MPRA

Free Trade Agreements and International Trade Flow of Pakistan: A Gravity Modelling Approach

Abbas, Shujaat

Institute of Business Management, Karachi, Pakistan

2018

Free Trade Agreements and International Trade Flow of Pakistan: A Gravity Modelling Approach

Shujaat Abbas[1]
Institute of Business Management,
Karachi, Pakistan
shujaat.abbass@gmail.com

Abstract

This study explores the effect of free trade agreements (FTAs) on international trade flow of Pakistan by using contemporary panel estimation techniques on augmented gravity models for export flow and import flow with major 47 global trading partners from 1980 to 2016. The estimated results of standard gravity equations are consistent with the theory; whereas, findings of augmented variables revealed significant negative effect of SAFTA on both exports and imports flow. The FTA with China, Malaysia, and Indonesia have significant positive effect on imports with insignificant/negative effect on exports flow; whereas, FTA with Bangladesh, Sri Lanka, and the USA have significant positive effect on export flow with insignificant/negative effect on imports. The study urges Pakistan to revisit its FTA policies with China, Malaysia, and Indonesia for greater market access. Future studies should address the disaggregated behavior of bilateral trade flow between Pakistan and its trading partners with preferential/free trade agreements.

1. INTRODUCTION

The world trade has witnessed a considerable proliferation in regional and bilateral free trade agreements for greater economic diversification and development due to the continued stalemate in multilateral trade

---

negotiations involving the World Trade Organization (WTO). The countries around the world are exploring options of regional/bilateral trade liberalization through granting preferential/free market access.

Pakistan has signed a regional trade agreement with South Asian countries known as the South Asian Free Trade Agreement (SAFTA) in 2004, and other bilateral free trade agreements (BFTA) with the USA in 2003; Sri Lanka in 2005, Indonesia in 2007, China in 2007, Malaysia in 2007, Mauritius in 2008, and Afghanistan in 2010, for greater diversification and expansion. The previous empirical have reported ineffectiveness of SAFTA in creation of sufficient trade among regional countries, (Gul and Yasin, 2011; Abbas and Waheed, 2015). The failure of SAFTA enhanced importance of BFTAs for Pakistan, but this study does not found any empirical study on effect of these FTAs on bilateral exports and imports flow. The effectiveness of any multilateral and/or bilateral free or preferential trade agreements can be determined by exploring their effect on bilateral export flow and import flow.

The contemporary Hecksher-Ohlin trade model, introduced by Heckscher (1919) and developed by the Ohlin (1952), suggests mutually beneficial international trade flow based on relative factor endowment differential. Pakistan has signed free trade agreements (FTAs) with developing countries of Asia having homogenous production factors and pattern, except FTA with Mauritius. The domestic production factor, as a result, are facing severe competitive pressure from relative more specialized developing countries. The domestic industries due to relatively high cost of production are facing existential threat from relatively higher competitive foreign industries, mostly from China, India, and other developing countries. This study investigates the efficiency of these BFTAs of Pakistan by exploring their effect on bilateral exports and imports flow.

The rest of the study is organized as follows: Section 2 reviews international trade performance; whereas, section 3 surveys selected theoretical and empirical literature. Section 4 discusses modeling strategy and data sources. Section 5 analyses estimated results, and section 6 concludes the study with policy implications.

2. INTERNATIONAL TRADE OF PAKISTAN

International trade is the medium of income redistribution among the world and is a founding concept in economic thoughts. The early mercantilism was a first national economic policy that dominated in Europe in the 16th to 18th century much before the emergence of classical economic thought by Adam

Smith in 1776. The importance of international trade has considerably increased in recent years due to globalization and corresponding deteriorating of trade balance in comparative lower competitive developing countries.

Pakistan is small open economy with comparatively lower contribution to international trade and capital flow. The exports are highly concentrated on few agriculture and agriculture-dependent manufacturing industries and are directed toward few countries, Abbas and Waheed (2015). The external trade balance of Pakistan is witnessing chronic deficit since its inception that has significantly increased in recent years due to deteriorated domestic productivity and competitiveness. The post globalization distorted trade performance according to Abbas and Waheed (2017) reveals lower domestic production specialization or competitiveness as compare to competing international industries. The stagnation/distorted domestic productivity and export growth with increasing population and labor force is a matter of great concern.

