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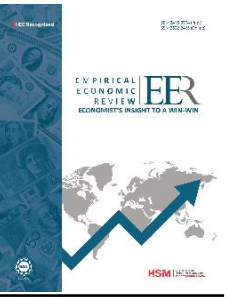

Title:	**Trade Opportunities, Competitiveness, and Trade Potential in Pakistan: An Analysis of GCC Regional Countries**
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Trade Opportunities, Competitiveness, and Trade Potential in Pakistan: An Analysis of GCC Regional Countries

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Abstract

Pakistan and GCC region share a common religion and cultural characteristics, increasing their importance to Pakistan regarding trade policy. To promote economic, cultural, and technical cooperation with GCC members, Pakistan is committed to signing a free trade arrangement with GCC. The current study aims to examine Pakistan's trade opportunities, competitiveness, and trade potential in the Gulf Cooperation Council (GCC) region during 2003-2017. The results show that Pakistan has the maximum comparative and competitive advantage with Bahrain, Saudi Arabia, and UAE among GCC countries. PPML (Poisson Pseudo-Maximum Likelihood) shows that the main trade indicators responsible for Pakistan's bilateral trade enhancement are GDP in both countries and partner country trade openness. Among the GCC countries, Pakistan has the highest trade potential with Bahrain, Kuwait, and Qatar. In contrast, with UAE and Saudi Arabia, Pakistan has a lower trade potential than the rest of the countries. Therefore, there is an essential need to sign FTA with the GCC countries before boosting the mutual trade and cooperation of Pakistan. The analysis exhorts Pakistan to improve the macroeconomic framework for investment purpose to promote investment in labour-intensive industries which need improvement. Future studies suggested to conduct an in-depth study to pinpoint the microeconomic and macroeconomic factors causing the decline in competitiveness of Pakistan's main labour-intensive businesses in both the manufacturing and agricultural sectors with GCC nations.

Keywords: Gulf Cooperation Council (GCC), PPML, revealed comparative advantage (RCA), trade potential, trade competitiveness

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Introduction

Gulf Cooperation Council (GCC) is a regional, intergovernmental union which comprises of Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates (UAE) to enhance cooperation with each other in trade, religion, finance, tourism, research and technical progress, industry, agriculture, and administration. Some GCC countries are considered the world's fastest-growing economies because of their gas and oil revenues. About 30% of the world's oil is positioned in these states (British Petroleum Company [BPC], 2012). Therefore, the oil and gas producing countries have their dominant position which attracts the world toward this region, especially the Asian economies. In Asia, the GCC's top export partners are China, India, South Korea, and Japan and imports from China, USA, India and UAE (Ulrichsen, 2017). The modern edge world is changing day by day, and developing economies are searching for new markets to expand the list of buyers (Irshad & Xin, 2014).

Like these developing economies, Pakistan is also shifting its focus towards new markets, especially to ASEAN and Gulf countries. Irshad et al. (2015) stated that China-Pakistan Economic Corridor (CPEC) would also push Pakistan's economic growth to participate in world trade with competitive price and production. Since its independence, Pakistan has had long-standing cultural, political, and economic relationships with GCC states, particularly with the United Arab Emirates, followed by Saudi Arabia (see Figure 1). Pakistan and the GCC region share a common religion and cultural characteristics which increases their importance to Pakistan regarding its trade policy. To promote economic, cultural, and technical cooperation with the members, Pakistan is committed to sign a free trade arrangement (FTA) with the GCC. Therefore, Pakistan and GCC ministers started negotiations and approved the initial framework. This agreement would help to increase Pakistan's exports of fruits, meat, and rice and improve its private-sector trade. In 2017, Pakistan's export to the GCC was $1.52 billion, with a share of 7% of Pakistan's total exports, while the imports are $3.82 billion which is 24.5% of Pakistan's total imports (see Table 1).

