

## Cotton Export Potential: A Case Study of Pakistan

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### Abstract

The study highlights the issues of export potential faced by Pakistan's cotton industry regarding the competitiveness in the international perspective. The methodology of Balassa's Revealed Comparative Advantage is used to determine the comparative advantage at 3-digit level of Standard International Trade Classification using United Nation Commodity Trade Statistics of Import and Export. The paper discusses the changing patterns of the Pakistan's cotton trade with its comparison with the world. In the end analysis of the recent years shows that, especially the time period from 2002 to 2012. The study indicates that if government does not make major changes to increase the cotton yield this sector will lose its potential beyond repair and Pakistan will lose a great source of income. Study suggests that there is need to strengthen the competitiveness of cotton by exports encouraging trade policy, research and development in cotton production and proactive disaster management policy.

**Keywords:** Trade, Revealed comparative advantage, Exports, Agriculture.

### 1. Introduction

Pakistan is an agricultural country and since its inception the agriculture sector of Pakistan plays a vital role by making a great contribution to the GDP. In figures, currently agriculture contributes for about 21.2 percent of GDP and accommodates 43 percent of the labor force. It is considered that Pakistan agriculture is underperforming taking performance of agricultural exports under consideration. Pakistan is dependent on climatic conditions for its exportable agricultural products may have to contend with output being determined by the vagaries of the weather.

The pattern and nature of foreign trade gives a fairly good indication of economies that enter into trade agreements. In international trade countries with comparative advantage in certain products are likely to produce and export those commodities. In some cases, they will need to import raw materials for their exports, establishing a strong link between the two.

A large number of agricultural Pakistani products exhibit comparative advantage but could not accomplish their full potential in international market. Important crops of Pakistan, such as wheat, rice, maize, cotton and sugarcane holds 25.2 percent of the value added in overall agriculture and 5.4 percent to GDP, this study will focus on cotton exports and with which country cotton exports exhibit strong comparative advantage. Cotton crop is also known as "Silver Fiber" is one of the major exports of Pakistan; Pakistan's economy depends heavily on cotton crop which significantly contributes by providing raw material to the textile industry. It accounts for 7.0 percent of value added in agriculture and 1.5 percent of GDP. Pakistan ranks as the fourth largest cotton producing country in global ranking, satisfying almost all requirements of its growing textile industry and providing sufficient surplus for export. Pakistan has become one of the biggest exporters of cotton yarn and cotton related products (such as garments and textile made-ups) due to extra ordinary growth of local textile industry in the recent years.

With the passage of time globalization is becoming inevitable. Pakistan is member of SAFTA and ECO which aims to promote zero tariffs, removal of trade barriers and promotion of intra-regional trade in the region. Trade liberalization and free markets boost economic growth and creating employment, on the other hand, they have created fierce competition for exporters in international market, there are many organizations working globally to protect the developing countries from trade disadvantages.

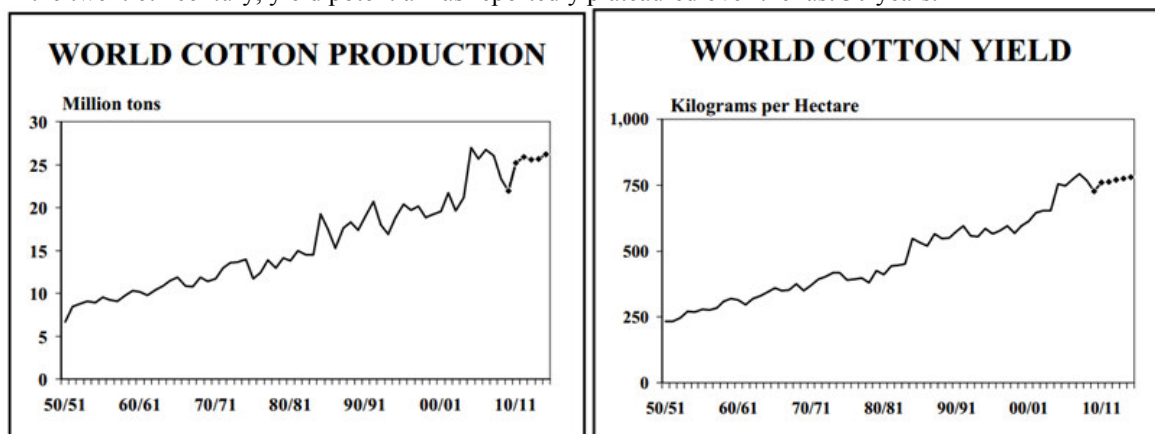
According to World Trade Organization's Agreement of Agriculture member countries should consider comparative advantage when formulating trade policies Faruquee(1995) suggested Pakistan should benefit from utilizing comparative advantage in global market to increase efficient and effective allocation of its resources. Azhar (1995) If Pakistan uplifts the level of branding, storage capability and transportation to meet the global standards in international market of its nontraditional products then Pakistan can exploit its export potential. Pakistan has become one the largest exporters of yarn cotton due to government efforts and cooperation domestic growers to increase production. K. Bakhsh (2005) concluded that supervision of agencies and departments involved in the distribution and quality control of vital inputs (such as seed, fertilizer and pesticides etc) with their timely availability play the key role in cotton productivity enhancement. Waqar Akhtar (2009) calculated RCA for fruits and discovered that increasing pattern of RCA reflects higher earnings from exports which led to growth in fruits. Efficient productivity in any sector reflects that the country has comparative advantage in that sector.

