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Exploring the Gravity of Agricultural Trade in China–Pakistan Free Trade Agreement

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China and Pakistan signed a free trade agreement in 2006. In this study, the impact of the China–Pakistan Free Trade Agreement (CPFTA) on trade of agricultural products is explored by using the gravity model. Two Panel data sets, one for agricultural exports of China and one for agricultural exports of Pakistan were used. This contains data for agricultural exports and other macro-economic factors of China and Pakistan with 110 partner countries from 2001 to 2014. The Poisson Pseudo Maximum-Likelihood (PPML) technique of the gravity model was employed to analyze this data. The results suggest that CPFTA had a strong trade creation effect on agricultural exports of Pakistan. It helped provide an exponential increase in the agricultural exports of Pakistan to China. However, CPFTA was not found very effective for Chinese agricultural exports to Pakistan. This study contributes to the literature by determining the potential effects of the CPFTA on agricultural trade. Policy makers will find the results of this study useful because they point out impact of a bilateral trade agreement on trade of agricultural products.

Keywords: agricultural trade, free trade agreements, gravity model, trade creation, trade diversion

INTRODUCTION

China and Pakistan have a long history of cooperation, as diplomatic relations were established and started nurturing in 1951 when Pakistan opened its mission in Beijing. Pakistan was one of the first countries and the first Muslim country to recognize the People's Republic of China. These two countries developed strong bilateral relations because of their proximity and interests in international matters. They are actively involved in economic cooperation by forming the Joint Economic Commission, Economic Cooperation Group, Joint Energy Working Group and a Joint Investment Company. To boost trade between the two countries they agreed and entered into the Framework Agreement on Expanding and

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Deepening Bilateral Economic and Trade Cooperation, Free Trade Agreement, and the extended Joint Five Year Economic Plan in 2006 (Siddique, 2014).

Recently, there has been exponential growth of economic regionalism around the world which is also evident from the increased number of regional trade agreements (RTAs). One of the main reasons of proliferation of RTAs is that it is difficult to get global trade agreements through the World Trade Organization (WTO) (Lambert & McKoy, 2009). As per the regional trade agreement (RTA) database of the WTO, about 440 RTAs had been notified by May 2017 from WTO members, counting goods, services and accessions separately, out of which 274 were in force.[1] After accession to the WTO in 2001, China also actively participated in the regionalism by initiating negotiations for different bilateral and regional trade agreements with the objectives to facilitate trade and commercial partnerships (Zhang, Zhang, & Fung, 2007). However, welfare impact of regionalism remained a controversial issue among trade economists. Some researchers found the impact of RTAs to be positive (Freund, 2000; Ornelas, 2005) while some found it to be negative (Levy, 1997; Panagariya, 2000). Moreover, different RTAs had different effects on China's trade with other countries, some had positive while some had negative effects on China's overall international trade (Liu, 2007). Recent studies suggested that China must pay special attention to the RTAs which are becoming a new and hidden type of strategic trade policy (Linbo, 2017).

In this study, the agricultural trade impact of China–Pakistan Free Trade Agreement (CPFTA) is analyzed. The CPFTA was signed in November 2006 and in July 2007 came into force. Economists find the impact of the free trade agreement (FTA) by measuring its trade creation and trade diversion possibilities, the concept that was first introduced by Viner (1950), which explains that when trade among member countries increases because of reduction in trade barriers; it is called trade creation; on the other hand, when the imports shift from low-cost nonmember country to the higher-cost member country because of reduction in trade costs, it is called trade diversion. Trade creation is presumed to have good welfare effects while trade diversion is presumed to have loss of welfare.