Figure 1. Trade Balance of Pakistan with Selected South Asian Countries
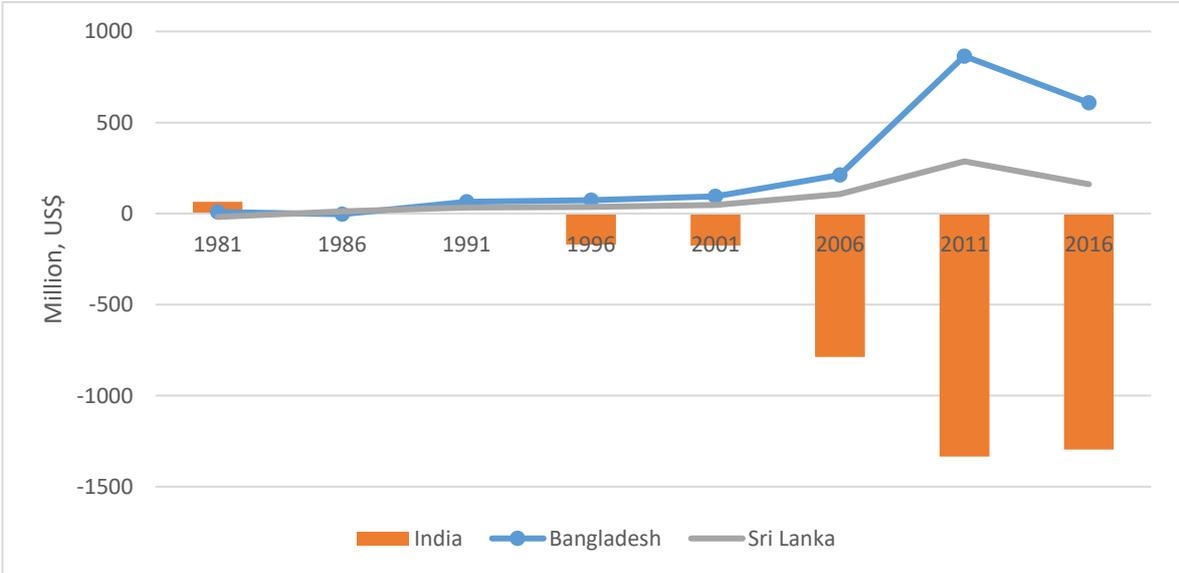
Source: Author's tabulation. Data were taken from the direction of trade statistics, published by the International Monetary Fund, 2018.

The increasing global competition resulted considerable proliferation in regional and bilateral free trade agreements for greater trade diversification and development. Pakistan has signed a regional trade agreement with South Asian known as South Asian free trade agreement (SAFTA) along with various other bilateral free trade agreements (BFTAs) with Afghanistan, China, Indonesia, Malaysia, Sri Lanka, Mauritius, and the USA for the expansion of international trade and economic growth. This

section will discuss trade performance of Pakistan with selected countries with preferential/free trade agreements.

The successful proliferation of regional trade agreements across the globe forced South Asian countries for formation of South Asian free trade agreement (SAFTA) in January 6, 2004. The graphs in Figure 1 revealed that the trade balance of Pakistan is positive with Bangladesh and Sri Lanka in the region; whereas, India revealed considerable high negative trade balance. The trend analysis revealed that trade surplus with Bangladesh and Sri Lanka witnesses deterioration after 2011 onward; whereas, trade deficit with India is witnessing a sharp deterioration considerable after from positive balance in 1991 to negative 1.2 billion US$ in 2016. The trend analysis revealed a sharp increase in the trade surplus with Bangladesh and Sri Lanka has increase after formation of SAFTA in 2006 up to 2011 and then started to deteriorate afterward. Pakistan should revisit international trade with India and diversify, if possible, its imports towards other regional countries for greater exports growth.

Pakistan has signed various free trade agreements with other South East Asian countries such as China in 2006, Indonesia in 2006, and Malaysia in 2007 for greater regional integration. The Figure 2 shows the trade balance of Pakistan with selected South East Asian countries from 1980 to 2016.