Pakistan with efficient production of cotton and effective government support price policy can earn

more foreign exchange, evidence of this is 2004-2005 production of cotton which exceeded by 4.28 million bales. PWCR (2010) Cotton area under Bt cotton in Punjab has been increased rapidly from 60% in 2008 to 75% in 2010. While in Sindh almost 80% of cotton area is under Bt cotton in 2010. S. Anwar (2010) tells us competitiveness and openness of cotton increased cotton exports. K. Riaz (2012) explained the main products from agricultural sector can create high demand in developed markets if agriculture sector performs at its maximum capability.

### 1.1. GLOBAL COTTON TREND

Since ancient times, the genetic makeup of the crops has been modified by farmers. Demand for features such as faster growth and efficient seeds have strikingly altered domesticated plant species compared with their wild relatives. In cotton, sexual crosses between plants with desirable characteristics and selection within their progeny resulted in varieties with increased fiber quality and yield and the ability to grow in temperate regions (May, 1999). However, (Meredith Jr, 2000) despite the remarkable advances made by traditional plant breeding in the twentieth century, yield potential has reportedly plateau-ed over the last 30 years.



Data Source: ICAC Cotton Statistics

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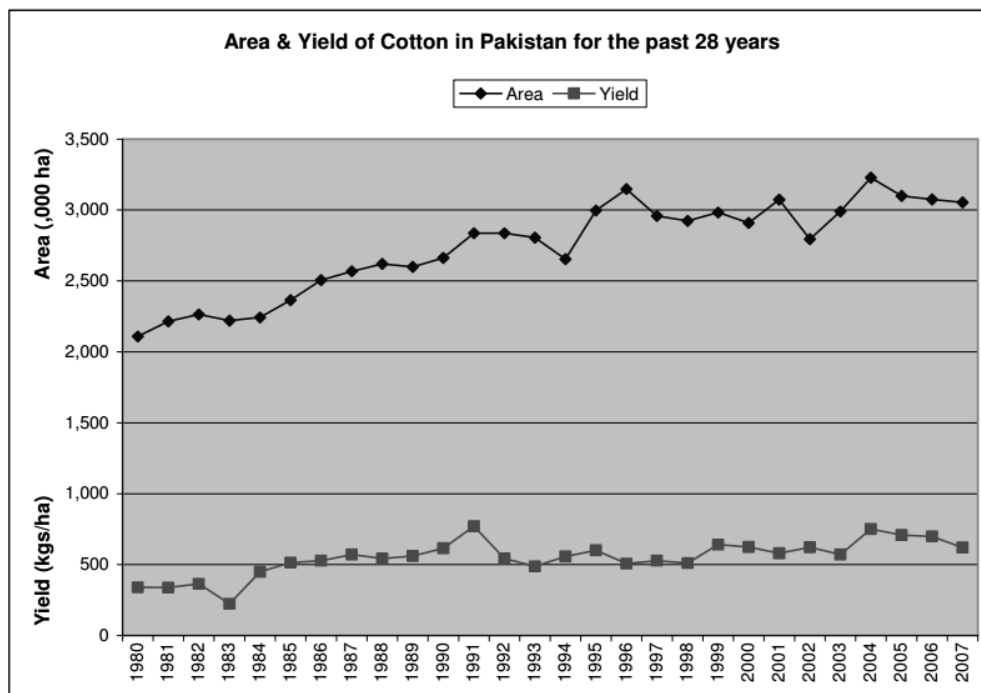
The above graphs show last seven decades of the production (in million tons) and yield (kilograms per hectare) of world cotton at a glance. It is clear that production and yield trends are increasing over the time period. New technology and modern production methods have enabled the world to produce in bulk quantity but the trade pattern of the world kept on changing. Today's world textile and garment trade is valued at a staggering \$425 billion. Under the pressure of free markets and increasing globalisation, it is India and China that are the new global manufacturing powerhouses. However, the recent growth of Asia in the world's leading textile manufacturer is not new phenomenon. Until the industrial revolution at the end of the eighteenth, both India and China were leading economic areas and their skill in cotton textile manufacturing were superior to those of Europe. Asia manufactured great quantities of colorful printed and painted cotton that were sold across the Indian Ocean and reached faraway places such as Japan and Europe where they were craved as exotic fashionable goods. China and India are at the top among cotton producing nations but their higher consumption of China makes it the number one destination for exports of cotton from around the world, other major importing countries are Turkey and Indonesia. USA, India and Australia were the top exporting countries in 2011. Pakistan is also among the cotton exporting countries and as well as in cotton importing countries.

