China & World Economy

China & World Economy / 83–103, Vol. 29, No. 3, 2021

Exploring the Advantages and Disadvantages of the China–Pakistan Free Trade Agreement

*Mirajul Haq, Javeria Saeed, Muhammad Akram**

Abstract

This paper explores whether the China–Pakistan Free Trade Agreement (FTA), which entered into effect in 2007, has led to advantages or disadvantages for the participating countries. It assesses the gains and losses associated with the agreement rigorously using two different approaches. First, the revealed comparative advantage index is calculated for 10 commodity groups. This identifies the commodity groups in which the participating countries have a comparative advantage. Second, trade creation and trade diversion are estimated for overall imports and for the commodity-group level imports. This analysis provides useful information about the commodity groups in which a particular party to the FTA is experiencing an advantage or a disadvantage. The findings of the study show that China has an advantage in producing capital-intensive goods whereas Pakistan has a comparative advantage in the production of primary and semi-manufactured goods. The empirical findings also indicate that, overall, the formation of the bilateral free trade agreement between Pakistan and China enhances trade with member countries as well as with nonparticipating countries.

Key words: gravity model, panel data, revealed comparative advantage, trade creation, trade diversion

JEL codes: C10, C23, F14, F15

I. Introduction

Reciprocal trade agreements between two or more nations are known as regional trade agreements (RTAs). They have a legal status under Article XXIV of the General Agreement on Tariffs and Trade (GATT, 1994). An RTA is a reasonable approach to the

*Mirajul Haq (corresponding author), Assistant Professor, International Institute of Islamic Economics (IIIE), International Islamic University Islamabad, Pakistan. Email: haqmirajeco@gmail.com; Javeria Saeed, MPhil Scholar, International Institute of Islamic Economics (IIIE), International Islamic University Islamabad, Pakistan. Email: jaweriasaeed27@gmail.com; Muhammad Akram, Assistant Professor, International Institute of Islamic Economics (IIIE), International Islamic University Islamabad, Pakistan. Email: muhammad.akram@iiu.edu.pk.

development of liberalized trade within a certain geographical area, which is intended to intensify economic ties among the participating countries. Such agreements have experienced rapid growth since the early 1990s. This is evident from the fact that, in 1980, only 15 agreements existed, whereas, at the end of 2019, 490 RTAs were listed with the World Trade Organization (WTO).[1] Among the RTAs, 270 (55 percent) were free trade agreements (FTAs), 162 (33 percent) were economic integration agreements (EIAs), and 30 (6 percent) were customs unions (CUs). The expansion of regionalism around the world has caught the attention of economists and policymakers and currently holds a central place in policy debates. However, the related literature on the subject takes two contrasting views on the trade and economic effectiveness of RTAs for member countries.

The proponents of regionalism have claimed that RTAs are always beneficial for member countries because they are the most feasible way to address regional issues that are outwith multilateral agendas. This group of studies has explored the positive impacts of RTAs for trade, economic growth, and social welfare. However, these studies were generally accompanied by the argument that the formation of unions is the building bloc to the liberalization of global trade (Keuschnigg et al., 1996; Georges, 2008; Lambert and McKoy, 2009; Park et al., 2009). Studies in support of regionalism also argue that regional trade agreements reduce costs, and increase competition and policy cooperation among participants, which in turn increases trade among them (Kono, 2002; Sarker and Jayasinghe, 2007; Lambert and McKoy, 2009; Vollrath et al., 2009, among others). Endorsing an optimistic view, some studies argue that regionalism is the right way to enhance the growth and development of countries through the stimulation of FDI and technological diffusion (Fox, 2004; Ando and Kimura, 2005; Nguyen and Ezaki, 2005; Kim et al., 2011).

On the other hand, a pessimistic view claims that, in general, regionalism puts both participating and nonparticipating countries at a disadvantage. This group of studies (Clausing, 2001; Lee et al., 2008; Datta and Kauliavtsev, 2009, among others) argues that regional integration has been regarded as a substitute for multilateralism, impeding the liberalization of global trade. They believe that, in such situations, RTAs depress multilateral liberalization and that, as a result, global trade becomes distorted. Some others (Baldwin and Venables, 1995; Clarete et al., 2003; Kandogan, 2005; Carrere, 2006) argue that regionalism does not always have the same effects but varies from bloc to bloc, depending on the period under consideration, the commodities, and

[1]This includes all five categories of RTAs namely preferential trade agreements (PTAs), free trade agreements (FTAs), customs unions (CUs), common markets (CMs), and economic unions (EUs).

the countries involved. Thus, the advocates of regionalism designate conditions for member countries to obtain the dynamic gains of RTAs. For instance, in pioneering work on the subject, Lipsey (1957) points out that the trade diversion of RTAs for participating countries is minimized if those countries have closer proximity and if the major portion of their international trade depends on the other countries. Similarly, Krugman (1991), Frankel et al. (1995, 1997), and Baier and Bergstrand (2004) argued that, in most situations, trade creation dominates trade diversion; however, if a member country is less integrated with rest of the world then trade diversion dominates trade creation.

In Asia, the rapid development of RTAs started from the early 1990s. A third of the world's RTAs are enforced in Asia. Pakistan and China, two neighboring countries, started negotiations on FTAs in goods and services on November 24, 2006. These entered into force in July and October 2007 respectively.[2] Pakistan is the leading country in South Asia to enter into an FTA with China. The prime objective of the China–Pakistan FTA is to strengthen trade and to expand trade volume between the two countries.[3] This FTA was implemented in two phases. In the first phase Pakistan and China agreed on a 30 percent reduction of tariffs on products for the period of 2007 to 2011. In the second phase, both countries agreed to reduce tariffs up to 90 percent. Pakistan also agreed to provide tariff concessions on raw and semifinal products and China agreed to provide tariff concessions on final products.

Even though an FTA was signed between the two countries in 2006, Pakistan is still just a marginal contributor to China's overall trade. Pakistan has so far failed to grow bilateral trade with China to a sizeable volume. Despite the fact that China's worldwide imports have exceeded $1 trillion, Pakistan holds only a very small share of this. Pakistan's exports to China 2018 fiscal year were just US$1.82 billion (United Nations, 2018), whereas China's exports to Pakistan grew from $3.5 billion to $18.25 billion from 2006 to 2017. Pakistan's trade balance with China has also been distorted. For example, Pakistan's exports to China increased from US$0.4 billion in 2005 to US$1.82 billion in 2018; by contrast, imports from China increased from US$1.8 billion in 2005 to US$18.2 billion in 2017.

China's growing share of international trade, and Pakistan's constant trade deficit with China, are the basic motivations behind this study. In this context, the study explores empirically whether the China–Pakistan FTA entailed advantages or

[2]In July 2007 under GATT Article XXXIV, the FTA in goods was in force, whereas in October 2007 under GATT Article V, the FTA in services was in force between China and Pakistan.

[3]Although Pakistan and China have the advantage of a close relationship, geographical proximity, and road connections, economic relations between these countries remain far below their potential.

disadvantages for Pakistan and China. Two different approaches have been used for this purpose. First, Balassa's (1965) revealed comparative advantage (RCA) index was used on a group of 99 commodities classified using the Standard International Trade Classification (SITC) two-digit codes. The motivation behind this analysis is to specify the individual commodity group in which Pakistan has trade potential with China, and to identify the commodity group in which China holds an RCA.