Figure 2. Trade Balance with of Pakistan Selected South East Asian Countries

Source: Author's tabulation. Data were taken from the direction of trade statistics, published by the International Monetary Fund, 2018.
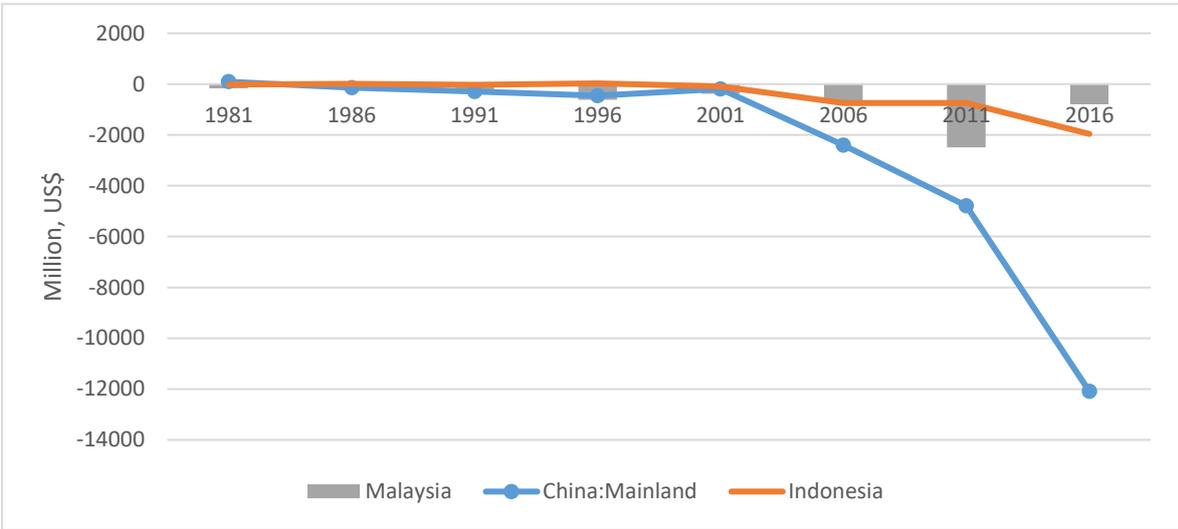
The graphs in Figure 2 revealed that the trade balance of Pakistan with selected South East Asian countries have started to deteriorate from 2001 onward and recent years witnessed a sharp increase in

trade deficit. It had trade surplus of 92 million US$ with China in 1981 which has transformed into the largest single country trade deficit since 2006 onward that has approached to staggering deficit of 12.1 billion US$ in 2016. The pace of deficit has considerably increased in recent years due to considerably large increase in Pakistan China Economic Corridor related imports. The trend of trade deficit revealed it will expand further in future. Similarly, trade balance of Pakistan with Indonesia also witnessed sharp increase in trade deficit since 2006 onward and approached 1.96 billion in 2016. The trade balance with Malaysia revealed trade deficit that has deteriorate from 1981 onwards and approached 792 million US$ in 2016.

Table 3. Trade Balance of Pakistan with Mauritius and the USA
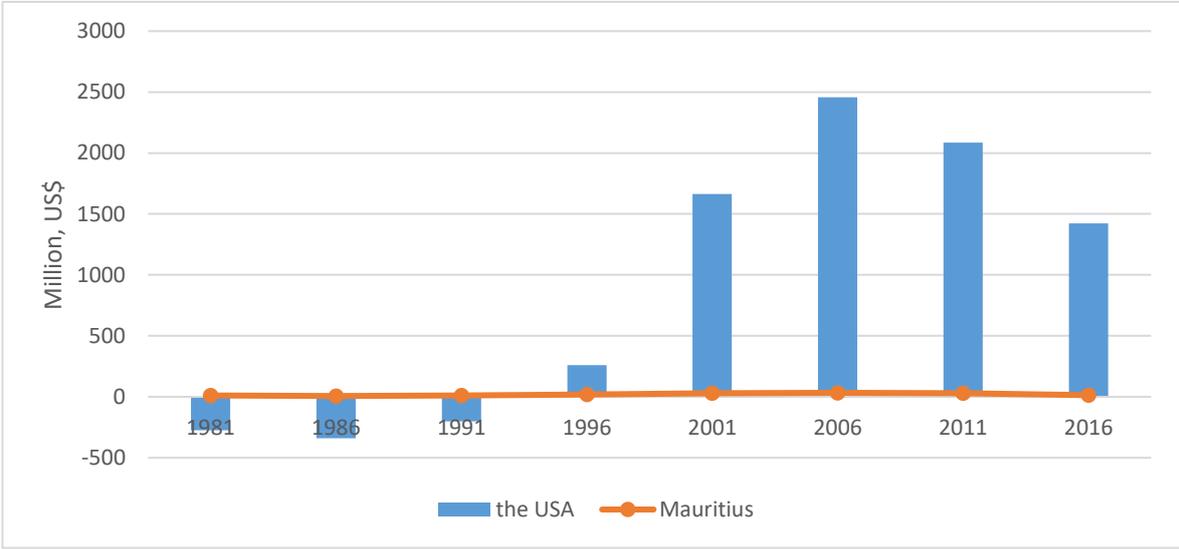
Source: Author's tabulation. Data were taken from the direction of trade statistics, published by the International Monetary Fund, 2018.

Pakistan has also signed free/preferential trade and investment agreement with the United States of America and small island country of Mauritius in 2003 and 2007, respectively. The graphs in the Figure 3 revealed that Pakistan has a persistent and large trade surplus with the USA and Mauritius from 1991 onward and recent years witnessed a satisfactory export growth performance with considerable distortion of imports. Imports from the USA has decreased from 2.085 billion in 2011 to 1.42 billion in 2016. Similarly, imports from Mauritius witnessed highly distorted growth 13 million in 1991 to 17 million in 2016. Pakistan should diversify its imports towards selected countries in order to ensure future export market and growth.