World cotton production during the year 2013-14 season is estimated at 25.5 million tons, the lowest in four seasons but world cotton mill use is projected to remain around 23.5 million tons with the consumption pattern shifting from China to Turkey, India and Pakistan.

According to the International Cotton Advisory Committee (ICAC), because of bad weather conditions and low cultivation area, production in the USA and China is significantly less than the last season. Cotton plantings in the southern hemisphere start in large-scale in the October of 2013-14 with approximately 2.7 million hectares estimated to be planted with cotton in 2013-14, similar to 2012-13. However, yields are expected higher which will result in an increase in South American production. World volume of cotton trade is estimated at 8.5 million tons during 2013-14, approximately 1 million tons less as compared with the last season, due to a decrease in imports by China.

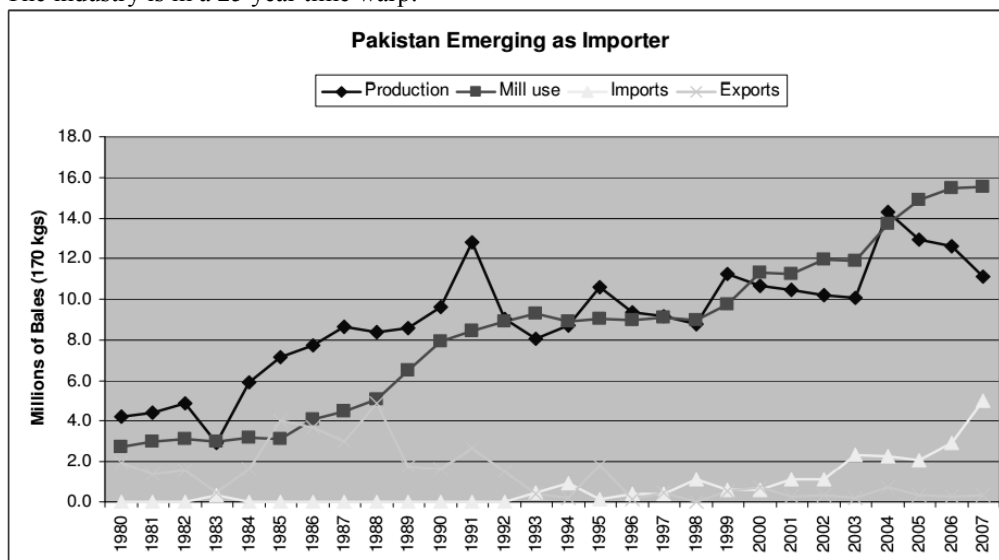
The forecast of world ending stocks for 2013-14 are at 20.4 million tons, an increase of 2 million tons from the previous season. In 2013-14, China's reserves are projected to rise to 11.4 million tons. However, Other than China world ending stocks will increase by less than 200,000 tons, so by the end of 2013, China will hold nearly 60 percent of the world stocks.

