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## Trade Development in Pakistan: An Evidence by Gravity Model Approach

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**Abstract:** This study estimated the trade potential of Pakistan by using the gravity model of trade. In this research, the panel data is used for the time period 1995-2018 for 42 countries under analysis. The country's potential trade is predicted with some specific trading partners as well as globally in the context of coefficients results obtained from the model. The outcomes indicated that Pakistan's potential in terms of trade is at maximum level in (ASEAN), (EU), Middle East, Latin America and North America. The potential for trade is very lower with (SAARC) and (ECO). The key issues analysed by this study are; political and social barriers with neighbouring countries, specifically India and Pakistan, which are the biggest economies of SAARC. The same barriers seemed in the EU and NAFTA. In this situation, the Exports of Pakistan are badly impacted by political crises.

**Key Words:** Trade Potential, Augmented Gravity Model, Pakistan

**JEL Classification:**

### Introduction

The trade and trade share is a very important topic in today's world. "The universal economic adjustment is supported by trade liberal policies. The International Monetary Fund (IMF), World Trade Organization (WTO), World Bank and Asian Development Bank (ADB) are measured to be core pillars in this policy-making". The different trade pacts and international assimilation have supported overall economic development in the world. The different groups of the world as "South Asian Association for Regional Cooperation (SAARC), Economic Cooperation organisation (ECO), North American Free Trade Agreement

(NAFTA) and Association of South East Asian Nations (ASEAN), are prominent models of economic integration and economic development globally".

For the time being, the country integrated the diverse trade improvements according to the requirements under the guidance and supervision of the World Trade Organization (WTO) and the International Monetary Fund (IMF). The whole country is monitored by more volume of imports than exports from numerous areas of the world. Key markets of exports for Pakistan are the USA, China, Afghanistan, UK, Germany, France, Bangladesh, Italy and Spain, covering more

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than 60% of total export in these markets. On the other hand, the maximum importing markets of Pakistan are UAE, China, Kuwait, Saudi Arabia, Malaysia, Japan, India, USA, Germany and Indonesia. At present, China is a very noticeable trade mate of Pakistan in the context of goods and services and in the framework of the Indian economy, it is typically different where the exports are very negligible while imports are higher, specifically in life-saving drugs.

It has been observed that the development of any country depends on its exporting of goods and services rather than they are importing them. The main reason behind it is that in addition to consumer goods, most of the importing goods and services in Pakistan are luxurious goods and services. The global growth welfare depends upon exports of the world. The share of exports is in close combination with the growth as well as the welfare of the country. Pakistan exports are declining with neighbour countries as well as EU countries during the last two decades on average because of different national and international reasons. In addition to this, the agreement of the Generalised Scheme of Preference (GSP) was expected to bring up the trading potential of this country and Europe to an advanced level, but unfortunately, it did not remain productive. Exports of Pakistan to India, United Arab Emirates (UAE) and other Asian economies are not viewed as concentrated even in the existence of PTAs and FTAs with several countries as SAFTA in respect of India and Bangladesh. Therefore, it is very significant to explore the trade strength of the Pakistani economy in terms of both imports and exports independently.

### **Research Questions**

- What is the trading potential of Pakistan?
- Is there any effect of infrastructure on the trade potential of Pakistan?
- What is the influence of the real effective exchange rate on the trade potential of Pakistan?
- What is the role of policy-making in the trade potential of Pakistan?

- Is there any effect of the average tariff rate on the trade potential of Pakistan?

### **Literature Review**

[Amir. F et al. \(2021\)](#) worked on Pakistan and India's trade potential. They also discussed the opportunities and challenges for both countries. They considered MFN status in the analysis of some selected industries. Primary (qualitative) and secondary (quantitative) data are used in this study. This research suggested that the trade potential of both countries depends upon trust and political decision-making. Both countries are required to initiate a business-friendly environment and change the bureaucratic mentality.

[Gul. N and Iqbal. J \(2021\)](#) worked on tapping the international potential of Pakistan in secondary trade by using the gravity model and utilising terms of destination. They analysed different latest products for 101 potential trading partners. They divided goods into different food and non-food groups of items. They suggested the Pakistani economy work on non-traditional measures. The focus should also be strengthened for traditional trading partners.