Second, we used the Kandogan (2005)[4] gravity model and assessed trade creation and trade diversion to examine the advantages and disadvantages of the China–Pakistan FTA for Pakistan and China. Trade creation and trade diversion resulting from the China–Pakistan FTA are estimated for overall imports and for each commodity group classified by SITC-2. This analysis is motivated by a gap in the existing literature. Existing studies examine the effects of the China–Pakistan FTA on trade flows between Pakistan and China with reference to single commodity groups, which cannot capture the full effects of the China–Pakistan FTA on trade flows. By taking into account all of the commodity groups, the analysis provides useful information regarding the specific commodity groups in which a particular member country is experiencing an advantage or disadvantage. A result-oriented and inclusive trade policy requires comprehensive analyses of the effects of the trade agreement on all commodity groups of member countries. Thus, by having two different approaches and an analysis that considers each commodity group we believe that our study is well positioned to make recommendations related to the effects of China–Pakistan FTA on the countries' trade.

The rest of the paper is structured as follows. Section II presents a detailed methodology to meet the objectives of the study. It covers the construction of the RCA of different traded goods, an empirical model (gravity model), the measurement of trade creation and trade diversion, variables, data and data sources, estimation techniques, and the definition and construction of the variables under consideration. Section III presents the results of the RCA indexes for Pakistan and for China. Section IV offers estimated results from the gravity model and the measurement of trade creation (*TC*) and trade diversion (*TD*). The paper concludes with Section V, which provides a summary of key findings.

II. Methodology

As mentioned above, this study rigorously assesses the potential gains and losses resulting from the China–Pakistan FTA using different measures. In this context, the

[4]We used the Kandogan gravity model because, along with standard explanatory variables, it captures a number of fixed effects related both to exporter and importer countries.

methodology section is divided into four different subsections. Subsection 1 illustrates the measurement of RCA. Subsection 2 demonstrates the measurement of trade creation and trade diversion. Subsection 3 presents the definition and construction of the variables under consideration. Finally, subsection 4 presents a discussion of sample size and data sources.

1. Measurement of revealed comparative advantage

The one appropriate method to measure the comparative advantage or disadvantage of a country in a particular traded good is the RCA index developed by Balassa (1965). Based on the theoretical background work of classical economists Ricardo (1817), Heckscher (1919), and Ohlin (1933), Balassa structured the RCA index as follows:

$$RCA_{ij} = \frac{X_{ij}}{X_i} \div \frac{X_{wj}}{X_w}, \tag{1}$$

where RCA_{ij} shows the revealed comparative advantage of the i^{th} country for good j. X_{ij} is the i^{th} country's exports of commodity j, X_i is total exports of country i, and X_{wj} represents the world exports of commodity j, and X_w is the world's total exports. Follow Balassa's (1965) RCA index, we calculated the RCA indices of Pakistan and China for both primary and manufactured products for 99 commodities group at the level of SITC 2-digit code covering the period from 1990−2015.[5] In general, RCA values are stated as <1 or >1. Value less than 1 indicate a country's revealed comparative disadvantage, whereas those greater than 1 point towards a comparative advantage in a particular commodity.

2. Measurement of trade creation and trade diversion

One frequently used technique for assessing RTAs is the measurement of *TC* and *TD* developed by Viner (1950).[6] In the literature on this subject, different methodologies have been used to measure *TC* and *TD* and hence to estimate the net effects of RTAs for the participating countries (Baier and Bergstrand, 2004; Kandogan, 2005; Carrere, 2006; Vollrath et al., 2009).

In this study, *TC* and *TD* are measures of estimation from the gravity model. Tinbergen (1962) was the first person to introduce the gravity model equation to measure bilateral trade flows of a country in terms of the size of the economy and geographical distance between trading partners. Later, Poyhonen (1963) used the gravity model and estimated the international trade volume without any economic foundation. However, with the passage of time the gravity model was estimated in different studies

[5]For the SITC code see Appendix I.

[6]See Fox (2004) for a comprehensive definition of trade creation and trade diversion.

with some modifications – for example, Pelzman (1977), Anderson (1979), Bergstrand (1985, 1989), Krugman (1987), Helpman and Krugman (1985), Deardorff (1998), Frankel and Romer (1999), Evenett and Keller (2002), Frankel and Rose (2002), Anderson and Wincoop (2003, 2004), and Kandogan (2005). We follow the gravity model of Kandogan (2005) for three reasons. First, Kandogan (2005) considered time, commodity, exporter, and importer bilateral specific fixed effects; hence it presented a correctly specified fixed-effects model. Second, Kandogan (2005) used a bilateral interaction dummy to control for time-invariant country pair fixed effects. Third, the error term is more refined, taking into account time-invariant bilateral effects on country *i*'*s* imports from country *j*'*s* at time *t*.

(1) The gravity model

We use Kandogan's (2005) fixed-effect gravity model to measure the effects of the China–Pakistan FTA on the participating countries. In this context, we incorporate importer, exporter, commodity, and bilateral fixed effects in the model. The modified gravity model takes the following form:

$$Ln\left(M_{ijst}\right) = \delta_t + \partial_i + \theta_j + \rho_{ij} + \gamma_s + \beta_1 \ln Y_{it} + \beta_2 \ln Y_{jt} + \beta_3 Dist_{ij} + \beta_4 EXR_{ijt} + \beta_5 POP_{it} + \beta_6 POP_{jt} + \beta_7 SIM_{ijt} + \beta_8 RF_{ijt} + \beta_9 CL_{ij} + \varepsilon_{ijt}, \quad (2)$$

Here, M_{ijst} are imports of commodity *s* by *i* country from *j* country at time *t*, and δ_t denotes year fixed effects, which capture time-varying factors that affect imports to the country. ∂_i is the importer fixed effect; it captures the time-invariant characteristics of the importer country. Similarly, the exporter fixed effect θ_j captures time-invariant characteristics of the exporter country. ρ_{ij} is the bilateral interaction fixed effect, which captures time-invariant bilateral pair country characteristics that affect the trade between the importer and exporter. Finally, the commodity group fixed effects, γ_s, captures commodity-group specific characteristics that influence the trade flows of that particular commodity group. γ_{it} and γ_{jt} are real GDP of importer and exporter country respectively. $Dist_{it}$ denotes the distance between country *i* and *j*. EXR_{ijt} is the exchange rate of importer country *i* and exporter country *j* at time *t*. POP_{it} and POP_{jt} represent the population (a proxy of market size) of country *i* and *j* at time *t* respectively. SIM_{ijt} and RF_{ijt} denote the similarity index and relative factor endowments of trading partners respectively at time *t*. CL_{ij} is a dummy variable for a common language – if country *i* and *j* share a common language then this is assigned a value of 1, otherwise it is 0. ε_{ijt} is an error term.

(2)Estimation technique

Empirical estimation was carried out using the fixed effect estimation technique to cope

with the gravity model (empirical model Equation 2), which includes a number of fixed effects.

