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Examining the Trade Determinants and Potential of Pakistan: A Gravity Model Analysis

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Abstract: This study aims at identifying the main determinants of the annual trade flows of Pakistan with its top trade partners, including those with which the country has signed trade agreements. Given the present economic conditions of the country, it is important to identify the main determinants of trade so that the country can benefit from trade openness around the world. In addition to identifying trade determinants, the impact of adherence to a particular trade agreement was also examined. The results indicate that FTA signed by Pakistan with China and other trade partners has created trade opportunities for participating countries, highlighting the importance of trade liberalization for the long-run development of the country. Besides, the trade potential of Pakistan with selected trade partners has also been estimated.

Keywords: Gravity model, panel data, total trade, trade potential, Pakistan.

JEL Classification: C23, F10, P45.

Examining the Trade Determinants and Potential of Pakistan: A Gravity Model Analysis

1. Introduction

Trade is an integral part of efforts for the development and growth of an economy. Economists from Adam Smith have advocated trade as an important determinant for the economic growth of a country (Salvatore, 2013). In the present-day world, 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 policies, made necessary adjustments from time to time, and achieved high growth rates. In contrast, the trade policy of Pakistan lacks smoothness and witnesses many ups and downs. In the initial years, the country successfully implemented Import-Substitution Industrialization (ISI) and recorded high growth rates in the 1960s (Ali & Li, 2016). However, by the mid-'70s, many economists in the country advocated an export-led growth strategy to benefit from increased global liberalization. Thus the country adopted a liberal trade regime in 1977 by lifting restrictions and reducing the number of banned goods (Ahmed, et al., 2015).

Further, many liberalization measures were taken under the guidance of the IMF and World Bank (Abbas & Waheed, 2017). Like other developing countries, Pakistan hoped to benefit from increased bilateral and multilateral trade agreements, particularly with neighboring countries. However, the country has not benefited from a trade-led growth strategy. Among many reasons, the main ones have been the internal economic position of the country and the continuously low magnitude of exports compared to imports during these years. In comparison, many other countries like Bangladesh, India, Malaysia, and Thailand started the liberalization process around the same decade, but have increased their share of world exports (Ahmed, et al., 2015). Though the government has taken many measures to promote exports, these measures have failed to produce desirable results due to a lack of research on the actual problem (Zaidi, 2015).

In recent years, Pakistan witnessed an export high of USD 25.1 bn in 2013-14. The momentum was not sustained, however, due to commodity slumps in the international market and structural constraints like overvalued exchange rates, high input costs, and energy shortages. Export

growth in the country mirrored the world growth trade pattern after 2014 and recorded a continuous decline (Economic Survey of Pakistan, 2018-19). In the last few decades, Pakistan's share of world exports has stagnated and even declined (Dollar, et al., 2006). Further to this, it is important to mention that the export sector has not performed as per the economic needs of the country, resulting in an increasing trade deficit yearly. Thus if Pakistan is to benefit from any future trade-led growth policy, it is vital to identify determinants of trade flow (exports plus imports) of Pakistan with its top trade partners. The present analysis rests on two main motivations. The first objective is to examine determinants of the trade flow of Pakistan with major trade partners[1] through the gravity model approach. Most empirical studies are centered on the export flow between countries, while the present analyses focus solely on total trade flow. Secondly, this analysis aims to examine the exact impact of the FTAs signed by Pakistan in recent years and estimate the total trade potential from these trade partners.

2. Literature Review

Since Anderson (1979), the literature on the gravity model has experienced exponential growth with a large number of published articles. This section highlights previous studies using the gravity model on Pakistan and other countries. The first part discusses various studies related to trade determinants. The second section highlights studies related to trade potential.

