IMPACT OF FREE TRADE AGREEMENT (FTA) ON TRADE PATTERNS OF GOODS BETWEEN PAKISTAN AND CHINA

By

EHSAN, Sana

THESIS

Submitted to
KDI School of Public Policy and Management
in partial fulfillment of the requirements
for the degree of

MASTER OF PUBLIC POLICY IN ECONOMIC DEVELOPMENT

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Committee in charge:

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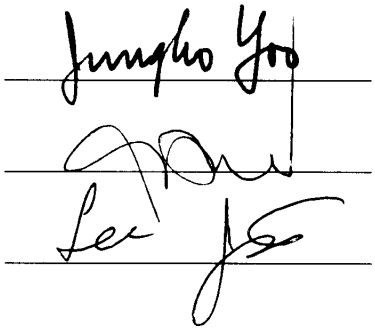

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ABSTRACT

IMPACT OF FREE TRADE AGREEMENT (FTA) ON TRADE PATTERNS OF GOODS BETWEEN PAKISTAN AND CHINA

By

Ehsan, SANA

Pakistan and China share long lasting cordial relationship. To extend this relationship a free trade agreement (FTA) was signed between the countries in 2006. The purpose of my study is to examine the impact of this FTA on patterns of goods traded especially from the point of view of Pakistan. Due to data limitations only observations from 2003-2010 have been included in the analysis which has been carried out using Before-After FTA analysis, Revealed Comparative Advantage (RCA) and Gravity Model. Before-After analysis reveals that the trade patterns have improved generally (Pakistan exports as well as imports from China have increased) but the trade deficit of Pakistan has also increased; the RCA analysis shows that there is a difference in goods traded by both countries in world markets and bilaterally except the top ranked products. The gravity model suggests that Pak-China FTA does not appear to affect the bilateral trade flow one way or another. The positive and statistically significant China's GDP could have positive influence on Pakistan's exports to China because bigger the China's GDP, the greater China's imports from Pakistan, and bigger its capacity to absorb imports. On the other hand, Pakistan's GDP does not have much influence on its exports to China. Therefore in present conditions it is Pakistan which benefits more from the bilateral trade because Pakistan's exports to China are positively correlated with China's GDP which is growing faster than Pakistan's GDP.

Dedicated to my Parents

ACKNOWLEDGEMENTS

I wish to express my sincere gratitude to Prof. Nam, Sang-Woo, Dean of KDI School of Public Policy and Management for providing me an opportunity to study at this prestigious school and does my research project work on “Impact of FTA on Trade Patterns of Goods between Pakistan and China”. This research project bears on imprint of many peoples. I extend my heartfelt gratitude to my Major Professor Yoo, Jung Ho for guidance, vital encouragement and support in carrying out this research work. I also wish to thank the officials and other staff members of KDI who rendered their help during the period of my research work especially KDI School Library Staff. My special thanks to my committee member Prof. Lee, Sung Joo for his kind advises. Last but not least I wish to avail myself of this opportunity, express a sense of gratitude and love to my friends especially Ms. Uzma Ibrahim for much needed motivation in completing my work and my beloved parents for their support, strength, and help and for everything.

Sana Ehsan

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1. INTRODUCTION

The benefits from trade could differ from country to country based on its national welfare, economic, political, regional and strategic state of affairs. Countries tend to agree upon mutual free trade agreement when multilateral liberalization is unattainable. More free trade could help increase national welfare[1]. Similarly, many factors added to establishment of Free Trade Agreement (FTA)[2] between Pakistan and China in 2006 to extend its long lasting bilateral and economic relations to improve its trading patterns cooperation and partnership in various sectors ranging from social to technical.

Pakistan and China both are members of World Trade Organization (WTO) and according to Article XXIV of GATT, WTO members are permitted to enter into bilateral or regional agreements provided they cover most bilateral trade flows and they do not have net trade diversion effect. Both the countries have different economic structures and specialize accordingly. It is hard to say that if their specialization in goods is based on the theory of comparative advantage where countries tend to specialize in those individual segments of production where they have comparative advantage.

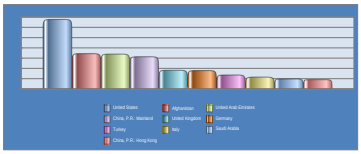
China's exports to Pakistan are more diversified and bigger in volume then those by Pakistan. Pakistan's export product mix is very narrow; around 80% of its exports consist of cotton yarn Shabir and Kazmi (2007). In 2010, Pakistan exports (HS) to China were reported as US $ 1.4 billion as compared to US $ 6.9 billion of China's export to Pakistan. China is the fourth largest importing country of Pakistan, and accounts for 11.9% imports and 5.5%

[1] Krugman & Obstfeld (2009) p. 213

[2] Free Trade Agreements (FTAs) are a kind of RTAs which includes *removal of tariffs and other trade restrictions on a comprehensive array of either goods services or both*.

exports (European Commission Trade n.d.). The volume of bilateral trade between Pakistan and China has increased from US$ 1.4 billion in 2001 to US$ 5 billion in 2006 and about $14 billion in 2010. Figure 1.1 illustrates top ten trading partners of Pakistan in the year 2010 where China stands as fourth largest trading partner of Pakistan.

Figure 1.1 Pakistan Top 10 Trading Partners



Source:

IMF

Direction of Trade Statistics (DOTS)

The Chinese exports like many other developed and developing countries undergone transition. 1980's was dominated by clothing, footwear, other light manufactures and fuels, where as 1990's China saw the transition towards relatively manufactured goods like telecommunication, industrial supplies etc which further expanded to automated and data processing and electronic goods. Since the exports of China to the rest of the world are growing so are the China's imports of raw material to produce those goods, which includes primary input to the industry (crude oil, and other metals), intermediate inputs (the basic components for electronic and consumer goods) and the capital goods Barry Eichengreen (2007).

Barry Eichengreen (2007) further argue that the effects of China's fast transition are likely to be felt intensely especially by its Asian neighbors and listed "Geographical proximity, shared borders, linguistic commonalities, and the existence of extensive networks

of overseas Chinese" as one of the reasons responsible for China's trade with other Asian countries. Due to commonality of these factors in China's competitors some of them may compete in third market. China's emergence as one of the leading contributor in world's GDP could reduce the export market of its competing countries. It is also observed that countries usually tend to have closer trade relations with higher GDP countries and their neighbors. Pakistan is not an exception to have close ties with China and having an FTA as a result.

Thus, it would not be wrong to say that China is part of the transition in which third world and developing countries rise as exporters of manufactured goods from primary goods. More than 80 percent of China's export consists of manufactured goods[3]. China is in the phase of emerging as a global leader has to improve its patterns of trade and technology to compete with advanced countries of Asia like Japan and South Korea. From the China's case it is evident that it is emerging as a modern-export oriented producer which relies on import of primary inputs. So it would not be wrong to say that the faster the country's exports grow the faster the imports of materials grow from input exporting countries Barry Eichengreen (2007). This could also mean that gains from trade arise from better utilization of resources.

(a) Background

Like other countries Pakistan is also changing its direction of policies towards increasing efforts to realize gains from trade through plurilateral and bilateral agreements. Bilateral relations seek mutually beneficial arrangements with the objective of reducing tariffs and eliminating non-tariff barriers (NTBs). Pakistan became WTO's member in 1995 and since then it has notified six FTA's (in-effect), whereas China has notified twelve FTA's (in-effect) since joining WTO in December 2001 (Table 1.1).

[3] (Krugman & Obstfeld, 2009), p 22

Table 1.1: Pakistan and China FTA Status[4]

	(i)	Under negotiation (ii)		Concluded (iii)		
Country	**Proposed**	**(2a) Framework agreement signed/under negotiation**	**(2b) Under negotiation**	**(3a) Signed but not yet in effect**	**(3b) Signed and in effect**	**Total**
Pakistan	10	5	3	2	6	26
China	6	2	4	0	12	24

i. Proposed-parties are considering a free trade agreement, establishing joint study group or joint task force, and conducting feasibility studies to determine the desirability of entering into FTA.

2a. Framework agreement signed/Under negotiation-parties initially negotiate the contents of a framework agreement (FA), which serves as a framework for future negotiations.

2b. Under Negotiation-parties begin negotiations without a framework agreement (FA)

3a. signed but not yet in effect- parties signed the agreement after negotiations have been completed. Some FTAs would require legislative or executive ratification.

3b. signed and in effect- when the provisions of an FTA becomes effective, e.g when tariff cut begins

Pakistan China Free Trade Agreement

In response to increasingly changing global trends of trade, China started multi-tracking its regional and multilateral trade negotiations in 1990 and emphasized the economic factors rather than political to expand its trade liberalization. Trade is one of the primary channel through which China has transformed from a closed autarkic economy to an open globalized one. China has FTAs with ASEAN, Chile, New Zealand, Peru, Costa Rica, Singapore and Pakistan[5]. On the other hand, Pakistan is a member of SAARC and also has FTA with Sri Lanka, Malaysia, China and SAFTA.