Table 1

Pakistan Exports to GCC as a Share of Total Export and Import, (1000 US$)

Year	Pak Export to GCC	Pakistan Total export	Pak export to GCC share in Pak exp(%)	Pak Import from GCC	Pakistan Total import	Pak import from GCC share in Pak imp. (%)
2003	1783842	11930076	15	3821510	13048609	29.3
2004	602398	12585424	4.79	3393794	15420356	22
2005	1822660	16050201	11.4	6802391	25096575	27.1
2006	1775946	16932873	10.5	9190040	29825754	30.8
2007	2765897	17838407	15.5	9211672	32593936	28.3
2008	3145349	20279046	15.5	14208610	42326567	33.6
2009	2418037	17554698	13.8	9223966	31583718	29.2
2010	2662869	21413103	12.4	12294592	37537025	32.8
2011	2809209	25343769	11.1	16139131	43578259	37
2012	3706749	24613676	15.1	16916511	43813262	38.6
2013	2727132	25120883	10.9	16905283	43775183	38.6
2014	2274159	24722182	9.2	15875384	47544889	33.4
2015	1733786	22089018	7.85	11416054	43989645	26
2016	1489391	20533793	7.25	10432434	46998269	22.2
2017	1520603	21877787	6.95	14084516	57440013	24.5

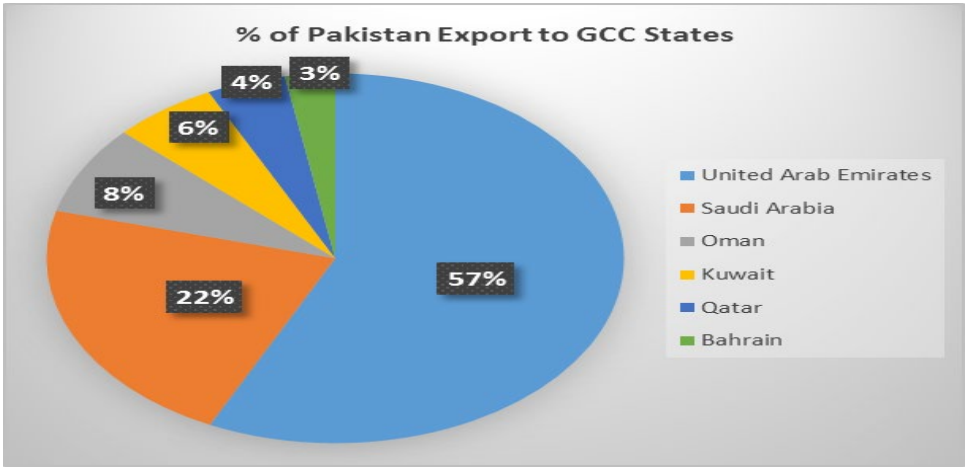
Note. Source: Trade map

Pakistan's economy is agro-based, and its exports is mainly centralized on a few products which are primary natural products and have low export value. The top exported products of Pakistan to the GCC in 2017 are cereal, meat, and textile with a collective share of 41.5% in Pakistan's total export to these states, while in the same period, the imports from the GCC consist of; mineral fuels, organic chemicals, plastics, and natural or cultured pearls. Pakistan's exports to the GCC are lower than GCC's exports to Pakistan. Even though, Pakistan has a friendly relationship (besides trade) with these Muslim states still it didn't get the expected benefits. Pakistan has huge trade potential with these oil-producing economies. Therefore, to achieve

the desired benefits, Pakistan needs to increase its trade volume with these Gulf States by making FTA and eliminating the tariff, especially on oil and fuels. The current study aims to investigate Pakistan's trade potential and competitiveness with the GCC states by utilizing latest estimation technique Poisson Pseudo Maximum Likelihood (PPML) estimator proposed by Silva and Tenreyro (2006, 2011, 2022). and revealed the comparative advantages suggested by the previous studies. Furthermore, the current study provides a complete guideline to the policymakers regarding regional connectivity and product specialization.

