

Determinants of Exports and Potential between Pakistan and its top Trade Partners: A Gravity Model Analysis

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Abstract

The present study attempts to identify export determinants of Pakistan with its major trade partners from 2003 to 2020 using gravity model of trade. The analysis quantifies impact of Free Trade Agreement (FTA) signed between Pakistan and China on export flow of the country in relation to other trade agreements where only one country is part of the agreement. Similarly, potential of Pakistan with these trade partners is examined which reveals that the country enjoys huge export potential with neighbouring countries. Moreover, export potential exists with other countries including USA, and Kuwait that could provide a way for future policy efforts for trade expansion. However, results show that export potential with China has been exhausted which may be due to improved trade relations between the two countries in recent years.

Keywords: Gravity Model, Panel Data, Exports, Export Potential, Pakistan

Introduction

Trade is an integral part of efforts for the development and growth of an economy. Economists right from Adam Smith have advocated trade as an important determinant for the economic growth of a country (Salvatore, 2013). In present-day world, many countries like China, India, Hong Kong, Singapore, South Korea, Taiwan and others have achieved a higher level of economic development with the help of international trade. These economies adopted appropriate trade policy, make the necessary adjustment from time to time and were successful in achieving a higher growth rate. In contrast, the trade policy of Pakistan lacks smoothness and witnessed many ups and downs. In initial years, the country successfully implemented Import-Substitution Industrialization (ISI) policy and recorded a high growth rate in the 1960s (Ali & Li, 2016). However, by mid-'70s, many economists in the country advocated export-led growth strategy to benefit from increased liberalization around the world. Thus the country adopted liberal trade regime in 1977 by lifting restrictions and reducing number of banned goods (Ahmed, Hamid & Mahmud, 2015). Further, many liberalization measures were taken under the guidance of the IMF and World Bank (Abbas & Waheed, 2017). Like other developing countries, Pakistan was hopeful to benefit from increased bilateral and multilateral trade agreements, particularly with neighbouring countries. However, till date, the country has not been able to benefit from trade-led growth strategy due to many reasons, including the internal economic position of the country. Many other countries like Bangladesh, India, Malaysia, Thailand etc. who started the liberalization process around the same decade have been able to increase their share of World exports (Ahmed, Hamid & Mahmud, 2015). Though the

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government have taken many measures to promote exports, these measures have failed to produce desirable results owing to lack of research on actual problem (Akbar Zaidi, 2015).

In recent years, Pakistan witnessed the highest exports of USD 25.1 bn in 2013-14. The momentum was not sustained due to commodity slump in the international market and structural constraints like overvalued exchange rate, high input costs and energy shortage. Export growth in the country followed the World growth trade pattern after 2014 and recorded a continuous decline (Economic Survey of Pakistan, 2018-19). From last couple of decades, share of Pakistan in world exports has not only stagnated and but also declined (Dollar, Hallward-Driemeier, & Mengistae, 2006). As per the latest data, share of Pakistan in world exports was 0.18 per cent in 1990 which declined to 0.15 per cent in 2012 and further to 0.12 per cent³ in 2020. This clearly shows how poorly the export sector of country has performed in recent times. Thus to benefit from export-led growth policy, it is vital to identify export determinants of Pakistan, particularly with neighbouring countries. In this context, economists make use of gravity model, which is an appropriate tool for this purpose. In line with the objectives of the present study, both basic and augmented gravity model has been applied to identify the export determinants of the country with its main trade partners. In addition, export potential of the country has also been predicted with selected partner countries.

Literature Review

Since Anderson (1979), literature on gravity model has experienced exponential growth with countless articles published. This section highlights some previous studies on Pakistan and other countries in which gravity model has been applied.