[Irshad. SM \(2018\)](#) studied that Pakistan-China Free Trade Agreement (PCFTA) is the outcome of the friendship of decades between both countries by using the gravity model. They covered the years from 1992 to 2015 for panel data analysis. Here different econometric techniques are used as EGLS, REM, two-stage EGLS, GMM, Tobit and PPML on Pakistan and China mutual trade. They were of the view that the essential variables as a common border, trade openness, facilitation of WTO and Gross Domestic Product influenced positively trade, and on the other hand, inflation, the distance between countries and geographical position worked in a negative mode. The Pakistani industry should focus on new measures of trade to boost the trading capacity.

[Kiran et al. \(2018\)](#) analysed the export potential of Pakistan with SAFTA by applying the gravity model. In this research, panel data was employed by considering the years from 2003 to 2016. The variables used in this study

were GDP, GDP per Capita, distance, border and inflation. For estimation, multiple regression models were employed. The results of this study suggested that non-tariff barriers and trade liberal policies should be utilised for the promotion of overall trade.

Priede et al. (2017) tried to analyse the trade potential of China and Latvia by discussing the challenges and opportunities for both countries. Here the local and international market competition is discussed after Russian sanctions. The self-sustaining behaviour of the biggest economies as Germany, France, Italy, Spain and the Netherlands is discussed.

Veebel and Markus (2015) analysed the political decisions (sanctions) put by the EU on Russia and Russian resistance to the EU. This study helps us to find out the result of sanctions on the overall performance of the economies. This study is done on the theoretical model, which impacts overall work.

Noorani (2012) said that bilateral trade is the main cause of development in neighbouring countries. After the separation of the sub-continent, 70% of trade was between India and Pakistan, but unfortunately, due to conflict in 1948, the pattern changed.

[Simwaka \(2010\)](#) projected "the trade growth from southern Africa Development Communities FTA and analysed the variation between actual trade and potential trade amongst the member countries. He made estimation by applying the gravity method through the maximum likelihood method ranging from the yearly data of 1991 to 2000. This research inferred that the possible trade is higher than actual intraregional trade, and there is more trade potential in the sub-region. This research also revealed that FTA is very supportive of exchanging promotion in the region".

[Rahman \(2009\)](#) examined "the trade possibility of Australia. This research used data from 50 economies ranging from the period 2001-2005 and calculated the gravity model by Ordinary Least Square (OLS). The determinants of Australia's two-sided trade are trade openness, distance, GDP, GDP per

capita and common language. The analysis revealed that the main trade potential of Australia is linked with Singapore, Argentina, the Russian Federation, Portugal, Greece, Chile, the Philippines, Norway, Brazil and Bangladesh".

Butt (2008) analysed the trading capacity of Pakistan in the outlook of worldwide and mutual trade associates for 19 segments of Pakistan. He utilised the gravity model, which was estimated by the Pseudo maximum likelihood method. In this research, cultural, historical and geographical indicators were utilised, and the estimated values were found in accordance with the micro foundation of these variables. He summed up that the trade probability of Pakistan is at maximum for the USA, China, Hong Kong, Japan and India. Pakistan has the greatest opportunity of trade potential, especially in exports, with India in 13 sectors out of 15 sectors.

[Ruiz and Vilarrubia \(2007\)](#) tried to assess the possibility of export and import bases in Mediterranean countries by adding some significant variables on the basis of imports and exports to eradicate some biased calculations. They used 102 countries consisting the period 1976-2005 on the basis of panel data. The dummies were used for various economies to analyse the trading capacity on the basis of the gravity approach. This research concluded that the exclusion of multilateral trade limitation variables strongly affects the estimation of the strength of exports and agreements of trade, especially by indicating liberal trade policies. This study also depicted that expansion of export opportunities is available in the US economy.

[Rahman et al. \(2006\)](#) analysed the formation of trade and the diversification of trade impacts of RTAs and specially SAFTA. They used panel data covering 61 economies having a range from 1991-2003. On the basis of free trade agreements, the real effective exchange rate was mainly considered in the basic gravity model. In the gravity model, the economy based and fixed based are considered base models. They incorporated the gravity model Tobit approach and OLS estimation. This study reveals that SAPTA is

the core cause of the creation of exports within the same bloc and export diversification overall.

[Batra \(2004\)](#) worked on “the Indian economy’s international trade base by using the augmented gravity approach and ordinary least squares (OLS) procedures. The technique was primarily employed to assess worldwide trade flows and then to calculate the trade potential of the Indian economy with its trading countries. The distance and income variables with certain conditioning variables were utilised, which changed the trade pattern accordingly. The study illustrated that India has significant trade potential in the Asia-Pacific region, then followed by Western Europe and North America. The higher trade potential of Indian economy lies with China, UK, Italy and France when different restrictions and conditions are removed”.

