports with the abolishment of quotas. Textile contribution is still strong with some of the developed countries, especially for products of high value adding and specialty end uses. Well known fact is, clothing production is labor-intensive and the rag trading has been dominated by developing countries. Nazire and Hacer Simay [25] studied and analyzed the comparative advantage and intra-industry trade of five countries: Hungary, Czech Republic, Poland, Romania and Turkey in the global textile and clothing markets by employing Balassa's RCA index and intra-industry trade (IIT) index for the period 2002-2013 [3]. The results have revealed that while only Turkey had comparative advantage in the global textile market, Romania was also hand in hand with Turkey in the world's clothing market. The comparative advantage of these two countries in the global clothing market presents a stronger declining trend compared to that in textiles, which is certainly due to the entrance of cheap-labor East Asian countries into the global clothing market, as this market is more labor-intensive compared to textiles. Moreover, while a high intra-industry trade index is found in Czech Republic, Hungary and Poland, an inter-industry trade structure is observed in Romania for textiles and clothing. Turkey presents intra-industry specialization in textiles, while possessing inter-industry trade structure in terms of clothing calculated and compared the competitive ability of Pakistan's carpet and textile floor coverings industry with other South Asian countries - China and India [26]. The pattern of revealed comparative advantage was identified and calculated on 4-digit level for duration of 1996-2009

and 2004-2009 respectively. The study found out a rising, stable and fluctuating trend in RCA at 2-digit level for India, China and Pakistan respectively. The test of equality of means of RCA indicates a statistically significant difference emerged. The findings showed that a favorable potential exists for higher growth of carpet industry and it can support the export earnings and employment, keeping in view the international competitiveness in rapidly globalized markets. Karaalp analyzed Turkey's comparative advantage and competitiveness in the textile and clothing industries for the period 1988-2008 in the enlarged EU market. The results revealed that Turkey has an overall strong comparative advantage and competitiveness in textile and clothing in the EU market. All competitiveness indices for the years 2005-2008 showed an increasing trend for the textile industry and a decreasing trend for clothing. The decrease in the competitiveness of clothing was observed more intensively in the enlarged EU market compared to that of the EU 12. These results can be thus interpreted: Turkish textile industry responded well to the elimination of quotas, while the clothing sector has been more vulnerable to the inclusion of low-cost labor countries in the market since 2005. Ignjatijevic [27] analyzed the level of specialization and comparative advantage of textile and apparel industry of Serbia, with the aim to improve the position of the country at the international market. The structure of export and comparative advantage of Serbian textile and apparel industry has been dynamically analyzed, and its competitiveness has been evaluated on an international level for the period 2004-2009. They identified negative value of comparative advantage of Serbian textile and apparel industry and the rise in specialization in intra-industry exchange on the level of industry, whereas there is a satisfactory level of comparative advantage of export and intra-industry exchange for specific groups of market goods.

Wadud and Wahida [28] examined dynamic comparative advantage in textiles and clothing trade and the country-specific factors that explain variations of comparative advantage among the trading nations. The absolute and relative change show that while comparative advantage in both textiles and clothing is deviated towards developing economies, many developed high-income economies possess comparative advantage over extended periods. In the second stage, RCA indices are regressed against some country-specific industry characteristics such as capital/labor ratio, industry size and wage rates. The estimated models show significant relationship between comparative advantage and the country characteristics. Results of this study provide evidence of changes in the pattern of comparative advantage in textiles and clothing over the decades when multi-fiber arrangement (MFA) type trade restrictions existed. These evidences have implications for the trading nations in the ongoing liberalized trade regimes.

The presented exploratory investigation into long-term patterns of trade specialization among leading textile and apparel exporting nations, assessing patterns of comparative advantage across the textile machinery, man-made fiber, textiles and apparel sectors of the textile complex to determine their adaptability for both trade specialization and industry evolution theories [29]. A revealed comparative advantage index was employed to evaluate international competitiveness for 30 nations over a 42-year period. Repeated measures of ANOVA were used to determine the significance of the observed patterns across five income-defined groups of nations. Long-term patterns of specialization broadly reflect expectations of factor proportions theory and industry evolution models. Product and income group characteristics combine to influence comparative advantage. Higher income nations generally remain stronger in more

capital-intensive sectors, while lower income countries have emerged to dominate labor-intensive sectors.