[4] http://aric.adb.org/10.php accessed 27th September 2011

[5] China's signed FTA includes Asia-Pacific Trade Agreement (1976), China Thailand PTA (2003), China Hongkong, CEPA (2004), China-Macau, CEPA (2004), ASEAN-China FTA (2005), China-Chile FTA(2006), Pakistan-China FTA (2006), China-New Zealand FTA (2008), China-Singapore FTA (2009) and China Peru FTA; China's FTAs under negotiation include China-GCC FTA (2005), China-Australia FTA (2005), China Iceland FTA (2006), China-Norway FTA (2007), China-Costa Rica FTA (2009); China's FTA under consideration include China-India FTA (2003), Japan-China-Korea FTA (2003), China-Korea FTA (2005) and China-Switzerland FTA (2009)

Pakistan and China share long lasting cordial relationship. In 2005 during Premier Wen Jiabao's visit to Pakistan, China and Pakistan announced to launch negotiations on free trade agreement. Subsequently, FTA was signed in 2006 which became effective in July 2007. On February 21, 2009, Chinese State Councilor Dai Bingguo and Pakistani President Asif Ali Zardari witnessed the signing of the Agreement on Trade in Service of the China-Pakistan FTA which entered into force since 10th October 2009.

The FTA between Pakistan and China covers trade in goods and services, investment, and institutional mechanism for supporting bilateral trade and investment. In first step, both the countries signed an Early Harvest Program (EHP) on 5th April 2005, which became operational in January 2006. Further modalities were finalized within a year for next five years to be covered under preferential agreement (Phase I). Under the Phase II, both in terms of tariff lines and trade volumes, Pakistan and China agreed to eliminate tariffs on no less than 90% of the products.

Under the agreement China agreed to reduce tariff rates on 6,418 *8-digit* tariff lines, whereas concessions by Pakistan include 5,686 *8-digit* tariff lines. Table 1.2 shows the Model and timeline of Zero Tariff Items under Pakistan-China Early Harvest Program. Both the countries agreed on three product categories for elimination and reduction of the tariffs. According to one estimate in a report *Evaluation of Pakistan China FTA*[6], for Pakistan's top 20 products[7] at HS 6-digit China has granted much lower tariffs in ASEAN[8]-China FTA and APTA[9] countries which puts Pakistan's exports at a disadvantage because Pakistani exporters

[6] (Adil, Sadia, Muhammad, & Hammad)

[7] The top three product chapters include light petroleum of chapter 27, Rice of chapter 10 an d T-Shirt, singlet and other vests of cotton of chapter 60.

[8] Association of Southeast Asian Nations including Indonesia, Malaysia, Philippines, Singapore, Thailand, Vietnam, Brunei, Burma, Cambodia and Laos

[9] Asia Pacific Trade Agreement (APTA); member countries (Bangladesh, China, India, Laos,

face more competition from India and Bangladesh in Chinese market and therefore affecting the market share of those products.

Table 1.2 Pakistan China FTA- Early Harvest Program Timeline

Product Category for Pakistan and China	Not Later than 1 Jan 2006	Not Later than 1 Jan 2007	Not Later than 1 Jan 2008
All products with applied MFN tariff rates higher than 15%.	10%	5%	0%
All products with applied MFN tariff rates between 5% (inclusive) and 15% (inclusive).	5%	0%	0%
All products with applied MFN tariff rates lower than 5%.	0%	0%	0%

Source: Ministry of Commerce, Government of Pakistan

The products on which Pakistan will get market access at zero duty include industrial alcohol, cotton fibers, bed-linen and other home textile, marble and other tiles, leather articles, sports goods, mangoes, citrus fruit and other fruit and vegetables, iron and steel products and engineering goods. Likewise, China will also reduce tariff by 50% on fish, dairy sector, frozen orange juice, plastic products, rubber products, leather products, knit wear and women garments etc. On the other hand, Pakistan gave market access at zero tariffs[10] (386 tariff lines at 8-digit level) to China mainly on machinery, organic and inorganic chemicals, fruits and vegetables, medicaments and other raw material for various industries including engineering sector, and intermediary goods for engineering sector etc. The categories and other products are stipulated in Table 1.3;

South Korea and Sri Lanka)

[10] http://www.commerce.gov.pk/?page_id=212

Table 1.3 Commitments by Pakistan & China

Category No.	Track	No. of Tariff Lines		%age of Tariff lines at 8-digits	
		Pakistan	China	Pakistan	China
I	Elimination of Tariffs (three years)	2,423	2,681	35.6	35.5
II	0-5% (five years)	1,338	2,604	19.9	34.5
III	Reduction on Margin of Preference of 50% (five years)	157	604	2.0	8.0
IV	Reduction on Margin of Preference of 20% (five years)	1,768	529	26.1	7.0
V	No Concession	1,025	1,132	15.0	15.0
VI	Exclusion	92	-	1.4	-

Source: Ministry of Commerce, Government of Pakistan

(b) Purpose of the Study

Opponents of Pak-Sino FTA claim that Pakistan's export to China lack diversity and as Pakistan's imports are increasing as compared to its exports the trade deficit is also increasing. They also assert that tariff reduction under the FTA arrangement between them could harm the Pakistan's small and medium industry. These claims make it imperative that the trade pattern of both the countries should be studied in the light of FTA. Over the years Pakistan's export to China have moved from primary goods to semi manufactured goods. Pakistan's import from China consists of finished goods as well as machinery and other equipments. These changing patterns if studied in detail will help to analyze the impact of FTA on Pakistan's economy.

The purpose of my research is to examine the Free Trade Agreement of Pakistan with its neighboring country China which is emerging as one of the major player in the changing global trends of trade liberalization and one of them is bilateral free trade agreements (FTA). China has made FTA as an integral part of its policy in achieving major share in world trade according to a report *Evaluation of Pakistan China FTA*[11].

[11] (Adil, Sadia, Muhammad, & Hammad)

Therefore, this paper aims at analyzing that how economically useful are the ties between Pakistan and China after 2006 FTA and how it is affecting composition of Pakistan's export and import products. The study is organized in a way that first it examines the pre and post FTA between Pakistan and China (goods) and its impact on trade patterns. This study will also explore the Revealed Comparative Advantage of both Pakistan and China for composition of exports and imports of Pakistan and compare its results with Before-After Analysis. Further, it will examine the impact of FTA using traditional approach of Gravity Model. The analysis will include the data from 2003 to 2010 to reach a conclusion.

2. LITERATURE SURVEY

Free trade agreements and regional trade integration are playing a vital role in economic development of many countries and help improve the standard of living of people by opening up the economies, NAFTA, SAFTA, EU and ASEAN are few examples of successful regional integration. The liberalization of trading system is hotly debated among economists and among other factors fall down of Geneva's 2008 trade talks and the financial crisis has placed tremendous pressure on it.

A free-trade agreement is a contractual arrangement between two or more countries under which they give each other preferential market access, usually called free trade[12]. Therefore by definition FTAs require reduction in barriers on 'substantially all' the trade between the partner countries. By nature FTAs are more likely to involve countries of similar interests of lowering trade barriers and also eliminating the free-rider problem. General Agreement on Tariffs and Trade (GATT) Article XXIV spells out the compatible obligations for FTAs.

FTAs are seen as an important milestone in enhancing bilateral relations among the partner countries. Increasing number of FTA's between WTO member countries seems to have a positive impact on the mutual gains but the real impact of FTA's is mixed. On the other hand, these FTA's poses a threat to WTO as a whole and the individual members because it violates the principle of MFN. Zhang (2010) claims that FTA's are likely to take away trade and investment from the countries where there are less favorable business conditions. Traditionally, FTA's are more effective where countries have different economic structures because it allows countries to specialize in areas where they have comparative advantage. In his study Salvatore (2009) has categorized six arguments which support

[12]Goode (2007)

moving away from a free trading system but do not give argument which justify moving away from multilateral trade. These six categories includes (i) strategic trade and industrial policies; (ii) the de-industrialization of advanced countries; (iii) rapid globalization and outsourcing; (iv) advanced countries demand for stricter labour and environmental benchmarks in emerging economies; (v) rise of regional trade agreements (RTAs); and (vi) rising protectionism to ward off the global financial crisis.

Gene & Helpman (1995) examines the opportunities arising from FTA using political-economy framework and the conditions that would make possible the political minded governments to conclude an FTA. The governments mostly endorse the FTA if there is substantial welfare gain for average voter and potential gains for potential and actual exporters greater than the losses to import competing industries. They also found that reduced protection may lead to trade creation whereas enhanced protection may raise trade diversion. Dent (2010) evaluates the growth and patterns of free trade agreements in Asia Pacific and reveals that the bilateralism in Asia Pacific is dense and depicts regional community-building process.

Freund, C. (2003) has revealed how reciprocity is important in free trade agreements using 91 trade agreements since 1980's. The findings show that an increase of one percent in preferences may lead to one half of a percent increase in the preferences received by the other partner country. The results also show that the North-South agreements are modified form of reciprocity which is associated with countries' size. From policy perspective, Freund, C. (n.d) found that the incentives in form of protection to get more concessions are concern in trade agreements. Furthermore, if a developing country reduces its tariffs, the effect on reciprocal reduction is very low. With higher trade barriers countries can extract greater concessions from trade agreement members.

Akhtar and Ghani (2010) estimated the impact of regional integration in South Asia using Gravity Model using cross sectional and pooled data. Their results show that among south asian countries the potential of trade creation exists if Pakistan, India and Srilanka sign regional tarde agreement. Frankel & Romer (1999) constructed a measure to estimate the effect of trade on income. Their estimation uses geographical components of countries' trade to use them as instrumental variables to determine their impact on income. The results suggest that trade raises income and one percentage increase in the ratio of trade to GDP increases income per person by at least one-half percent. As a result raised income helps accumulation of physical as well as human capital and thus increasing countries' output. To estimate bilateral trade impact on income, Frankel & Romer (1999) also uses population and area of the countries in their gravity model and suggests that geographical factors are one of the major determinants in bilateral trade. Linder (1961) in his theory "Linder's Theory" also examined the impact of income level on how a country distributes its international trade across its trading partner countries.