[Lai and Zhu \(2004\)](#) studied the basic factors of two-way trade in 34 economies by utilising panel and cross-sectional data on the basis of distance, average tariff rate, time-varying tariff, and total factor productivity-adjusted wages. The results of this study suggested that the liberalisation of tariffs is more advantageous for developing economies as compared to advanced markets, and trade is shifted from desirable trade partners to non-favourable trade partners.

[Anderson and Wincoop \(2003\)](#) developed the basic foundation of the gravity model theoretically. The cost-benefit analysis was done in the different trading provinces of the US and Canada. This study found that the national borders decrease trade among states of both countries at a huge level as compared to no bordering states.

[Frankel and Romer \(1999\)](#) worked on international trade by considering the living standards. A cross-country analysis was conducted for the period 1985 for 63 countries. This research was done on the regional indicators to discover the ways and cause and effect between trade and income. The conclusion of this study showed that trade and income are positively correlated and as trade increases through human and capital factors in connection to geographical factors.

## Augmented Gravity Model

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Firstly, the traditional variables were used in the gravity model, but numerous other taming variables can be formulated for the basic gravity model for the real impact of other variables which affect bilateral trade among the countries. For example, the basic gravity model may contain GDP per capita in the trading economies. This boosts that models may include other independent variables such as the absolute value of per capita income differentials (PCGDPD) and dummies for the common border of the economies (BORDER), common language (LANG), and common socio-economic region (REGL), etc. Normally, the dummies of variables take the values of 0 and 1. The equation can be shown with the inclusion of additional variables as follows:

$$\begin{aligned} \text{Log}(Trade_{ij}) = & \alpha + \\ & \beta 1 \log(GDP_i / GDP_j) + \beta 2 \log(PCGDP_i / PCGDP_j) + \beta 3 \\ & \log(Distance_{ij}) + \beta 4 (BORDER_{ij}) + \\ & \beta 5 (LANG_{ij}) + \beta 6 (REGL_{ij}) + \beta 7 (PCGDPD_{ij}) + \mu_{ij} \quad (3) \end{aligned}$$

We shall use the above-extended equation (3) in our study with few further changes. For a detailed study, this equation will be very result oriented.

## Panel Data Framework

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Previously, classical gravity models were used in the single equation form and used cross-sectional data to calculate trade potential between the trading economies for a specific period of one year. While the panel data analysis delivers more target-oriented evidence by applying a single equation framework, it has developed more common since it has allowed the research of any topic on several grounds with chronological comments for a well-defined span of time.

## Data and Sample size

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For the analysis of the trade strength of Pakistan, we have to apply a two-stage method. Firstly, we have to evaluate the basic gravity model for the purpose of coefficients of trade streams of Pakistan to its exchanging economies. Further, the estimation of the augmented gravity model by the addition of supplementary variables is suggested to assess

the influence of respect to the economy of Pakistan with other potential economies of the world. In the end, the estimated coefficients are used for the analysis of the trade strength of Pakistan in connection to local trade allies.

Here, 42 economies of the world (comprising Pakistan) from various regional trade classes are taken for this research. These economies are selected on the basis of their trade importance and trading cooperation with Pakistan keeping in view the presence of data. The selection of economies is as under:

- SAARC: (Sri Lanka, Bangladesh, and India)
- ASEAN: (Thailand, Indonesia, the Philippines, and Malaysia.)
- NAFAT: (Canada and The US)
- Middle East: (Egypt, Iran, Turkey, Kuwait and Saudi Arabia).
- Far East: (China, Australia, Hong Kong, New Zealand, and Japan)
- Central and South America: (Argentina, Brazil, Chile and Mexico).

For this study, "annual data form 1995 to 2018 is used adding exports and imports of Pakistan with the trade associates included in the list cited above. The main source of data is the direction of the trade statistics yearbook (various issues) disseminated by the International Monetary Fund (IMF). Data on GDP, GDP per capita, Real Effective Exchange Rates, average tariff rate, infrastructure, total

Imports and total exports were taken from the World Development Indicators (2018). Data on the consumer price index (CPI) is acquired from the International Financial Statistics Database. The data on distance (which is taken in Kilo Meters) between Islamabad (the Capital City of Pakistan) and other capital cities of the world is obtained from [www.indo.com/distance](http://www.indo.com/distance)".

### Results of Gravity Model

"Equation (2) is estimated by using panel data through gravity model in consideration to economy's bilateral trade relationship with its trade countries".