The graphs in the Figure 3 revealed that Pakistan has a persistent and large trade surplus with the USA and Mauritius from 1991 onward and recent years witnessed a satisfactory export growth performance with considerable distortion of imports. Imports from the USA has decreased from 2.085 billion in 2011 to 1.42 billion in 2016. Similarly, imports from Mauritius witnessed highly distorted growth 13 million in 1991 to 17 million in 2016. Pakistan should diversify its imports towards selected countries in order to ensure future export market and growth. The above discussion on trade performance of Pakistan concluded persistently increasing large external trade deficit and free trade agreements have further aggravated considerably. This study explores the effect of regional and bilateral free trade agreements on bilateral exports and imports of Pakistan using augmented gravity models for export flow and import flow.

3. LITERATURE REVIEW

The idea of gravity model has emerged in Physics that has been introduced to international trade by the Tinbergen (1962) for explanation of bilateral trade, migration, and capital flows across the national boundaries. The gravity model has now taken a shape of standard model for explanation of the trade (export and import) flow, international migration, and capital flow. The required microeconomic foundation of gravity model has been presented by the Linnemann, (1966) Anderson, (1979), Bergstrand, (1985; 1989; 1990); Leamer and Stem (1970); and Leamer (1974) and others[2].

The gravity model has been intensively used in the empirical analysis to address international trade, capital, and international migration due to strong explanatory power with acceptable theoretical foundations. The plethora of studies have used augmented gravity models to explore the effects of regional and/or bilateral free trade agreements. Pastore *et. al*., (2009) investigates Barcelona's trade integration with the Mediterranean (MED) countries and with the new EU members by computing trade potential with these EU partners from 1995 to 2002 using an out-of-sample methodology. The finding suggests the existence of unexploited trade potential with both groups of partners. Cinar et al., (2016) investigated the extent to which countries in the former Silk Road regions are either reaching or failing to reach their trade potential with China by using an augmented gravity model and estimated trade potential using in-sample, out of sample, and counterfactual technique. The estimated result revealed

---

[2] For details, see Bergeijk, (2010).

that China's former Silk Road trading partners have yet to realize the potential benefits of China's growth for the period from 1990 to 2013. In more recent studies, Magrini *et al.*, (2017) assessed the causal impact of the EU trade preferences granted to the Southern Mediterranean Countries (SMCs) in agriculture and fishery products over the period 2004–2014 by using highly disaggregated data on the sectoral level. This study applied a non-parametric matching technique for continuous treatment – specifically, a generalized propensity score matching technique to evaluate the preferential treatment. The results showed that the impact of the EU preferences is positive and significant on SMCs agriculture and fishery trade.

The literature of Pakistan shows large empirical literature on gravity model to explain behavior of trade and capital flow, (i.e. Achakzi, 2006; Butt, 2008; Akther and Ghani, 2010; Gul and Yasin, 2011; Malik and Chaudhary, 2012; and Abbas and Waheed, 2015; Abbas, 2016). The focus these studies were either identification of macroeconomic determinants or exploration of trade potential. The SAFTA has been incorporated and found ineffective in creation of regional trade, (i.e. Achakzi, 2006; Gul and Yasin, 2011; and Abbas and Waheed, 2015). The review literature revealed that BFTAs are not subjected to empirical investigation to explore their effects on bilateral exports and import flow of Pakistan with its global trading partners.

4. MODEL SPECIFICATION

The gravity model of international trade flow argues that the bilateral trade flow is a positive function of the economic size of each country, measured through the gross domestic product (GDP) and the negative function of bilateral distance. The standard gravity model of the international trade, introduced by the Tinbergen (1962) and Pöyhönen (1963) describes the trade relationship between heterogeneous economies at various geographic distances, is presented in Equation 1.

$$T_{ij} = \alpha \frac{Y_i . Y_j}{D_{ij}} \tag{1}$$

Where: T_{ij} is bilateral trade (export and import) flow, Y_i is domestic productivity measured by real GDP; Y_j is the income of a trading partner, and D_{ij} is bilateral distance. The log-linear standard gravity models for import and export flow of Pakistan with its global trading partners are presented as follows.

$$LnX_{ijt} = \beta_0 + \beta_1 \ LnY_{it} + \beta_2 Ln \ Y_{jt} + \beta_3 \ LnD_{ij} + \mu_{it} \tag{2}$$

$$LnM_{ijt} = \gamma_0 + \gamma_1 \, LnY_{it} + \gamma_2 Ln \, Y_{jt} + \gamma_3 \, LnD_{ij} + \varepsilon_{it} \qquad (3)$$

Where; Ln is natural logarithm with base 10. M_{ijt} is imports flow to Pakistan from selected global trading partners (j). X_{ijt} is bilateral exports flow of Pakistan to global trading partners. Y_{it} is the gross domestic product of Pakistan. Y_{jt} is the domestic product of trading partners, and D_{ij} is the geographic distance between capitals of sampled countries. The coefficients β_0 and β_0 are intercepts of models for export flow and import flow, respectively. According to gravity theory, the coefficients of domestic product of Pakistan [β_1 & γ_1] and that of trading partners [β_2 & γ_2] are expected to positively associated with export flow and import flow; whereas, coefficients for bilateral distance [β_3 & γ_3] are expected to have negative effect.