Rahman (2003) used the gravity model approach to analyze the trade determinants of Bangladesh with other countries of the world. The study concludes that the total trade of Bangladesh is determined positively by GDP, GDP per capita, and openness to trade by partner countries. The major factors that affect exports of the country include the total import demand of partner countries, the exchange rate, and the trade openness of Bangladesh. On the other hand, per capita income, inflation rate, and openness of countries involved affect their imports. Erdem & Nazlioglu (2008) applied the augmented gravity model by incorporating variables like arable land area and environment to examine the main drivers of agricultural exports from Turkey to the EU. The factors like EU market size, climate and environment of the non-Mediterranean area, and the Turkey-

[1] Afghanistan, Australia, Bangladesh, Belgium, Canada, China, France, Germany, Hong Kong, India, Iran, Indonesia, Italy, Japan, Kuwait, Malaysia, Netherlands, Oman, Russia, Saudi Arabia, Singapore, Spain, Turkey, USA, UAE, UK. These partners have been selected on the basis of the magnitude of total trade of Pakistan with these countries in 2019.

EU customs union agreement positively impact Turkish exports to the EU, while arable land of EU and geographical distance discourage exports from Turkey to EU. Similarly, Goswami (2013) has applied panel fully-modified ordinary least square (FMOLS) techniques to identify the determinants of trade in South Asia. The factors that play an important role in trade cooperation include per capita income growth, human capital, trade liberalization, infrastructure, and financial development.

According to Khan & Khan (2013), GDP and GDP per capita positively impact the trade relations of Pakistan with its partners. Using panel data, Abbas & Waheed (2015) are of the view that the supply capacity and market size of partner countries positively impact the export flows of Pakistan. Using the PPML estimation technique with panel data for 1993-2013, Hussain (2017) argues that GDP, per capita income, and distance are the major factors affecting the export flow of Pakistan. Besides, information flow, a proxy for globalization, positively impact exports of the country. In another study, Xin et al. (2018) analyzed bilateral trade determinants between Pakistan and its trade partners, including China, with which it has signed a FTA. The results show that the bilateral trade of Pakistan is positively affected by GDP, religion, membership in the WTO, trade openness, and common borders and negatively by geographical distance and inflation. Abbas & Waheed (2019) indicate a high level of trade between Pakistan and partner countries with a common language. However, a low level of trade has been reported between bordering countries.

Giving a theoretical justification for applying the gravity model, Mishra et al. (2015) found a positive relation between India's GDP and its trade volume with the outside world. Further to this, Sahu & Heng (2017) utilized an augmented gravity model to examine exports of India to its top 50 trade partners. The study concludes that GDP, distance, population, and real exchange rate are the main factors influencing the exports of India. Finally, Lohani (2020) applied the gravity model to examine the trade flow of India to other BRICS countries from 2001 to 2016. The study found that distance, common language, and common border play important roles in the trade relationship of India with these countries.

Discussing trade potential, Achakzai (2006) has estimated the trade potential of Pakistan in the Economic Cooperation Organization (ECO). The high coefficient value of -1.27 for distance indicates that transportation costs are significant, which act as a barrier to trade between member countries. Other constraints include production inefficiencies, restrictive

trade practices, communication gaps, financial constraints, and many other factors that impede intra-ECO trade. The study finds that Pakistan has considerable scope to increase its exports to member countries. In another study, Gul & Yasin (2011) argue that from 2001-05, Pakistan enjoyed the highest trade potential with ASEAN countries, followed by Western Europe, the Middle East, Latin America, and North America. Pakistan enjoys the highest trade potential with Japan, followed by Sri Lanka, Bangladesh, Malaysia, the Philippines, among other countries. According to Sultan & Munir (2015), Pakistan enjoys the highest trade potential with Hungry and Norway. In exports, it enjoys the highest trade potential with Switzerland and Hungry, whereas, in the case of imports, Norway, followed by the Philippines, dominates the list. The study suggests that Pakistan should focus on industrial development to benefit from increasing trade opportunities.

From the literature discussed above, we have not been able to find any study which explains the trade determinants of Pakistan with the main focus on FTAs as well as taking into account time-variant and time-invariant measures. Further, no study has examined the total trade potential with top trade partners. It is important to mention that total trade partners have been selected based on the magnitude of trade between Pakistan and these countries in 2018. Therefore, the present study tries to fill this literature gap by applying the augmented gravity model.