Musleh-ud-Din, Ghani and Qadir (2009) evaluates the comparative advantage and concludes that the range of products in which Pakistan can specialize is very narrow, that is only 11 products at HS-2 level which includes raw material and food products. Whereas China's range of comparative advantage in products is broad, almost covering 84 product categories. The authors in their study have also used Trade Specialization Index (TSI) other then gravity model which varies between +1 and -1They also argue that the comparative advantage results (11 products in case of Pakistan and 84 product categories in case of China) "are not surprising given the enormous difference between the two countries in terms of economic size and production structure". The authors further argue that the short term effect of FTA between Pakistan and China is tilted towards China. Both the countries have

substantial potential of expansion of bilateral trade which can support balanced level of trade between the two countries given more efficient allocation of resources is promoted.

Choi (2009) suggests that China engaged itself in FTA negotiations with its neighboring countries which are 'strategically crucial' to its diplomatic objectives and also extending its negotiations with Australia, GCC and SCO because of its interest in energy and natural resources. China adopts different strategies for its FTA's with developing and developed countries Zhang (2010). In case of developing countries it focuses on reduction of tariff and non-tariff barriers, market access and trade facilitation whereas, in case of developed countries its focus is much centered towards policy and institutional issues. Witteloostujin (2004) while exploring the factors that contributed in openness of Chinese economy and forming trade linkages suggests that the in 90's the Chinese program of market-oriented reform helped it establishing its patterns of bilateral trade linkages. The partner country's multiplicity helped china to capture a major share in world market.

3. METHODOLOGY

During the past years China has emerged as a major competitor in labor intensive manufactured goods. Being neighbor to China, Pakistan's industries are also affected and the share in global market before and after FTA can help understand this dimension of trade patterns. In order to initiate basis for the research questions it is pertinent to start with the analysis of overall trade patterns before and after FTA. This analysis can be expanded to Pakistan's and China's export trade with each other and also with world. The overall picture then can be further deepened to see the changes in patterns of comparative advantage due to this FTA using Revealed Comparative Advantage (RCA). The analysis will be further expanded to see the prospects of FTA using Gravity Model.

A. Before and After FTA Performance Analysis

An analysis will be carried out using the overall flows of bilateral trade. The analysis will be further deepened into 2-digit Harmonized System's 22 chapters. Table 3.1 shows the list of sections and chapters accordingly.

Table 3.1: Harmonized System Sections and Chapters

Section I	Chapter 1-5	Live Animals and Animal Products
Section II	Chapter 6-14	Vegetable Products
Section III	Chapter 15	Animal or vegetable fats and oilsand their cleavage products; prepared edible fats; animal or vegetable waxes
Section IV	Chapter 16-24	Prepared Foodstuffs; Beverages, Spirits, and Vinigar; Tobacco and Manufactured Tobacco Substitutes
Section V	Chapter 25-27	Mineral Products
Section VI	Chapter 28-38	Chemical Products
Section VII	Chapter 39-40	Plastic and Articles thereof, Rubber and articles thereof
Section VIII	Chapter 41-43	Raw hides and skins, leather, fur skins and articles thereof; saddler and harness; travel goods, handbags and similar containers; articles of animal gut (other than silkworm gut)
Section IX	Chapter 44-46	Wood and articles of wood; wood charcoal; cork and articles of cork; manufactures of straw, of esparto or of other plaiting materials; basket ware and wickerwork.
Section X	Chapter 47-49	Pulp of wood or of other fibrous cellulosic material; waste and scrap of paper or paperboard; paper and paperboard and articles thereof
Section XI	Chapter 50-63	Textile and textile products
Section XII	Chapter 64-67	Footwear, headgear, umbrellas, sun umbrellas, walking sticks, seatsticks, whips, riding-crops and parts thereof; prepared feathers and articles made therewith; artificial flowers; articles of human hair
Section XIII	Chapter 68-70	Articles of stone, plaster, cement, asbestos, mica or similar materials; ceramic products; glass and glassware
Section XIV	Chapter 71	Natural or cultured pearls, precious or semiprecious stones, precious metals, metals clad with precious metal, and articles thereof; imitation jewelry; coin
Section XV	Chapter 72-83	Base metals and articles of base metal
Section XVI	Chapter 84-85	Electrical Machinery
Section XVII	Chapter 86-89	Vehicles, Aircrafts and Vessels
Section XVIII	Chapter 90-92	Optical, photographic, cinematographic, measuring, checking, precision, medical or surgical instruments and apparatus; clocks and watches; musical instruments; parts and accessories thereof
Section XIX	Chapter 93	Arms and ammunition; parts and accessories thereof
Section XX	Chapter 94-96	Miscellaneous manufactured articles
Section XXI	Chapter 97	Works of art, collectors' pieces and antiques

Section XXII	Chapter 98-99	Special classification provisions; temporary legislation; temporary modifications proclaimed pursuant to trade agreements legislation; additional import restrictions proclaimed pursuant to section 22 of the agricultural adjustment act, as amended

Source: Pakistan Customs

Average numbers will be shown graphically for the years from 2003-2006 to see the increase and decrease in volumes of imports and exports for bilateral flows as well as world flows.

B. Revealed Comparative Advantage

The Balassa Index[13] of RCA is defined as a country's share in world exports of a commodity divided by its share of total world exports. Through this examination we will be able to reach two objectives of our study

i. The pattern of comparative advantage for Pakistan and China in their markets.
ii. The leading sectors/products of Pakistan and China in terms of their revealed comparative advantage.

The analysis may also help us in understanding the composition of goods traded between Pakistan and China, Pakistan and world, and China and world. The results will also help us understand if Pakistan has revealed comparative advantage in the same goods in its bilateral trade with China as in the trade with the rest of the world.

In this study this index will help to examine the commodities/industry in which Pakistan and China have revealed comparative advantage. This index is calculated as follows;

$$RCAij = (Xij/Xwj)/(Xi/Xw)$$

Where

[13] Balassa's (1965)

X_{ij}= ith country's export of commodity j

X_{wj}= world exports of commodity j

X_i = total exports of country i

X_w = total world exports

> '*On the basis of this index, a country is defined as being specialized in exports of a certain product if its market share in that product is higher than the average or, equivalently, if the weight of the product of the country's exports is higher than its weight of the exports of the reference area. A country reveals comparative advantages 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 total exports of the reference area.*'[14]

Therefore, we can say that if $RCA_{ij} > 1$ then a comparative advantage is revealed. Batra and Khan (2005) in their study mentions the advantage of using RCA approach that '*it considers the intrinsic advantages of a particular export commodity and is consistent with changes in an economy's relative factor endowment and productivity*' on the other hand its disadvantage is '*it cannot distinguish improvements in factor endowments and pursuit of appropriate trade policies by the country*'. However, RCA advantages and disadvantages are beyond the focus of current analysis.

C. Gravity Model Analysis

A gravity model is an econometric technique to estimate trade flows[15]. It has been widely used not only to estimate impact of FTA's but also the effect of GATT member, currency

[14] http://www.ecares.org/ecare/personal/conconi$/web/RCA.pdf

[15] Jan Tinbergen (1962) compared the size of bilateral trade flows between any two countries.

unions, foreign direct investment etc Plummer, Cheong and Hamanaka (2010). Gravity model is very helpful in isolating the effect of FTA on trade. It has capability of controlling many factors which may affect trade. The model was first introduced by Tinbergen (1962) to measure the impact of bilateral trade in terms of size of the economies as well as geographical distance among the partner countries.

The basic gravity model is analogous to Newton's Law of gravitation in physics. It positively relates the imports of country i from the other country j (M_{ij}) to the gross domestic product (GDP) of the importing country (Y_i) and the GDP of the exporting country (Y_j). Geographical distance (K_{ij}) is negatively related to between the exporting and importing countries. The model can be written as;

$$M_{ij} = G\ (Y_i Y_j / K_{ij}) \qquad \ldots. \qquad (1)$$

Where

G is a constant

After taking logarithm equation (1) and adding additional variable it can be expressed as

$$\ln M_{ij} = G + \alpha_1(\ln Y_i) + \alpha_2(\ln Y_j) - \alpha_3(K_{ij}) + \alpha_4(FTA_{ij}) + \mu_{ij} \qquad \ldots(2)$$

Where;

M_{ij} : Imports of country i from country j

Y_i : Real GDP of country i

Y_j : Real GDP of country j

K_{ij} : Distance between country i and country j

FTA_{ij} : Dummy variable which is assigned value 1 if country i and j have signed FTA and 0 otherwise

μ : the error term

Effects captured by gravity model will tell us the export capacity of the exporting country measured by GDP variable, higher the GDP, the higher will be economy's capacity to export. Similarly for importing country GDP will represent its capacity to absorb imports, higher the GDP of importing country, higher will be the demand for imported goods. Both the variables are expected to give positive signs (α_1 & α_2). The positive coefficient of FTA variable will imply positive impact of FTA on bilateral trade flows and its size will help determine the creation or diversion of trade.

Since both the countries are neighbors so we can drop the distance variable. And equation 2 can be written as follows

$$\ln M_{ij} = G + \alpha_1(\ln Y_i) + \alpha_2(\ln Y_j) + \alpha_3(FTA_{ij}) + \mu_{ij} \quad \ldots(3)$$

Equation 3 will be used in our analysis to find the impact of Pakistan-China FTA.