Finding the impact of CPFTA on agricultural trade is of vital importance and has not been explored earlier. In this study, the effects of CPFTA on agricultural trade is analyzed using disaggregated trade data and by using Poisson Pseudo-Maximum-Likelihood (PPML) technique of the gravity model. Sun and Reed (2010) analyzed the impact of major regional trade agreements on agricultural trade using PPML and OLS estimation; they proved that PPML estimation must be preferred over OLS in cases of agricultural trade. Most of the existing studies in this regard analyzed the impact of multilateral trade agreements on agricultural trade (Fadeyi, Bahta, Ogundeji, & Willemse, 2014; Jayasinghe & Sarker, 2008; Koo, Kennedy, & Skripnitchenko, 2006; Sun & Reed, 2010) while this study analyzed the impact of a bilateral trade agreement on agriculture trade using the PPML estimator. As per our literature research, no earlier study tried to find the impact of a bilateral trade agreement on agricultural trade using the PPML estimator.

The rest of study is organized as follow: The next section explains basics of the gravity model of global trade, model specification, and description of data used in this study. The third section describes and discusses empirical results and the final section gives the conclusions.

METHODOLOGY

Model Specification

For many decades, the gravity model remained a very powerful tool for analyzing global trade (Anderson, 1979). The gravity model was first used by Tinbergen (1962) and Pöyhönen (1963) for *ex* post facto analysis of global trade using Newton's law of gravity which says that international trade between two countries is directly proportional to their economic size while inversely proportional to trade costs. Gross Domestic Product (GDP) is widely considered as a proxy for economic size that attracts trade between two countries. However, mutual distance of trading partners is considered as trade cost that forms resistance in trade. Thus, theory of the gravity model advocates that countries with stronger GDPs and that are geographically closer to each other tend to experience high trade volumes. Conversely, smaller GDP and larger geographic distance acts as major factors to lower international trade. Some recent studies proved that as long as the trade partners have stronger GDPs, distance is not a very important resistance term; it can be offset by the economic size of partners, and stronger partners can have high trade volume despite the fact they are not in close proximity (Brun, Carrère, Guillaumont, & De Melo, 2005; Burger, Van Oort, & Linders, 2009). Many researchers augmented the gravity model with other variables to explore different determinants of trade and enhance its explanatory power. For example, Bergstrand (1985, 1989) augmented the gravity equation with population while Mátyás (1997) and Thai (2006) augmented the gravity model with an exchange rate.

Many potential shortcomings in specification of the gravity model were pointed out by subsequent researchers, including a potential endogeneity problem (Lee & Swagel, 1997; Trefler, 1993), zero trade values problem (Baldwin & Harrigan, 2011; Hallak, 2006; Helpman, Melitz, & Rubinstein, 2008), and heteroskedasticity issues (Hurd, 1979). A solution to the endogeneity problem was suggested by researchers (Baier & Bergstrand, 2007; Magee, 2003) by introducing different type of fixed effects in the gravity model. Silva and Tenreyro (2006) proposed Poisson Pseudo-Maximum-Likelihood (PPML) estimator for the gravity model and argued that it behaves very well in the presence of hetroskedasticity in trade data. Later, Silva and Tenreyro (2011) proved that PPML estimator also has consistent results in the presence of zero trade observations.

As the basic theory, the gravity model states that trade among countries is proportional to the economic size of the countries and inversely proportional to the trade costs.

In equation form, it can be written as follows for agricultural trade:

$$X_{it} = e^{\left(\sum \alpha_i DUM_i\right)} GDP_{it}^{\alpha_1} POP_{it}^{\alpha_2} DIST_i^{\alpha_3} ER_i^{\alpha_4} AL_i^{\alpha_5} v_{it} \quad (1)$$

where X_{it} is dollar value of agricultural exports to country i at time t, GDP_{it} is gross domestic products of country i at time t and represents economic size of the trader partner, POP_{it} is population of country i at time t, $DIST_i$ is the distance between capital of home country and capital of country i, ER is the exchange rate, AL is the agricultural land of country i which is also a proxy for economic size for our case, and v_{it} is the error term. The DUM_i is the value of different dummy variables that capture the information regarding specific interest and that can significantly impact the bilateral trade among trade partners.