Figure 1

Percentage Share of Pakistan's Exports to the GCC States in 2017



Note. Source: Trade Map

Literature Review

Revealed Comparative Advantage (RCA)

The inspiration for organized trade was first presented by Adam Smith in his famous book *An Enquiry into the Nature and Causes of the Wealth of Nations* in 1776. Smith presented the "Absolute Advantage Theory". According to Smith's theory, countries can benefit from their trade after attaining specialization in a commodity with an absolute advantage. However, this theory cannot answer the question, if there is no absolute advantage for a country, what will be the trade pattern? To answer this question, in 1817, David Ricardo presented his theory of comparative advantage. According to his theory, two countries can conduct a mutually

beneficial trade in those commodities in which both countries have the lowest opportunity cost. Many economists clarified comparative advantage theory over time with Heckscher-Ohlin (H-O) and Wassily Leontief and modern-day economists. Balassa (1965) created an index called Exposed Comparative Advantage (RCA) to classify the comparative advantage role that can be used to assess the relative rating of the comparative advantage. After (Balassa, 1965) many studies (Memedović, 1994; Donges & Riedel, 1977; Bowen, 1983; Liesner, 1958; Vollrath, 1991) increased the outline of the RCA. The concept of RCA was revised and further updated in such a manner that there is an excessive number of RCA steps. Flowing are the RCAs employed in the current study. Formally, the basic Balassa RCA Index is as follows:

$$\boldsymbol{RCA_{ij}} = \frac{\boldsymbol{X_{ij}/X_i}}{\boldsymbol{X_{nj}/X_n}} \quad (1)$$

Where $\boldsymbol{X_{ij}}$ is the country Pakistan's exports of product j to partners in the particular time period, $\boldsymbol{X_i}$ is Pakistan's total exports to partners while $\boldsymbol{X_{nj}}$ represents the world export of product j and $\boldsymbol{X_n}$ is the total exports of the world. When the result is RCA>1, it assesses that Pakistan has a comparative advantage in the specific product, while RCA<1 exhibit that Pakistan has revealed a comparative disadvantage. Balassa (1967) developed another form of RCA named 'Dynamic Revealed Comparative Advantage' (DRCA) which showed the changes over time. The formula of the DRCA index is;

$$\boldsymbol{DRCA_{ik}} = \left(\frac{\boldsymbol{X_{ikt}}}{\boldsymbol{X_{it}}} + \frac{\boldsymbol{X_{ikt}}}{\boldsymbol{X_{it}}}\right) \times \left(\frac{\boldsymbol{X_{ikt}}}{\boldsymbol{X_{it}}} \times \frac{\boldsymbol{X_{ik_0}}}{\boldsymbol{X_{i0}}}\right) \quad (2)$$

Where $\boldsymbol{DRCA_{ik}}$ is the dynamic revealed comparative advantage of Pakistan in commodity k, while $\boldsymbol{X_{itk}/X_{it}} = \frac{\boldsymbol{X_{itk}/X_{it}}}{\boldsymbol{X_{wkt}/X_{wt}}} = \boldsymbol{RCA_t}$ is the RCA value of commodity k in the terminal year (t) and $\boldsymbol{X_{ik0}/X_{i0}} = \frac{\boldsymbol{X_{ik0}/X_{i0}}}{\boldsymbol{X_{wk0}/X_{w0}}} = \boldsymbol{RCA_0}$ is the RCA value of commodity k in base year (0). The value of the DRCA varies from nil to endless; the value above 100 shows the comparative advantage, whereas the value below 100 demonstrates the comparative disadvantage in commodity production k. Another form of RCA is addressed by Vollrath (1991), the Relative Trade Advantage (RTA), the Relative Export Advantage (REA), and the Revealed Competitiveness

(RC). The main distinction between Vollrath and Balassa's index, even then, would be that it discourages double counting.

$$\boldsymbol{RTA}^{1} = \left(\frac{\frac{X_{ij}}{X_{ik}}}{\frac{X_{nj}}{X_{nk}}} \right) - \left(\frac{\frac{M_{ij}}{M_{ik}}}{\frac{M_{nj}}{M_{nk}}} \right) \tag{3}$$

$$\boldsymbol{RC} = \boldsymbol{ln}\left(\frac{\frac{X_{ij}}{X_{ik}}}{\frac{X_{nj}}{X_{nk}}} \right) - \boldsymbol{ln}\left(\frac{\frac{M_{ij}}{M_{ik}}}{\frac{M_{nj}}{M_{nk}}} \right) \tag{4}$$