4. DATA DESCRIPTION

The data set for before and after FTA performance analysis has been taken from Trade Map data which uses COMTRADE Data base for its own data analysis. Similarly the data used for the analysis in revealed comparative advantage has been taken from Trade Map on HS-2 digit for the year 2003 (before FTA), 2006 (At the time of FTA) and 2010 (after FTA). Trade date links its data source to COMTRADE data base. The data set used for gravity model has been taken for the years 2003 to 2010. The data on GDP have been accessed through World Integrated Trade Solutions (WITS) where as CEPII data has been used to get data on distance.

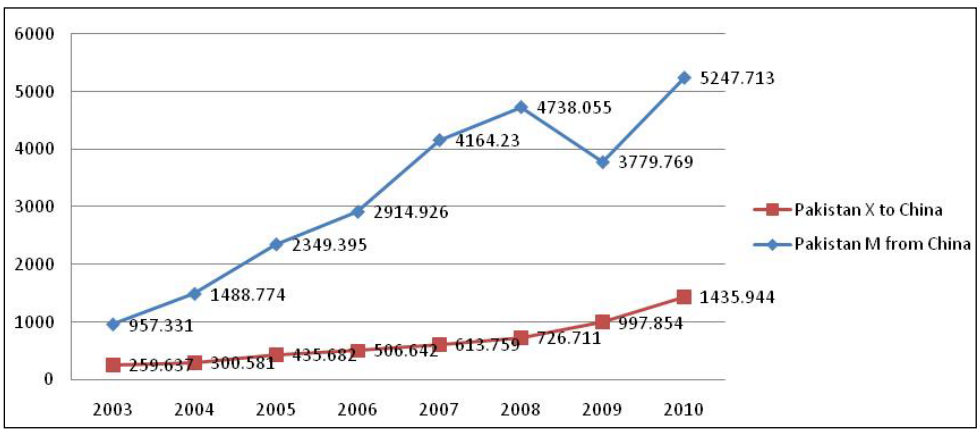
5. ANALYSIS AND DISCUSSION

The analysis of all the models described in previous chapter is as follows

A. Before and After FTA Performance Analysis

It is evident from the figure 4.1 that how Pakistan and China's bilateral trade has grown over time. After the FTA in 2006 Pakistan's exports (X) to China increased from US $ 506 million to US$ 1,435 million in 2010. However, Pakistan's imports (M) from China also increased from US $ 2,914 million to US$ 5,247 million in 2010.

Figure 4.1: Pakistan China Bilateral Trade (US$ million)



Source: Author's Calculation based on UNCOMTRADE database

The data has been further analyzed to see the growth in exports and imports of Pakistan and China. The detail analysis is tabulated in Table 4.1 where column (1) shows Pakistan's imports from China (Pk M from Ch) and column (1a) shows its growth rate in percent. Similarly columns (2) & (2a) to (8) & (8a) shows Pakistan and China bilateral trade of goods and their growth rates for the period 2003-2010, the table also shows their trade of goods with the world and its growth rates. The analysis has been divided to Pre-EHP period (2005), EHP period (2006) and Post-EHP period or FTA Period (2007-10).

Table 4.1: Pre and Post FTA Performance Analysis (US$ billions)

		1	1a	2	2a	3	3a	4	4a	5	5a	6	6a	7	7a	8	8a
	Year	Pk M from Ch	Growth Rate (%)	Pk X to Ch	Growth Rate (%)	Pk M from World	Growth Rate (%)	Pk X to World	Growth Rate (%)	Ch M from Pk	Growth Rate (%)	Ch X to Pk	Growth Rate (%)	Ch M from World	Growth Rate (%)	Ch X to World	Growth Rate (%)
PRE EHP	2003	96		26		1305		1193		57		185		41276		43823	
	2004	149	56	30	16	1795	38	1338	12	59	3	247	33	56123	36	59333	35
	2005	235	58	44	45	2510	40	1605	20	83	40	343	39	65995	18	76195	28
EHP	2006	291	24	51	16	2983	19	1693	5	101	21	424	24	79146	20	96894	27
Post EHP	2007	416	43	61	21	3259	9	1784	5	110	10	583	38	95612	21	122006	26
	2008	474	14	73	18	4233	30	2028	14	101	-9	605	4	113256	18	143069	17
	2009	378	-20	100	37	3158	-25	1755	-13	126	25	552	-9	100556	-11	120165	-16
	2010	525	39	144	44	3754	19	2141	22	173	37	694	26	139420	39	157819	31

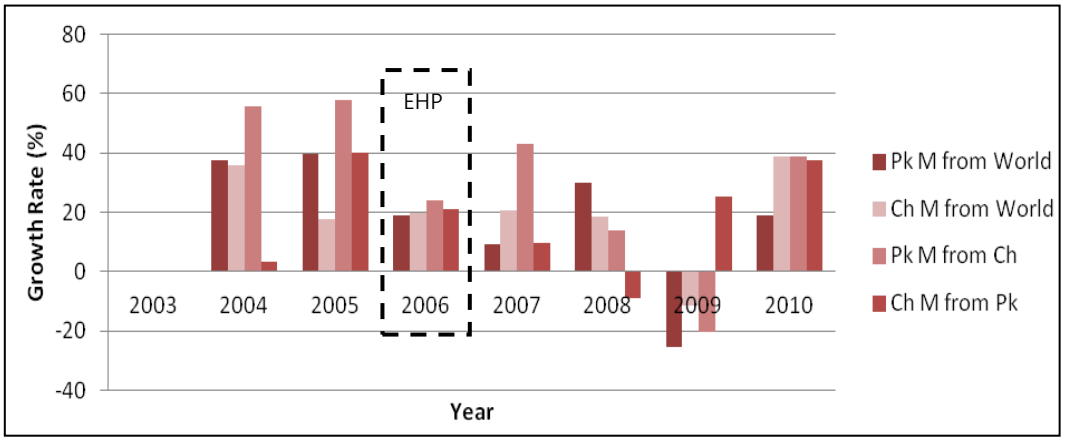
Source: Author's Calculation based on UNCOMTRADE database

I. Pakistan China Imports Analysis

Figure 4.2 is a graphical representation of growth rates of Pakistan's imports from World (Pk M from World), China's imports from World (Ch M from World), Pakistan's imports from China (Pk M from Ch) and China's imports from Pakistan (Ch M from Pk). During pre-EHP period growth rates of Pakistan's imports from world increased slightly in 2005 and decreased sharply in EHP period from 40 to 19 percent.

The decreasing trend is followed by other variables (Pk M from Ch, Ch M from Pk) in EHP period except China's imports from world which increased 2 percent during EHP period. The decreasing trend in Pakistan's trade with China could be reason of delay in implementation of Early Harvest Program (EHP) which was signed in April 2005, and was operational by January 2006.

Figure 4.2 Pak-China Bilateral and Pak-China World Imports (M)



Source: Author's Calculation based on UNCOMTRADE database

The increase in Pakistan's imports from world from 2003-05 is due to prolonged period of growth witnessed by Pakistan which strengthened domestic demand. From 2006-07 the slight decline in imports is caused by tight monetary policy, softening oil prices, decline in imports of cars and fertilizers etc. The Economic Survey of Pakistan 2008-09 reports that the sharp decrease in Pakistan's imports from world during 2008-09 are mainly caused by

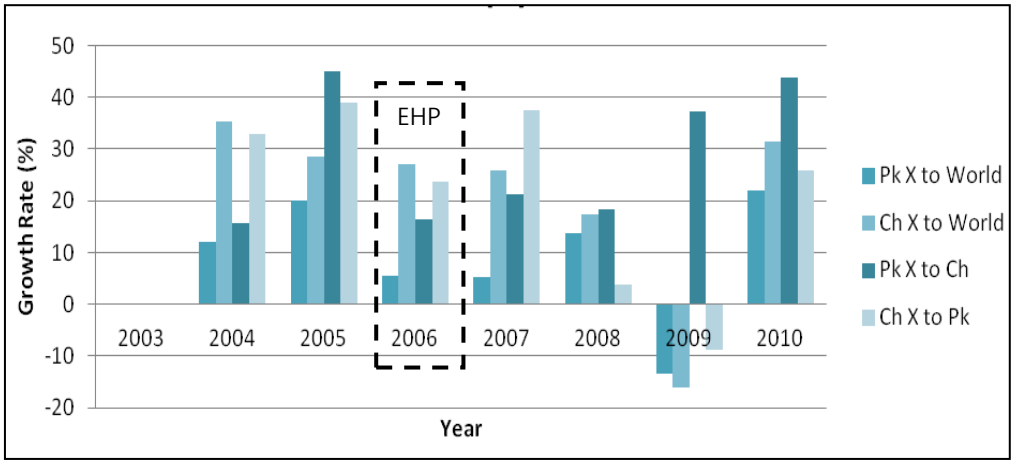
‘import compression measures lowering domestic demand coupled with massive fall in international oil prices have started paying dividends and imports witnessed slowdown’.

II. Pakistan China Exports Analysis

Figure 4.3 is a graphical representation of growth rates of Pakistan’s exports (X) to World (Pk X to World), China’s exports to World (Ch X to World), Pakistan’s exports to China (Pk X to Ch) and China’s exports to Pakistan (Ch X to Pk). During 2004-05 Pakistan’s exports to world increased with a growth rate of 12 to 20 percent whereas the growth rate during 2006 was only 5 percent. For China the exports to world witnessed a slight decline and the growth rate decreased from 35 to 28 percent. During 2006 and 2007 despite previous years successful trade policy Pakistan witnessed an abrupt trend in exports which is mainly contributed by decline in exports of food items especially rice and fruit caused by adverse weather conditions and high domestic demand, discriminatory anti-dumping duty on bed linen by EU (textile and textile products is one of the largest contributor in Pakistan exports). This slow growth continued till 2008.