1.2. PAKISTAN COTTON PERFORMANCE



Data Source: ICAC Cotton Statistics

The figure above represents the last 30 years of production and exports in Pakistan and the average yield. Despite the fact the area of has increased from 2 million hectares to 3 million hectares with the passage of time but yield is stagnated. Whenever the yield has shown improvement (e.g. the early 90s and in 2004), some natural calamity has befallen the industry (e.g. CLCV, mealy bugs, floods etc). Pakistan has increased its production by increasing its cotton growing area not using the modern techniques to increase the productivity. The industry is in a 25 year time warp.



Data Source: ICAC Cotton Statistics

The mill use is increasing due to high demand of Pakistani textile domestically and in international markets. In eighties Pakistan was exporting cotton till mid nineties. Since 2001 Pakistan is emerging as an importer of cotton. The current average cotton yield in Pakistan is 18 maunds (1 maund = 37.32 kgs) of seed cotton per acre which would produce 11.7 million (170 kg) bales on 3.2 million hectares. With an objective of meeting existing mill demand, an increase by 30% to 23.4 maunds in yield on average which would produce 15.2 million bales. Pakistani farmer will earn extra US\$ 0.9-1.1 billion per year earning from these 3.5 billion bales, not overseas cotton farmers.

These are certainly impressive numbers but Pakistan can achieve more in cotton production. Firstly already a higher target is set for the Cotton Vision 2015 Project (20m bales by 2015) and secondly, the Indian

cotton industry has already achieved more than this level of improvement.

## 2. METHODOLOGY AND DATA

### 2.1.1. MEASURING RCA WITH THE WORLD

Revealed comparative advantage (RCA) indexes tell us viable information for analyzing a nation's comparative advantage, based on actual export performance. Liesner in 1958 established the idea to calculate the performance of country's strong sectors by determining country's actual flows. Bela Balassa was pioneered and popularized the work as the Balassa Index<sup>1</sup>. More specifically, the Balassa index for commodity j exported from nation i (RCA<sub>ji</sub>) can be written as follows:

$$RCA_{ji} = \frac{\left(\frac{X_{ji}}{X_{jw}}\right)}{\left(\frac{X_i}{X_w}\right)}$$

Where,

$X_{ji}$	=	exports of the commodity j from nation i
$X_{jw}$	=	world exports of commodity j
$X_i$	=	exports of nation i
$X_w$	=	world exports

### 2.1.2. INTERPRETATION:

The Revealed Comparative Advantage index is from zero to one as the break-even point. If Revealed Comparative Advantage value of less than unity indicates that the commodity is not exportable, if a RCA is unity means that the commodity reflects a "revealed" comparative advantage. Revealed Comparative Advantage index is not symmetrical in a way that one can't compare both portions of the break-even level.

### 2.2. Measuring Bilateral RCA

The RCA index presented earlier uses the global market<sup>2</sup> as the market reference. This study will include bilateral RCA for top importing countries. Measurement of disaggregation to determine of RCA at the bilateral and regional levels, equation can be written as follows:

$$RCA_{ji}^R = \frac{\frac{X_{ji}^R}{X_i^R}}{\frac{X_{ji}}{X_i}}$$

Where,

$X_{ji}^R$	=	exports for product j from country i to country or region R
$X_i^R$	=	exports of country i to country or region R
$X_{ji}$	=	total exports of product j from country i
$X_i$	=	total exports of country i

### 2.3. Interpretation:

If  $R_{ji}$  RCA exceeds one then we conclude that the country i has a comparative advantage in the export of product j to the reference market R. This is so because a value of this index greater than unity implies that the share of product j in country i's exports to region R exceeds the share of product j in the country's total exports.