### The Basic Gravity Model

The random effect model (REM) is applied with some modifications, and results are taken for 42 countries covering the time period 1995 to 2018. Here Pakistan (jth country), including 41 pairs of other observations, is included in the model:

$$\text{Log (Trade}_{ij})_t = \beta_1 + \beta_2 \log(\text{GDP}_i \cdot \text{GDP}_j)_t + \beta_3 \log(\text{Distance}_{ij})_t + W_{it} \quad (2)$$

By using the above model, the results are put in table 1. In this model, both basic variables (creation of GDP and distance) originated as significant. The results are desirable, having realistic magnitude and projecting signs.

**Table 1.** Basic Gravity Model

Independent Variable	Co-efficient	Standard Error	t-Statistics*
Constant	-6.02	6.55	-0.90
Product of GDP	0.89	0.03	16.02
Distance	-1.32	0.70	-2.11
Adjusted R-Square	0.60	-	-

\*the standard errors and t-statistics are heteroskedasticity-robust (white, 1980).

By adding the product of per capita GDP of trading partners of the economy of Pakistan as independent variables in connection to basic variables (such as GDP and Distance), this estimation is done. The results of the estimated model are not so much desirable. If we see all the three variables included in the estimation

are significant, having expected signs, but the rate of co-efficient of GDP is lower than its original value (i.e. in the nonappearance of per capita GDP). We can perceive the problem of multicollinearity because GDP and per capita GDP both are used in the model, so we have to droplet one variable from it.



### Augmented Gravity Model

The common form of model is:

$$\text{Log (Trade}_{it}) = \beta_0 + \beta_1 \log X_{1it} + \beta_2 \log X_{2it} + \dots + \delta_1 D_{1t} + \delta_2 D_{2t} + \dots + W_{it}$$

We have differentiated qualitative and quantitative variables with DX, where D stands for dummy variables and X stand for quantitative variables.

**Table 2.** Augmented Gravity Model

Explanatory Variable	Co-efficient	Std. Error*	t-statistic*
Constant	-0.89	5.08	-0.18
Product of GDP	0.90	0.06	16.97
Distance	-1.98	0.78	-3.67
Border	-1.31	0.68	-2.88
Language	0.85	0.36	2.36
SAARC	-0.18	0.46	-0.56
ECO	0.55	0.56	0.91
Per capita GDP Differential	0.14	0.06	2.38
Adjusted R <sup>2</sup>	0.59	-	-

\*The standard errors and t-statistics are heteroskedasticity.

The value on the basis of estimation is 0.14, which tells that bilateral trade develops as a variance of per capita GDP of Pakistan's economy and its trade associates increase, but it's not according to proportion. Therefore, estimated outcomes promote the H-O hypothesis (as the changes in factors endowments) in the perspective of the economy of Pakistan.

The dummies (qualitative) variables are also used for analysis. The border is used as a dummy variable in the case of Pakistan. The co-efficient of the border is negative due to the fact that majorly two countries, India & Iran, are added to the study, having a negative impact. Normally results are against the common wisdom and theory, but the reasons are very clear that exports and imports to India are limited owing to political barriers. On the other hand, trade with India and Iran is unrecorded (underground). The other problems, including lower skills, the same nature of products, low industrial growth and low level of technical progress, are the main reasons for not having proper trade potential. The result of the dummy variable for a common language is statistically significant and has a positive expected sign. The trade of Pakistan with other countries, sharing common language and culture, is at high potential.

### Further Augmentation of Gravity of Model

The gravity model is further augmented with certain explanatory variables practically; trade openness, real effective exchange rate, infrastructure, and average tariff rate to analyse the important parameters of worldwide trade. The addition of these variables will assess the robustness of the model. The researchers used some additional dummy variables such as GDP to trade ratio and share of custom duties. In the literature review, Rehman (2003) employed the trade-GDP ratio in the gravity model to examine the trade flows of the economy of Bangladesh with its trading partners. On the basis of the availability of data for concerned countries, we will use other variables for trade openness. This model shows some improvement on the basic model in terms of goodness of fit. The co-efficient of basic variables (GDP and distance) is statistically significant and has expected signs. This extended model also supported the basic gravity theory. Common border, ECO, and SAARC dummies also stood the same as in the previous model. The co-efficient of GDP differential is significant and Positive, as explained and supported by the H-O hypothesis. The real effective exchange rate is at 1 per cent as currency depreciation has a positive impact on Pakistan's trade. The

infrastructure is also statistically significant at 1 per cent. As it improves, it impacts positively on Pakistan Trade. In the same way average tariff rate impacted negatively when importing

countries charged the average tariff rate on imports. The analysis of the average tariff rate clearly indicated that it contributes negatively.