In which $\boldsymbol{X_{ij}}$ is the product j export of country i, and $\boldsymbol{X_{ik}}$ represents the nation i total exports of other products; $\boldsymbol{X_{nj}}$ is the global exports of product j and $\boldsymbol{X_{nk}}$ is the world total exports; $\boldsymbol{M_{ij}}$ is the import of product j by country i and $\boldsymbol{M_{ik}}$ represents the country i total imports of other products; lastly, $\boldsymbol{M_{nj}}$ and $\boldsymbol{M_{nk}}$ correspond to the imports of commodity j and total imports of other commodities by the world. The positive values of RTA, REA, or the competitive advantage, while the negative values show the competitive disadvantage (Vollrath, 1991). It should be noted that Balassa and Vollrath are based on different ideas. Therefore, they are not strictly comparable. There is a rich literature on Pakistan's business sector that examines Pakistan's competitive and comparative advantage in various sectors using RCA indices with different countries. Therefore, Zaheer et al. (2015) used Balassa to expose the comparative advantage relative to the world for Pakistan's cotton industry and concluded that Pakistan's cotton industry is going down in productivity and substantially by losing its ability in the exports of Pakistan. The RCA method examined the trade specialization of leather products in the selected Asian economies by Shahab & Mahmood (2013) and concluded that Pakistan has the highest comparative advantage in leather products over selected economies. Before and after quota, Ahmad & Kalim's (2013) analysis made it possible to estimate the competitive advantage of Pakistan's a textile and apparel industry. Their findings indicated that in apparel goods, Pakistan enjoys a competitive advantage though experiencing a lower comparative advantage in the apparel market. Following a custom union deal with the European

[1] Where, $\boldsymbol{REA} = \boldsymbol{ln}\left(\frac{\frac{X_{ij}}{X_{ik}}}{\frac{X_{nj}}{X_{nk}}} \right)$ and $\boldsymbol{RMA} = \boldsymbol{ln}\left(\frac{\frac{M_{ij}}{M_{ik}}}{\frac{M_{nj}}{M_{nk}}} \right)$ then Equation 4 will appear.

Union, Topcu & Kilavuz (2012) used the competition indices of RCA and Vollrath to evaluate the Turkish commodity competitiveness. Their findings found that in low and medium-tech goods, Turkey has a comparative advantage, whereas in high-tech products it has a comparative disadvantage. Irshad & Xin (2017a) revealed that Pakistan has a clear comparative advantage in the textile sector followed by hide and skins and vegetables by employing Balassa's theory of revealed comparative advantage (RCA).

The Gravity Model of Trade

From the last half-century, gravity models have been used to explain the bilateral trade flow among the nation, driven by the Newton's law of gravitational forces. According to the Tinbergen economic gravity model, trade between countries is the function of GDPs and distance (Tinbergen, 1962). After Tinbergen, Linnemann (1966), Anderson (1979), Bergstrand (1989), Deardorff (1998), Eaton and Kortum (2002), Anderson and Wincoop (2003), Melitz (2003), Guttmann and Richards (2004) and Helpman et al. (2008) developed their gravity models with the new econometric approaches. These researchers used different actual and dummy variables to explore the trade flow between the countries. A fundamental form of the gravity model, can be expressed as:

$$\boldsymbol{T_{ij}} = \boldsymbol{C}\frac{\boldsymbol{Y_i}^{\boldsymbol{\theta 1}}\boldsymbol{Y_j}^{\boldsymbol{\theta 2}}}{\boldsymbol{D_{ij}^{\theta 3}}} \tag{5}$$