The international competitiveness of the US technical and industrial textile sector and assessed it Balassa's RCA. The US RCA between 'higher-tech' and 'lower-tech' categories and in aggregate textiles was compared against nine leading textile trading partners between 1992 and 2002 [30]. These were drawn equally from high, middle and low-income country groups, based on World Bank classifications. A repeated measures analysis of variance was used to test for statistical significance. Overall, high-income countries enjoy a stronger international trade position in higher-tech products, while medium and low income countries have a stronger position in lower-tech products and aggregate textiles. While USA has got a revealed comparative advantage in higher-tech products with partners from all groups, it has a revealed comparative disadvantage in lower-tech products and in aggregate textiles. No statistically significant differences were found in US competitiveness between country groups and no changes in US competitiveness over time. Jin [31] studied the comparative advantage for Chinese textile industry based on the background of rising labor cost. It proposes that Chinese textile industry shall transfer the Comparative Advantage to Competitive Advantage.

Peter and Ting [29] presented an exploratory investigation into ten-year (1995-2004) patterns of trade specialization among Eastern European and former Soviet Union Nations, assessing patterns of comparative advantage across the textile machinery, man-made fiber, textile, and apparel sectors of the textile complex to determine whether they conform with both trade specialization and industry evolution theories. A revealed symmetric comparative advantage index is employed to evaluate international competitiveness for 27 Eastern European and former Soviet Union Nations over the ten-year period. Repeated measures (ANOVA) are used to determine the significance of the observed patterns across four income-defined groups of nations. The pattern of export development and RSCA generally reflects expectations regarding factor proportions theory and industry evolution models. The RMANOVA partially confirms the observations. The analysis depicted that income group does not independently affect comparative advantage; however, the nature of products is the significant factor influencing national comparative advantage. The established models may be better at understanding those nations which have established relatively stable politic and economic environment, and have been experiencing earlier stages of industry development, but appear less useful in predicting development patterns for those nations experiencing dramatic transitions from regulated to de-regulated markets. The employed gravity model, to examine the impact of the rise of China's textile and clothing (T and C) sector on the exports of its Asian counterparts [32]. It was established that China's textile exports posed a greater competitive threat than its clothing exports to the T and C exports of other Asian economies. It was also found that higher-income Asian economies fared better than their lower-income counterparts. This is because the higher-income Asian economies tend to be specialized in segments of Textile and Clothing sector, less exposed to Chinese competition.

Methodology

Balassa index, the most popular index to measure Revealed Comparative Advantage of a country, is computed as:

$$RCA_i = (X_{i,j}/\Sigma X_j)/((X_{i,world}/\Sigma X_{world}) \quad (1)$$

where,

RCA_i-Revealed Comparative Advantage of good I;

$X_{i,j}$-Exports of good i by country j;

ΣX_j-Total exports by country j;

$X_{i,world}$-World exports of good I;

ΣX_{world}-Total world export.

Using Balassa's index, a country is defined as being specialized in exports of a certain product if its market share of the product is higher than the average, or equivalently, if the weight of the product of the country's exports is higher than the weight of the exports of the reference area [3]. A country reveals comparative advantage in products for which this indicator is higher than 1 showing that its exports of those products are more than expected on the basis of its importance in the total exports of the reference area. In this work the whole world was considered as the reference. Table 1 indicates the RCA index for developing countries (RCA devg.) and RCA index for developed countries (RCA devd.) and the difference between RCA of developing and developed economies (Diff.) for silk (HS code 50), wool, animal hair, horsehair yarn and fabric thereof (HS code 51),Cotton (HS code 52), Vegetable textile fibresnes, paper yarn, woven fabric (HS code 53), Manmade filaments (HS code 54) and Manmade staple fibres (HS code 55).