Din, Ghani and Qadir (2009) have examined prospects of Pakistan's trade with China by applying augmented gravity model with Pooled OLS technique in addition to “Trade Specialization Index” and “Gruble-Lloyd Index”. The study argues that there is great potential for expansion of bilateral trade, but it may remain in favour of China at least in short-run. In the long-run, trade is likely to influence production structure, balance the trade, and help in sustainable development of both countries. According to Khan and Khan (2013), GDP and GDP per capita positively impact trade relations of Pakistan with its partners. The author is of the view that steps should be taken to increase trade with large countries. Moreover, economic activities should be preferred, and politics should not dominate economic and trade decisions. Using the panel data set, Abbas and Waheed (2015) are of the view that supply capacity and market size of partner countries positively impact export flows of Pakistan. The study suggests that the country needs to revise trade agreements and diversify its basket of goods exported to partner countries to benefit from enhanced trade opportunities. Using export panel data for 1996-2009, Suvankulov and Ali (2015) are of the view that Pakistan has successfully made inroads in domestic market of Turkey, whereas the same is not true for the latter even though there is vast potential for its products to gain market in Pakistan. If the two countries sign FTA, it would be more beneficial for Turkey as Pakistan has already exploited the Turkish market. Given the narrow base of exports in Pakistan, its prospects are limited compared to Turkey to exploit domestic markets of each other. According to Mohamand *et al.* (2015), exports from Pakistan are mainly dominated by primary and semi-manufactured goods and have access to few markets. Whereas imports are continuously increasing at a rapid pace than

³ Data source: https://www.wto.org/english/res_e/publications_e/trade_profiles21_e.htm

exports, thus creating the problem of trade deficit for the country. Over the last many years, no concrete steps were taken to diversify export commodities and get market access in other countries. The exports are fast losing market to other countries, and steps need to be taken in this direction.

Using PPML estimation technique with panel data for period 1993-2013, Hussain (2017) argue that GDP, per capita income and distance, are the major factors affecting export flow of Pakistan. Besides, Information flow which is taken as proxy for globalization has a positive impact on exports, so the government should provide necessary information to the business community to boost exports to other trade partners. In another study, Irshad and Xin (2018) have analyzed bilateral trade between Pakistan and its trade partners, including China with which it has signed FTA or RTA. The results show that bilateral trade of Pakistan with all those countries with which FTA was signed is positively affected by GDP, religion, membership in WTO, trade openness, common borders and negatively by geographical distance and inflation.

Applying gravity model and using both cross-sectional and panel data, Hassan (2001) found opportunities for trade creation among SAARC countries without any evidence of trade diversion with other countries of the world. Another study by Martinzen-Zarzoso (2003) applied the gravity model and examined intra-block effects of EU, NAFTA and Centro-American Common Market. The study concluded that income elasticity of exporter was higher than income elasticity of importer and argued for signing of a new preferential trade agreement among sample countries. Similarly, Rahman, Shadat and Das (2006) used the gravity model of trade and found significant intra-regional trade creation in SAPTA. Besides, Raghuramapatruni (2015) found that there is great potential for intra-BRICS trade as these countries are complementary to each other and have the opportunity to increase trade with each other in a number of product categories. Later on, Mathur, Arora and Bhardwaj. (2016) investigated the impact on India aligning with RCEP and BRICS and examined gains and losses from intra-regional trade. The study concludes that free trade agreement in merchandise goods is beneficial for India with RECP countries. In the case of BRICS, India should negotiate for entry of goods with comparative advantage on a reciprocal basis. Mattoo, Mulabdic and Ruta (2017) are of the view that PTA's which cover broader areas create more trade opportunities for non-member countries than those agreements which are limited in nature. Besides, Inançlı and Mahamat Addi (2019) argue that there has been no trade creation or diversion in Economic Community of Central African States (ECCAS) during the period 2007-16. However, Common Market for Eastern and South African (COMESA), Economic Community of Central African States (CEMAC) and East African Community (EAC) has created trade opportunities for member countries. Thus the study argues for free movement of goods and people within the region. In addition, many scholars including De Soyres, Maire and Sublet (2019), Pasara and Dunga (2020), Pfaffermayr (2020) have expressed different views on impact of trade agreements on bilateral trade between countries.