The empirical literature on international trade flow of Pakistan have employed augmented gravity models by augmenting with incorporated real exchange rate, common language, common border, SAFTA, and other variables, (see, Butt 2008; Gul and Yasin 2011; Abbas and Waheed 2015). This study expands the available literature by incorporating effect of all binary variables in the gravity models for export and import flow;

$$LnX_{ijt} = \beta_0 + \beta_1 LnY_{it} + \beta_2 LnY_{jt} + \beta_3 LnD_{ij} + \beta_4 LnRER_{ijt} + \beta_5 BDR_{ij} + \beta_6 SAFTA_{ij}$$
$$+ \beta_7 \, FTAUSA + \beta_8 \, FTACH + \beta_9 FTAIND + \beta_{10} \, FTAMAL + \beta_{11} \, FTASRL$$
$$+ \beta_{13} \, FTAMAU + \mu_{it} \qquad (4)$$

$$LnM_{ijt} = \gamma_0 + \gamma_1 LnY_{it} + \gamma_2 LnY_{jt} + \gamma_3 LnD_{ij} + \gamma_4 LnRER_{ijt} + \gamma_5 BDR_{ij} + \gamma_6 SAFTA_{ij}$$
$$+ \gamma_7 \, FTAUSA + \gamma_8 \, FTACH + \gamma_9 FTAIND + \gamma_{10} \, FTAMAL + \gamma_{11} \, FTASRL$$
$$+ \gamma_{12} \, FTAMAU + \varepsilon_{it} \qquad (5)$$

Where RER_{ij} is relative prices. BDR_{ij} is dummy for bordering countries. $SAFTA_{ij}$ is South Asian free trade agreement. FTAUSA is FTA with the USA. FTACH is FTA with China. FTAINDO is FTA with Indonesia. FTAMAL is FTA with Malaysia. FTASRL is FTA with Sri Lanka. FTA MAU is FTA with Mauritius, and FTAUSA is free trade agreement with the USA.

The relative prices measure the responsiveness of trade (export and import) to change in the relative price level. The data on relative prices of Pakistan with selected trading partners is not directly available and is calculated using purchasing power parity condition, see Equation 7.

$$RER_{ijt} = ER_{ijt} \left({}^{P_{jt}}\!\big/\!{}_{P_{it}} \right) \qquad (6)$$

Where ERij is nominal bilateral exchange rate of domestic currency (Rs) in term of the unit currency of selected trading partners. P_i and P_j are domestic prices and prices at trading partners, respectively, measured by their respective GDP deflators. The coefficients of relative prices [β_4 & γ_4] measures responsiveness of bilateral exports and imports flow with respect to change in relative prices. An increase in relative prices makes domestic exports cheaper for international buyers and imports expensive for domestic customers thus expecting positively effects on export flow and negatively effect on imports flow. .

The coefficients of common BDR [β_5 & γ_5] are expected to positively associated with bilateral exports and imports flow, but the empirical studies have reported negative or insignificant effect on trade flow. Similarly, the coefficients of SAFTA [β_6 & γ_6] are expected to have positively affect both bilateral exports and imports flow and empirical studies have reported negative/insignificant effect, (see, Butt 2008; Gul and Yasin, 2011; Abbas and Waheed, 2015). The major factor making regional economic integration ineffective is inception based hatred and rivalry among member nations over outstanding disputes. The binary variables for selected BFTA of Pakistan with USA, China, Indonesia, Malaysia, Sri Lanka, and Mauritius are first time incorporated and according intuition of the gravity theory the coefficients [$\beta_7 - \beta_{12}$ & $\gamma_7 - \gamma_{12}$] are expected to have significant positive effect on both model for exports flow and imports flow.

The data of dependent variables i.e. export flow and import flow of Pakistan with 47 global trading partners from 1980 to 2016 are collected from Direction of Trade Statistic (DOT)[3] published by the International Monetary Fund (IMF). The data on gross domestic products, GDP deflators, and that of official exchange rate are taken from the World Development Indicators (WDI) published by the World Bank. The data of geographic distance and bordering countries are collected from Centre d'Etudes Prospectives et d'informations internationales (CEPII)[4]. The data of bilateral exchange rate of Pakistan taken from international financial statistics, published by the International Monetary Fund.