Years	HS code 50			HS code 51			HS code 52			HS code 53			HS code 54			HS code 55		
	RCA devg	RCA devd	Diff.	RCA devg	RCA devd	Diff.	RCA devg	RCA devd	Diff.	RCA devg	RCA devd	Diff.	RCA devg	RCA devd	Diff.	RCA devg	RCA devd	Diff.
2006	1.704	0.543	1.161	0.818	1.144	-0.326	1.578	0.612	0.966	1.312	0.806	0.506	1.384	0.758	0.626	1.381	0.759	0.622
2007	1.637	0.567	1.07	0.796	1.149	-0.353	1.586	0.596	0.99	1.279	0.814	0.465	1.404	0.73	0.674	1.366	0.755	0.611
2008	1.516	0.621	0.895	0.75	1.19	-0.44	1.546	0.593	0.953	1.288	0.787	0.501	1.373	0.73	0.643	1.298	0.784	0.514
2009	1.645	0.542	1.103	0.782	1.173	-0.391	1.602	0.562	1.04	1.447	0.688	0.759	1.463	0.671	0.792	1.403	0.72	0.683
2010	1.636	0.483	1.153	0.817	1.173	-0.356	1.553	0.549	1.003	1.503	0.597	0.906	1.426	0.65	0.776	1.384	0.692	0.693
2011	1.534	0.549	0.985	0.788	1.21	-0.422	1.434	0.633	0.8	1.478	0.599	0.88	1.434	0.628	0.806	1.389	0.672	0.717
2012	1.448	0.581	0.867	0.743	1.253	-0.51	1.452	0.576	0.876	1.397	0.616	0.781	1.396	0.628	0.768	1.303	0.719	0.584

2013	1.4	0.569	0.83	0.762	1.233	-0.471	1.512	0.511	1.001	1.394	0.621	0.773	1.425	0.599	0.826	1.301	0.717	0.584
2014	1.4	0.615	0.785	0.775	1.217	-0.442	1.512	0.505	1.007	1.375	0.64	0.735	1.419	0.594	0.824	1.316	0.695	0.62
2015	1.461	0.58	0.881	0.785	1.196	-0.411	1.58	0.469	1.112	1.455	0.585	0.869	1.453	0.586	0.868	1.381	0.652	0.728
Source: ITC, COMTRADE data.																		

Table 1: RCA values for developed and developing economies for selected commodities.

Results and Discussion

Figure 1 shows RCA of developed and developing economies for silk products. RCA values greater than unity (RCA>1) reveal a comparative advantage, while values less than unity ($0 \leq RCA<1$), a comparative disadvantage.
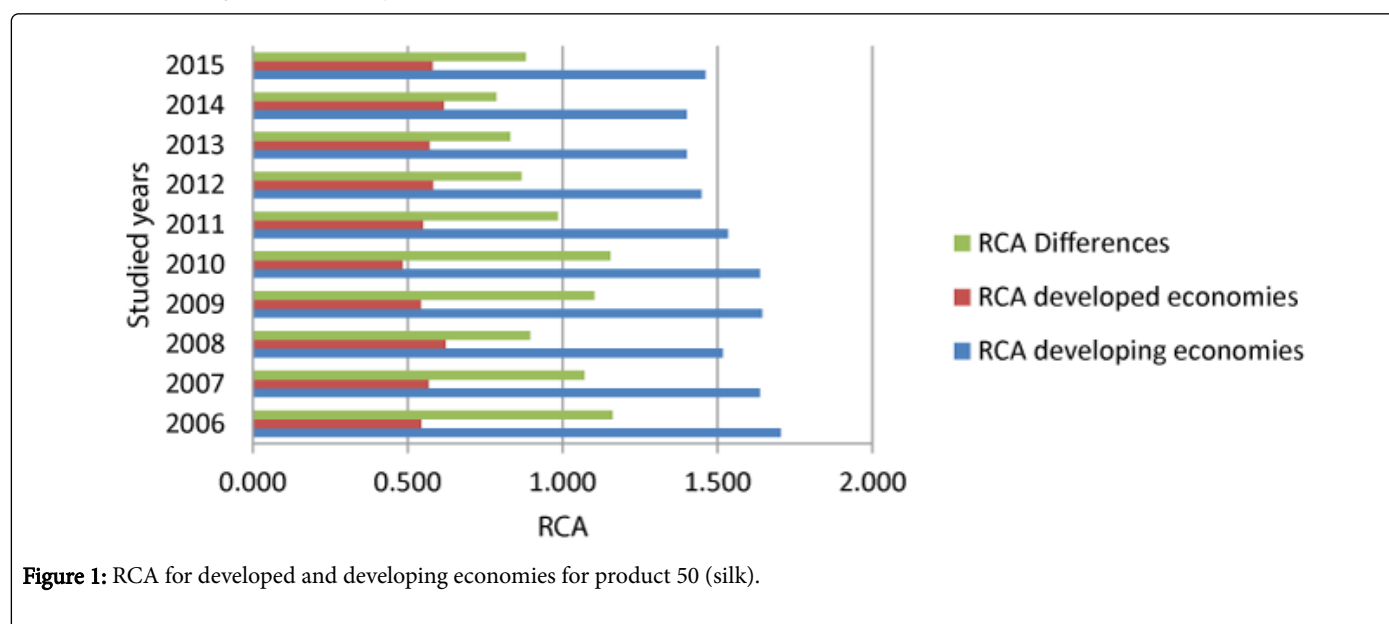