Discussing trade potential, Achakzai (2006) has estimated trade potential of Pakistan in Economic Cooperation Organization (ECO). The results show that signs of variables were as per expectations and in line with theory. The high coefficient value of -1.27 for distance indicates that transportation cost is high, which acts as a barrier to trade between member countries. Besides, other constraints include production inefficiencies, restrictive trade practices, communication gap, financial constraints and many other factors which the member countries need to address to increase intra-ECO trade. The study concludes that there is considerable scope for Pakistan to increase its exports with member countries. In another study, Gul and Yasim (2011) argue that in 2001-05, Pakistan enjoys highest trade potential with ASEAN countries followed by Western Europe, Middle

East, Latin America and North America. Country-wise Pakistan enjoys the highest trade potential with Japan, followed by Sri Lanka, Bangladesh, Malaysia, Philippines, and other countries. Thus, Pakistan should explore new ways and means to enhance trade relations with these regions and countries. Moreover, quality of products need to be improved, and costs minimized to make firms able to compete in the international market. According to Sultan and Munir (2015) Pakistan enjoys highest trade potential with Hungary and Norway. In exports, it enjoys highest trade potential with Switzerland and Hungary, whereas, in case of imports, Norway followed by the Philippines, dominates the list. The study suggests that trade barriers with other countries should be removed and Pakistan should focus on industrial development to benefit from increasing trade opportunities. From the literature discussed above, it is clear that in the available literature only few variables were taken into account, and some important variables were ignored. In addition, there is dire need to understand trade creation and trade diversion of FTA signed between China and Pakistan and its impact on other partners of Pakistan. The present study attempts to fill this gap by examining export determinants of the country by including all important variables and taking care of the endogeneity problem, which was also ignored in previous studies. In addition, export potential of Pakistan with these countries has been estimated. Thus the present study is an attempt to help policy makers to formulate appropriate trade policy which can lead to export-led growth in the country.

The Empirical Model and Estimation Technique

The basic model

Tinbergen (1962), a Dutch economist, was the first to lay the mathematical foundation of the gravity model and apply it empirically. The model relates the monetary value of the log of total trade between two or more countries to the log of their national income respectively, a composite term measuring incentives and barriers to trade between them. This specification allows easy interpretation of parameters estimated in logarithm, which are elasticities of these estimated parameters (Yotov *et al* 2016).

This approach is used to examine the main determinants of exports between Pakistan and its major trade partners. The dependent variable corresponds to the annual volume of total exports. The following specification is considered:

$$X_{ijt} = \alpha_0 Y_{it}^{\alpha_1} Y_{jt}^{\alpha_2} Z_{ij} \beta^{\lambda} W_{ijt}^{\delta} e^{\lambda D_{ij}} \epsilon_{ijt} \dots \dots \dots (1)$$

Where,

X_{ijt} = exports from country i to j in year t.

Y_{it} = vector of variables associated with country i in year t.

Y_{jt} = vector of variables associated with country j in year t.

Z_{ij} = vector of time-invariant variables for countries i and j.

W_{ijt} = vector of time-varying variables which changes over both countries i and j.

D_{it} = vector of time-invariant variables for countries i and j.

$\alpha_0, \alpha_1, \alpha_2, \beta, \delta$ and λ are vector of coefficients and

ϵ_{ijt} residual term which includes idiosyncratic error and country pair-specific term b_{ijt} ⁴

To avoid the problem of "Bronze medal mistake" all variables in the model are considered in nominal terms. The approach of converting variables in real terms with same price index leads to inappropriate conversion and biased estimates (Baldwin & Taglioni 2006).

⁴ This hypothesis also used by Montant (2019).

Multilateral Resistance Factors

Anderson & van Wincoop (2003) have highlighted importance of relative trade costs to ensure correct specification of the gravity model. Indeed, the level of trade between two countries is affected not only by absolute costs but by relative costs also. More specifically trade between two countries "depends on bilateral barrier between them relative to average trade barriers that both regions face with all their trading partners" (Anderson & van Wincoop 2003). The global measure of trade restrictions and barriers of country *i* relative to its trade partners is embodied through notion of multilateral trade factors (MRT). The ignorance of this term leads to "gold medal mistake" and leads to biased estimates (Baldwin & Taglioni 2006). However, MRT terms are not directly observable. An easy and simple method used by Rose and Van Wincoop (2001), Baldwin and Taglioni (2006), consists of using country fixed effects. In addition to country fixed effects, following Gaurav and Bharti (2019) time-fixed effects were used to check for time-varying heterogeneity like exogenous shocks that cause fluctuation in trade between partner countries.

Impact of Free Trade Agreements

According to Frankel and Rose (2000), free trade agreement between partner countries leads to an increase in bilateral trade by multiplicative coefficient nearly equal to three, while Head (2003), is of the view that FTA's lead to increase in trade by nearly 50 per cent on average as established by gravity model. In the present study, the objective is to assess the impact of free trade agreement signed by Pakistan with China in relation to other trade agreements signed by former with Iran, Sri Lanka and Malaysia.