(3) Trade creation and trade diversion

Following Kandogan (2005), we estimated *TC* and *TD* and net effect (*NE*). *TC* and *TD* were estimated from the regression errors $\overline{\varepsilon}_{ijt}$ of an empirical model (Equation 2) for pre- and post-China–Pakistan FTA as follows:

$$TC = \overline{\varepsilon}_{ijt} \text{ after the FTA for participants} - \overline{\varepsilon}_{ijt} \text{ before the FTA for participants}. \quad (3)$$

A value of *TC* greater than zero ($TC > 0$) points toward trade creation, which shows that, as a result of the agreement, the trade among the participating countries has increased. For trade diversion, we take the difference of the average errors pre- and post-China–Pakistan FTA for nonmember countries.

$$\begin{aligned} TD = {} & \overline{\varepsilon}_{ijt} \text{ after the trade agreement for nonparticipating countries} \\ & - \overline{\varepsilon}_{ijt} \text{ before the trade agreement for nonparticipating countries}. \end{aligned} \quad (4)$$

The value of *TD* is less than zero ($TC < 0$), which indicates that, as a result of the agreement, the trade of participating countries with nonparticipating countries has decreased. To estimate the *NE* of China–Pakistan FTA we simply take the difference between the *TC* and *TD* (the difference between the estimated values of Equation 3 and Equation 4):

$$NE = TC - TD. \quad (5)$$

This process is repeated for each commodity group and hence *TC*, *TD*, and *NE* are estimated at a commodity level.

3. Definition and construction of variables under consideration

The GDPs of importer countries Y_{it} and exporter countries Y_{jt} are used as proxies for trading countries' income. Y_{it} captures the demand side; hence we expect a positive sign for β_1, indicating that imports increase with an increase in the GDP of the importer country and vice versa. Conversely, the GDP of exporting country Y_{jt} captured the supply side of the economy; hence, as the GDP of the country increases, after fulfilling domestic demands, its ability to export increases; we therefore also expect a positive sign for β_2.

Distance $Dist_{ij}$ from the capital city of the importer to the capital city of the exporter, measured in kilometers, is the proxy for the transportation costs of traded commodities. β_3 should hold a negative sign, as imports decrease with an increase in distance between trading partners. Previous studies, such as Bergstand (1985) and Dell'Arricia (1999), demonstrated that the accession of the exchange rate of the gravity model has helped to explain trade variation among participating states. The exchange rate EXR_{ijt} is included

as an explanatory variable in the model, which is calculated as follows:

$$EXR_{ijt} = \frac{\text{annual average of the national currency unit of Pakistan per US dollar}}{\text{annual average of the national currency unit of country } j \text{ per US dollar}}. \quad (6)$$

Using the above measure, we determine the annual average exchange rate – the number of Pakistan's currency units per one unit of the partner country's currency. Imports of the participant country normally decrease / increase with depreciation / appreciation of the domestic currency; we therefore expect a negative sign for β_4. Population POP_{ijt} is used as a proxy for the market size of each trading partner. The larger the market size the more it trades; hence we expect a positive sign for β_5.

We also include control variables in the model. For instance, the common language variable, CL_{ij}, is a qualitative variable that represents the extent of language similarity between Pakistan and its trading partners. The value is set to 1 if the country's language is one of the languages that is close to Pakistan's language (English) and set to 0 otherwise. Following Kandogan (2005), the similarity index SIM_{ijt} is calculated; this measures similarity of economic size (in terms of GDP) of country i and j at period t. The SIM_{ijt} index is calculated to find how much the partners' countries are similar in economic size. Follow Kandogan (2005), we calculate SIM_{ijt} as follows:

$$SIM_{ijt} = \ln\left\{1 - [Y_{it} / (Y_{it} + Y_{jt})]^2 - [Y_{jt} / (Y_{it} + Y_{jt})]^2\right\}. \quad (7)$$

Equation (7) shows that terms in brackets take the value of 0.5 when the two trading countries are of equal economic size and value decreases as countries diverge in size. Relative factor endowment, RF_{ijt} estimates the distance between trading partners in terms of their relative factor endowments. Following Kandogan (2005), RF_{ijt} is calculated with the following formula:

$$RF_{ijt} = \left| \ln\left(\frac{K_{it}}{L_{it}}\right) - \ln\left(\frac{K_{jt}}{L_{jt}}\right) \right|, \quad (8)$$

where K_{it} is capital stock and L_{it} shows the labor force of the importer country i at time t; similarly, K_{jt} capital stock and L_{jt} shows the labor force of the exporter country j at time t. The measure takes the value of zero when importer i and exporter j have the same factor endowment ratios, and increases with an increase in differences.

4. Sample size, data, and data sources

For the gravity model (Equation 2), we consider a data set from 20 major trading partners of Pakistan covering the period 1990–2015.[7] We also use annual data sets for

[7]The criterion for the selection of Pakistan's major trading partners is the volume of Pakistan's imports and exports from these countries in the latest fiscal year (2015−16).

99 commodities from Pakistan and China for the same period. As the FTA between Pakistan and China came into force during 2007, the time period under consideration is divided into two subperiods. The period from 1990–2007 is the pre-FTA period, whereas 2008−2015 is the post-FTA period. Data on the bilateral imports and bilateral exports of Pakistan and China have been taken from UN Comtrade 2016. The data on GDP, foreign exchange rate, labor force, population, and exchange rates for Pakistan and China, including 20 major trading partners of Pakistan, are taken from World Development Indicators (WDI) data set of the World Bank.[8] Data on geographical distance (km) between Islamabad (the capital of Pakistan) and the capital cities of the trading partners are taken from the Centre d'Etudes Prospective et d'Information International (CEPII) online.[9] Imports, exports, GDP, foreign exchange reserves, gross domestic capital formation, and exchange rates have been adjusted by the consumer price index (CPI) of the respective country. Imports, exports, GDP, foreign exchange reserves, gross domestic capital formation, exchange rates, labor force, and the distance between the importer and exporter country are in log form.

III. Results of revealed comparative advantage analysis

As discussed above, the aim of this study was to explore the potential and perils of the China–Pakistan FTA. This section presents the estimated values of the RCA index of 10 different commodity groups that were traded between Pakistan and China. Table 1 shows the RCA index values of the 10 different commodity groups (SITC-0 to SITC-9). Columns 2 and 3 of Table 1 show the RCA of SITC-0 (food and live animals) of Pakistan and China respectively. The value of the RCA index for this group shows that China exhibits a very strong comparative advantage in food and live animals over the entire period under investigation. Results illustrate that the RCA of China increased substantially in 2000 and touched the highest level of 915.64; however, it declined subsequently to 28.95 in 2001 and then fell constantly over the period. Evaluating the RCA index of Pakistan for food and live animals in the observed period shows that in the first four successive years 1990−1993 the values of the RCA index are <1, indicating the comparative disadvantage status of Pakistan in this commodity group. Pakistan gained a comparative advantage in 1995 (RCA = 10.35) and retained a comparative advantage until 2015; however, a larger variation was detected in the RCA index value, which touched the highest level of 11.24 in 2004 and reached the lowest point of 1.22 in 2013.

Columns 4 and 5 show the RCA index values of SITC-1 (beverages and tobacco). The

[8]Available at https://databank.worldbank.org/source/world-development-indicators.

[9]Available at http://www.cepii.fr/cepii/en/welcome.asp.