Figure 1: RCA for developed and developing economies for product 50 (silk).

Developing economies had shown advantage over developed economies for silk, since RCA>1 for all the ten years considered, but from 2011 to 2014 declining trend was found. This can be attributed to the fact that alternate fibers like 'Artificial Silk' in the form of blend or other combinations with cheaper prices were used prominently.

On the other hand, developed economies haven't shown marked fluctuation over the ten year span, excluding the years 2008 and 2014.

RCA difference between the two economies was also narrowing down between 2011 and 2014, but last year slightly rose up due to decrease in overall consumption of the fiber around the world (trade map link) which leads to discourage the producers in developed economies.
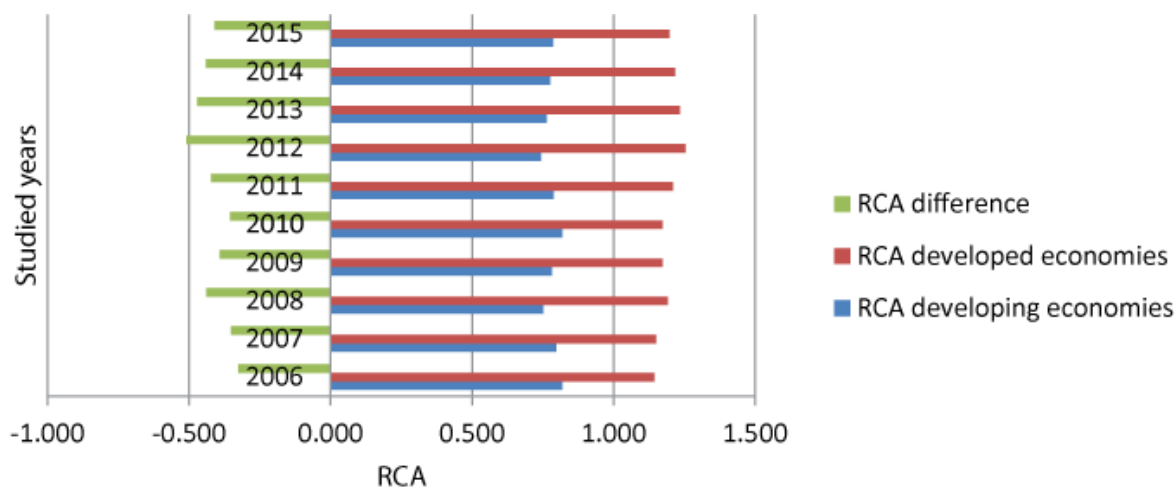
Figure 2: RCA for developed and developing economies for product 51 (Wool, animal hair, horsehair yarn and fabric thereof).