**Table 3.** Further Extended Augmentation

Explanatory Variable	Co-efficient	Std. Error*	t-statistic*
Constant	-0.77	5.32	-0.17
Product of GDP	0.87	0.05	17.66
Distance	-1.55	0.61	-3.52
Border	-2.60	0.35	-3.16
Language	0.78	0.62	1.86
SAARC	0.36	0.47	0.61
ECO	1.50	0.71	1.87
Per capita GDP Differential	0.17	0.06	2.86
Real Effective Exchange rate	0.07	0.08	3.99
Trade Openness (Partner Country)	0.51	0.16	3.19
Trade Openness (Pakistan)	1.26	0.39	3.91
Infrastructure	2.16	0.78	2.61
Average tariff rate	-1.9	0.6	-1.99
Adjusted R <sup>2</sup>	0.61	-	-

Here we are interested in trade openness having a positive impact by liberalising the trade policy and by ending barriers to the economy. The infrastructure also impacted positively by improving roads and other basic facilities. The average tariff rate of any country impacted negatively on the trade potential if any country increased the tariff rate on the import.

### Segmented Gravity Model

The effects of the gravity model are put when the economies are put into various regional groups such as; the EU, NAFTA, ECO, SARC,

ASEAN, and countries of the Middle East, Latin America and the far East. Our target here is to compare these results with other larger models and to keep a deeper look at the relative importance of regional groups of Pakistan. Firstly, now the number of countries is distributed in small cross-sectional groups where the time span is unchanged. The regression covers the time 1995-2018. Here the analysis of three variables is done in which the product of GDP, distance and the trade-GDP ratio is used as a Proxy for trade openness. Few dummy variables are omitted because of the reason to avoid the problem of identification.

**Table 4.** Gravity Models Comparative Position

Model Variable	Constant	Product of GDP	Distance	Trade/GDP (Partner)	Adjusted R <sup>2</sup>
Pak-Versus-all countries	-0.90 (5.99)	0.88 (0.06)	-1.86 (0.71)	0.51 (0.15)	0.58
Pak-Versus- EU	-28.21 (6.77)	0.89 (0.08)	-0.72 (0.9)	-0.64 (0.19)	0.69
Pak-Versus-ASIAN	-3.28 (2.8)	0.68 (0.05)	0.26 (-6.88)	0.19 (0.08)	0.53
Pak-Versus-SAARC-ECO	-11.96 (4.28)	0.71 (0.09)	-0.88 (0.66)	0.28 (0.32)	0.56
Pak-Versus-Middle East	47.99	0.94	-6.28	1.06	0.40

Model Variable	Constant	Product of GDP	Distance	Trade/GDP (Partner)	Adjusted R <sup>2</sup>
	(10.9)	(0.09)	(1.22)	(0.13)	
Pak-Versus-Far east	-2.99 (2.1)	0.66 (0.06)	-0.88 (0.20)	0.19 (0.11)	0.78
Pak-Versus-NAFTA-LAT-America	-58 (38)	1.77 (0.19)	-2.2 (3.82)	0.18 (0.20)	0.18

Note: The standard errors given in parentheses and these are heteroskedasticity robust (White 1980).

If we see the co-efficient of size (Product of GDP) are similar besides NAFTA having a very large value because of the very large US economy. The value of distance in the aspect of sign is the same, but its magnitude changes at a significant level; even though distance increases the transportation cost but it may overcome with other factors, which may increase trade. The trade openness except EU is positive as Pakistan has the largest potential to expand trade. The Pakistani trade potential is also higher with ASEAN on the basis of trade liberalisation. SAARC and ECO have also expected signs of having large economies to increase trade accordingly. The Countries of the Middle East also have a positive and expected sign as co-efficient are statistically significant. The other regional group of Far East countries also depicted the expected signs for all co-efficient. The last important group is NAFTA and Latin America. These groups are merged to facilitate the estimation process and some data bindings.

### Evaluation of Overall Trade Potential

Here the trade potential is evaluated on the basis of co-efficient from overall generally augmented models and models. On the basis of segmentation, we have to compare the models on both sets of estimates. Our estimation suggests that Pakistan have sufficient potential to expand trade with different countries of the world on average, including New Zealand, Australia, Switzerland, Hong Kong, Brazil, Sweden, Austria, Philippe, Sri Lanka, Bangladesh, Malaysia, Kuwait, Germany, Canada, Iran, China, France, Japan, Italy, Spain, Korea, Denmark, and the UK. It has been observed that the maximum ratio of trade potential exists in Brazil and Norway. If the P/A ratio reaches 1, then it means Pakistan trade is reached its potential level. On the other hand, if its value is less than 1 then the trade has exceeded the predicted level, as in the case of Chile and Mexico.