Table 1. Revealed comparative advantage of Pakistan and China

Years	SITC-0		SITC-1		SITC-2		SITC-3		SITC-4		SITC-5		SITC-6		SITC-7		SITC-8		SITC-9	
	PAK	CHN	PAK	CHN	PAK	CHN	PAK	CHN	PAK	CHN	PAK	CHN	PAK	CHN	PAK	CHN	PAK	CHN	PAK	CHN
1990	0.09	59.71	…	…	…	…	35.41	0.17	…	12.93	2.81	24.889	1.52	20.57	13.17	24.72	1.72	4.75	6.65	0.08
1991	0.83	41.16	…	…	…	…	9.87	0.23	…	22.19	0.28	33.67	1.81	18.88	1.34	30.85	0.24	11.46	3.72	1.94
1992	0.63	2.83	…	0.27	…	0.27	15.82	0.06	…	0.04	19.31	0.66	2.08	0.25	110.53	2.28	3.34	0.057	1.69	0.04
1993	0.35	102.57	…	0.03	…	0.03	77.42	3.03	…	0.30	0.08	73.29	2.09	19.24	9.06	201.53	0.09	13.59	1.00	1.03
1995	10.35	9.91	6.79	0.03	6.79	0.03	37.80	2.95	…	0.34	0.46	95.11	2.76	23.78	7.89	82.48	0.07	10.74	0.47	4.05
1996	9.75	226.05	…	0.03	…	0.03	12.21	1.44	…	0.18	0.38	113.56	6.09	26.27	11.18	195.99	0.25	12.72	0.14	15.81
1997	4.76	436.23	…	0.04	…	0.04	6.29	3.74	…	0.23	0.68	94.96	9.57	24.42	47.96	97.08	13.04	7.39	3.69	26.99
1998	4.86	14.66	…	0.01	…	0.01	3.12	3.53	…	0.23	27.86	158.37	3.44	28.03	15.06	92.34	0.22	7.18	0.04	0.51
1999	9.69	15.10	…	0.02	…	0.02	1.47	5.02	…	0.15	29.77	152.15	3.69	36.16	33.12	123.49	0.12	7.74	6.19	10.76
2000	6.87	915.64	…	0.02	…	0.02	0.03	3.56	…	0.05	41.66	124.62	5.03	38.80	1.81	138.46	1.02	9.33	0.35	24.97
2001	3.85	28.95	…	…	…	…	1.13	3.55	0.06	0.04	34.56	113.28	8.95	44.98	58.88	222.12	0.27	12.65	2.12	20.85
2002	4.35	28.41	…	…	…	…	7.79	2.78	3.23	0.13	4.29	113.94	4.06	53.42	1.34	271.74	0.21	16.98	0.22	25.99
2003	7.54	12.53	24.95	7.04	24.95	7.04	9.79	36.87	4.16	19.22	4.10	11.58	0.75	8.29	0.31	20.18	2.03	13.11	0.59	19.85
2004	11.24	10.83	16.17	10.89	16.17	10.89	1.29	38.27	5.67	47.22	6.23	10.01	3.25	8.69	0.28	9.87	2.56	8.52	2.57	31.26
2005	7.83	34.80	8.80	174.45	8.80	174.45	2.25	80.93	3.57	16.72	7.89	31.21	3.07	21.88	14.62	21.71	3.54	20.04	0.59	20.72
2006	9.48	14.49	16.23	10.21	16.23	10.21	3.14	22.58	3.98	8.73	6.12	16.12	4.58	7.73	10.67	6.81	18.24	6.80	0.76	14.78
2007	6.56	14.06	27.73	5.74	27.73	5.74	1.90	36.45	10.97	9.64	6.03	17.67	1.86	8.64	6.74	7.91	27.32	5.87	0.74	14.29
2008	5.79	12.26	24.28	5.13	24.28	5.13	1.50	24.62	18.66	11.26	6.16	16.34	3.04	8.13	22.74	8.39	7.05	4.85	1.66	9.97
2009	4.60	15.58	11.50	8.39	11.50	8.39	2.15	23.98	3.65	14.12	4.51	20.82	8.10	5.36	12.21	9.17	5.96	6.05	0.49	23.95
2010	4.47	17.28	15.92	9.23	15.92	9.23	2.12	28.15	3.99	12.19	5.05	26.78	2.50	4.69	10.63	7.23	16.03	6.67	0.73	20.19
2011	2.87	20.19	12.44	6.86	12.44	6.86	0.94	34.16	2.01	11.02	4.93	29.05	4.58	4.89	10.37	6.02	4.75	5.12	9.00	22.24
2012	3.16	28.08	6.09	5.81	6.09	5.81	0.54	32.74	0.76	11.71	2.45	24.06	2.83	4.13	3.69	7.80	6.12	7.39	0.55	16.07
2013	1.22	17.07	3.17	6.57	3.17	6.57	1.33	30.88	3.42	13.34	4.72	24.66	1.66	3.88	1.43	8.08	5.37	7.19	0.29	26.60
2014	3.28	21.02	14.32	5.72	14.32	5.72	1.36	31.36	3.88	12.46	5.05	23.16	2.59	3.98	3.54	7.09	4.75	9.31	0.73	13.39
2015	3.58	19.99	4.40	3.91	4.40	3.91	35.41	25.68	0.06	12.73	2.81	21.12	1.30	3.96	4.19	9.75	3.07	6.29	0.59	9.65

Source: Authors' own calculation using data set from the UN's Comtrade 2016.

results show that Pakistan persistently has a RCA >1 throughout the entire period under consideration, indicating the comparative advantage of Pakistan in beverages and tobacco. China had a comparative disadvantage in the initial years (1992–2000), when RCA <1, but it achieved a comparative advantage in 2003 and touched the highest level (174) in 2005. However, a comparison of the RCA results for Pakistan and China revealed that, compared to China, Pakistan holds a higher RCA in the exports of beverages and tobacco.

Columns 6 and 7 show the RCA values of SITC-2 (crude materials, inedible, except fuel). The values of the RCA index reveal that Pakistan exhibits a relatively higher RCA in the production of crude materials. In the case of Pakistan, the RCA values recorded were greater than unity during the entire period under consideration. China increased its relative advantage with the passage of time; however, compared with Pakistan, China has a lower RCA value – it is greater than unity but declining over time.

The RCA values of the commodity group, SITC-3 (mineral fuels, lubricants, and related materials), are presented in columns 8 and 9 of Table 1. The results indicate that Pakistan shows a declining trend of RCA in this commodity group, whereas China shows an increasing trend. This is evident from the fact that, in 1990, Pakistan recorded a relatively better RCA value (RCA = 35.41) and touched the highest, 77.42, in 1993; however, it declined continuously and touched the lowest level, 0.03, in 2000. On the other hand, China had a comparative disadvantage in the first successive years; however, it gained momentum and touched the highest level (RCA = 80.93) in 2005. In this group, until 1997, Pakistan had a higher RCA; however, it reversed from 1998 and continuously decreased, whereas China sustained an increasing and substantial comparative advantage during this period. The subsequent columns, 10 and 11, give the RCA index values of commodities group, SITC-4 (animal and vegetable oils, fats, and waxes). In this group, the comparative advantage of Pakistan is greater than unity except in 2001, 2012, and 2015. China shows higher values in the first two successive years, 1990 and 1991; however, China switched from a comparative advantage to a disadvantage in 1993 (RCA = 0.04) and maintained the same trend until 2002. In 2003, China shifted from a comparative disadvantage to a comparative advantage, and it touched the highest RCA value of 47.22 in 2004. From 2000, in most years, Pakistan held a relatively low RCA compared with China in this commodity group.