In the case of Product 51 (wool, animal hair, horse hair yarn and fabric, thereof), developed economies have distinctive advantage over developing economies for all the observed years. The climatic conditions are favoring developed countries for animal fibers, specifically wool, as compared to developing economics except China. As depicted in Figure 2, wool, animal hair, etc., have retained their position in global market as no abrupt change was seen either from developed or developing economies in the export rates, except for the year 2012. Highest RCA value was registered in 2012 for developed economies and the difference was also significant due to large share from developed economies in world trade. But for the last year, the share of wool from European Union was falling down. According to Wool journal, April 2015, exports to Europe, the second largest destination for raw wool exports, fell by 13% for 2014/15 to February 2016 as a result of decline in exports to Italy, Germany, Czech Republic and United Kingdom. After strong gains in the first half of 2014, raw wool exports to India from the large exporting countries have fallen back this season, by 12%.
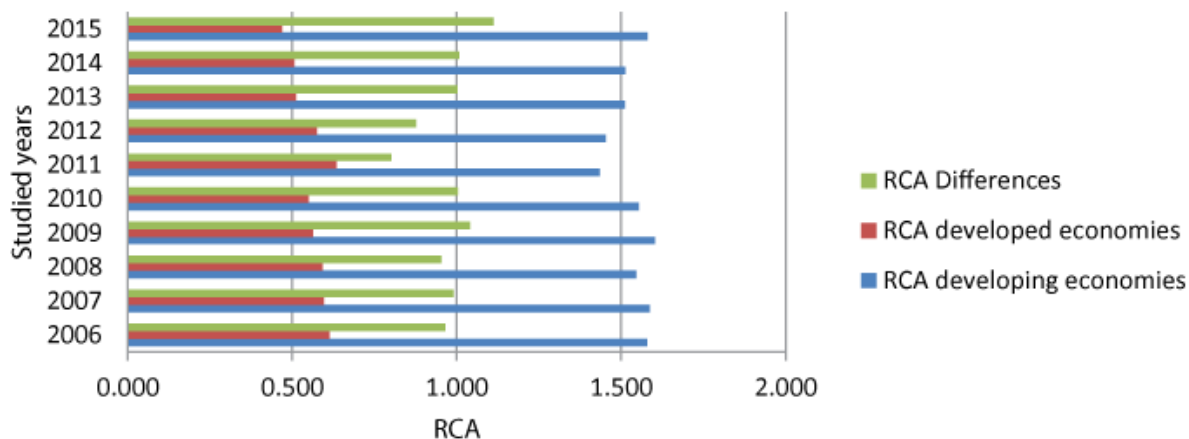

Figure 3: RCA for developed and developing economies for product 52 (Cotton).

Cotton is the king of fibers and mostly consumed for many end uses. RCA for cotton for developing economies have absolute advantage in terms of availability of free land as well as favorable climatic conditions for its growth. According to the Figure 3 the developed economies, United States of America contributed highest and best quality cotton for export purposes. U.S. cotton production is pegged at 14.3 million bales for 2016/17, as producers are anticipated to increase planted area by about 10%. Domestic mill use is projected to be even with 2015/16 level, while exports are anticipated to rise, with ending stocks unchanged from the beginning level. India and China, which used to fulfill most of the global demand, are falling under developing economies with huge amount of irrigation land. But according to cotton outlook, Feb 2016, China's 2015/16 production was estimated as 23.8 million bales, a 21% drop from last season. Production in the eastern areas plummeted by about 40%, due to noticeably less government support. In addition to it, a combination of lower area and unfavorable weather reduced production in the Xinjiang Autonomous Region. With declining production, China fell behind India as the world's largest cotton producer. China's 2015/16 harvested area is estimated at about 3.4 million hectares, 1 million

below 2014/15. Yields are expected to reach 1524 kg per hectare, 3% higher, as the proportion of area in the higher-yielding Xinjiang Autonomous Region rose above 60% (Report on OECD-FAO Agricultural Outlook 2015-2024. It was observed that the contribution from developing economies started declining from 2015, whereas the share of developed economies was increasing, resulting in the widening up of the difference of export value between the two major economies.
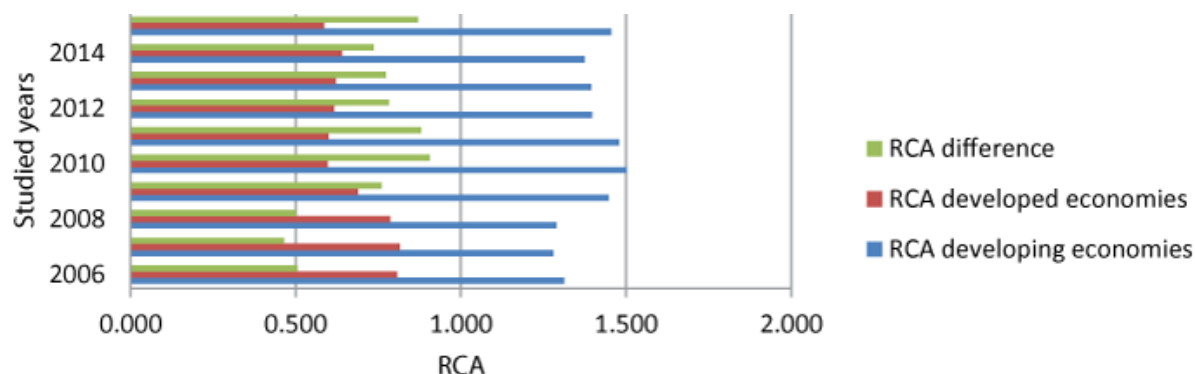