In gravity model, binary dummy variables are incorporated to examine effect of FTA's signed between countries. In the model, two dummy variables have been incorporated to separate impact of FTA on trade creation and trade diversion. Besides, SAFTA has been included in the model to examine impact of regional trade agreement on trade volume of country. Kepaptsoglou et al. (2010), examined previous empirical work on impact of FTA's establish that results obtained in various studies are contradictory. However, before examining impact of FTA, one must address the problem of endogeneity associated with such agreements. The idea behind FTA is that it can enhance trade volume, but causation can also be reversed, i.e., increased trade volume can motivate countries to sign FTA. Kepaptsoglou et al. (2010), is of the view that unclear results obtained in existing literature could be due to endogeneity problem. In traditional approach, an FTA dummy variable is added on right-hand side of the equation which can be correct if causal link proceeds from FTA coming into force and trade flows. However, the reverse (from trade flow to FTA) can also be true, which leads to endogeneity problem and biased results.

The solution to this problem implies a specific methodology. Baier and Bergstrand (2007) have applied pair-fixed effect methodology to address this problem in panel data set, which has been applied in present study. The main shortcoming of the selected method is that time-invariant variables like distance, common language and common border have to be excluded. However, the solution to this problem is to run two specifications; (i) A specification with time-invariant variables but without FTA dummies. (ii) A specification with FTA dummies but without time-invariant variables.

Econometric Methodology

Traditionally cross-sectional data was used in gravity model to estimate bilateral trade determinants. However, it yields biased results due to heterogeneity (Chang and Wall, 2005) and recent works have used panel data which has many advantages over time series and cross-sectional

data. It is with the use of panel data which enables us to capture the relevant relationship between variables over time. Besides, it is possible to monitor unobservable trading-partner-pairs individual effects. With the help of panel data, country and time-invariant variables can be controlled, which is not possible in cross-section or time-series study. It gives more information and variability, more efficiency and degree of freedom, and less collinearity among the variables.

In addition, choice of proper estimation technique in any model is of prime importance (Carrere, 2005). In most studies, OLS estimation technique has been used.

$$\ln T_{ijt} = \alpha_0 + \alpha_1 \ln Y_{it} + \alpha_2 \ln Y_{jt} + \beta \ln Z_{ij} + \delta \ln W_{ijt} + \lambda D_{ij} + \ln \epsilon_{ijt} \dots \dots \dots (2)$$

However, this technique provides biased results and deviates from key assumptions due to unobserved heterogeneity. The OLS with or without correcting for heteroscedasticity overestimates the actual standard errors (Gujarati, 2003). Thus the traditional gravity model with OLS provides inconsistent estimates. The solution to this problem is Fixed effect or Random effect estimation. In fixed effect, both time and individual effects are brought under consideration along with different intercepts for each individual and time period. It should be noted that in fixed effect, slope coefficients are constant. Thus when individual intercepts are correlated with one or more explanatory variables, fixed effect is more appropriate. On the other hand, Random effect assumes that intercept of each cross section is a random variable and are drawn from a large population with constant mean. Thus individual intercept shows deviations from constant mean value (Gujarati, 2003). The random effect model is appropriate when random intercept of each cross sectional unit is uncorrelated with explanatory variable. One important benefit of using this approach is that it uses less degree of freedom so that we need not to estimate N cross sectional intercepts (Gujarati, 2003).

Following Mishra et al (2015), to choose between the two techniques, Hausman test is applied. The results from Hausman test support the random effect model (RE) as p-value is greater than 5 per cent. Besides the present study intends to estimate the effect of both time-variant and time-invariant variables on trade volume of Pakistan with its major trade partners. Ozdeser and Ertao (2010) are of the view that the Random effect model is preferred to Fixed effect model when the interest is to study both time-invariant and time-variant variables. Moreover, to account for MTR's and time-specific shocks, exporter, importer and year specific factor have been controlled, which lead to the following equation.

$$\ln T_{ijt} = \alpha_0 + \alpha_1 \ln Y_{it} + \alpha_2 \ln Y_{jt} + \beta \ln Z_{ij} + \delta \ln W_{ijt} + \lambda D_{ij} + E_t + I_t + Y_t + \ln \epsilon_{ijt} \dots \dots (3)$$

In addition, Prais-Winsten regression with panel corrected standard error (PCSE) has been utilized as suggested by Papazoglou (2006), Marques (2008) and Brodzicki (2009). It should be noted that gravity model estimation of trade is based on several econometric techniques which are complementary and not substitutes to each other. This combination of various estimation methods and specifications enables us to evaluate the coherence of estimates (Head & Mayer 2013).