Here, $\boldsymbol{T_{ij}}$ is the trade volume between country i and country j, K is the constant term, $\boldsymbol{\theta}$ is the coefficient of the variables while $\boldsymbol{Y_i}$ and $\boldsymbol{Y_j}$ represents the country i and j gross domestic products, and $\boldsymbol{D_{ij}}$ shows the distance between the countries. Taking a logarithm of this model and adding an error term can transform the model into a linear equation. The linear can be written as:

$$\text{In}\,(\boldsymbol{T_{ijt}}) = \boldsymbol{\sigma_0} + \boldsymbol{\sigma_1}\,\boldsymbol{\ln}\big(\boldsymbol{Y_{it}} * \boldsymbol{Y_{jt}}\big) + \boldsymbol{\sigma_2}\,\boldsymbol{\ln}\big(\boldsymbol{D_{ijt}}\big) + \boldsymbol{\varepsilon_{ijt}} \tag{6}$$

The model in Equation 6 can be augmented by adding more explanatory variables such as exchange rate, language, tariff rates, and border. Due to the above few variables which could not represent the actual world trade, that's the reasons many researchers (Soloaga & Wintersb 2001; Tang 2005; Martinez et al. 2005; Elliott 2007; Melitz 2007; Irshad & Xin, 2017b) used

different variables (actual or dummy) in trade sectors to capture the full effect of trade flow between the GCC countries.

In the case of Pakistan, Sultan & Munir (2015) investigated Pakistan's export and import potential with a random effect model of gravity model and concluded that Pakistan has a massive export potential with Switzerland, China, and Hungry and have the potential to import Norway, Philippines, Portugal, China, and Greece. Zafar & Butt (2008) elaborated Pakistan trade potential by PML (Pseudo Maximum Likelihood) gravity model and found that Pakistan has the highest trade potential with China, Japan, India, Hong Kong, and USA. Khan & khan (2013) examined Pakistan's bilateral trade flow with their major trading partners. Their results depicted that Pakistan has strong trade potential with Japan, India, Turkey, Malaysia, and Iran. Therefore, Irshad et al. (2018a) estimated Pakistan's bilateral trade potential with China by applying EGLS, REM, EGLS, GMM, Tobit, and PPML methods. Their results confirmed that Pakistan has a massive trade potential with China. Another research was done by Irsahd et al. (2018b) where they employed the gravity model of the trade determined from China's trade pattern with OPEC members, their outcomes revealed that China has great potential to expand its trade flow to OPEC members, especially to those countries who signed a free trade agreement with China. Ahsan et al. (2021) assessed the influence of trade facilitation and trade expenses on Pakistan's international trade using the gravity model. According to the gravity model, Pakistan's trade facilitation affects import and export commerce. Therefore, on the basis of the current study's findings, this article makes recommendations for enhancing trade facilitation and lowering trade costs, such as boosting power infrastructure, upgrading the port building, and lowering trade expenses visible and invisible.

Model Creation and Data Source

The current study uses the most popular Poisson Pseudo Maximum Likelihood (PPML) method of gravity model as suggested by Silva and Tenreyro to estimate Pakistan's trade potential with the GCC countries. The model can be used in the presence of heteroscedasticity and can provide consistent results in the case of zero trade observation (Silva & Tenreyro, 2006, 2011, 2022). The augmented gravity model used in this research is as follows:

$$\ln(T_{ijt}) = \sigma_0 + \sigma_1 \ln(Y_{it} * Y_{jt}) + \sigma_2 \ln(D_{ijt}) + \sigma_3 \ln(ExR_{ijt}) + \sigma_4 \ln(Trf_{ijt}) + \sigma_5 \ln(TO_{it}) + \sigma_6 \ln(TO_{jt}) + \varepsilon_{ijt} \quad (7)$$

Where (T_{ijt}) is the trade between Pakistan and the GCC countries in this particular period t, $(Y_{it} * Y_{jt})$ are the gross domestic product of Pakistan and partners, (D_{ijt}) (the proxy for transportation cost) is the geographical distance between Pakistan and partner countries, (ExR_{ijt}) is the exchange rate between Pakistan and partners countries in particular period t, (Trf_{ijt}) is the tariff rate between Pakistan and the GCC, (TO_{it}) and (TO_{jt}) are the trade openness of Pakistan and partner j.