Columns 12 and 13 show the RCA values for the commodity group, SITC-5 (chemical and related products), which indicate that the RCA of Pakistan exhibited large variations in the earlier years of the observed period. For instance, in 1990, Pakistan displayed a comparative advantage, which shifted to a disadvantage in 1991 (RCA = 0.28) and reached 19.31 in 1992; however, it again switched to a disadvantage in 1993 and the trend was sustained in four consecutive years. China held a comparative advantage in

1990 and 1991, which switched to a disadvantage in 1992 (RCA = 0.66), but increased sharply in 1993 (RCA = 73.29) and touched the highest level in 1999 (RCA = 152.15). Overall, in "chemicals and related products," China holds a stronger RCA than Pakistan.

Similarly, columns 14 and 15 show the RCA values of commodity group SITC-6 (manufactured goods classified chiefly by material). The results revealed that, in most of the years, Pakistan's RCA values were greater than unity (RCA >1); however, they were mostly just above 1. In the same way, in most of the years, China holds a comparative advantage that RCA values are greater than 1 except 1992 (RCA = 0.25). Even though the RCA index of China remained higher than that of Pakistan during the whole period, both countries have closer RCA values indicating that China's exports in this product group are almost the same as those of Pakistan.

Columns 16 and 17 present the RCA values of SITC-7 (machinery and transport equipment). These RCA values revealed that China had a comparative advantage in the production of machinery and transport merchandise in the entire period, whereas Pakistan exhibited a comparative disadvantage in two successive years (2003, 2004). Comparing the RCA of the two countries in the initial year, 1992, Pakistan had the highest RCA (RCA = 110.53) compared to just 2.28 for China. However, China's RCA abruptly increased to 201.53 in 2003 whereas Pakistan declined to 9.06 China held the strongest comparative advantage until 2002; this touched the highest point (271.74) in 2002, whereas Pakistan has the lowest (0.28) in 2004. From 2003, China RCA had a declining trend, whereas Pakistan registered a positive trend until 2011. In summary, we can say that the production of machinery and transport merchandise in both countries had a mixed trend in terms of RCA; however, China has a stronger RCA in the production of machinery and transport merchandise. The RCA values of the commodity group SITC-8 (miscellaneous manufactured articles) are presented in columns 18 and 19 of Table 1. The RCA values show that China held a comparative advantage in the entire period except 2002 (RCA = 0.057); on the other hand, Pakistan shows a disadvantage in most of the years from 1991 to 2002. The highest RCA index value was recorded for China (RCA = 16.98) in 2002, whereas for Pakistan the highest RCA (RCA = 27.32) recorded in 2007. Overall, in miscellaneous manufactured articles, China holds a relatively stronger RCA.

Finally, columns 20 and 21 present the RCA values of commodity group SITC-9 (commodities and transactions), which includes "Special transactions and commodities not classified, coin and gold, nonmonetary commodities." The RCA index values presented in Table 1 show that, in the initial years of the period of observation, Pakistan had a relatively stronger RCA. However, in 1995 Pakistan swapped from a comparative advantage to a disadvantage; in contrast, China moved from a disadvantage (RCA = 0.04) in 1992 to a comparative advantage (RCA = 4.05). From 1995, China maintained a stronger

comparative advantage in the entire period apart from in 1998 (RCA = 0.51), whereas Pakistan had a comparative disadvantage in this commodity group in most of the years.

IV. Estimated results of the gravity model and the measurement of trade creation and trade diversion

This study aimed to determine the advantages and disadvantages of the China–Pakistan FTA, so we estimated trade creation and trade diversion. In this context, first, we use the gravity model, given in Equation 2, to generate pre- and post-China–Pakistan FTA estimates. Second, using the estimates from Equation 2, we calculated the average regression error for member countries and for the nonparticipating countries, which gave total trade with member countries and with nonparticipating countries, for both the pre- and the post-China–Pakistan FTA period. Third, using Equations 3, 4, and 5, we calculated *TC*, *TD*, and *NE* for the China–Pakistan FTA. The same process was repeated to measure *TC*, *TD*, and *NE* for each commodity group. The results we obtained from this process are discussed in this section.

1. Estimated results of gravity model (dependent variable: total imports of Pakistan)

This section presents the estimated results of the gravity model described in Equation 2. The dependent variable is Pakistan's total imports from 20 major trading partners over the period from 1990 to 2015.[10] Keeping in view the notions of *TC* and *TD*, we have to consider both participating and nonparticipating trading partners while assessing any RTA. In this specific case, Pakistan and China have made a FTA; however, we want to assess the reduction or increase in trade due to this agreement between the participating countries (Pakistan and China) as well with nonparticipating countries. To examine this, we have to consider not only the data set of these two countries but we also require data sets regarding nonparticipating trading partners to assess that how trade is affected with nonparticipants as a result of the agreement (Anderson and Wincoop, 2004; Kandogan, 2005; Lambert and Mackoy, 2009). Pakistan and China are the two participating countries in the China–Pakistan FTA; hence the gravity model can be estimated by taking total imports of any participating country as a dependent variable (Anderson and Wincoop, 2003; Kandogan, 2005; Lambert and Mackoy, 2009). Hence, the total imports of Pakistan from 20 major trading partners during the observation period are taken as a dependent variable. Table 2 depicts the pre- and post-China–Pakistan FTA estimated results from the gravity model.

[10]For the list of 20 major trading partners of Pakistan see Appendix II.

Table 2. Estimated results of gravity model (dependent variable is total imports of Pakistan)

Variables	Pre-China–Pakistan FTA	Post-China–Pakistan FTA
$\log Y_{it}$	1.2471*** (0.000)	0.8712 *** (0.000)
$\log Y_{jt}$	1.2879*** (0.000)	1.1603*** (0.000)
$Dist_{ij}$	−0.0067*** (0.000)	−0.0032 ** (0.021)
$\log Pop_{it}$	0.8546*** (0.000)	0.8141*** (0.000)
$\log Pop_{jt}$	−0.7203 *** (0.000)	−0.5997*** (0.000)
EXR_{ijt}	−0.0098 *** (0.000)	−0.0090*** (0.000)
SIM_{ijt}	0.3913*** (0.000)	0.3028*** (0.000)
RF_{ijt}	0.6472*** (0.000)	0.4603 *** (0.000)
CL_{ij}	0.6309*** (0.000)	0.4613 *** (0.000)
Observations	520	520

Note: *** and ** represent statistical significance at 1 and 5 percent levels, respectively.