By taking the logarithm of Equation (1) and including specific variables for our case, the gravity model equation can be written as:

$$\begin{aligned} lnX_{it} = {} & \propto_0 + \propto_1 lnGDP_{it} + \propto_2 lnPOP_{it} + \propto_3 lnDIST_i \\ & + \propto_4 lnER_i + \propto_5 lnAL_i + \propto_6 COML_i \\ & + \propto_7 CONTIG_i + \propto_8 COMCOL_i \\ & + \propto_9 CPD_i + \propto_{10} FTAD_i + \varepsilon_{it} \end{aligned} \tag{2}$$

In Equation (2) α_0, α_1, α_2, α_3, α_4, α_5, α_6, α_7, α_8, α_9, and α_{10} are the coefficients to be calculated. This gravity equation was formulated specifically for agricultural trade based on the available literature regarding impact of RTAs on agricultural trade creation and diversion (Fadeyi et al., 2014; Jayasinghe & Sarker, 2008; Koo et al., 2006; Lambert & McKoy, 2009; Sun & Reed, 2010; Viner, 1950). These studies used Viner's concept of trade creation and trade diversion; trade creation occurs as a result of economic integration when production and exports of efficient producers increased, and trade diversion occurs as a result of economic integration when production and exports of inefficient producers increased. It postulates that if the trade partners were natural partners for trade of specific products, the removal of trade barriers causes an increase in trade among the FTA members and is known as trade creation; when trade partners were not natural partners for trade of specific products while the removal of trade barriers causes them to trade with each other instead of trading with their natural partners, it is called trade diversion. To calculate these effects, two dummy variables CPD_i and $FTAD_i$ were introduced. The CPD_i is the China–Pakistan dummy variable that captures differences in patterns of China–Pakistan trade with the rest of world, it gets the value of 1 in the case where trading partners were China and Pakistan, and zero otherwise. Its coefficient explains how much greater or lower were Pakistan's agricultural exports to China (or China's agricultural exports to Pakistan) as compared to other trading partners. For the case of China's agricultural exports, it will determine whether or not Pakistan is a natural partner of China for importing agricultural products, and similarly for the case of Pakistan's agricultural exports, it will determine whether China is a natural partner of Pakistan for importing agricultural products or not. The $FTAD_i$ is a free trade agreement dummy variable that gets the value of one if trade partners are China and Pakistan, and for the years in which free trade agreement was effective, and zero otherwise. Its coefficient combined with the coefficient of CPD_i measures trade creation or trade diversion effect of CPFTA on agricultural exports of China and Pakistan. A positive and significant coefficient of $FTAD_i$ combined with positive and significant coefficient of CPD_i explains the trade creation effect of the CPFTA. It explains that two countries were natural partners for trade of agricultural products and FTA further improved this trade. A positive and statistically significant coefficient of $FTAD_i$ when combined with negative and statistically significant coefficient of CPD_i will indicate trade diversion effect of CPFTA. It explains that two countries were not natural partners for trade of agricultural products; however, their agricultural trade improved and diverted from natural partner countries because of FTA. Similarly, a negative and statistically significant coefficient of $FTAD_i$ combined with positive and statistically significant coefficient of CPD_i explains trade diversion effect of CPFTA. It explains that two countries were natural partners for trade of agricultural products; however, FTA caused decrease in trade volume. If results of both CPD_i and $FTAD_i$ will be negative and significant,

it explains that two countries are not natural trade partners and FTA also could not improve the situation. A nonsignificant coefficient of CPD_i explains that there is no significant agricultural trade existing between two countries, and a nonsignificant coefficient of $FTAD_i$ indicates that CPFTA have no significant effect on agricultural trade between two countries.