In case of Pakistan China bilateral trade in pre-EHP period both Pakistan’s exports to China and China’s exports to Pakistan witnessed positive growth rate. During EHP Period both Pakistan and China experienced decrease in export volumes. The same factors which affected Pakistan’s world exports also affected Pakistan’s exports to China. Delay in implementation of EHP may have caused this slowdown. The same reasons for slow down listed above in Pakistan China Import Analysis affected has obvious effect on Pakistan’s exports to China (Figure 4.3) which reached US $ 1 billion with a growth rate of 37 percent from 18 percent in 2008.

Figure 4.3 Pak-China Bilateral and Pak-China World Exports (X)



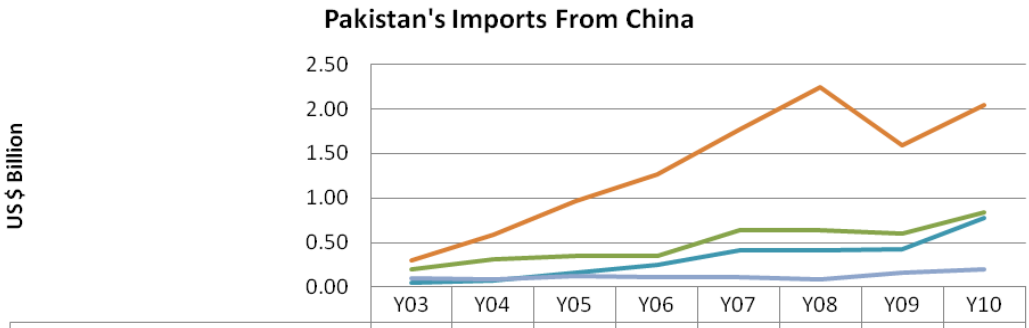
Source: Author's Calculation based on UNCOMTRADE database

III. Pakistan Import and Export Analysis at HS-2 Digit level

Figure 4.4 shows the analysis of top four 2-digit HS Chapter's of Pakistan's imports from China[16]. The Imports shows that Chapter 84-85 (Electrical Machinery) has the largest share, Pakistan spent US$ 2.05 billion on its imports in 2010. The imports of chemical and textile products have also increased after the FTA. The Chapter 84-85 has always been at top in imports from 2003-10. Before FTA during 2003-04 Chapters 50-63 have been at number 4 in top import products from China. Out of 22 Sections with 99 chapters in Harmonized System (HS) only top 4 chapters (84-85, 28-38, 50-63, 86-89) have been analyzed for simplification of analysis.

[16] The Harmonized System (HS) of international trade comprises of 22 Sections. Each Section has several Chapters (see Table 3.1), for instance Chapter 84-84 is synonym with Section X VI and so on. Here, Chapters have been mentioned instead of Sections to make it easy for t he readers to link the results of Before-after Analysis with RCA analysis which is computed at HS-2 digit level products.

Figure 4.4[17]



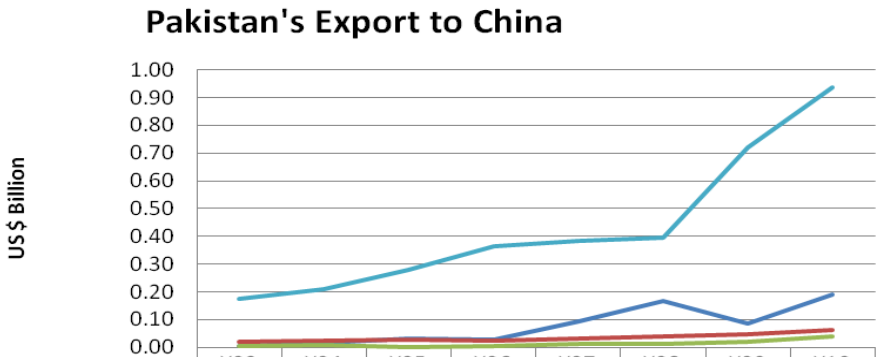
	Y03	Y04	Y05	Y06	Y07	Y08	Y09	Y10
Chapter 84-85 Electrical Machinery	0.30	0.59	0.97	1.26	1.76	2.24	1.59	2.05
Chapter 28-38 Chemical Products	0.20	0.31	0.35	0.34	0.64	0.64	0.60	0.84
Chapter 50-63 Textile & Textile Products	0.05	0.07	0.17	0.25	0.41	0.42	0.43	0.78
Chapter 86-89 Vehicles, Aircraft & Vessels	0.10	0.09	0.12	0.12	0.12	0.09	0.16	0.20

On the other hand in Figure 4.5 Pakistan's exports to China are graphically represented for top 4 products at HS-2 digit. In year 2010 Pakistan earned US$ 0.93 billion from its top ranked export Chapter 50-63 (textile and textile products) where as for same chapter Pakistan imported goods of worth US$ 0.78 billion from China in year 2010. The other chapters include Chapter 25-27 (mineral products) and Chapter 1-5 (live animals and animal products).

The analysis for Pakistan's exports to China reveals that the Chapters which were contributing billions of dollars in Pakistan's economy in 2003 are still the same. These results reveal that the composition of Pakistan's exports to China has not changed over the years but only witnessed growth. Similarly, out of 22 Sections with 99 chapters in Harmonized System (HS) only top 4 Chapters (50-63, 25-27, 1-5, 39-40) have been analyzed for simplification of analysis.

[17] Figure 4.4, 4.5, 4.6 and 4.7 have been drawn based on UNCOMTRADE database

Figure 4.5



	Y03	Y04	Y05	Y06	Y07	Y08	Y09	Y10
Chapter 50-63 Textile and Textile Products	0.17	0.21	0.28	0.36	0.38	0.39	0.72	0.93
Chapter 25-27 Mineral Products	0.01	0.02	0.03	0.03	0.09	0.17	0.09	0.19
Chapter 1-5 Live Animals & Animal Products	0.02	0.02	0.03	0.03	0.03	0.04	0.05	0.06
Chapter 39-40 Plastic and Articles thereof, Rubber and articles thereof	0.01	0.01	0.00	0.01	0.01	0.01	0.02	0.04

Comparing these results with Pakistan's trade with World interesting results are revealed. Table 4.2 shows Comparison of Pakistan's HS-2 Digit products trade with China and trade with World.

Table 4.2 Comparison of Pakistan's HS-2 Digit Products Trade with China & Trade with World

Rank	Pakistan X to China	Pakistan X to World	Pakistan M from China	Pakistan M from World
1	**Ch 50-63**	**Ch 50-63**	Ch 84-85	Ch 25-27
2	Ch 25-27	Ch 06-14	Ch 28-38	Ch 84-85
3	Ch 01-05	Ch 25-27	Ch 50-63	Ch 28-38
4	Ch 39-40	Ch 41-43	Ch 86-89	Ch 72-83

Source: Author's Calculation based on UNCOMTRADE database

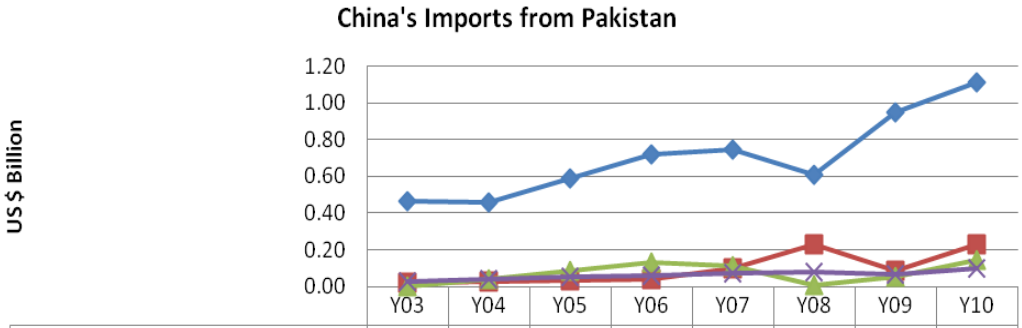
Table 4.2 shows top 4 Chapters at HS-2 level of Pakistan's exports (X) to China in comparison with Pakistan's exports to World; and comparison of Pakistan's imports (M) from China and Pakistan's imports from World. Chapter 50-63 is top ranked in Pakistan's exports to China as well as the World. Whereas the rest of the composition of top 4 export chapters are different. In case of imports the top importing Chapter 84-85 is second largest Chapter in

Pakistan's imports from world. Similarly Chapter 28-38 products are second largest set of products imported from China and 3rd largest from World. Rest of the composition of both the markets that is China and World are different.

IV. China's Import and Export Analysis at HS-2 Digit level

Figure 4.6 shows the analysis of top four 2-digit HS chapter's of China's imports from Pakistan. The Imports shows that Chapter 50-63 (Textile & Textile Products) has the largest share, China spent US$ 1.11 billion on its imports in 2010. The imports of Chapter 25-27 and Chapter 41-43 witnessed a decrease in 2009. Imports of Chapter 72-83 decreased in 2007 after FTA. All the 4 top ranked chapters of China's imports from Pakistan increased in 2010.