Estimated results reveal that in both cases (pre- and post-China–Pakistan FTA) the GDP of the importer country (Pakistan), Y_{it}, holds a positive coefficient, which is statistically significant. The result indicates that, in the period under investigation, imports to Pakistan increased with an increase in its GDP. However, if we compare the magnitude of the coefficients, it is lower in the post-China–Pakistan FTA case, which points towards the consequence that after forming the China–Pakistan FTA, the response of Pakistan's GDP to its imports has decreased. In the same way, the GDP of exporter countries (Y_{jt}) carries a positive sign both pre- and post-China–Pakistan FTA, which points toward the outcome that the ability of exporting countries to export increased with an increase in their GDP. Geographical distance ($Dist_{ij}$) was negative and this was statistically significant. The result may be explained in the context of transportation costs: Pakistan imports less from far-flung countries owing to high transportation costs.

The population of the importer country (POP_{it}) is positive and this is statistically significant for both the pre- and post-China–Pakistan FTA cases. The population of an importer country demonstrates a demand for imports; therefore, the demand for imports increases with an increase in the population of the importing country. Likewise, the population of exporter countries (POP_{jt}) is negative and this is statistically significant. Yet again, the result is theoretical justifiable and indicates that the domestic demand in exporting countries increases with an increase in their population; they therefore export less. The exchange rate (EXR_{ijt}) also plays a significant role in determining Pakistan's

imports. The negative coefficient for the exchange rate of the importer country shows that the depreciation in the domestic currency makes imports costly, leading to a decrease in the demand for them.

The impact of the similarity index (SIM_{ijt}) on imports by Pakistan is positive and significant. This implies that Pakistan is importing more from the countries that are similar in GDP size to Pakistan. Similarly, our results indicate that relative factor endowments (RE_{ijt}) significantly determine Pakistan's imports. Furthermore, the results indicate that Pakistan imports more from the countries that have a common language with Pakistan, as CL_{ij} is positive and this is statistically significant. The conclusion that one can draw from these results is that all explanatory variables hold the signs that would be expected according to the standard gravity model.

2. Estimated results of gravity model (dependent variable: commodity-level imports of Pakistan)

Tables 3 and 4 present the pre- and post-China–Pakistan FTA estimated results of the gravity model where commodity-group-level imports of Pakistan are used as dependent variables. The results reported in these tables show that, for almost all commodities groups, the estimated results are the same as the results for overall imports reported in Table 2.[11]

Table 3. Estimated results of gravity model pre-China–Pakistan FTA (dependent variable: commodity-level imports of Pakistan)

	SITC-0	SITC-1	SITC-2	SITC-3	SITC-4	SITC-5	SITC-6	SITC-7	SITC-8	SITC-9
$\log Y_{it}$	0.649***	2.980***	1.029**	1.760**	0.387**	1.567***	1.291***	1.461***	2.700***	1.583***
	(0.000)	(0.001)	(0.120)	(0.031)	(0.041)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
$\log Y_{jt}$	0.198***	3.4455***	0.266***	0.567***	0.942***	1.249***	1.587***	2.697***	2.825***	2.894***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
$Dist_{ij}$	−0.030**	−0.012***	−0.052***	−0.001***	−0.007***	−0.002***	−0.003***	−0.006**	−0.004**	−0.014**
	(0.040)	(0.000)	(0.000)	(0.000)	(0.000)	(0.011)	(0.001)	(0.032)	(0.022)	(0.031)
$\log Pop_{it}$	0.653***	0.414*	0.438***	0.055***	0.817***	0.279***	0.171***	0.251***	0.7723***	0.365***
	(0.000)	(0.140)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
$\log Pop_{jt}$	−0.314***	−0.443***	−0.225*	−0.8440***	−0.522***	−0.145*	−0.640***	−0.938***	−0.126***	−0.357***
	(0.000)	(0.000)	(0.072)	(0.011)	(0.015)	(0.070)	(0.000)	(0.000)	(0.000)	(0.000)
EXR_{ijt}	−0.009***	−0.010***	−0.004***	−0.014***	−0.004***	−0.004***	−0.010***	−0.016***	−0.013***	−0.016***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
SIM_{ijt}	0.383***	0.014*	0.275***	0.733***	1.031***	0.798***	0.743***	0.010***	0.265*	0.168**
	(0.000)	(0.090)	(0.000)	(0.000)	(0.000)	(0.140)	(0.000)	(0.000)	(0.090)	(0.040)
RF_{ijt}	−0.023	0.550***	0.182	1.375**	0.338***	0.139***	0.492***	1.391***	0.780***	0.882***
	(0.291)	(0.000)	(0.317)	(0.051)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
CL_{ij}	1.625***	0.848***	0.898***	2.147***	0.402*	0.443***	0.003*	0.618***	0.276*	1.031***
	(0.000)	(0.000)	(0.00)	(0.00)	(0.07)	(0.00)	(0.09)	(0.00)	(0.06)	(0.00)
Observations	2,382	400	2,509	593	745	2,716	2,795	2,789	2,175	430

Note: ***, **, and * represent statistical significance at 1, 5, and 10 percent levels, respectively.

[11]The estimated results of commodity group imports presented in Tables 3 and 4 are the same as that of total imports results presented in Table 2, hence the results presented in Tables 3 and 4 are not interpreted.

Table 4. Estimated results of gravity model post-China–Pakistan FTA (dependent variable: commodity level imports of the Pakistan)

	SITC-0	SITC-1	SITC-2	SITC-3	SITC-4	SITC-5	SITC-6	SITC-7	SITC-8	SITC-9
$\log Y_{it}$	0.972** (0.04)	−1.126 (0.35)	1.185** (0.02)	−3.119 (0.13)	4.730* (0.06)	0.253 (0.56)	0.612 (0.22)	0.966*** (0.01)	1.276*** (0.01)	2.111** (0.03)
$\log Y_{jt}$	0.046* (0.08)	1.114** (0.04)	0.123*** (0.00)	2.695 (0.31)	−0.025 (0.97)	0.303 (0.14)	0.677*** (0.01)	1.228*** (0.00)	1.356*** (0.00)	2.184*** (0.00)
$Dist_{ij}$	−0.013*** (0.00)	−0.018*** (0.00)	−0.007*** (0.00)	−0.003 (0.18)	−0.006*** (0.00)	−0.002*** (0.00)	−0.002** (0.02)	−0.005* (0.06)	−0.001*** (0.00)	−0.002*** (0.00)
$\log Pop_{it}$	0.576*** (0.00)	4.669*** (0.00)	2.68*** (0.00)	3.124 (0.62)	13.83 (0.15)	4.921** (0.02)	0.390 (0.86)	6.578*** (0.00)	4.434*** (0.01)	1.725** (0.03)
$\log Pop_{jt}$	−0.424** (0.03)	−1.554*** (0.00)	0.296*** (0.00)	−2.822*** (0.00)	−1.173 (0.14)	−0.735*** (0.00)	−0.905*** (0.00)	−1.624*** (0.00)	−1.592*** (0.00)	−2.404 (0.60)
EXR_{ijt}	−0.002*** (0.00)	−0.014*** (0.00)	−0.005*** (0.00)	−0.031*** (0.00)	−0.019*** (0.00)	−0.009*** (0.00)	−0.005*** (0.00)	−0.008*** (0.00)	−0.005*** (0.00)	−0.007*** (0.00)
SIM_{ijt}	0.697*** (0.00)	0.377*** (0.00)	0.262*** (0.01)	0.008 (0.97)	1.502* (0.09)	0.815*** (0.00)	1.072*** (0.00)	0.466*** (0.00)	0.907*** (0.00)	0.907*** (0.00)
RF_{ijt}	0.118*** (0.00)	1.542*** (0.01)	−0.043 (0.85)	2.954*** (0.00)	0.639* (0.07)	0.593*** (0.00)	0.795*** (0.00)	1.402*** (0.00)	1.071*** (0.00)	1.974*** (0.00)
CL_{ij}	0.254*** (0.00)	0.933*** (0.01)	0.106** (0.02)	1.895*** (0.00)	0.427 (0.24)	0.642*** (0.00)	0.131*** (0.00)	0.477*** (0.00)	0.478*** (0.00)	1.009*** (0.00)
Observations	2,490	396	1,848	468	1,767	1,963	2,481	2,402	2,227	342

Notes: ***, **, and * represent statistical significance at 1, 5, and 10 percent levels, respectively. Time, reporter, partner and sector fixed effects are controlled.