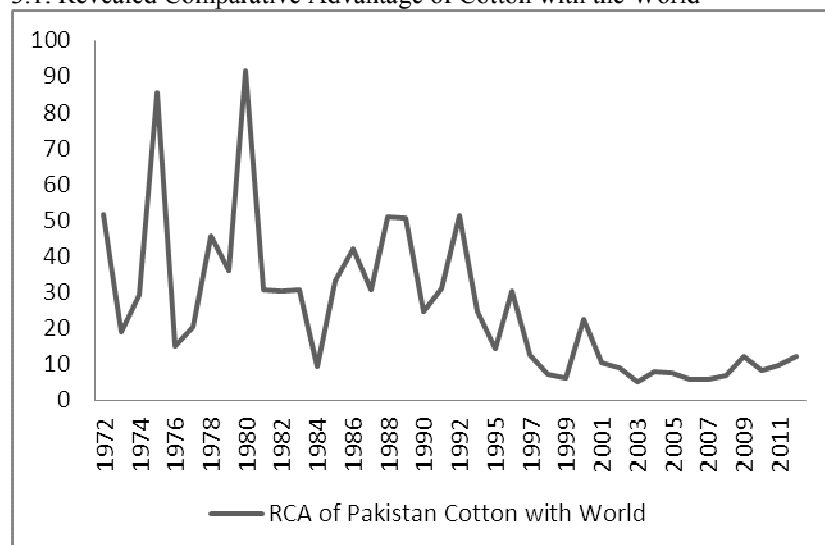
The index of RCA is calculated using data on 37 countries from United Nations Statistics Division UN COMTRADE (SITC Rev.1 Commodity Code 263) and International Cotton Advisory Committee (ICAC) Cotton Statistics.

<sup>1</sup> Balassa advocates that the performance of exports a particular industry/product from a nation – as calculated by RCA index – as the relative share of the country's export of the commodity in the world export of the similar commodity, up on the total share of the nation in global exports.

<sup>2</sup> World market consists of 37 countries in this Paper. Argentina, Australia, Austria, Belgium, Brazil, Canada, China, Ethiopia, France, Germany, Hong Kong, India, Indonesia, Italy, Japan, Korea, Malaysia, Mexico, Netherlands, Nigeria, Norway, Pakistan, Philippines, Poland, Russia, Saudi Arab, Singapore, south Africa, Spain, Sweden, Switzerland, Thailand, turkey, UAE, UK, US & Vietnam

### 3. Empirical Findings

#### 3.1. Revealed Comparative Advantage of Cotton with the World



Source: Author's calculation using UN COMTRADE Statistics

Figure shows the evolution of RCA Index for Cotton of Pakistan from 70s up till now. It shows that Pakistan's cotton exports are competitive in the international market since the values of the RCA index are greater than unity throughout the period of analysis. It also shows that the country is facing continuous deterioration in the level of competitiveness in global market. Pakistan needs to enter the mainstream science and technology arena with strong IP laws and enforcement. This will allow Pakistan prompt access to future technologies and breakthroughs. Otherwise, Pakistan will be left behind scrambling for outdated technologies or left to fend for itself.

#### 3.2. Bilateral Revealed Comparative Advantage with Top Importers

The estimations for the years 2002 to 2012 provide evidence on the movement of in the pattern of RCA of Cotton for Bangladesh China, Indonesia, Turkey and Vietnam, which are the world's top destinations for cotton exports. At SITC Rev.1 classification, the revealed comparative advantage is greater than unity for Pakistani cotton other than Turkey among top 5 importers of cotton.