---

[3]http://elibrary-data.imf.org/

[4] http://www.cepii.fr/

The data for binary variable for BDRij is constructed valuing 1 to adjacent countries and 0 otherwise. $SAFTA_{ij}$ is constructed by valuing 1 from 2006 onward and zero otherwise. FTAUSA is constructed by valuing 1 from 2003 onward, and zero otherwise. FTACH is constructed by valuing 1 from 2007 onward, and zero otherwise. FTAINDO is constructed by valuing 1 from 2007 onward, and zero otherwise. FTAMAL is constructed by valuing 1 from 2008 onward, and zero otherwise. FTASRL is constructed by valuing 1 from 2005 onward, and zero otherwise. FTAMAU is constructed by valuing 1 from 2007 onward, and zero otherwise.

5. ESTIMATED RESULTS

This section discuss the macroeconomic behavior of export flow and import flow of Pakistan with its global trading partners from 1980 to 2016 by using contemporary panel data estimation techniques. The estimated result of the Hausman test suggests the efficiency of panel fixed effect model over the random effect model. The bilateral distances are time-invariant, and panel fixed effect model is not applicable in this case. The random effect model through relating individual-specific variation to error term can cause autocorrelation and bias estimates, (Baltagi, 2013).

Table 1. Hausman test for model selection

Test Summary	Export Model			Import Model		
	Chi-Sq. Stat.	Chi-Sq. d.f.	Prob.	Chi-Sq. Stat.	Chi-Sq. d.f.	Prob
Cross-section random	26.423	10	0.003	40.023	10	0.00

Source: Author's estimation

This study uses panel generalized ordinary least square estimation technique with cross-sectional weight to address the effect of selected core and policy variables on bilateral exports and imports flow.

The estimated results in Table 2 show that the effect of core variables are consistent with the theory of gravity model of exports flow. The estimated result of the augmented variables revealed the real exchange rate has the significant positive effect of lower intensity on export flow. One percent increase in the real exchange rate is associated with the increase in exports flow by only 0.02 percent. The estimated results of binary variable for BDR and SAFTA revealed a significant negative effect on export flow. SAFTA revealed that export flow of Pakistan is -0.83 times lower with South Asian

countries than other trading partners in the model; whereas, BDR revealed -0.61 times lower trade with boring countries. The findings are consistent with the Abbas and Waheed (2015). The possible explanation suggested by the reviewed empirical studies is inception based rivalry and enmity with regional and bordering countries.

Table 2. Result of Gravity Model for Export Flow

Dependent variable: Export Flow

Variables	Coeff.	t-stat.	prob.		Coeff.	t-stat.	prob.
C	-11.904	-13.386	0.000		-8.622	-9.478	0.000
LOG(YI)	1.288	18.096	0.000		1.116	15.844	0.000
LOG (YJ)	0.658	32.904	0.000		0.696	85.817	0.000
LOG(DIJ)	-0.774	-11.001	0.000		-0.961	-18.246	0.000
LOG(RERIJ)					0.034	6.863	0.000
BDRIJ					-0.635	-5.441	0.000
SAFTA					-0.823	-3.807	0.000
FTAUSA					1.238	6.377	0.000
FTACH					0.574	1.234	0.126
FTAIND					-0.176	-0.992	0.271
FTAMAL					0.269	2.098	0.049
FTASRL					1.231	23.173	0.000
FTAMAU					1.124	6.377	0.000
No of observations		1739			1739		
Adjusted R^2		0.543			0.783		
S.E. of Regression		1.217			1.150		
F-stat. [prob.]		688.251[0.000]			564.736[0.000]		
Mean Absolute Error		0.93			0.875		
Bias proportion		0.006			0.008		
Variance proportion		0.151			0.148		

Source: Author's estimation. Note: Yi domestic product of Pakistan. Yj is domestic product of trading partners. Dij is bilateral distance. RERij is relative prices. BDRij is dummy for bordering countries. $SAFTA_{ij}$ is South Asian free trade agreement. FTAUSA is FTA with the USA. FTACH is FTA with China. FTAINDO is FTA with Indonesia. FTAMAL is FTA with Malaysia. FTASRL is FTA with Sri Lanka. FTA MAU is FTA with Mauritius.

The result of bilateral free trade agreements (BFTAs) shows that the FTA with the USA, Sri Lanka, Mauritius, and Malaysia have created considerable exports for Pakistan, whereas, FTA with China and Indonesia have insignificant effect. Pakistan should revisit bilateral trade agreement with China and Indonesia for corresponding market access to domestic exports.   The result of the diagnostic tests confirmed goodness of fit of the regression model. The coefficient of determination revealed

explanation of 78.3 % variation in the dependent variables by selected explanatory variables in the exports models. The result of F-stat. validates overall goodness of fit of the regression model. The standard error of the regression model and bias proportion is low indicating forecasting efficiency.