Having discussed the estimated gravity model results presented in Tables 2, 3, and 4, now we move to Table 5, which presents the results of *TC*, *TD*, and the net effects of the China–Pakistan FTA.

Table 5. Trade creation and trade diversion effects of China–Pakistan FTA in Pakistan for total and commodity-level imports

Imports	*TC*	*TD*	*NE*
Total	382.45	1,102.83	−720.38
SITC-0	293.53	709.38	−415.85
SITC-1	395.75	1,148.67	−752.92
SITC-2	129.28	357.97	−228.69
SITC-3	−12.97	83.92	−96.89
SITC-4	251.98	941.42	−689.44
SITC-5	428.59	1,286.95	−858.36
SITC-6	494.64	1,406.03	−911.39
SITC-7	597.52	1,820.41	−1,222.89
SITC-8	821.53	2,327.76	−1,506.23
SITC-9	317.45	−953.22	326.98

Note: See Appendix I for SITC codes.

In Table 5, columns two, three, and four show the *TC*, *TD*, and net effect respectively of China–Pakistan FTA for overall imports and for the commodity group-level imports of Pakistan. The results reported in Table 5 indicate that, for overall imports, the FTA gives rise to trade creation between member countries (Pakistan and China). However, the increase in imports of Pakistan from China as a result of the China–Pakistan FTA is less than the increase in imports from nonparticipating countries during the period under investigation. This implies that, in general, China–Pakistan FTA has resulted in an increase in the trade between Pakistan and China along with increasing trade with nonparticipating countries. The result shows that the China–Pakistan FTA gives rise to trade creation in all commodity groups except SITC-3 "minerals, fuels, lubricants and related material," implying that in 9 out of 10 commodity groups, imports by Pakistan from China have increased. However, the increase in imports by Pakistan from China is less than the increase in imports from nonparticipating countries. On the other hand, a trade diversion effect is found in one commodity group SITC-9 "commodities and transactions." The overall result reveals that the China–Pakistan FTA enhances trade with participating and nonparticipating countries in all commodity groups except SITC-3 and trade with nonparticipating countries has also increased in all the commodity groups except SITC-9. Thus, we can say that the China–Pakistan FTA has led to trade creation overall.

V. Conclusion

This study attempted to examine empirically whether the FTA between Pakistan and China that came into force in 2007 created advantages or disadvantages for those countries. The potential gains and losses of the agreement were rigorously assessed using two different approaches. First, the Balassa (1965) RCA index was calculated for 10 different commodity groups to identify the commodity groups in which the two countries maintained a comparative advantage. Second, trade creation and trade diversion were estimated for overall imports and for the commodity-group level imports of Pakistan using Kandogan's (2005) generalized gravity model. Our results from the RCA index reveal that China has an advantage in producing capital-intensive goods, whereas Pakistan retained an RCA in the production of primary and semi-manufactured goods. The RCA index showed that Pakistan had an increasing trend towards a comparative advantage in beverages and tobacco, crude materials, and inedible except fuel, whereas China exhibited a very strong comparative advantage over the whole period under investigation relative to Pakistan in the exports of food and live animals, chemicals and related products, manufactured goods, machinery and transport equipment, miscellaneous manufactured articles, commodities, and transactions. Our

findings also indicate that, overall, the China–Pakistan FTA led to trade creation. The formation of the China–Pakistan FTA enhanced trade with participating countries as well as with nonparticipating countries in general. This is illustrated by the fact that, in the case of different commodity groups, our findings show that, except for SITC-3, in all commodity groups, the China–Pakistan FTA led to trade creation between the member countries and increased trade with nonparticipating countries. Our findings also indicate that the China–Pakistan FTA diverts trade from nonparticipating countries to participating countries only in the case of the SITC-9 commodity group. So, in a nutshell, we can say that the China–Pakistan FTA is a trade-creating free trade area.

Despite the fact that this study has some limitations, we believe that our findings provide a basis for recommendations about the China–Pakistan FTA. Our findings reveal that, overall, the China–Pakistan FTA has led to trade creation, which has enhanced trade with the participating countries as well as with nonparticipating countries. This suggests that the participating countries could strengthen the agreement further to obtain greater potential gains from it.

References

Anderson, J. E., 1979, "A theoretical foundation for the gravity equation," *American Economic Review*, Vol. 69, No. 1, pp. 106−16.

Anderson, J. E. and E. V. Wincoop, 2003, "Gravity with gravitas: A solution to the border puzzle," *American Economic Review*, Vol. 93, No. 1, pp. 170−92.

Anderson, J. E. and E. V. Wincoop, 2004, "Trade costs," *Journal of Economic Literature*, Vol. 42, No. 3, pp. 691−751.

Ando, M. and F. Kimura, 2005, "The formation of international production and distribution networks in East Asia," in I. Takatoshi and A. K. Rose eds, *International Trade in East Asia* (NBER-East Asia Seminar on Economics, Volume 14). Chicago: The University of Chicago Press, pp. 177−213.

Baier, S. L. and J. H. Bergstrand, 2004, "Economic determinants of free trade agreements," *Journal of International Economics*, Vol. 64, No. 1, pp. 29−63.

Balassa, B., 1965, "Trade liberalization and revealed comparative advantage," *Manchester School of Economic and Social Studies,* Vol. 33, No. 2, pp. 99−123.

Baldwin, R. E. and A. J. Venables, 1995, "Regional economic integration," *Handbook of International Economics,* Vol. 3, pp. 1597−644.

Bergstrand, J. H., 1985, "The gravity equation in international trade: Some microeconomic foundations and empirical evidence," *The Review of Economics and Statistics*, Vol. 67, No. 3, pp. 474−81.

Bergstrand, J. H., 1989, "The generalized gravity equation, monopolistic competition, and the

factor-proportions theory in international trade," *Review of Economics and Statistics*, Vol. 71, No. 1, pp. 143−53.

Carrere, C., 2006, "Revisiting the effects of regional trade agreements on trade flows with proper specification of the gravity model," *European Economic Review*, Vol. 50, No. 2, pp. 223−47.

Clarete, R., C. Edmonds and J. Wallack, 2003, "Asian regionalism and its effects on trade in the 1980s and 1990s," *Journal of Asian Economics*, Vol. 14, No. 1, pp. 91−129.

Clausing, K., 2001, "Trade creation and trade diversion in the Canada−United States free trade agreement," *Canadian Journal of Economics/Revue Canadienned' economique*, Vol. 34, No. 3, pp. 677−96.