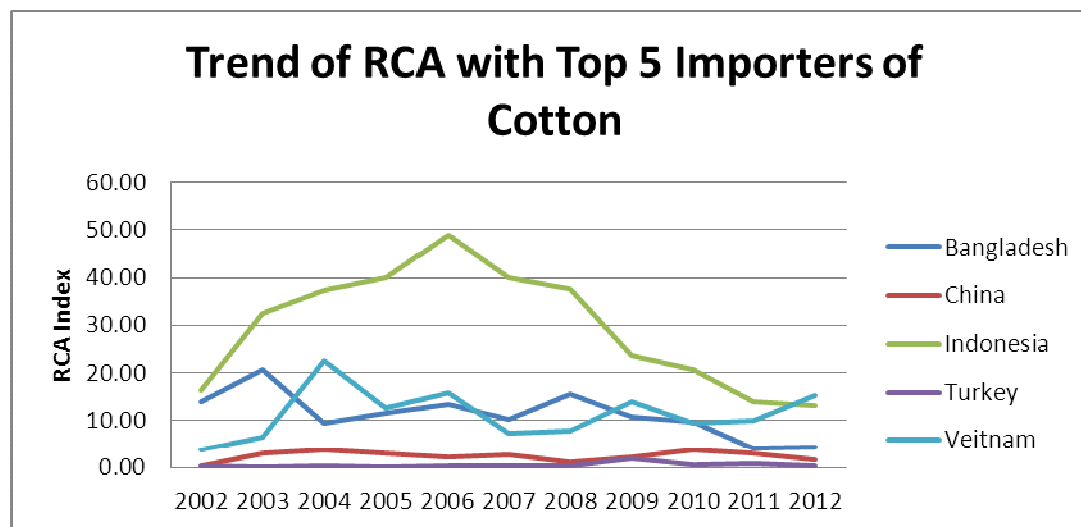
Table 3.2

Year	SITC CODE	Bangladesh	China	Indonesia	Turkey	Vietnam
2002	263	13.88	0.20	16.53	0.33	3.67
2003	263	20.58	2.91	32.42	0.15	6.36
2004	263	9.49	3.79	37.23	0.43	22.68
2005	263	11.49	2.93	39.90	0.14	12.78
2006	263	13.52	2.33	48.83	0.23	15.98
2007	263	10.16	2.64	39.90	0.28	7.31
2008	263	15.65	1.10	37.68	0.20	7.82
2009	263	10.88	2.26	23.61	2.06	13.95
2010	263	9.63	3.92	20.70	0.49	9.52
2011	263	4.07	2.93	13.89	0.83	9.89
2012	263	4.27	1.60	13.08	0.33	15.45

Source: Author's calculation UN COMTRADE Statistics

The reported results in the following figure show that RCA for Pakistan's cotton was increasing from 2002 to 2006 in almost all top importing countries. The main reason was political stability from 2002 to 2006 and good foreign policy in Musharraf Era. The decreasing export volume and value of cotton after 2006 have declined competitiveness of Pakistan. The Musharraf Era showed that Pakistan cotton had great potential for growth. Pakistan's lacking in mechanization and absence of modern techniques to increase its yield has made Pakistan an importer of cotton. In order to meet its consumption-production gap Pakistan is at the moment importing cotton<sup>1</sup>.

<sup>1</sup> Pakistan ranked 9<sup>th</sup> in top cotton importing countries or areas in 2011, according to UN Comtrade.



Source: Author's calculation UN COMTRADE Statistics

#### 4. CONCLUSION

In this study we have analyzed the export potential of cotton exports and estimated its revealed comparative advantage with the world and top importer of cotton. Balassa Index has been used to analyze cotton exports of Pakistan using commodity system SITC Rev.1. Our analyses shed light on changing pattern of competitiveness of cotton sector in Pakistan in the last 10 years.

Pakistan exports for cotton were world renowned; the world RCA for cotton was very high in seventies but with the passage of time it has been decreasing due to cotton leaf curls virus, no professional seed in industry, Mealy bugs, Water, weeds and floods etc. Pakistan's yield per hectare has not shown improvement, Pakistan has been improving its exports by increasing the area of cotton cultivation area.

The time period from 2002 to 2006 showed growth after that weak trade policy, absence of research and development in cotton production and natural calamities have declined the competitiveness of Pakistan.

The changing RCA in Pakistan cotton i.e. shift from high to low level of competitiveness indicates that this sector is losing its potential if government make fulfill the requirements of this sector it can become great source of higher exports earning. There is a growing perception that the increasing cost of doing business (bad agriculture policy, security issues, political instability etc) in Pakistan is eroding the competitiveness of the cotton industry in Pakistan. In 2013 Pakistan was 106<sup>th</sup> in the World Bank's report on "ease of doing business" Pakistan ranking has declined to 110<sup>th</sup> out of 189 in 2014. According to report Pakistan is 206 days to get an electricity connection. Pakistan is lagging in establishing an electronics system for tax payments and other services as compared other Asian countries.

Thus in the rapidly changing international economic markets' environment, there is a need to strengthen the competitiveness of the cotton.

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