3. Methodology

The "gravity equation" is popularly known for its successful explanation of different types of flows like trade, tourism, and migration. The equation specifies that flow from country A to country B can be explained by economic forces in these countries and those economic and other forces resisting or aiding this flow. 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 examines the main determinants of bilateral trade between Pakistan and its major trade partners. The dependent variable corresponds

to the annual volume of total trade. The following specification is considered:

$$T_{ijt} = \alpha_0 Y_{it}^{\alpha 1}\, Y_{jt}^{\alpha 2}\, Z_{ij}\beta\hat{}\, X_{ijt}^{\delta}\, e^{\lambda D_{ij}}\, \epsilon_{ijt} \quad (1)$$

Where

T_{ijt}= total trade between country i and 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 binary time-invariant variables for countries i and j.

α_0, $\alpha_1, \alpha_2, \beta$, δ, and λ are the vector of coefficients and

ϵ_{ijt} the residual term, which includes idiosyncratic error and country pair-specific term[2] b_{ijt}

All variables introduced in the model are considered in nominal terms to avoid the "bronze medal mistake" identified by Baldwin & Taglioni (2006).

3.1 The multilateral resistance terms

Anderson & van Wincoop (2003) have highlighted the importance of relative trade costs to ensure the correct gravity model specification. Indeed, the level of trade between two countries is affected not only by absolute costs but by relative costs also. The global measure of trade restrictions and barriers of country i relative to its trade partners is embodied through the notion of multilateral trade factors (MRT). The ignorance of this term leads to what Baldwin & Taglioni (2006) refer to as the "gold medal mistake" and biased estimates. However, MRT terms are not directly observable, and one must use proxies to measure these terms.

[2] This hypothesis also used by Montant (2019).

Rose & Van Wincoop (2001) and Baldwin & Taglioni (2006) use an easy and simple method to capture MRT consisting of three sets of dummies for importers, exporters, and time periods.

3.2 The impact of Free trade agreements (FTAs)

According to Frankel & Rose (2000), a free trade agreement between partner countries leads to an increase in bilateral trade by a multiplicative coefficient nearly equal to three, while Head (2003) takes a more modest view such that FTAs lead to an increase in trade by nearly 50 percent on average as established by the gravity model. Similarly, Kepaptsoglou et al. (2010) examined previous empirical work on the impact of FTAs and found that results obtained in various studies are contradictory. However, one must address the endogeneity associated with such agreements before exploring the effects of FTA. 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 FTAs. Kepaptsoglou et al. (2010) are of the view that unclear results obtained in existing literature could be due to endogeneity problems. In the traditional approach, an FTA dummy variable is added on the right-hand side of the equation, which can be correct if a causal link proceeds from FTA coming into force and trade flows. However, the reverse (from trade flow to FTA) can also be true, leading to endogeneity problems and biased results.

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

4. Econometric methodology

Traditionally cross-sectional data was used in the gravity model to estimate bilateral trade determinants. However, it yields biased results due to heterogeneity (Chang & Wall, 2005), and recent works have used panel data which has many advantages over time series and cross-sectional data. Using panel data lets us capture the relevant relationship between variables over time. Besides, it is possible to monitor unobservable trading-

partner-pairs individual effects (Martinez-Zarzoso & Nowak-Lehmann, 2019). With the help of panel data, country and time-invariant variables can be controlled, which is not possible in cross-section or time-series studies. It gives more information and variability, efficiency and degree of freedom, and less collinearity among the variables.