Table 3. Result of Gravity Model for Imports Flow

Dependent variable: Import Flow

Variables	Coeff.	t-Stat.	Prob.	Coeff.	t-Stat.	Prob.
C	-10.480	-9.759	0.000	-6.989	-8.948	0.000
LOG(YI)	1.045	12.378	0.000	0.786	11.544	0.000
LOG(YJ)	0.805	34.131	0.000	0.786	86.749	0.000
LOG(DIJ)	-0.803	-12.067	0.000	-0.837	-40.003	0.000
LOG(RERIJ)				0.030	3.040	0.002
BDRIJ				0.389	8.351	0.000
SAFTA				-0.857	-8.948	0.000
FTAUSA				0.029	0.409	0.682
FTACH				1.245	10.313	0.000
FTAIND				1.989	16.773	0.000
FTAMAL				2.717	35.689	0.000
FTASRL				0.583	7.840	0.000
FTAMAU				-2.621	-17.164	0.000
No of observations		1739			1739	
Adjusted R^2		0.476			0.758	
S.E. of Regression		1.553			1.452	
F-stat.[prob]		527.048[0.000]			495.629[0.000]	
Mean Absolute Error		1.168			1.106	
Bias prop.		0.000			0.000	
Variance prop.		0.183			0.191	

Source: Author's estimation. Note: Yi domestic product of Pakistan. Yj is domestic product of trading partners. Dij is bilateral distance. RERij is relative prices. BDRij is dummy for bordering countries. $SAFTA_{ij}$ is South Asian free trade agreement. FTAUSA is FTA with the USA. FTACH is FTA with China. FTAINDO is FTA with Indonesia. FTAMAL is FTA with Malaysia. FTASRL is FTA with Sri Lanka. FTA MAU is FTA with Mauritius.

The estimated result of the Table 3 shows that the effect of core variables are consistent with the theory of gravity model of import flow. The findings of augmented variables revealed that the relative prices have positive but insignificant effect on bilateral import flow. It implies that imports of Pakistan are not sensitive to change in relative prices. The binary variable of BDR revealed significant positive impact indicating 0.03 times greater import from bordering countries as compare to other countries in the model. Similarly, the SAFTA revealed -0.86 times lower imports from South Asian

countries.   The result of binary variables for BFTAs shows that the FTA with China, Indonesia, Malaysia, and Sri Lanka have created is 1.245, 1.99, 2.72, and 0.58 times greater imports; whereas, FTA with the United States and Mauritius revealed significant negative on import flow indicating lower import of 0.03 and 2.62 times, respectively.

The result of the diagnostic test confirmed goodness of fit of the regression model and the coefficient of determination revealed that approximately 75.8 % variation in the dependent variables is explained by selected explanatory variables in the models. The result of F-stat. validates overall goodness of fit of the regression model. The standard error of the regression model and bias proportion is low indicating forecasting efficiency.

6.   CONCLUSION

This study is an attempt to explore the effect of free trade agreements (FTAs) on international trade flow of Pakistan by using contemporary panel estimation techniques on augmented gravity models for export flow and import flow with major 47 global trading partners from 1980 to 2016.

The estimated results of the standard gravity equations are consistent with the theory of the gravity model. The findings of the augmented gravity variables revealed that the SAFTA have a significant negative effect in both models for export flow and import flow indicating lower trade creation among regional countries. The findings of bilateral free trade agreements (BFTAs) with China, Malaysia, and Indonesia, and Sri Lanka have significant positive effect on bilateral import flow with insignificant and/or negative effect on exports flow; whereas, FTA with the USA have created significant exports for Pakistan with negative effect on import flow.

This study urges Pakistan to revisit its trade relations and free trade agreements for correspondingly greater market access. Future studies should address the disaggregated trade flow between Pakistan and trading partners with FTA using HS data up to six digit level. It should use import diversification as a tool for greater market access for domestic products. It should diversify its imports towards Bangladesh, Sri Lanka, and the USA aiming to expand deteriorating exports of domestic products/industries.

References

Abbas, S. (2016). Remittances Flow to Pakistan: A Gravity Approach, *Journal Transition Studies*

Review, *23*(1), 97-106

Abbas, S., & Waheed, A. (2018). Import determinants and Potential Markets: A Panel Data Gravity Modeling Analysis for Bahrain, *Review of Middle East Economics and Finance*, *14*(1), https://doi.org/10.1515/rmeef-2017-0017.