Dummy variable $COML_i$ represents the common language dummy variable—English is the official language of Pakistan and Chinese is official language of China. So, $COML_i$ takes the value of 1 when the official language of the trade partner country is English (in the case of Pakistan) or Chinese (in the case of China), and 0 otherwise. Coefficient of this variable will explain impact of common language on agricultural trade, $CONTIG_i$ represents the common border; it takes the value of 1 in case of neighboring countries that share a common border with China or Pakistan, and 0 otherwise. This will help us to assess the role of the common border in bilateral trade of agricultural products in the case of Pakistan and $COMCOL_i$ represents colonial ties among trade partners while $lnv_{it} = \varepsilon_{it}$ represents the error term. All possible determinants of agricultural trade are included in the model and Table 1 shows the expected signs for these variables for agricultural trade in light of some recent studies regarding agricultural trade (Atif, Haiyun, & Mahmood, 2017; Fadeyi et al., 2014; Shuai, 2010; Sun & Reed, 2010).

Estimation Technique

Equation (2) is valid only in the case $X_{it} > 0$ and problematic when $X_{it} = 0$ because log of 0 is not defined. Practically, there are many instances of $X_{it} = 0$ as it represents that two countries have zero trade for a specific period and/or for a specific sector. Recently, many studies advocated not to use the log-linear model and preferred to choose Poison models (Burger et al., 2009; Silva & Tenreyro, 2006, 2011; Sun & Reed, 2010; Westerlund & Wilhelmsson, 2011).

So, our model is specified as follows:

$$\boldsymbol{X_{it}} = \exp\{\propto_0 + \propto_1 \boldsymbol{lnGDP_{it}} + \propto_2 \boldsymbol{lnPOP_{it}} + \propto_3 \boldsymbol{lnDIST_i} + \propto_4 \boldsymbol{lnER_i} + \propto_5 \boldsymbol{lnAL_i} + \propto_6 \boldsymbol{COML_i} + \propto_7 \boldsymbol{CONTIG_i} + \propto_8 \boldsymbol{COMCOL_i} + \propto_9 \boldsymbol{CPD_i} + \propto_{10} \boldsymbol{FTAD_i} + \varepsilon_{it}\} \quad (3)$$

TABLE 1
Independent Variables and Expected Signs

Independent Variable	*Description*	*Expected sign*
GDP_{it}	Gross domestic products of country *i* at time *t*	+
POP_{it}	Population of country *i* at time *t*	−
$DIST_i$	The distance between capital of home country and capital of country *i*	−
ER_i	Exchange rate	+
AL_i	Agricultural land of country *i*	+
$COML_i$	Common language dummy variable	+
$CONTIG_i$	Common border dummy variable	+
$COMCOL_i$	Common colonizer dummy variable	+
CPD_i	China–Pakistan dummy variable	±
$FTAD_i$	Free trade agreement dummy	+

In order to deal with the endogeneity problem, the Equation (3) has been estimated with time fixed effects; it will also help to control different other macroeconomic factors like global economic boom or recessions (Yang & Martinez-Zarzoso, 2014). To manage zero trade observations, the technique used by Sandberg, Seale Jr., and Taylor (2006) and adopted by Fadeyi et al. (2014) for agricultural trade was used; they added a value equal to one in the case where observed bilateral trade is zero. The dependent variable was $X_{it} = X_{it} + 1$ for every case where $X_{it} = 0$. To deal with heterosketdasticity, whichis also a big problem in trade data, Poisson Pseudo-Maximum Likelihood (PPML) method was used as suggested by Silva and Tenreyro (2006). The same method was also used by other researchers (Fadeyi et al., 2014; Sun & Reed, 2010) specifically for agricultural trade and, Sun and Reed (2010) also proved that the PPML method performs very well as compared to the OLS model in the case of agricultural trade; therefore, the PPML method was selected as the estimation technique for this study.