Table 5. Overall Trade Potential of Pakistan

Indicator Countries	(P-A) 2000-2004	(P-A) 2005-2009	(P-A) 2010-2013	(P-A)2014-2018
Australia	0.8071	-0.4712	-0.3316	-0.6668
Bangladesh	-2.7680	-2.7681	-4.60129	-3.5070
Belgium	-1.4867	-0.016**	-0.0216**	0.1550
Brazil	0.7121	-0.2071	0.1770	0.1886
Canada	0.0312	-0.0356**	0.09612	0.0871
Chile	-0.5604	-0.0808**	-0.1826**	-0.1716**
China	-0.2171**	-0.7751	-0.7027	-0.7287
Denmark	1.3337*	1.0515	0.4787	0.3877
Egypt	0.0307	-0.3312	-0.0739**	-0.0616**
France	0.5717	0.6600	0.5131	0.6323
Germany	0.3331	0.1232	0.2122	0.2233
Greece	0.8161	1.1231*	1.3361*	1.2233*
Hong Kong	0.0151	0.2835	0.8061	0.9031
Hungary	1.5541*	1.2312*	1.8109*	1.7108*



Indicator Countries	(P-A) 2000-2004	(P-A) 2005-2009	(P-A) 2010-2013	(P-A)2014-2018
India	-0.2266**	-0.6612	-0.4381	-0.2131**
Indonesia	-1.6121	-1.7191	-1.5555	1.5121
Iran	0.4919	0.5021	1.4121	1.5121
Italy	0.3121	0.1525	0.3071	0.4051
Japan	0.7009	0.4131	0.4533	0.5211
Kuwait	-1.6216	-1.3712	-1.7210	-1.8218
Malaysia	-0.3913**	-0.4616	-0.8882	-0.9922
Mexico	1.6121*	0.9332	0.6631	0.8121
Netherland	0.0616	0.2056	0.2991	0.3552
New Zealand	-0.1602	-0.3151	-0.0144**	-0.0144**
Norway	1.8535*	1.6571*	2.0401*	2.0101*
Philippine	1.4121	0.8201	0.8966	0.9155
Portugal	0.1713	0.3641	0.3842	0.2841
Saudi Arabia	-1.5027	-1.5061	-1.2719	-1.1810
Singapore	0.2131	0.5071	0.6551	0.5441
Spain	0.2612	0.2661	0.0415	0.0313
Sri Lanka	-1.6033	-1.5612	-1.5313	-1.5261
Sweden	1.2291	0.3161	0.8121	0.9618
Switzerland	0.1194	0.2818	0.7122	0.8133
Thailand	-0.9121	-0.8494	-0.7961	-0.8762
Turkey	0.5181	0.3540	0.2161	0.4121
UAE	-1.8218	-1.7419	-2.1553	-2.3552
UK	-0.5531**	-0.4151	-0.4223	-0.5112
USA	-1.0034	-1.0620	-0.9042	-0.8032

Note: \* shoes highest trade potential, while \*\* indicates exhausted trade potential.

In the above table, the study is done on an average of four years and five years time period. The average trade potential (P-A) is calculated on the basis of the highest and lowest trade potential. China, India, Malaysia, the UK etc., have the highest trade potential for the period 2005 to 2009 and for the period 2014 to 2018, respectively. For the period 2014

to 2018, Norway, Hungary, New Zealand and Egypt have also highest trade potential. The trade potential is estimated through the gravity model on the basis of different variables such as GDP, distance, border, real effective exchange rate, trade openness, infrastructure and average tariff rate.