Datta, A. and M. Kouliavtsev, 2009, "NAFTA and the realignment of textile and apparel trade: Trade creation or trade diversion?" *Review of International Economics*, Vol. 17, No. 1, pp. 172−86.

Deardorff, A., 1998, "Determinants of bilateral trade: Does gravity work in a classical world?" in J. Frankel ed., *The Regionalization of the World Economy*, Chicago: University of Chicago Press.

Dell'Ariccia, G., 1999, "Exchange rate fluctuations and trade flows: Evidence from the European Union," *IMF Staff Papers*, Vol. 46, No. 3, pp. 315−34.

Eventt, S. J. and W. Keller, 2002, "On theories explaining the success of the gravity equation," *Journal of Political Economy*, Vol. 100, No. 2, pp. 281−316.

Frankel, J., E. Stein and S. Wei, 1995, "Trading blocs and the Americas: The natural and unnatural, and the super-natural," *Journal of Development Economics*, Vol. 47, No. 1, pp. 61−95.

Frankel, J., E. Stein and S. Wei, 1997, *Regional Trading Blocs in the World Economic System*, Washington DC: Institute for International Economics.

Frankel, J. and A. Rose, 2002, "An estimate of the effect of common currencies on trade and income," *The Quarterly Journals of Economics*, Vol. 117, No. 2, pp. 437−66.

Frankel, J. and D. H. Romer, 1999, "Does trade cause growth?" *American Economic Review*, Vol. 89, No. 3, pp. 379−99.

Fox, J. W., 2004, "Regional trade agreements: A tool for development?" *PPC Evaluation Working Paper* No.15 [online; cited Nov. 2020]. Available from: https://www.oecd.org/derec/unitedstates/35933797.pdf.

Georges, P., 2008, "Liberalizing NAFTA rules of origin: A dynamic CGE analysis," *Review of International Economics*, Vol. 16, No. 4, pp. 672−69.

Government of Pakistan, Finance Division, 2016, *Pakistan Economic Survey 2016−17* [online; cited Nov. 2020]. Available from: http://www.finance.gov.pk/survey_1617.html.

Heckscher, E., 1919, "The effect of foreign trade on distribution of income," *Ekonomisk Tidskriff,* 497−512. Translated as chapter 13 in American Economic Association selected, *Reading in the Theory of International Trade*, Philadelphia: Blakiston, 1949, pp. 272−300.

Helpman, E. and P. Krugman, 1985, *Market Structure and Foreign Trade: Increasing Returns, Imperfect Competition, and the International Economy*, Cambridge MA: MIT Press.

Kandogan, Y., 2005, "Trade creation and diversion effects of Europe's regional liberalization agreements," *William Davidson Institute Working Paper* No. 746 [online; cited Nov. 2020]. Available from: https://ssrn.com/abstract=681605.

Keuschnigg, C., W. Kohler, A. Casella and A. Sapir, 1996, "Austria in the European Union: Dynamic gains from integration and distributional implications," *Economic Policy*, Vol. 11, No. 22, pp. 155−211.

Kim, S., Lee, J. W. and C. Y. Park, 2011, "Ties binding Asia, Europe and the USA," *China & World Economy*, Vol. 19, No. 1, pp. 24−46.

Krugman, P. R., 1987, "Is free trade passé?" *Journal of Economic Perspective*, Vol. 1, No. 2, pp. 131−44.

Krugman, P. R., 1991, "Increasing returns and economic geography," *Journal of Political Economy*, Vol. 99, No. 3, pp. 483−99.

Kono, D. Y., 2002, "Are free trade areas good for multilateralism? Evidence from the European free trade," *International Studies Quarterly*, Vol. 46, No. 4, pp. 507−27.

Lambert, D. and S. Mckoy, 2009, "Trade creation and diversion effects of preferential trade associations on agricultural and food trade," *Journal of Agricultural Economics*, Vol. 60, No. 1, pp. 17−39.

Lee, H., C. Koo and E. Park, 2008, "Are exports of China, Japan and Korea diverted in the major regional trading blocs?" *The World Economy*, Vol. 31, No. 7, pp. 841−60.

Lipsey, R. G., 1957, "The theory of customs unions: Trade diversion and welfare," *Economica*, Vol. 24, pp. 40−6.

Nguyen, T. and M. Ezaki, 2005, "Regional economic integration and its impacts on growth, poverty and income distribution: The case of Vietnam," *Review of Urban & Regional Development Studies*, Vol. 17, No. 3, pp. 197−215.

Ohlin, B., 1933, *Interregional and International Trade*, Cambridge MA: Harvard University Press.

Park, D., I. Park and G. E. B. Estrada, 2009, "Prospects for ASEAN–China free trade area: A qualitative and quantitative analysis," *China & World Economy*, Vol. 17, No. 4, pp. 104−20.

Pelzman, J., 1977, "Trade creation and trade diversion in the council of mutual economic assistance," *American Economic Review*, Vol. 67, No. 4, pp. 713−22.

Poyhonen, P., 1963, "A tentative model for the volume of trade between countries," *Weltwirtschaftliches Archiv*, Vol. 90, pp. 93−100.

Ricardo, D., 1817, *On the Principles Of Political Economy And Taxation*, London: John Murray.

Sarker, R. and S. Jayasinghe, 2007, "Regional trade agreements and trade in agri-food products: Evidence for the European Union from gravity modeling using disaggregated data," *Agricultural Economics*, Vol. 37, No. 1, pp. 93−104.

Tinbergen, J., 1962, *Shaping the World Economy: Suggestions for an International Economic Policy*, New York: Twentieth Century Fund.

United Nations, 2016, *UN Comtrade Database* [online; cited Nov. 2020]. Available from: https://comtrade.un.org.

Viner, J., 1950, *The Customs Union Issue*, New York: Carnegio Endowment for International Peace.

Vollrath, T., M. Gehlhar and C. Hallahan, 2009, "Bilateral import protection, free trade agreements and other factors influencing trade flows in agriculture and clothing," *Journal of Agricultural Economics*, Vol. 60, No. 2, pp. 298–317.

Appendix I: Standard international trade classification (SITC) of different products

Primary products		Manufactured products	
SITC code	Explanation	SITC code	Explanation
SITC-0	Food and live animal	SITC-5	Chemical and related products
SITC-1	Beverages and tobacco	SITC-6	Manufactured goods classified chiefly by material
SITC-2	Crude materials, inedible except fuel	SITC-7	Machinery and transport equipment
SITC-3	Minerals fuels, lubricants and related material	SITC-8	Miscellaneous manufactured article
SITC-4	Animal and vegetable oils, fats, and waxes	SITC-9	Commodities and transactions

Source: United Nations (2016).

Appendix II: Twenty major trading partners of Pakistan

S/N	Country	S/N	Country
1	China	11	Afghanistan
2	UAE	12	United Kingdom
3	Saudi Arabia	13	Turkey
4	Kawait	14	Bangladesh
5	Indonesia	15	Italy
6	India	16	France
7	USA	17	Sri Lanka
8	Japan	18	Quatar
9	Germany	19	Korea Republic
10	Malaysia	20	Spain

Source: Government of Pakistan, Finance Division (2016).

(Edited by Jin Song)