Data Description

Two panel data sets, one for agricultural exports of China and the other for agricultural exports of Pakistan were used. Each panel data set contains data for 110 countries, including Pakistan and China from 2001 to 2014 (14 years). These years were selected based on the reason that after joining the WTO in 2001, China's agricultural trade patterns become more persistent as compared to the pre-WTO period (He, 2010), and that of the China–Pakistan free trade agreement (CPFTA), which had taken effect in 2007. Taking data for these years will give a fair assessment of the impact of CPFTA by observing seven years before and seven years after the enforcement of the free trade agreement, and all the years included are after China's accession to the WTO. The trade data regarding agricultural exports of China and Pakistan were collected from United Nations Commodity Trade (UN COMTRADE) Statistics database,[2] trade data of agricultural products were extracted by following the WTO's definition of agricultural products, that is, Section 0, Section 1, and Section 2 (excluding Divisions 27 and 28) and Section 4, and by selecting standard international trade classification (SITC) Rev. 3.0 for all products. Data regarding population, GDP, exchange rate, and agricultural land were obtained from the World Bank Development Indicators (WDI) database. Data for common border, distance, common language, and colonial ties were extracted from the website of Centre d'Etudes Prospectives et d'Informations Internationales (Mayer & Zignago, 2011).

RESULTS

The PPML technique was used to estimate the effect of CPFTA on agricultural trade and Stata 14.00 software used to run the model. Table 2 represents the estimation results for agricultural exports of Pakistan and Table 3 represents the estimation results for agricultural exports of China. Estimation results show that the traditional gravity variables also had a significant impact on agricultural exports of China and Pakistan. Higher GDP of an importer must have a positive and statistically significant effect on agricultural trade because it depicts

TABLE 2
Poisson Maximum Likelihood Estimate for Agricultural Exports of Pakistan as the Dependent Variable (with time fixed effects)

Explanatory Variable	*Parameter*	*Standard Error*
GDP of Importer (lnGDP)	0.2836***	0.0469
Population of partner country (lnPOP)	−0.3529**	0.0722
Distance (lnDIST)	−1.1667***	0.0925
Exchange rate (lnER)	0.0766***	0.0198
Agricultural land (lnAL)	0.1872***	0.0354
Common language dummy (COML)	−0.5245***	0.1751
Common border dummy (CONTIG)	0.2553	0.2559
Common colonizer dummy (COMCOL)	1.0353***	0.1358
China–Pakistan dummy (CPD)	0.6250**	0.2559
Free trade agreement dummy (FTAD)	0.8521***	0.2061
Intercept	15.1827	0.9617
R2	0.47	

Note: ***0.01, ** 0.05, * 0.1 level of significance.

TABLE 3
Poisson Maximum Likelihood Estimate for Agricultural Exports of China as the Dependent Variable (with time fixed effects)

Explanatory Variable	*Parameter*	*Standard Error*
GDP of Importer (lnGDP)	0.9171***	0.0383
Population of partner country (lnPOP)	−0.0088	0.0560
Distance (lnDIST)	−0.7837***	0.0631
Exchange rate (lnER)	0.0944***	0.0190
Agricultural land (lnAL)	0.0155	0.0166
Common language dummy (COML)	2.064***	0.0864
Common border dummy (CONTIG)	0.1863**	0.0852
Common colonizer dummy (COMCOL)	–	–
China–Pakistan dummy (CPD)	−0.3068*	0.1896
Free trade agreement dummy (FTAD)	0.3090**	0.1597
Intercept	−5.7935	0.9408
R2	0.90	

Note: *** 0.01, ** 0.05, * 0.1 level of significance.

higher demand potential of the importing country. On the other hand, higher GDP of the exporter indicates higher production potential that may lead to higher exports. Results of this study also found this to be true for agricultural exports of both China and Pakistan at the 1% level of significance. It showed a statistically significant and positive relationship between agricultural trade and income of country and indicated that, if other things remain constant, bigger countries in terms of GDP (like the United States, the UK, etc.) will import more agricultural products from China and Pakistan.