Several estimation techniques are applied to estimate a gravity model with panel data. However, the choice of proper estimation technique in any model is of prime importance (Brun, Carrère et al., 2005). In most studies, the following OLS estimation technique has been used.

$$lnT_{ijt} = \alpha_0 + \alpha_1 lnY_{it} + \alpha_2 lnY_{jt} + \beta\ lnZ_{ij} + \delta lnW_{ijt} + \lambda D_{ij} + ln\epsilon_{ijt} \quad (2)$$

However, this technique provides biased results and deviates from key assumptions due to unobserved heterogeneity. With or without correcting heteroscedasticity, the OLS overestimates the actual standard errors (Gujarati, 2007). Thus the traditional gravity model with OLS provides inconsistent estimates. The solution to this problem is fixed effect or random effect estimation. The Hausman test is applied to choose between the two techniques. In the present study, results from the Hausman test support the random effect model (RE) as the p-value is greater than 5 percent. Besides, the present study intends to estimate the effect of both time-variant and time-invariant variables on the trade volume of Pakistan with its major trade partners. Ozdeser & Ertac (2010) are of the view that the random effect model is preferred to the fixed effect model when the interest is to study both time-invariant and time-variant variables. Moreover, to account for MTRs and time-specific shocks, exporter, importer, and year-specific factor have been controlled, which leads to equation (3):

$$lnT_{ijt} = \alpha_0 + \alpha_1 lnY_{it} + \alpha_2 lnY_{jt} + \beta\ lnZ_{ij} + \delta lnW_{ijt} + \lambda D_{ij} + E_t + I_t + Y_t + ln\epsilon_{ijt} \quad (3)$$

Also, Prais-Winsten regression with panel corrected standard error (PCSE) has been applied as suggested by Papazogulou et al. (2006), Marques (2008), and Brodzicki (2009). It is important to mention here 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).

The gravity model is also used to predict future trade flow between countries. The coefficients acquired from the model are employed to determine the trade potential of Pakistan with its major trade partners. Following Sultan & Munir (2015) and Dadakas et al.(2020), trade potential has been calculated with the help of the following formula:

$$TP_{pak,j,year} = \left(\frac{\text{X\^{}pak}}{\text{Xpak,year}}\right) \quad (4)$$

The trade potential is estimated for two recent years (2017 & 2018) by dividing predicted values estimated with actual values. The ratio of predicted over actual trade enables us to analyze and interpret Pakistan's trade potential with its major trade partners. If Pakistan exhibits a potential trade ratio greater than one against a particular country, trade with that partner can increase given the prevailing economic conditions as trade potential is said to exist. If the value against a specific country is less than one, the present maximum potential has been exhausted.

5. Data

The dataset used is a balanced panel that includes 28 top trade partners of Pakistan, covering 2002 to 2018. The dependent variable in the present study is total trade between countries measured in current U.S. dollars. Data for total trade has been collected from the Direction of Trade Statistics, IMF, whereas data for GDP and GDP per capita was extracted from World Development Indicators (WDI), World Bank.

The information for other variables, including distance, language, and contiguity (common border), was downloaded from the CEPII data set. Information regarding regional trade agreements (RTA) and free trade agreements (FTA) was collected from World Trade Organization. All data in value terms are in current U.S. dollars.

5.1 Econometric results

Given the presence of different constraints[3], the strategy defined consists of using various estimation techniques to compare estimates and check for the coherence of results. The present study uses three estimation techniques with panel data: pooled OLS, panel OLS with fixed or random effects, and panel-corrected standard error (PCSE).

[3] This hypothesis also used by Montant (2019).

Table 1: Gravity Model of Total Trade Estimates without FTA dummies

	1	2	3	4	5
	OLS	**RE**	**RE**	**RE**	**PCSE**
Variables	**LnTotal Trade**	**LnTotal Trade**	**LnTotal Trade**	**LnTotal Trade**	**LnTotal Trade**
Lgdp_exp	0.319***	0.304**	0.366***	0.154	0.307***
	(0.00)	(0.02)	(0.00)	(0.25)	(0.00)
Lgdp_imp	0.413	0.709***	0.554***	0.734***	0.671***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Ldistance	-0.915***	-3.102***	-0.873***	-3.157***	-2.894***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
LRFE	0.178***		0.084*	0.059	0.038
	(0.00)		(0.06)	(0.26)	(0.32)
Common	0.113*	3.748***		3.703***	3.466***
language	(0.10)	(0.00)		(0.00)	(0.00)
Contiguity	-0.228	1.953***		1.975***	2.033***
	(0.13)	(0.00)		(0.00)	(0.00)
Constant	7.168***	17.428***	2.579	20.636***	16.358***
	(0.00)	(0.00)	(0.40)	(0.00)	(0.00)
R-square (within)	0.419	0.62	0.62	0.59	0.90
Adj. R-square (overall)	0.412	0.92	0.38	0.89	
Observations	476	476	476	476	476
Hausman test		0.092	0.092	0.092	
Breusch-Pagan test		0.00	0.00	0.00	
Type of FE		Exporter Importer Year	Year	Exporter Importer	Exporter Importer Year