Figure 4.6



	Y03	Y04	Y05	Y06	Y07	Y08	Y09	Y10
Chapter 50-63 Textile & Textile Products	0.47	0.46	0.59	0.72	0.75	0.61	0.95	1.11
Chapter 25-27 Mineral Products	0.02	0.03	0.03	0.04	0.10	0.23	0.09	0.23
Chapter 72-83 Base Metals and Articles of Base Metals	0.00	0.04	0.09	0.13	0.11	0.01	0.05	0.14
Chapter 41-43 Raw Hides and Leathers etc	0.03	0.04	0.05	0.06	0.07	0.08	0.07	0.10

The graphical representation of top 4 China's export to Pakistan is shown in Figure 4.7. The top export

Figure 4.7

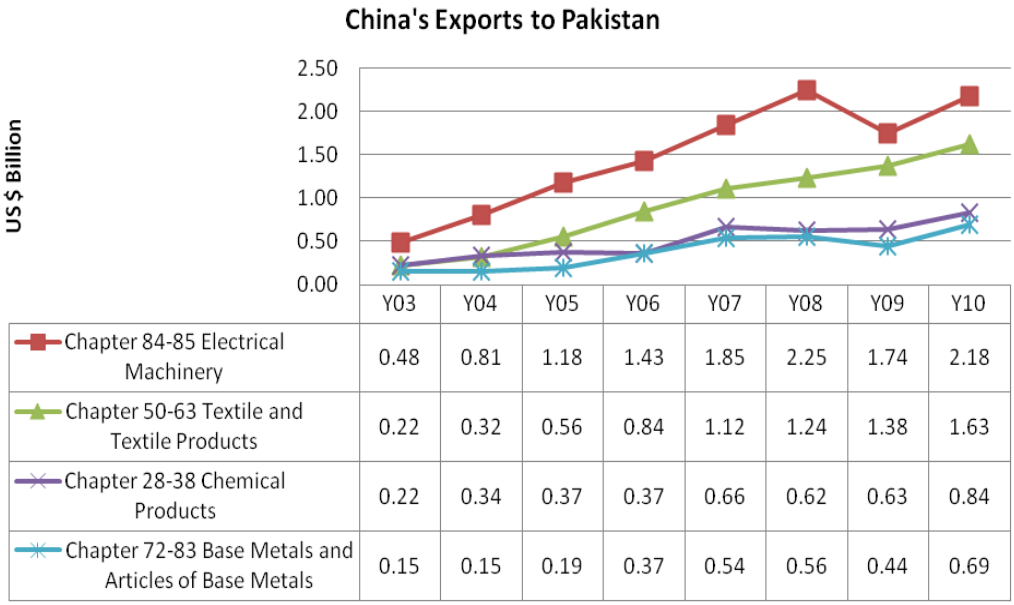


Table 4.3 shows top 4 Chapters at HS-2 level of China's exports (X) to Pakistan in comparison with China's exports to World; and comparison of China's imports (M) from Pakistan and China's imports from World.

Table 4.3 Comparison of China's HS-2 Digit Products with Pakistan & Trade with World

Rank	China X to Pakistan	China X to World	China M from Pakistan	China M from World
1	**Ch 84-85**	**Ch 84-85**	Ch 50-63	Ch 84-85
2	**Ch 50-63**	**Ch 50-63**	**Ch 25-27**	**Ch 25-27**
3	Ch 28-38	Ch 72-83	**Ch 72-83**	**Ch 72-84**
4	Ch 72-83	Ch 28-38	Ch 41-43	Ch 28-39

Source: Author's Calculation based on UNCOMTRADE database

The composition of China's exports to Pakistan and World are similar. Whereas the top import from Pakistan is different from the import from world. The reason is different size of economy of both China and Pakistan and respective demand. Chapter 25-27 and Chapter 72-83 are among top chapters exported by China to Pakistan and World.

B. Revealed Comparative Advantage- Analysis

In this part of study I intend to analyze RCA for both Pakistan and China at HS-2 digit product level to have overall picture of both countries relative performance. In general, if the importing country lowers import barriers, it is expected that home country's exports increase to the importing country. Since FTA lowers China's import barriers, Pakistan's exports to China are expected to increase. Especially, the exports of the items with RCA>1 are expected to increase faster than exports of other items after FTA, since Pakistan has comparative advantage in those items. If the exports of the items with RCA>1 indeed increase faster than those of other items after FTA, then it shows that the Pakistan-China trade pattern goes as expected by the principle of comparative advantage. Otherwise, we suspect that there are some obstacles preventing the bilateral trade follow the principle of comparative advantage.

There may be many other factors which affect both countries' relative share in world market but that is out of the scope of this analysis. The indices comprises of 99 chapters of 22 sections before and after FTA. The analysis has been carried out on 2-digit level of HS classification for the years 2003 (before FTA), 2006 (FTA was signed) and 2008 & 2010 (After FTA). The data for both the countries have been taken from Trade Map Data[18] online source.

I. Pakistan's Revealed Comparative Advantage

During 2003 Pakistan had revealed comparative advantage in 27 products (Table 4.4) and for the year 2006 & 2010 Pakistan has RCA in 28 and 26 products in 2008, respectively.

[18] http://www.trademap.org/

Analyzing product to product for these four years it is revealed that the items have been almost same during 2003, 2006 and 2008 with RCA>1. However, in 2010 items with codes ’71, ’78 and ’82 added to the list and the items dropped included ’15, ’56, and ’64.

Table 4.4: Pakistan’s RCA

Pakistan's RCA >1 at HS-2 Digit															
Y03	RCA	Y06	RCA	Y08	RCA	Y10	RCA	Y03	RCA	Y06	RCA	Y08	RCA	Y10	RCA
'63	58.6	'63	62.5	'63	54.6	'52	51.2	'17	3.0	'54	2.7	'05	2.5	'11	2.4
'52	36.8	'52	49.8	'52	54.2	'63	45.9	'56	2.9	'14	2.5	'03	2.3	'08	2.3
'57	14.7	'10	16.3	'10	18.9	'10	19.6	'05	2.1	'17	2.3	'60	2.2	'60	2.3
'54	11.8	57	13.6	'42	12.1	'55	10.6	'55	1.9	'58	2.2	'22	2.0	'03	1.9
'10	10.8	'42	12.5	'57	10.4	'41	10.2	'96	1.9	'05	2.1	'95	1.8	'95	1.9
'42	10.2	'11	9.7	'41	10.3	'25	9.2	'60	1.9	'03	1.9	'08	1.6	'58	1.5
'61	8.0	'61	9.3	'25	9.8	'42	8.8	'07	1.8	'60	1.8	'15	1.5	'22	1.5
'36	7.3	'41	7.7	'61	8.3	'61	7.7	'03	1.8	'15	1.6	'56	1.2	'07	1.5
'13	6.2	62	6.0	'55	6.9	'57	6.6	'93	1.8	'08	1.6	'97	1.2	'78	1.4
'41	6.1	'36	5.9	'13	6.3	'62	6.1	'08	1.5	'53	1.5	'11	1.1	'17	1.4
'62	5.4	'55	5.7	'62	5.9	'14	5.2	'58	1.3	'56	1.4	'64	1.1	'82	1.2
'11	4.8	'13	5.5	'17	5.8	'13	3.7	'64	1.0	'64	1.3	'96	1.1	'71	1.1
'95	3.4	'95	3.2	'36	5.7	'36	3.5	'01	1.0	'22	1.2			'54	1.1
'14	3.2	'25	3.0	'14	4.5	'05	2.9			'96	1.0			'01	1.0

Source: Author’s Calculation based on UNCOMTRADE database

To link these results with our previous analysis that is, *Before and After FTA Analysis* growth rates percent of exports have been computed for the items in Table 4.5. The growth rates have been calculated for the period 2003-2006 (before FTA), 2006-2008 (EHP & FTA Period), and 2008-2010 (FTA Period). The Before-after FTA analysis was carried out only on Sections I-XXII of Harmonized System (HS) with an objective to see the increase and decrease in volumes of imports and exports for bilateral flows as well as world flows in those sections, where as RCA analysis has been carried out not only on Sections I-XXII but also on HS-2 digit products to determine their level of export growth before and after FTA. In order

to link the results from before-after analysis with results from RCA analysis, the top four HS-Sections which resulted from Before-After Analysis will be compared with RCA results. This comparison will help us analyze if top four HS-Sections in Before-After Analysis is comprised of products with RCA>1 or not and if they are growing faster or slower (Table 4.5).

Chapter 01-05: The two products in RCA analysis shows that the growth in their exports increased in 2008 which is result of economic boom Pakistan achieved during this year where as the growth in their exports declined in 2010 which may be affected by 2009 adverse economic conditions.

Chapter 25-27: ’22 and ’25 registered negative growth in Pakistan’s exports. This chapter earned Pakistan US$ 0.17 billion in 2008 and US$ 0.19 billion in 2010.