The population of an importing country has a negative effect on its agricultural trade (Fadeyi et al., 2014; Sun & Reed, 2010). In this study, it also found that the population of the importer had a negative effect on its imports—in the case of Pakistan. A statistically significant and negative parameter for population explains that larger countries will import fewer agricultural products from Pakistan by substituting it for domestic trade. This is also because of the fact that countries with larger populations have an abundance of a rural population that is involved in agricultural production and causes a decrease in export demand for agricultural products of that country. The population of the importer is found to be nonsignificant in the case of China.

The distance between the trade partners is considered as trade cost and traditionally has a negative impact on volume of the agricultural trade. Likewise, distance coefficient in this study was found negative and statistically significant at the 1% level of significance both for China and Pakistan. It explains that China and Pakistan had more agricultural trade with countries for which transportation costs are lower as compared to countries for which transportation costs are higher. In our case, because China and Pakistan are neighboring countries, distance proved to be a very important determinant of trade for agricultural products. Our results for this variable were also consistent with the previous studies regarding trade of agricultural products (Fadeyi et al., 2014; Sun & Reed, 2010).

Exchange rate fluctuations have significant effects on agricultural trade (Cho, Sheldon, & McCorriston, 2002; Huchet-Bourdon & Bahmani-Oskooee, 2013) and a higher exchange rate normally has a positive effect on agricultural exports (Kandilov, 2008). In our case, it explains that if there is depreciation in the currency of the exporter country (China or Pakistan) causing a higher exchange rate, it will lead to an increase in agricultural exports. On the other hand, if there is appreciation of the currency of the exporter country, it will cause a decrease in agricultural exports of the country; results of this study have also proven this and it was found that the exchange rate had a positive and significant effect on agricultural trade of China and Pakistan.

Agricultural land of the importer was taken into our gravity equation because it depicts production capability of the importer and an important determinant of agricultural trade between countries just like GDP of a country. It was expected that being the proxy for economic size of a country, its coefficient will also show similar results as that of its GDP. The same was found in the case of Pakistan; it is found to be positive and statistically significant at the 1% level for agricultural trade. However, this variable is not found to be significant in the case of China.

The coefficient of common language is found to be negative and statistically significant at the 1% level of significance in the case of Pakistan and positive and statistically significant at the 1% level in the case of China. This may look odd but keeping in mind that our dependent variable is agricultural exports not the overall exports, this explains that common language is not an important factor in the case of trade of agricultural products. For Pakistan, a negative sign of the estimated coefficient for the common language dummy also implies that Pakistan had more agricultural trade with countries that do not speak English as their official language like China, Afghanistan, United Arab Emirates, and various European countries. For China, a positive sign of the common language dummy shows that it had more agricultural trade with the countries that speak Chinese as the official language.

The dummy variable for common border is found to be nonsignificant in the case of Pakistan; this nonsignificant dummy variable for common border explains that most of the

trade partners of Pakistan for agricultural exports are not its neighboring countries as Pakistan did not have significant agricultural trade relations with its neighboring countries except for Afghanistan and China. This may also be attributed to political tensions with bordering countries as explained in earlier studies specifically for the case of Pakistan (Abbas & Waheed, 2015; Gul & Yasin, 2011). The dummy variable for common border is found to have positive and significant results in the case of China. This explains that China had good relations with its neighboring countries for trade of agricultural products. The estimation results of COMCOL dummy variable is positive and statistically significant in the case of Pakistan which explains that Pakistan had more agricultural trade with countries for which it had colonial relationships. The common colonizer dummy variable does not exist in the case of China because China did not have a common colonizer with any of the 110 countries selected in our sample.