p-values in parentheses
*p <.10, **<.05, ***<.01

5.2 Estimates without FTA dummies

First, basic specification estimates are presented in Table 1. The "L" prefix indicates that the logarithm operator has been applied to those variables. Interpretations hereafter rest on the reasoning of the exporter country (that is, Pakistan).

Obtained estimates indicate that the GDP of both countries (reporter and partner) is positive and statistically significant as expected. The results support the theory that trade between countries increases with an increase in GDP and decreases with distance. The results indicate that the GDP of both countries (reporter and partner) is positively related to the trade of Pakistan with its major trading partners. Obtained estimates in the

model (1) indicate that bilateral trade grows with an increase in exporting and importing countries' GDP. With an increase in the GDP of a partner country of 10 percent, bilateral trade enhances by 7 percent, which indicates increasing trade opportunities between partner countries. On the other hand, an increase in the GDP of Pakistan leads to a less than proportionate increase in bilateral trade. In line with past literature, distance has a significant and negative impact on bilateral trade as with an increase in distance by 10 percent; trade volume declines by 31.02 percent—the significant and negative effects of distance highlight the need to improve infrastructure and connectivity between countries.

The difference in per capita GDP was included in model (3) in line with Sultan & Munir (2015) and Montant (2019) to account for factor endowments. The estimates coefficient is significant and has a positive sign indicating a higher trade volume between trading countries. From the positive sign of the coefficient, it can be concluded that the H-O hypothesis dominates the Linder hypothesis, which means that countries with different factor endowments have a higher inter-industry flow than intra-industry trade[4]. This result could suggest the domination of inter-industry trade between Pakistan and its major trading partners.

The positive and significant coefficient of common language indicates that countries that share a tongue trade more with each other than countries that speak different languages. The estimated coefficient in model (2) shows that holding all else constant, a common language between countries enhances bilateral trade. Similarly, model (2) results indicate that the common border also tends to increase trade between countries with contiguity than geographically distant countries.

Finally, various tests have been performed to check for the specification of the model. The Breusch-Pagan test has been applied to differentiate between pooled OLS and random effects models. Next, the Hausman test was used to distinguish between the fixed and random-effects models.

5.3 Estimates with FTA dummies

The main objective here is to estimate the impact of trade agreements on the total trade flow between Pakistan and its major trade

[4] That is, measurement of MRT, possible presence of heteroskedasticity, zero trade data and endogeneity problem with FTA binary variables.

partners. First, in line with Baier & Bergstrand (2007), fixed effects have been introduced in each model to overcome the endogeneity problem. The problem with this procedure is that time-invariant variables should be excluded due to perfect collinearity with fixed effects (Montant, 2019). These variables have been explained in Table 1. As discussed above, China has emerged as the largest trade partner of Pakistan, and the volume of bilateral trade has enhanced rapidly, particularly after an FTA was signed between the two countries in 2006. Thus given the increasing importance of China in Pakistan's trade, the present study aims to examine trade creation and trade diversion due to FTAs signed by Pakistan with China and other trade partners. Along with these FTAs, one regional trade agreement (SAFTA) was also examined to assess the trade opportunities of Pakistan in the immediate neighborhood.