Figure 4: RCA for developed and developing economies for product 53 (Vegetable textile fibresnes, paper yarn, woven fabric).

Vegetable fibers include bamboo, sisal, flex, etc., which are generally used in the form of blends either with cotton or polyester in different permutations and combinations, to enhance the performance of textile material. Figure 4 shows that RCA is greater than unity for developing economies due to adequate atmospheric conditions to grow such fibers. On the other hand, geographical shifts of textile and clothing industry prompted all mills in developing countries to upgrade themselves for mass production. From the year 2006 the export share from developing countries had shown a decreasing trend up to 2015 due to labor-intensive nature of industry and environmental impacts. The year 2010 indicates maximum RCA among all the selected years for developing economies and for later years it started decreasing owing to the drifting of Chinese labor force towards less fatiguing and higher incentive offering electronic gadget industries. In the last year (2015), it again started increasing due to the entry of new emerging countries like Vietnam, Kenya, etc. in the fields of textiles and clothing.
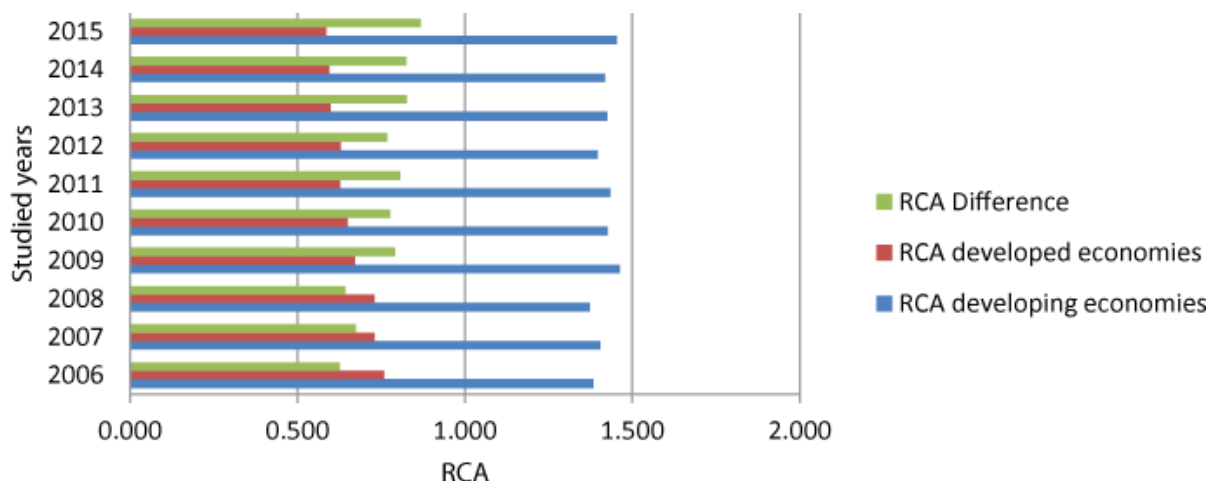

Figure 5: RCA for developed and developing economies for product 54 (Man-made filaments).