In the case of Pakistan, the estimated coefficient for the China–Pakistan dummy has a positive value of 0.62, and it is statistically significant at the 5% level of significance; it explains that Pakistan already exported 85%[3] more agricultural products to China than to the average trade partner during 2001–2014 and that China and Pakistan are natural partners for agricultural exports of Pakistan. The coefficient estimate for the free trade agreement dummy is 0.85 and it is significant at the 1% level of significance. This positive and statistically significant value of FTA dummy combined with a positive and significant China–Pakistan dummy explains that the free trade agreement had a strong trade creation effect and caused exports of the average Pakistani agriculture sector to China increase by 133% as a result of the free trade agreement. The China–Pakistan free trade agreement proved to be a positive contributor to improve the agricultural exports of Pakistan.

In the case of China, the estimated coefficient for the China–Pakistan dummy has a negative value of 0.30 and it is statistically significant at the 10% level of significance; it explains that China did not have a significant amount of agricultural exports to Pakistan, and it exported about 26% less agricultural products to Pakistan than to the average trade partner during 2001–2014. This also explains that China and Pakistan are not natural trade partners for China's agricultural exports. The coefficient estimate for the free trade agreement is 0.30 and it is significant at the 5% level of significance; this positive and statistically significant value of the FTA dummy variable combined with a negative and significant value of the China–Pakistan dummy explains that the free trade agreement had a trade diversion effect for agricultural exports of China. Although China exported 26%fewer agricultural products to Pakistan as compared to average trade partners, results of this FTA coefficient show that a 34%[4] increase in Chinese agricultural exports to Pakistan can be attributed to the trade diversion effect of CPFTA. It also revealed that Pakistan benefited more from the CPFTA as compared to China for the case of agricultural trade.

CONCLUSIONS

This article estimates the impact of the China–Pakistan free trade agreement (CPFTA) on volume of agricultural trade between China and Pakistan using the PPML estimator, which is a proven method for conducting empirical analysis of agricultural products. Disaggregated trade data regarding agricultural exports of China and Pakistan to its 110 partner countries from 2001

to 2014 were used. Agricultural exports of Pakistan to China were found to be significantly increased due to the implementation of CPFTA in 2007. However, CPFTA did not have a substantial impact on agricultural exports of China to Pakistan. Our findings suggest that Pakistan must maintain its trade policy with China as the agriculture sector and it is the biggest sector in terms of export earnings and providing employment to a considerable population in Pakistan.

In South Asia, China only has free trade agreement with Pakistan. These two countries also attained a currency swap agreement. It is to the great benefit of both countries to continue mutual economic cooperation. Impact of free trade agreements on the economy of a country still remained a controversial issue and these effects vary from country to country. Sometime, free trade agreement and trade liberalization policies may also adversely impact local industry of a country. Successful implementation of a free trade agreement would lead to reduction or elimination of import tariffs that could have a negative impact on employment in the agricultural sector and agro-allied industries of Pakistan. It has been proved that the China–Pakistan free trade agreement has increased exports of the agriculture sector of Pakistan to China. Both countries must continue their policies to further improve bilateral cooperation. The CPFTA is helpful in achieving an export-led growth policy of Pakistan. However, protection and improvement of local markets must be considered at the same time as the agriculture sector is the largest sector to provide employment to the people of Pakistan.

During April 2015, China and Pakistan launched the China–Pakistan Economic Corridor (CPEC) project worth $46 billion, which will further deepen and broaden the linkage between the two countries. This mega project consists of a network of about 3,000 kilometers of long highways, railways, and pipelines. It will connect China's Xinjiang province to the rest of the world through Pakistan's port of Gwadar. Current studies only explained the impact of CPFTA on agricultural exports of Pakistan by using data from 2001 to 2014. The China–Pakistan economic corridor may also have a huge impact on trade between the two countries. Further research may explore the impact of CPEC on the trade of agricultural products between China and Pakistan.

NOTES

1. The website is https://www.wto.org/english/tratop_e/region_e/region_e.htm
2. http://comtrade.un.org
3. Exp(0.62) −1 = 0.85.
4. Exp(0.30) −1 = 0.34.

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