Table 4.5 Growth Rates of Exports of Pakistan’s Products with RCA>1 from 2003-2010 and Comparison with Before After FTA Analysis

HS - Code	Product Name	GR (%) 2003-06	GR (%) 2006-08	GR (%) 2008-10	Comparison with B/A Analysis
'01	Live animals	-	-	-	
'03	Fish, crustaceans, mollusks, aquatic invertebrates	22	30	6	Chapter 1-5
'05	Products of animal origin	18	47	32	
'07	Edible vegetables and certain roots and tubers	-	24	-	
'08	Edible fruit, nuts, peel of citrus fruit, melons	29	118	75	
'10	Cereals	73	-81	-9	
'11	Milling products, malt, starches, inulin, wheat gluten	132	35	96	
'13	Lac, gums, resins, vegetable saps and extracts	11	103	-22	
'14	Vegetable plaiting materials, vegetable products	-23	69	85	
'17	Sugars and sugar confectionery	12	147	-63	
'22	Beverages, spirits and vinegar	-	97	-19	Chapter 25-27
'25	Salt, sulphur, earth, stone, plaster, lime and cement	-	372	-14	
'36	Explosives, pyrotechnics, matches, pyrophorics, etc	2	10	-22	

'41	Raw hides and skins (other than fur skins) and leather	34	21	8	
'42	Articles of leather, animal gut, harness, travel goods	48	13	-19	
'52	Cotton	42	0	12	Chapter 50-63
'54	Manmade filaments	-76	-	-	
'55	Manmade staple fibers	216	21	80	
'56	Wadding, felt, nonwovens, yarns, twine, cordage, etc	-39	-9	-	
'57	*Carpets and other textile floor coverings*	*10*	*-24*	*-31*	
'58	Special woven or tufted fabric, lace, tapestry etc	86	-	-	
'60	Knitted or crocheted fabric	2	28	20	
'61	Articles of apparel, accessories, knit or crochet	46	-1	5	
'62	Articles of apparel, accessories, not knit or crochet	28	1	7	
'63	Other made textile articles, sets, worn clothing etc	37	-3	4	
'64	Footwear, gaiters and the like, parts thereof	50	-2	-	
'95	Toys, games, sports requisites	-	-26	-6	
'96	Miscellaneous manufactured articles	-35	18	-	
'97	Works of art, collectors pieces and antiques	-	-	-	

Source: Author's Calculation based on UNCOMTRADE database

Chapter 39-40: In the RCA analysis the products included in this Chapter that is 39' and 40' do not have RCA>1. These products (RCA<1) might be contributing in bilateral gains from trade. On the other hand, in case of bilateral trade between Pakistan and China this Chapter is one of the top 4 contributors earning Pakistan billions.

Chapter 50-63: More than 80% items of this chapter have RCA>1 and this chapter is also the top export group of Pakistan. According to the table, of the items with codes '52, '55, '61, '62 and '63 only the item '55 shows higher growth than '60. The other items in this chapter include '56 which does not have RCA>1 in 2010 therefore its export growth rate could not be calculated. '57 has RCA>1 but its export growth rate is negative.

II. China's Revealed Comparative Advantage

During 2003 China had revealed comparative advantage in 47 products (Table 4.6), most of the products are finished goods; and for the year 2006 it had RCA in 45 products. In 2008

and 2010 China had RCA>1 in 44 products, respectively. China's exports became concentrated in many small export items. On the other hand overall China's exports did not grow as compared to that in 2007 (Table 4.1). The collapse of international trade in 2008-09 also severely hit China's export sector[19] along with other global trade leader countries. The top ranked products with RCA>1 are same for the years (2003, 2006, 2008 and 2010) under analysis.

Table 4.6: China's RCA

China's RCA >1 at HS-2 Digit															
Y03	RCA	Y06	RCA	Y08	RCA	Y10	RCA	Y03	RCA	Y06	RCA	Y08	RCA	Y10	RCA
'46	9.91	'46	7.87	'46	8.28	'66	7.14	'94	2.29	'52	2.14	'53	2.00	'89	2.22
'66	8.61	'66	7.68	'66	7.29	'67	6.45	'69	2.09	'78	2.14	'85	1.98	'85	1.94
'67	7.00	'67	6.20	'67	6.31	'46	6.33	'55	1.98	54	2.12	'36	1.83	'51	1.76
'50	6.33	'50	5.27	'50	4.55	'50	5.09	'54	1.94	'43	2.02	'83	1.80	'05	1.76
'42	5.76	'65	4.44	'65	4.43	'65	4.23	'51	1.90	'83	1.87	'73	1.74	'83	1.75
'65	4.60	'95	4.10	'58	4.23	'42	4.04	'82	1.89	'51	1.83	'16	1.71	'81	1.73
'95	4.54	'63	4.07	'63	4.12	'63	3.75	'80	1.88	'82	1.75	'51	1.68	'84	1.61
'63	4.17	'42	3.98	'42	3.79	'95	3.55	'14	1.59	'85	1.73	'82	1.58	'82	1.59
'64	4.09	'61	3.84	'61	3.79	'61	3.53	'79	1.55	'73	1.59	'70	1.55	'70	1.53
'86	3.98	'64	3.66	'95	3.64	'64	3.44	'83	1.55	'59	1.52	'84	1.52	'36	1.53
'62	3.52	'62	3.39	'64	3.60	'60	3.26	'91	1.54	'84	1.47	'89	1.49	'73	1.49
'61	3.48	'58	3.37	'96	3.22	'58	3.18	'85	1.49	'68	1.36	'68	1.40	'16	1.43
'05	3.13	'86	3.18	'62	3.21	'96	3.07	'73	1.45	'70	1.32	'43	1.38	'68	1.42
'36	3.03	'96	2.69	'86	2.99	'62	3.06	'20	1.43	'20	1.30	'20	1.29	'57	1.35
'43	3.00	'60	2.64	'60	2.85	'94	2.75	'84	1.35	'14	1.21	'57	1.26	'07	1.23
'58	2.78	'94	2.52	'94	2.67	'69	2.60	'68	1.35	'07	1.19	'28	1.16	'56	1.20
'53	2.64	'92	2.46	'92	2.62	'43	2.55	'07	1.34	'28	1.15	'72	1.14	'20	1.08
'92	2.59	'16	2.35	'55	2.36	'86	2.44	'28	1.31	'25	1.11	'90	1.11	'13	1.06
'96	2.51	'55	2.33	'81	2.35	'54	2.39	'03	1.19	'89	1.10	'56	1.09	'90	1.03
'81	2.48	'05	2.31	'52	2.29	'53	2.36	'25	1.17	'90	1.09	'14	1.07	'03	1.00
'52	2.46	'69	2.28	'54	2.28	'59	2.36	'10	1.14	'57	1.04				
'78	2.44	'36	2.28	'69	2.14	'92	2.29	'57	1.14						
'60	2.42	'81	2.25	'05	2.06	'52	2.26	'70	1.07						
'16	2.39	'53	2.21	'59	2.02	'55	2.24								

Source: Author's Calculation based on UNCOMTRADE database

[19] http://www.voxeu.org/article/china-s-strong-domestic-demand-has-reduced-its-trade-surplus

To link these results with our previous analysis that is, *Before and After FTA Analysis* growth rates percent for China's exports have been computed for the items in Table 4.6. The growth rates have been calculated for the period 2003-2006 (before FTA), 2006-2008 (EHP and FTA Period), and 2008-2010 (FTA Period). The Before-after FTA analysis was carried out only on Sections I-XXII of Harmonized System (HS) with an objective to see the increase and decrease in volumes of imports and exports for bilateral flows as well as world flows in those sections, where as RCA analysis has been carried out not only on Sections I-XXII but also on HS-2 digit products to determine their level of export growth before and after FTA. Like our previous analysis in case of Pakistan we will analyze China's RCA with top four chapter's products and see if they are growing faster or slower (Table 4.7).

Table 4.7 gives us an analysis of products with RCA>1 and their growth rates. Comparing these results with column 6 we see that the top ranked chapter of Before-After Analysis that is Chapter 28-38, Chapter 50-63, Chapter 72-83, and Chapter 84-85 show mixed trends in growth rates.

Chapter 28-38: '28's RCA was not greater than 1 in 2010 but as a whole it showed less growth than previous years.

C*hapter 50-63:* This chapter also showed mixed growth rates. '58 showed negative growth, '54 and '62 registered less growth showing that their exports did not grow fast. '53 and '56 registered faster growth in 2010.

Chapter 72-83: All the products in this section showed decrease and two products with negative growth rate. On the other hand, in case of bilateral trade between Pakistan and China this Chapter is one of the top 4 contributors earning China billions.

Chapter 84-85: This chapter comprises largest exports to Pakistan. China's overall growth rate in exports for this chapter registered slow growth.

Table 4.7 Growth Rates of China's Products with RCA>1 from 2003-2010 and Comparison with Before After FTA Analysis

HS - Code	Product Name	GR (%) 2003-06	GR (%) 2006-08	GR (%) 2008-10	Comparison with B/A Analysis
'05	Products of animal origin, nes	35	37	-1	
'07	Edible vegetables and certain roots and tubers	70	14	-	
'13	Lac, gums, resins, vegetable saps and extracts nes	-	-	-	
'14	Vegetable plaiting materials, vegetable products nes	15	24	-	
'16	Meat, fish and seafood food preparations	105	10	-3	
'20	Vegetable, fruit, nut, etc food preparations	74	54	-5	
'25	Salt, sulphur, earth, stone, plaster, lime and cement	97	40	-	
'28	Inorganic chemicals, precious metal compound, isotopes	112	75	-	Chapter 28-38
'36	Explosives, pyrotechnics, matches, pyrophorics, etc	46	12	11	
'42	Articles of leather, animal gut, harness, travel goods	30	37	23	
'43	Furskins and artificial fur, manufactures thereof	34	-27	125	
'46	Manufactures of plaiting material, basketwork, etc.	49	61	-28	
'50	Silk	73	1	14	Chapter 50-63
'51	Wool, animal hair, horsehair yarn and fabric thereof	52	5	13	
'52	Cotton	43	20	22	
'53	Vegetable textile fibres nes, paper yarn, woven fabric	26	-10	46	
'54	Manmade filaments	76	33	15	
'55	Manmade staple fibers	99	24	16	
'56	Wadding, felt, nonwovens, yarns, twine, cordage, etc	-	-	40	
'57	Carpets and other textile floor coverings	68	51	21	
'58	Special woven or tufted fabric, lace, tapestry etc	117	59	-29	
'59	Impregnated, coated or laminated textile fabric		81	46	
'60	Knitted or crocheted fabric	85	37	36	
'61	Articles of apparel, accessories, knit or crochet	117	36	10	
'62	Articles of apparel, accessories, not knit or crochet	74	20	4	
'63	Other made textile articles, sets, worn clothing etc	96	39	18	
'64	Footwear, gaiters and the like, parts thereof	68	36	20	
'65	Headgear and parts thereof	86	36	17	
'66	Umbrellas, walking-sticks, seat-sticks, whips, etc	70	45	48	
'67	Bird skin, feathers, artificial flowers, human hair	46	45	36	
'68	Stone, plaster, cement, asbestos, mica, etc articles	125	50	6	
'69	Ceramic products	113	28	38	
'70	Glass and glassware	138	61	14	