5.4 Estimating trade creation and trade diversion effects of FTAs with a gravity model

With the help of the gravity model, trade creation and diversion effects of trade agreements can be estimated. Suppose countries like Pakistan and China signed an FTA, which other countries like India are not part of. If, after the FTA, Pakistan trades (exports and imports) more with China and less with India, trade diversion occurs. In contrast, trade creation results if Pakistan trades more with India and China after the FTA. The present analysis tests the FTA's trade creation and trade diversion effects.

The present study aims to find out whether FTA signed between China and Pakistan in 2006 is creating or diverting trade from other countries like India. We create two dummy variables in our gravity equation as follows:

$FTAboth_{ijt}$= 1 if China and Pakistan are members of FTA at time T or 0 otherwise.

$FTAone_{ijt}$= 1 if only China or Pakistan is part of FTA at time T or 0 otherwise.

A positive coefficient on both variables indicates trade creation, whereas positive on one and negative on the other indicate trade diversion. It should be noted that in variable FTAone, other FTAs signed by Pakistan with Iran, Malaysia, and Sri Lanka were also taken into account.

The empirical results of FTAs are summarized in Table 2. These results should be considered given that Pakistan signed bilateral and regional trade agreements to reinforce international trade; in other words it is expected that these agreements should have a positive impact on bilateral trade. The results suggest that these agreements have in fact positively impacted the trade relations of Pakistan with its main trade partners. The FE model has been estimated in models (2), (3), and (4). Each model introduces exporter and importer fixed effects to control multilateral trade resistance (Anderson & Van Wincoop, 2003). The value of the R-squared reported is significantly high, which indicates that the model has adequate power to explain the variation in trade flows of Pakistan with its major trade partners.

From Table 2, it is clear that the sign on the coefficient for *FTAboth* is positive and significant, which is an indication of trade creation between the two countries, China and Pakistan. On the other hand, the coefficient on *FTAone* is negative, indicating trade diversion. In a bilateral trade agreement, the negative impact of a trade agreement is obtained when two countries sign an agreement, but only one country adheres to it. Montant (2019) is of the view that these negative impacts can be explained by the lack of complementarity between partner countries. Gaurav & Bharti (2019) have concluded that it is just a myth to say that FTA between developing and least developing countries benefits only the developing countries.

Along with FTAs, countries that are part of the same RTA are expected to trade more with each other. The results reported in Table 2 show that RTA has enhanced trade between participating countries. The results of the RTA align with the findings of Gaurav & Bharti (2019), who have examined different FTAs signed by India with its trade partners.

Table 2: Total trade with FTA dummies

	1	2	3	4	5
	OLS	**FE**	**FE**	**FE**	**PCSE**
Variables	**LnTotal Trade**	**LnTotal Trade**	**LnTotal Trade**	**LnTotal Trade**	**LnTotal Trade**
Lgdp_exp	0.518***	0.342***	0.322***	0.369***	0.642***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Lgdp_imp	0.163***	0.638***	0.641***	0.589***	0.160***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
LRFE	0.071***	0.029	0.019	0.002	0.064***
	(0.00)	(0.50)	(0.66)	(0.96)	(0.00)
FTA both	1.756***	0.469***		0.567***	1.743***
	(0.00)	(0.01)		(0.00)	(0.00)
FTA one	-0.437***	-0.207*		-233**	-0.466***
	(0.00)	(0.07)		(0.04)	(0.00)
SAARC	0.380***		0.220**	0.297***	0.346***
	(0.01)		(0.02)	(0.00)	(0.00)
Constant	2.22	-5.763***	-5.236***	-4.921***	-0.969
	(0.32)	(0.00)	(0.00)	(0.00)	(0.79)
R-square	0.35	0.63	0.63	0.64	0.36
Adj. R-square	0.34	0.59	0.59	0.60	
Observations	476	476	476	476	476
Type of FE		Exporter Importer Year	Exporter Importer Year	Exporter Importer Year	Exporter Importer Year

p-values in parentheses
*p <.10, **<.05, ***<.01

6. Trade Potential of Pakistan

The trade potential of Pakistan with FTA partners shows that potential exists with Iran, Malaysia, and Sri Lanka, whereas, with China, trade potential has been exhausted. This shows that trade agreements with Iran, Malaysia, and Sri Lanka have not been utilized efficiently compared to the trade agreement with China. Among SAFTA and neighboring countries, Pakistan enjoys huge trade potential with Afghanistan, Bangladesh, India, and Hong Kong in both years. Moreover, Pakistan can benefit from improved trade relations with other countries like Russia, Saudi Arabia, and Turkey, with which trade potential exists, as shown in Table 3.