Table 6. Regional Trade Potential of Pakistan

Indicator Countries	P/A 2001-2005	Indicator Countries	P/A 2001-2005
<b>EU</b>			
Austria	1.054	Sweden	1.319
Germany	1.139	Switzerland	1.135
France	1.129	Belgium	0.753
UK	1.280	Spain	0.952
Italy	1.024	Greece	0.825
Norway	1.350	Netherland	0.889
Portugal	1.508		
<b>Saarc Eco</b>			
Bangladesh	1.343	Iran	0.490
Sri Lanka	2.900	Turkey	0.666

Indicator Countries	P/A 2001-2005	Indicator Countries	P/A 2001-2005
India	0.689		
ASEAN			
Malaysia	1.018	Thailand	1.509
Philippines	5.155	Indonesia	0.377
<b>Far East</b>			
Japan	1.618	Australia	0.909
Korea	1.082	China	0.942
New Zealand	1.075	Hong Kong	0.893
<b>The Middle East and ECO</b>			
Iran	1.715	Saudi Arabia	0.886
Kuwait	1.308	Turkey	0.885
Egypt	0.486		
<b>The Middle East and Africa</b>			
Kuwait	1.469	Morocco	0.170
Saudi Arabia	0.526	Kenya	0.810
Egypt	0.342	Nigeria	0.514
<b>NAFTA and Latin America</b>			
USA	1.526	Canada	1.772
Argentina	1.286	Chile	0.541
Brazil	2.916	Mexico	0.612

Note:  $P/A > 1$  shows that there is high trade potential and exhausted potential otherwise.

"The outcomes of segmented gravity models are used to analyse the trade strength of Pakistan. Various quantitative analysis is done by excluding dummies. The results are suggested that Pakistan has high trade potential with different countries of the world. If we see the initial years from 2001 to 2005, the maximum trade potential is found in Western Europe, the Middle East, and Latin America, as suggested in the Asia-Pacific region, followed by western Europe, the middle east and Latin America. If we consider the Asia Pacific region, Pakistan has significant trade potential with Japan, Sri Lanka, Bangladesh, Malaysia, the Philippines and New Zealand". In addition, to this, in European Union, the potential for trade expansion is only with Iran, and in Latin America, there is high trade potential with NAFTA countries. There is also a good expectation of trade promotion in Canada.

### Conclusion and Policy Recommendations

In research and estimation techniques, almost all the approaches suffer from different weaknesses. This study is based on the availability, authenticity, rationality and

completeness of data. The trade strength, when researched on the basis of the gravity model approach, has certain limitations.

Its approach to common sense is that when countries are nearer and they have a common

language and culture, then they should have comparatively strong trade relations. Sometimes potential will surpasses the economics and commercial approaches. Our outcomes clearly suggested that the Pakistani economy has the maximum strength of trade in (ASEAN).

The exports and imports with SAARC countries are very low due to the fact that was having different trade barriers and political instability. This trade should be considered on the basis of the underground world for the period 2002 to 2005, the trade with India has exceeded its predicted level. Our trade with India should be higher than existed level. India has even given Pakistan the status of the most favoured nation (MFN). After that no significant level of exports as it is clear that there are social, economic and political tensions between both mentioned countries. Pakistan and India have the same level of

nature of products, so these countries cannot fulfil their trade need even if the barriers are removed. No doubt, there are few valid trade avenues between both countries to boost the relations. After the launch of SAFTA in 2006, the terms of trade are improved by reducing trade barriers for trade liberal policies in the region.

### **On the Basis of the Results, We Recommend the Following**

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Almost all western countries are improving restrictions on the quality of Pakistani products. These trade barriers should be reduced.

There is no proper facility of transport and infrastructure in Asian countries, so there should be an improvement for successful trade flows in Pakistan.

There should be proper trade policy formulation for exports and imports.

South Asian Countries should use a new approach for successful trade to show the actual trade potential of SAARC and ECO.

The quality of products should be improved to compete in the international market through cost-benefit analysis and rational policy making.

There should be a proper marking of political, social and diplomatic relations for the promotion of trade at the national and international levels.

Especially Pakistan should focus on ASEAN and the Middle East, where there is a higher potential for trade.

There should be a focus on the latest technology products for competitive markets.