'73	Articles of iron or steel	184	81	-19	Chapter 72-83
'78	Lead and articles thereof	201	-	-	
'81	Other base metals, cermets, articles thereof	178	69	-35	
'82	Tools, implements, cutlery, etc of base metal	83	27	16	
'83	Miscellaneous articles of base metal	160	33	9	
'84	Machinery, nuclear reactors, boilers, etc	124	44	15	Chapter 84-85
'85	Electrical, electronic equipment	156	50	14	
'86	Railway, tramway locomotives, rolling stock, equipment	65	-	-	
'89	Ships, boats and other floating structures	-	141	106	
'90	Optical, photo, technical, medical, etc apparatus	-	-	-	
'92	Musical instruments, parts and accessories	63	50	-4	
'94	Furniture, lighting, signs, prefabricated buildings	117	53	18	
'95	Toys, games, sports requisites	70	45	-11	
'96	Miscellaneous manufactured articles	98	67	14	

Source: Author's Calculation based on UNCOMTRADE database

These results help us understand the overall trade pattern of both the countries and the products in which they have comparative advantage. China specializes in capital intensive finished goods where as Pakistan specializes in labor-intensive commodities mostly related to agriculture sector. The change in ranking of Pakistan's RCA products also tells that its industry it's going through shift from raw material exports to semi manufactured goods. However, these results do not fully form any basis for products traded in FTA among both the countries except few top ranked Sections.

C. Gravity Model

The gravity model has been estimated for Pakistan and China for the years 2003-2010. The data set is constrained because of non-availability of bilateral data before 2003. Therefore, the data is comprised of 8 observations where the dependent variable is Pakistan's exports to China. The model described in methodology has been computed using Ms-Excel. The reported adjusted R^2 is 0.94 indicating reasonable power of explaining variation in trade flows between countries.

The gravity model result (Table 4.8) coefficient of 'Ln China GDP' is positive and significant that is 1.55 implying a positive relationship between economic size of China and bilateral trade whereas 'Ln Pakistan GDP' is negative and insignificant that is -0.52 which shows an indirect relationship between Pakistan's economic size and bilateral trade. The result indicates that China's GDP has a positive and statistically significant influence on Pakistan's exports to China. This means that the bigger China's GDP, the greater China's imports from Pakistan, and bigger its capacity to absorb imports. On the other hand, Pakistan's GDP does not have much influence on its exports to China.

Table 4.8: Gravity Model Results PAK-CHINA FTA 2003-2010

Regression Statistics						
Multiple R						0.981678143
R Square						0.963691977
Adjusted R Square						0.93646096
Standard Error						0.145915283
Observations						8
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	11.638261	5.278141	2.204992	0.092139	-3.016208	26.292729
Ln GDP China	1.550616	0.563927	2.749676	0.051392	-0.015096	3.116327
Ln GDP Pak	-0.524122	1.363235	-0.384470	0.720196	-4.309070	3.260825
FTA	-0.054932	0.252430	-0.217612	0.838382	-0.755791	0.645927

Source: Author's Calculation on Excel based on UNCOMTRADE database

Furthermore, the negative coefficient of Pak-China FTA (α_3) also indicates that FTA need to be exploited more to create bilateral trade between Pakistan and China. The insignificant FTA coefficient suggests that FTA does not appear to affect the bilateral trade flow one way or another.

Hence, the gravity model estimation shows that the bilateral trade between Pakistan and China has not yet reached the levels that positively impact both Pakistan and China. With FTA in effect for the past few years, it may need more years to reap from the fruits of FTA. In the present condition, the result indicates that it is Pakistan which benefits from the bilateral

trade, because its exports to China are positively correlated with China's GDP which is growing faster than Pakistan's GDP. On the other hand, the negative and insignificant coefficient of Ln GDP Pak suggests the need for Pakistan to expand its export capacity to further benefit from increasing exports to China.

6. CONCLUSION

Pakistan and China signed FTA in 2006 which has been in-effect since last 5 years. In case of Pakistan-China Free Trade Agreement, it seems China is better-off then that of Pakistan. The Phase-I of the FTA is in progress and will end in 2012. The feedback from the local manufactures and analytical assessment of the FTA after this phase will help in determining the actual impact of the FTA. This research study has tried to examine the impact of FTA on patterns of goods between Pakistan and China using three different approaches, that is, before-after FTA analysis, revealed comparative advantage and traditional gravity model. This study also examines that which country seems to benefit from this FTA. The comparison of both countries trade with world has also helped understand their trade patterns of goods in a better way.

The period considered for analysis was 2003-2010 and for better understanding time period was divided as Pre-EHP (2005), EHP (2006) and Post-EHP or FTA Period (2007-10) for HS-2 digit products. It has been observed that the decreasing trend in Pakistan's trade with China in early period of FTA could be due to delay in implementation of EHP. During pre-EHP both Pakistan and China exports witnessed positive growth rate, during EHP export volume of both countries decreased due to delay in implementation of EHP. Pakistan's Import analysis show that imports of chemical and textile increased after FTA however, electrical machinery has always been largely imported product during 2003-2010. Overall composition of Pakistan's top ranked exports to China has not changed as a result of this FTA. Chapter 50-63 (textile and textile products) is top ranked export chapter in both Pakistan's exports to China and World. In case of imports from world chapter 25-27 (mineral products) is top ranked.

The detailed analysis in case of China shows that its top ranked export chapters to Pakistan and world are same that is, Chapter 84-85 and Chapter 50-63 whereas, the top import from Pakistan different from its imports from world. Common chapters imported from Pakistan and world are Chapter 25-27 and Chapter 72-83.

The RCA model computed for the years 2003 (before FTA), 2006 (FTA was signed) and 2008 & 2010 (After FTA) shows that in case of Pakistan while compared with before-after analysis exports of chapter 50-63 registered faster growth as compared to other chapters. In total out of 97 products at HS-2 digit, Pakistan had revealed comparative advantage in 27 products in 2003, 26 products in 2008 and 28 in both 2006 & 2010, respectively. In case of China, in 2003 it had revealed comparative advantage in 47 products, 44 products in both 2008 and 2010. As compared to previous before-after analysis, the China's top rank export chapter to Pakistan (chapter 28-38) showed less growth, whereas chapter 50-63 showed mixed growth.

The results of RCA form basis to capture the effects of FTA at HS-2 digit product level and it also helps in understanding the diversification in Pakistan's trade goods as well as China's. China's trade goods seem more diversified where as Pakistan as compared to China is less diversified. China has advantage in producing capital intensive goods which is also evident from results of RCA whereas, Pakistan has advantage in producing textile products and other products includes semi manufactured goods. Like Chinese industry Pakistan's industry has also gone transition and bilateral trade flows show that the products traded in 2003 and 2006 are different from those in 2010 especially in case of Pakistan.

The gravity model results show that the coefficient of 'Ln China GDP' is positive and significant that is 1.55 implying a positive relationship between economic size of China and bilateral trade whereas 'Ln Pakistan GDP' is negative and insignificant that is -0.52 which

shows an indirect relationship between Pakistan's economic size and bilateral trade. The FTA coefficient of Pak-China FTA shows negative results which indicates that this FTA need to be exploited more to benefit greater from bilateral trade between Pakistan and China. The insignificant FTA coefficient also suggests that FTA does not appear to affect the bilateral trade flow one way or another. This could also means that a positive and statistically significant China's GDP could have positive influence on Pakistan's exports to China because bigger the China's GDP, the greater China's imports from Pakistan, and bigger its capacity to absorb imports. On the other hand, Pakistan's GDP does not have much influence on its exports to China. Therefore in present conditions it is Pakistan which benefits more from the bilateral trade because Pakistan's exports to China are positively correlated with China's GDP which is growing faster than Pakistan's GDP.

In view of Pakistan-China friendship this agreement is more like a political decision then an economic one. There are many other factors which affect the implementation and expansion of FTA among which prominent are internal investment environment, logistical support, and different level of support by the government to the investors, trade policy and political stability and motives of the FTA (economic and political). For Pakistan to benefit from this FTA it should concentrate on revisiting its trade policies to encourage domestic producer to take advantage from this FTA and negotiate with China for same treatment as in its other FTA's (zero tariff).

Implications of the Study

There are two conditions that must meet in order for countries to successfully participate in a free trade agreement. First, an incentive constraint mutually satisfied, and must make countries better-off. Second, the worthwhile long-run gains to the countries that keeps them to commit to the agreement, as opposed to maintaining tariffs.

In the context of Pakistan's trade environment and domestic industry the results are disturbing. Serious consideration is required to see if this FTA is resulting in degradation of Pakistan's domestic industry including large, medium and small industry or improved it. The policy makers need to make sure that favorable environment (incentives) for growth of the industry is provided so that the industry can compete in international market. This is a necessary step which is required to be taken as Pakistan and China share a long lasting friendship and this FTA has political as well as economic impact on the societies of both the countries.

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