Table 3: Trade Potential of Pakistan with Top Trade Partners

Values more than 1		Values less than 1		Values above 1		Values below 1	
2017		2017		2018		2018	
Country	**Trade potential**	**Country**	**Trade potential**	**Country**	**Trade potential**	**Country**	**Trade**
Afghanistan	1.15	UAE	0.93	Afghanistan	1.19	UAE	0.87
Bangladesh	1.22	Australia	0.89	Australia	1.31		
Hong Kong	3.40	Belgium	0.83	Bangladesh	1.18	Belgium	0.93
India	1.21	Canada	0.80	Hong Kong	2.68	Canada	0.88
Iran	1.63	China	0.66	India	1.05	China	0.76
Kuwait	1.48	Germany	0.95	Iran	1.51	Germany	0.93
Sri Lanka	1.28	Spain	0.64	Kuwait	1.69	Spain	0.68
Malaysia	1.47	France	0.77	Sri Lanka	1.03	France	0.97
Russia	1.01	U.K	0.83	Malaysia	1.51	U.K	0.82
Saudi Arabia	1.58	Indonesia	0.66	Saudi Arabia	1.54	Indonesia	0.68
Singapore	1.17	Italy	0.90	Singapore	1.21	Italy	0.89
Turkey	1.12	Japan	0.76	USA	1.08	Japan	0.77
USA	1.08	Netherland	0.53			Netherland	0.68
		Oman	0.57			Oman	0.48
		Thailand	0.76			Russia	0.73
						Thailand	0.73
						Turkey	0.96

Source: Author's estimation

7. Conclusion

In the present study, Pakistan's trade determinants have been identified using the gravity model of trade. The model explains the trade flow between countries as being proportional to the economic size and inversely proportional to the geographical distance between them. In line with recent studies, augmented gravity, which includes other variables besides income and distance, has been used. The estimated coefficients show that the gravity equation fits the data well and delivers results in line with the theoretical predicted impacts of variables. The results show that along with income and distance, FTA, common language, and common borders play essential roles in the total trade of Pakistan with its main partners. In addition to identifying trade 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 the case of FTAs where only one country is part of the agreement, it leads to trade diversion. Pakistan shares a common border with China, offering opportunities in terms of low transport costs. The two countries have signed many trade agreements, including a FTA, which should be a base for removing remaining trade barriers and enhancing trade.

In addition, the RTA also indicates that removing trade barriers enhances the trade volume of participating countries.

The second part of the empirical analysis examines Pakistan's trade potential with its major trade partners. The results present a promising picture for the enhancement of the 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 trade potential with Iran, Malaysia, and Sri Lanka and has only exhausted its trade potential with China. Thus from the above study, we can conclude that Pakistan has not utilized its FTAs efficiently.

From the gravity model analysis, it is clear that Pakistan has enormous potential to benefit from economic opportunities worldwide. With a focus on factors identified as main determinants of trade with the outside world, the formation of appropriate policy can take the country on the path of sustainable development. The present study has highlighted factors like GDP, distance, common culture, and bilateral trade agreements, which play an important role in the trade relations of Pakistan with its major trade partners. As neighboring countries share common culture and transportation costs can be reduced with them by opening more and more border points, the policy priority for the government of Pakistan should be to improve trade relations with these countries. India and China are two emerging economic powers of the world, and the country has the opportunity to increase their development pace by benefiting from these two countries' economic rise.

The present empirical work can be extended in different ways. The panel data set can be expanded to include other trade partners of Pakistan. Besides, the role of tariff and non-tariff restrictions can be examined in future studies.

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