The comparative advantage for developing economies for man-made filaments is shown in Figure 5. It was observed that the production of such filaments was swinging towards developing economies due its environmental impact. Polyester alone captured almost whole market due its cost effectiveness and compatibility to form blends with other fibers. This product category also follows the path of Product 53 for developed economies - the export value had shown a decreasing trend till 2015.
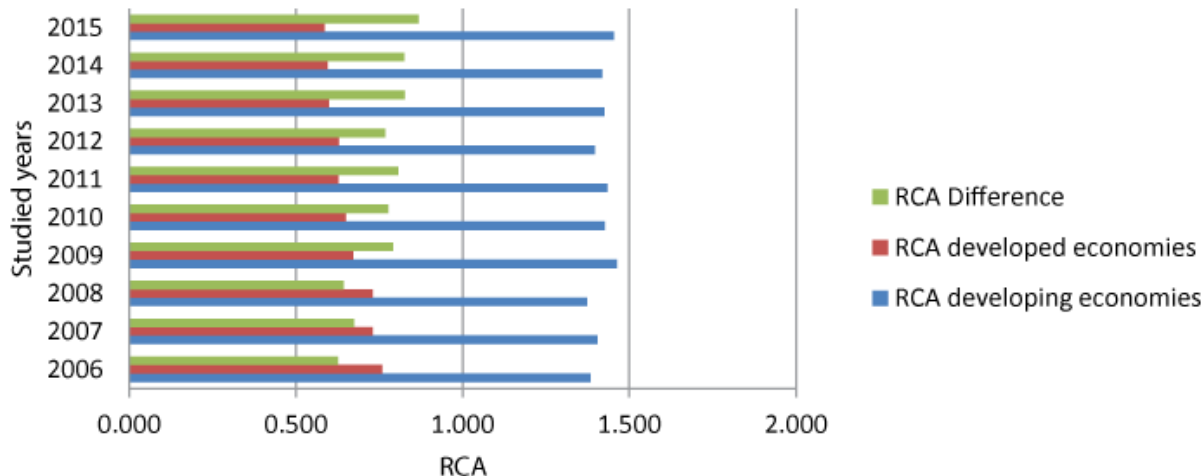
Figure 6: RCA for developed and developing economies for product 55 (Man-made staple fibers).

Man-made staple fibers are the same of man-made filaments with the inclusion of additional process of cutting of continuous filament into staple forms to impart physiological comfort to the wearer. Figure 6 shows the revealed comparative advantage for developing economies, similar to the trends shown by Product 54, including the relative increase in export share of developing countries in the last year. The export value is higher compared to man-made filaments due to breathable clothing aspects.

Conclusion

From RCA analysis, it is evident that the developing economies have lower opportunity cost in textile fiber/fabrics production. RCA comparison revealed that developed economies have an edge over developing economies in Product 51 category (wool, animal hair, horsehair yarn and fabric thereof), whereas the developing economies have higher RCA values in Products 50 and 52 categories (silk, cotton, vegetable fibers and man-made fiber/filaments). The substantial difference in RCA values between developed and developing economies (higher for developing economies) is likely to widen in the future years. The year 2009 was found to be most favorable for developing economies for HS codes 50, 52, 54 and 55 in the selected ten-year span of study. In the case of cotton, although developed economies do not have relative advantage over developing economies, the developed economies, particularly USA, have started taking necessary initiatives. Hence it is inferred that the developing economies shall focus on mass production of textile products utilizing more man power, which is clearly their absolute and existing advantage in these sectors. This will help these economies to tackle their under-employment issues and increase the per-capital income of their countrymen. Developed economies shall thrust themselves more into the domains of new product design, research and development to accrue the same profit with a smaller export quantity. The Disclosure of conflict of interest is that we declare that there is no financial/relevant interest that will influence the study.

References

1.   James J, Stephen M, Leslie M, Carol S, Lyman S (2016) Agricultural Outlook Forum 2016. The World and United States Cotton Outlook.

2.   Jody C, Shawn B, Michelle H (2016) The Economic Outlook for U.S. Cotton 2016. National Cotton Council of America.

3.   Balassa B (1965) Trade Liberalization and "Revealed" Comparative Advantage. The Manchester School 33: 99-123.

4.   Liesner HH (1958) The European Common Market and British Industry. Economic Journal 68: 302-316.

5.   Balassa B (1977) Revealed Comparative Advantage Revisited: An Analysis of Relative Export Shares of the Industrial Countries, 1953-1971. Manchester School of Economic & Social Studies 45: 327-344.

6.   Balassa B (1986) Comparative Advantage in Manufactured Goods: A Reappraisal. The Review of Economics and Statistics 68: 315-319.

7.   Hecksher EF (1919) The effect of foreign trade on the distribution of income in theory of International Trade, American Economic Association, Philadelphia, Blakiston.