Given the objectives, the present study is based on a dual approach. First, one considers basic gravity model along with other variables but without FTA dummies due to endogeneity problem. Estimates are performed with three techniques, i.e., pooled OLS, REM and PCSE. Next Fixed effect model was used for FTA dummies but without time-invariant variables to avoid the problem of endogeneity. The solution to the problem of endogeneity is Fixed effect model (Baier & Bergstrand 2007) Besides, to control for MTR's, exporter-fixed effects and importer-fixed effects were utilized.

Sample Data

The dataset used is a balanced panel that includes 28 top trade partners of Pakistan covering the period 2002-2020. The dependent variable in our study is exports from Pakistan to partner countries

measured in current U.S. dollars. The study is conducted at an annual frequency. Data for exports has been collected from the Direction of Trade Statistics, IMF, whereas data for GDP and GDP per capita was taken from World Development Indicators (WDI), World Bank.

The information for other variables which include Distance, Language, Contiguous (common border) was downloaded from CEPII data set. Similarly, Information for the Regional Trade Agreement (RTA) and Free Trade Agreement (FTA) was obtained from World Trade Organization. FTA data for Pakistan include Pakistan-China, Pakistan-Iran, Pakistan-Sri Lanka and Pakistan-Malaysia. Besides, SAARC trade agreement was included to examine the impact of regional trade agreement. All data in value terms are in current U.S. dollars.

Results and Discussion

Table 1 presents the regression results of our first step estimation. The Table presents results from all estimators employed using available data. Signs of the variables as presented and the size of coefficients are in line with previous literature. The results presented indicates that exports are influenced positively by GDP of partner countries, trade agreements and common language. The other factors which include the distance between countries, common border, inflation negatively influence exports from Pakistan to its top trade partners.

Table 1: Gravity Model of Exports without FTA dummies

	1	2	3	4	5
	OLS	RE	RE	RE	PCSE
Variables	Lnexports	Lnexports	Lnexports	Lnexports	Lnexports
Lgdp_exp	0.206* (0.06)	0.137 (0.42)	0.179*** (0.00)	0.017 (0.93)	0.143* (0.08)
Lgdp_imp	0.354*** (0.00)	0.650*** (0.00)	0.508*** (0.00)	0.743*** (0.00)	0.576*** (0.00)
Ldistance	-0.669*** (0.00)	-3.251*** (0.00)	-0.842* (0.07)	-3.669*** (0.00)	-2.849*** (0.00)
LRFE	0.162*** (0.00)		0.098* (0.08)		0.073 (0.11)
Common language	0.107 (0.31)	4.272*** (0.00)	0.121 (0.77)	7.706*** (0.00)	3.729*** (0.00)
Contiguity	0.122 (0.48)	1.645*** (0.00)	-0.122 (0.82)	1.533*** (0.00)	1.798*** (0.00)
Constant	8.536*** (0.00)	23.247*** (0.00)	7.056 (0.12)	27.263*** (0.00)	21.18*** (0.00)
R-square	0.24	0.43	0.43	0.41	0.896
Adj. R-square	0.23	0.93	0.23	0.89	
Observations	476	476	476	476	476
Hausman test		0.62	0.62	0.62	
Breusch-Pagan test		0.00	0.00	0.00	
Type of FE		Exporter		Exporter	Exporter
		Importer		Importer	Importer
		Year	Year		Year

*Source: data collected for the study p-values in parentheses; *p <.10, **<.05, ***<.01*