Abbas, S., & Waheed, A. (2015). Pakistan's Potential Export Flow: The Gravity Model Approach. *Journal of Developing Areas, 49*(4), 367-378.

Alam, M. M., Uddin, M. G., & Ta, K. M. (2009). Import Inflows of Bangladesh: the Gravity Model Approach. *International Journal of Economics and Finance, 1*(1), 131-140.

Achakzai, J. K. (2006). Intra-ECO Trade: A Potential Region for Pakistan's Future Trade. *The Pakistan Development Review, 45*(3), 425–437.

Akther, N., & Ghani, E. (2010). Regional Integration in South Asia: An Analysis of Trade Flows Using the Gravity Model. *Pakistan Development Review, 49*(2), 105-118.

Anderson, J. (1979). A Theoretical Foundation for the Gravity Equation. *The American Economic Review, 69*(1), 106-116.

Baier, & Bergstrand, J. H. (2001). The Growth of World Trade: Tariffs, Transport Costs, and Income Similarity. *Journal of International Economics, 53(1), 1*–27.

Baltagi, B. H. (2013). *Econometric Analysis of Panel Data* (5th ed.). Wiley and Sons.

Bergstrand, J. H. (1985). The gravity equation in international trade: Some microeconomic foundations and empirical evidence. *Review of Economics and Statistics*, *67(3),* 474–481.

Bergstrand, J. H. (1989). The generalized gravity equation, monopolistic competition, and the factor-proportions theory in international trade. *Review of Economics and Statistics*, *71(1)*, 143–153.

Bergstrand, J. H. (1990). The Heckscher-Ohlin-Samuelson model, the Linder hypothesis, and the determinants of bilateral intra-industry trade. *Economic Journal*, *100(403),* 1216–1229.

Bergeijk, P. A., & Brakman, S. (2010). The Gravity Model in International Trade: Advances and Applications, *Cambridge University Press*. USA

Batra, A. (2006). India's Global Trade Potential: The Gravity Model Approach. *Global Economic Review, 35* (3), 327-361.

Cinar, E. M., Johnson, J., & Geusz, K. (2016). Estimating Chinese Trade Relationships with the Silk Road Countries. *China & World Economy, 24*(1), 85–103.

Dinçer, G. (2015). Turkey's Rising Imports from BRICS: A Gravity Model Approach. *Munich Personal*

RePEc Archive, MPRA Paper No. 61979.

Govt. of Pakistan. (2017). *Economic Survey of Pakistan*, Ministry of Finance, Islamabad, Pakistan

Gul, N., & Yasin, H. M. (2011). The Trade Potential of Pakistan: An Application of the Gravity Model. *The Lahore Journal of Economics, 16(1)*, 23-62.

Heckscher, E. (1919), "The effect of foreign trade on the distribution of income", Ekonomisk Tidskrift, pp. 497-512.

Helpman, E. (1987). Imperfect competition and international trade: evidence from fourteen industrial countries, *Journal of the Japanese and International Economics*, *1*(1), 62-81.

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

Hassan, M. K. (2001). Is SAARC a viable economic block? Evidence from gravity model. *Journal of Asian Economics, 12*(2), 63–290.

IMF (2017). *Direction of Trade Statistics,* International Monetary Fund, Washington, D.C., USA

IMF (2017). *International Financial Statistics*, International Monetary Fund, Washington, D.C., USA

Leamer, E. (1974). The commodity composition of international trade in manufactures: An empirical analysis. *Oxford Economic Papers*, *26(30)*, 350-374.

Leamer, E., & Stem, R. M. (1970). *Quantitative international economics*. Boston, MA: Allyn and Bacon.

Linnemann, H. (1966). *An Econometric Study of International Trade Flows,* Amsterdam: North-Holland.

Malik, S., & Chaudhary, A. R. (2012). The Structure and Behavior of Pakistan's Imports from Selected Asian Countries: An Application of Gravity Model. *Pak. J. Commer. Soc. Sci., 6*(1), 53-66.

Magrini, E., Montalbano, P., & Nenci, S. (2017). Are EU trade preferences really effective? An impact evaluation assessment of the Southern Mediterranean Countries' case. *International Review of Applied Economics, 31*(1), 126-144

Ohlin, B. (1952), Interregional and International Trade: Revised Edition, Harvard University Press, Cambridge, MA.

Pastore, F., Ferragina, A. M., & Giovannetti, G. (2009). A Tale of Parallel Integration Processes: A Gravity Analysis of EU Trade with Mediterranean and Central and Eastern European Countries. *Review of Middle East Economics and Finance, 5*(2), 1475-3693.

Tinbergen, J. (1962). *Shaping the World Economy*, New York: Twentieth Century Fund

World Bank (2017). *World Development Indicators*, the World Bank, Washington, D.C., USA