8.   Ohlin B (1934) Interregional and International Trade. Political Science Quarterly 49:126-128.

9.   Kowalski P (2011) Comparative Advantage and Trade Performance: Policy Implications. Organization for Economic Co-operation and Development, pp: 1-53.

10. Hailay GB (2014) Trade Integration and Revealed Comparative Advantages of Sub-Saharan Africa and Latin America & Caribbean Merchandise Export. The International Trade Journal 28: 411-441.

11. Gonel FD (2000) The Revealed Comparative Advantages in Textiles of Turkey in Trade with European Union (1990-1997). Yildiz Technical University Besiktas Istanbul.

12. Akhtar N, Zakir N, Ghani E (2008) Changing revealed comparative advantage: a case study of footwear industry of Pakistan. The Pakistan Development Review 47: 695-709.

13. Alemayehu G, Atnafu GM (2008) China and India's Growth Surge: Is it a curse or blessing for Africa? African Development Review 20: 247-272.

14. Havrila I, Gunawardana P (2003) Analyzing Comparative Advantage and Competitiveness: An Application to Australia's Textile and Clothing Industries. Australian Economics Papers 42: 103-117.

15. Belay S (2010) Trade Liberalization in Textiles and Clothing and Developing Countries: An Analysis with Special Emphasis on the US Import Market. The International Trade Journal 24: 149-181.

16. Khurram S (2015) An RCA Analysis of Textiles and Clothing in Pakistan, India, and Bangladesh. Lahore Journal of Economics 20: 157–168.

17. Dushyant, Divya S (2015) Export Competitiveness of Indian Textile Industry. Journal of Research in Commerce & Management 4: 1 -5.

18. 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 3: 173-191.

19. 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 & TEXTILES in Eastern Europe 20: 8-11.

20. Karaalp HS, Yilmaz ND (2013) Comparative Advantage of Textiles and Clothing: Evidence for Bangladesh, China, Germany and Turkey. FIBRES & TEXTILES in Eastern Europe 21: 14-17.

21. Hiwotie WA (2010) Analysis of the Competitiveness of Ethiopian Textile sub- sector under Africa Growth and Opportunity Act (AGOA) using Porter Diamond Model. University of Greenwich, pp: 1-72.

22. Nawaz A, Rukhsana K (2013) Changing Revealed Comparative Advantage of Textile and Clothing Sector of Pakistan: Pre and Post Quota Analysis. Pakistan Journal of Commerce and Social Sciences 7: 520-544.

23. Priyanka S, Madan (2013) Export performance and competiveness of Indian textile industry. International Journal of Scientific Research 2: 315-316.

24. KF Au, MC Wong (2007) Textile and clothing exports of developed & developing countries: An analysis under the restrictive trade regime. The Journal of the Textile Institute 26: 471-478.

25. Nazire DY, Hacer Simay KO (2015) Comparative Advantage of Textiles and Clothing: Evidence for Top Exporters in Eastern Europe. FIBRES & TEXTILES in Eastern Europe 23: 8-13.

26. Yasmin B, Altaf S (2014) Revealed comparative advantage of carpets and textile floor covering industry in Pakistan, India and China. Journal of Economic Cooperation and Development 35: 113-134.

27. Ignjatijevic S (2012) Serbian Textile and Apparel Industry At The International Market: Comparative Advantage Analysis, Actual Problems Of Economics 7: 383-393.

28. Wadud IKM, Wahida Y (2009) Dynamic Comparative Advantage And Industry Characteristics As Basis For Trade In Textiles And Clothing. Corporate Ownership & Control 7: 478-492.

29. Peter K, Ting C (2006) Analysis of comparative advantage in the textile complex: A study of Eastern European and former Soviet Union nations. Journal of Fashion Marketing and Management 11: 82-105.

30. Ting C, Peter K, Carl D (2005) An Assessment of US Comparative Advantage in Technical Textiles from a Trade Perspective. Journal of Industrial Textiles 35: 17-37.

31. Jin W (2011) Rising labor cost and the comparative advantage of Chinese textile industry analysis. Advanced Materials Research 331: 694-698.

32. Edmund A, Barry L, Frederick N (2009) Did China Hurt the Textiles and Clothing Exports of Other Asian Economies, 1990–2005? Oxford Development Studies 37: 333-362.