In model (2) and (4), GDP of exporting country is insignificant; however, it should be noted that dependent variable is exports from Pakistan to partner countries, so our interest is economic mass of partner country. All other variables have expected sign and in line with previous literature. In model 1, the OLS estimation technique doesn't account for multilateral resistance, but the sign of GDP of both partner and reporting country and other variables is consistent with past literature. A look at results in Table 1 shows that GDP in the importing country, distance, PCGDPD, common border and cultural factors play an important role in exports of Pakistan with its major trade partners. The results (model 2) show that a 1 per cent increase in GDP of partner country leads to a 6.5 per cent increase in exports from Pakistan. Distance plays a more significant role as an increase in distance by 1 km leads to 3.25 per cent decline in exports from Pakistan to partner countries. These results point out the importance of improving infrastructure and connectivity with neighbouring countries. Similarly, PCGDP differential (model 4) supports the H-O hypothesis that countries with different factor endowment trade more with each other. Common language plays a more significant role in the enhancement of trade volume between partner countries. The common border has expected positive sign and plays an important role in trade enhancement of neighbouring countries as results presented in Table 1 indicate.

The next step is to examine the efficiency of estimators used in the present study. To differentiate between FE and RE, the Hausman test has been applied, which supports the RE model. Besides Breusch-Pagan test has been applied to differentiate between pooled OLS and RE, which again supports the RE model.

Estimation of Export Determinants with FTA dummies

A look at past empirical literature indicates that there is no clear and convincing evidence on the impact of trade agreements on trade flows between participating countries. However, recent progress in addressing endogeneity bias has led to the rediscovery of impact of FTA's on trade flows. Magee (2003) has addressed this problem using instrumental variables with cross-section and panel data analyses. Egger et al. (2008), Egger et al. (2011) have attempted to address the endogeneity problem through different techniques. However, it was Baier & Bergstrand (2007) who highlighted the importance of applying 'bilateral fixed effect' to address the problem of endogeneity in panel data analysis (Taguchi & Rubasinghe 2019).

Table 2 presents the results of gravity model without time-invariant variables which have been explained earlier. The results indicate that the GDP of partner countries is positive and significant, and in line with available literature. With an increase in the economic mass of partner countries, there is a significant and positive impact on exports from Pakistan to these partner countries.

The main aim here is to find the impact of agreements on trade creation and trade diversion between Pakistan and its main partners. For this purpose, two dummy variables have been created in addition to one dummy variable for the regional trade agreement. Results indicate that FTAboth has created trade opportunities for both countries, whereas FTAone has a negative sign which is an indication of trade diversion. Results indicate that adherence to FTAone tends to reduce the volume of export flows from Pakistan to trade partners. This result is mainly obtained for a pair of countries when only one country adheres to trade agreement.

The RTA has a positive sign and is statistically significant, which is an indication of increasing trade opportunities when a group of countries agree to open their border for multilateral trade. The model (3) shows that holding everything else constant, adherence to regional trade agreement lead to $(e^{(0.321)} - 1) = 37\%$ increase in trade.

Table 2: Exports with FTA dummies

	1	2	3	4	5
	OLS	FE	FE	FE	PCSE
Variables	Lnexports	Lnexports	Lnexports	Lnexports	Lnexports
Lgdp_exp	0.133 (0.20)	0.187* (0.05)	0.164* (0.08)	0.223** (0.02)	0.226 (0.19)
Lgdp_imp	0.190*** (0.00)	0.508*** (0.00)	0.533*** (0.00)	0.443*** (0.00)	0.188*** (0.00)
LRFE	0.182*** (0.00)	0.061 (0.24)	0.046 (0.38)	0.025 (0.63)	0.181*** (0.00)
FTA both	1.376*** (0.00)	0.586*** (0.01)		0.715*** (0.00)	1.382*** (0.00)
FTA one	-0.659*** (0.00)	0.049 (0.72)		0.013 (0.92)	-0.667*** (0.00)
SAARC	1.634*** (0.00)		0.321*** (0.01)	0.392*** (0.00)	1.637*** (0.00)
Constant	9.115*** (0.00)	0.259 (0.90)	0.291 (0.89)	1.370 (0.51)	6.685 (0.12)
R-square	0.31	0.44	0.44	0.46	0.31
Adj. R-square	0.30	0.38	0.38	0.40	
Observations		476	476	476	476
Type of FE	Exporter	Exporter	Exporter	Exporter	Exporter
	Importer	Importer	Importer	Importer	Importer
		Year	Year	Year	Year