## References

- Amir, F., Dey, S., Jamali, G. A. & Mulluk, A. W. (2021). Pakistan and India Trade: Prospects and challenges, *Global Scientific Journals*, 9, 2,
- Achakzai, J. K. (2006). Intra-ECO Trade: A Potential Region for Pakistan's Future Trade. *The Pakistan Development Review*, 45(3), 425–437. <https://doi.org/10.30541/v45i3pp.425-437>
- Ahmed, S. & Ghani, E. (2007), *South Asia's Growth and Regional Integration; an overview. In South Asia; Growth and Regional Integration*. Washington, DC, World Bank.
- Anderson, J.E. (1979). A Theoretical Foundation for the Gravity Equation. *American Economic Review*, 69(1), 106–116.
- Anderson, J. E, & van Wincoop, E. (2001). *Border, Trade and welfare, Working Paper 508*. Boston, MA; Department of Economics, Boston College.
- Baltagi, B. H. (2000). *Econometric Analysis of Panel Data, Chapter 14*. Englewood Cliffs, NJ; Prentice-Hall.
- Akhtar, S., & Malik, F. (2000). Pakistan's trade performance vis-a-vis its major trading. *The Pakistan Development Review*, 39(1), 37-50.
- Batra, A. (2006). India's Global Trade Potential: The Gravity Model Approach. *Global Economic Review*, 35(3), 327–361. <https://doi.org/10.1080/12265080600888090>
- Bussiere, M., & Schnatz, B. (2006). Evaluating China's Integration in World Trade with a Gravity Model Based Benchmark, Working Paper 693, Frankfurt; European Central Bank.
- Jomit, C. P. (2014). Export Potential of Environmental Goods in India: A Gravity Model Analysis. *Transnational Corporations Review*, 6(2), 115–131. <https://doi.org/10.1080/19186444.2014.11658386>
- Alexander, B. D. (2009). The Gravity Model and the Test for the Regional Integration Effect: The Case of Tanzania. *The Journal of Developing Areas*, 43(1), 25–44. <https://doi.org/10.1353/jda.0.0040>
- Frankel, J. A., & Rome, D. (1999). Does trade causes economic growth? *American Economic Review*, 89(3), 379-399.
- Fontoura, M. P., Marttnez-Galln, E., & Dias Proenca, I. M. (2006). Trade Potential in an Enlarged European Union: A Recent Approach. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.2718065>
- Gujrati, B. N. (2003). *Panel Data Regression Models*. In Basic Econometrics (4th ed.). New York; McGraw-Hill.
- Gul, N., & M. Yasin, H. (2011). The Trade Potential of Pakistan: An Application of the Gravity Model. *The Lahore Journal Of Economics*, 16(1), 23–62. <https://doi.org/10.35536/lje.2011.v16.i1.a2>
- Greenway, D. N. (2003). *Panel Data Regression Models*. In basic Economics(4th.ed) New York; McGraw-Hill.
- Kumar, A. (2006). *China-Pakistan Economics Relations, Special Report30*, New Delhi; Institute of Peace and Conflict Studies.
- Kiran et al. (2018). Determinants of trade potential between Pakistan and SAFTA countries by using gravity model, *City University Research Journal*, 8, 2.
- Lai, H., & Chun Zhu, S. (2004). The determinates of bilateral trade. *Canadian Journal of Economics*, 37(2), 459-483.
- Ozder, & Dizen, E. (2010). Turkey's Trade potential with EuroZone Countries; A Gravity Study, *European Journal of Scientific Research*, 43(1),
- Rahman, M. M. (2003). A Panel Analysis of Bangladesh's Trade; The Gravity Model Approach, Sydney; University of Sydney.
- Rahman, M. M., Shadat, W. B., Nd Das, N. C. (2006). *Trade Potential in SAFTA; An application of Augmented Gravity Model, Paper 61*, Dhaka, Centre for Policy Dialogue.
- Rehman, M. M. (2009). *Australia's global trade potential; evidence from the gravity model analysis. In Proceedings of the 2009 Oxford Business and Economics Conference*, 141, Oxford University Press.

- Roy, M., & Rayhan, M. I. (2012). Import Flows of Bangladesh: Gravity Model Approach under Panel Data Methodology. *Dhaka University Journal of Science*, 60(2), 153–157.  
<https://doi.org/10.3329/dujs.v60i2.11485>
- Ruiz, J. M., & Vilarrubia, J. M. (2007). The Wise Use of Dummies in Gravity Models: Export Potentials in the Euromed Region. *SSRN Electronic Journal*.  
<https://doi.org/10.2139/ssrn.997992>
- Irshad, M. S., Xin, Q., Hui, Z., & Arshad, H. (2018). An empirical analysis of Pakistan's bilateral trade and trade potential with China: A gravity model approach. *Cogent Economics & Finance*, 6(1), 1504409.  
<https://doi.org/10.1080/23322039.2018.1504409>
- Simwaka, K. (2010). An Empirical Evaluation of Trade Potential on Southern African Development Community. *AERC Research Paper No, 235*.
- Wang, C., Wei, Y., & Liu, X. (2010). Determinants of bilateral trade flow in OECD countries; evidence from gravity panel data models. *The World Economy*, 33(7), 894-915.
- World Bank. (2007). World Economy Gravity Models. In World Development Indicators, [CD-ROM].