*Source : Author Calculations; p-values in parentheses ; *p <.10, **<.05, ***<.01*

After identifying determinants which play an important role in exports of Pakistan, the second step is to estimate the trade potential of Pakistan with its major trade partners. It should be noted that Pakistan has signed trade agreements with China (2006), Iran (2004), Malaysia (2007), Sri Lanka (2005) and is part of SAFTA which came into force in 2006. Export potential of Pakistan is presented in Table 3 for two recent years (2019, 2020). The results show that Pakistan enjoys export potential with those countries which enjoy value greater than 1 and has exhausted potential with those countries with a value less than 1. Looking at partners with which Pakistan has signed any kind of trade agreement, the country enjoys export potential with Afghanistan, China, India, Iran, Sri Lanka and Malaysia in 2019. In 2020 the country enjoyed export potential with Afghanistan, India, Iran, Sri Lanka and Malaysia. These results indicate that Pakistan has not been able to benefit from existing trade agreements with partner countries with which export potential exists even after many years of the agreement. Besides Pakistan enjoys export potential with neighbouring countries which points out a lack of trade cooperation between involved countries.

Table 3: Export Potential of Pakistan

Values more than 1		Values less than 1		Values above 1		Values below 1	
2019		2019		2020		2020	
Country	Trade potential	Country	Trade potential	Country	Trade potential	Country	Trade potential
Afghanistan	1.06	Australia	0.75	Afghanistan	1.31	Australia	0.73
UAE	1.77	Belgium	0.66	UAE	1.85	Belgium	0.76
China	1.04	Bangladesh	0.89	Hong Kong	4.53	Bangladesh	0.95
Hong Kong	3.73	Canada	0.87	India	1.16	Canada	0.91
India	1.17	Germany	0.69	Iran	4.86	China	0.98
Iran	3.62	Spain	0.52	Kuwait	1.06	Germany	0.79
Japan	0.76	France	0.87	Sri Lanka	0.89	Spain	0.59
Kuwait	1.01	UK	0.66	Malaysia	1.09	France	0.90
Sri Lanka	1.11	Indonesia	0.89	Oman	1.04	Italy	0.81
Malaysia	1.19	Italy	0.77	Saudi Arabia	1.81	UK	0.71
Oman	1.05	Netherland	0.62	Singapore	1.02	Indonesia	0.48
Saudi Arabia	1.35	Russia	0.72	USA	1.14	Japan	0.78
Singapore	1.45	Thailand	0.83			Netherland	0.58
USA	1.14	Turkey	0.65			Russia	0.70
						Thailand	0.70
						Turkey	0.51

Data source: Author's calculation

Conclusion

In the present study, export determinants of Pakistan have been identified by using the gravity model of trade. The model explains the flow of exports between countries as being proportional to the economic size and inversely proportional to the geographical distance between them. To achieve the said objective, panel data set from 2002 to 2020 was used. In line with recent studies, augmented gravity which includes other variables in addition to income and distance, has been applied. The estimated coefficients show that the gravity equation fits data well and deliver results in line with the theoretical background of variables.

The results show that along with income and distance, free trade agreement, common language and common border plays an important role in exports of Pakistan with its main trade partners. In addition to export determinants, the impact of adherence to a particular trade agreement was also examined. The results indicate that FTA signed between China and Pakistan has created trade opportunities for both countries, whereas, in case of FTA, where only one country is part of the agreement, it leads to trade diversion. Pakistan shares a common border with China which offers opportunity in terms of low transport costs. The two countries have signed many trade agreements, including FTA, which should be made a base for the removal of remaining trade barriers and enhancement of trade. Besides, RTA also indicates that the removal of trade barriers leads to enhancement in the trade volume of participating countries.

The second part of empirical analysis aims to estimate the export potential of Pakistan with its major trade partners. The results present a promising picture for the enhancement of trade volume of the country with its main trade partners. It should be noted that Pakistan has signed trade agreements with China, Iran, Malaysia and Sri Lanka. The present analysis indicates that

the country enjoys export potential with India, Iran, Malaysia and Sri Lanka and has only exhausted its export potential with China. Thus from the above study, we can be concluded that Pakistan has not utilized its FTA's efficiently and Pakistan and China need to focus on removing remaining trade barriers and other economic condition to enhance trade cooperation.

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