In order to measure trade potentials of Pakistan with GCC members Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, United Arab Emirates study involved year (2003-2017). The current study is restricted on the availability of data because data is only available for the years mentioned above for all the selected countries. RCA indexes were used and data was taken from TRADE MAP and UN COMTRADE. Data was also taken from the WDI, IMF, and CEPII websites for the gravity model.

Empirical Findings and Analysis

RCA Discussions

The study has found very interesting outcomes from RCA equations. Therefore, the list of countries has been mentioned separately to get a better understanding of the current situation.

Bahrain

The study has analysed RCA at the aggregate level and found that Pakistan over Bahrain possesses a very strong RCA in food and live animals, manufactured goods, and commodity and transacts. The static analysis of RCA showed the fluctuation in the periods of analysis. Still, the overall comparative advantage has been improved with Bahrain till 2014 for food and animal and manufactured goods, while for commodity and transact Pakistan RCA has a declining trend. On the other hand, DRCA has not shown satisfactory results except for food and live animals. Like comparative advantage, Pakistan enjoys the competitive advantage over Bahrain in food and live animals, manufactured goods, commodity, and transactions. Among these sectors, only food and live animals showed tremendous RC value (see in Table 2).

Table 2

Pakistan Dynamic and Static Comparative Advantages Over GCC

Country	Commodity	Year					DRCA
		2003-05	2006-08	2009-11	2012-14	2015-17	
Bahrain	Food and animals	7.9	10.62	9.46	8.22	6.63	295
	Manufactured goods	2.99	4.01	3.49	2.79	2.37	16.2
	Commodity and transacts	35.8	2.42	4.69	9	3.25	4.38
Kuwait	Food and animals	3.95	6.56	4.24	4.27	5.11	92
	Manufactured goods	4.91	2.44	1.38	1.69	1.32	9.59
Oman	Food and animals	10.85	8.96	7.39	9.37	7.34	827
Qatar	Food and animals	12.62	11.73	11.73	10.01	7.78	495
	Manufactured Articles	1.60	0.69	0.58	0.81	0.98	2.12
Saudi	Food and animals	1.31	2.67	3.62	4.31	4.32	19.9
	Manufactured Goods	2.39	1.63	1.45	1.18	1.25	2.78
	Manufactured Articles	3.76	3.5	1.99	1.46	1.45	10.7
UAE	Food and animals	4.71	4.06	4.75	4.06	7.51	170
	Mineral fuels & lubricant	13.3	30.93	15.9	4.85	1.07	50.6
	Manufactured Articles	1.60	1.41	3.34	2.82	1.85	5.24

Kuwait

Pakistan has a vigorous static comparative advantage over Kuwait in food and live animals and manufacturing goods. Unfortunately, manufactured goods comparative advantage was continuously decreasing and reached the average value of 1.32 in 2015-17 from 4.9 in 2003-06. For both commodities, DRCA values were lower than 100, thereby, indicating a dynamic comparative disadvantage over Kuwait. However, the RCA results showed that Pakistan enjoys a competitive advantage in food and live animals and manufacturing goods and manufactured articles. As

compared to Bahrain, Pakistan has better competitive advantages in Kuwait markets.

Oman

Pakistan does not have good commercial cognition with Oman, relative to the rest of the GCC countries, Pakistan has a handsome RCA with the highest value of DRCA in food and livestock. Although RCA benefits from the deficit, in the study era, Oman has a competitive edge in food and live animals and manufactured articles in the analysis period.

Qatar

With Qatar, Pakistan has a good RCA level in food and animals. Initially, for manufactured articles, Pakistan had a moderate comparative advantage but at average, it vanished later on. Like comparative advantage, Pakistan has the dynamic comparative advantage only in food and animals. However, the RCA showed that Pakistan has a competitive advantage over Qatar in food and live animals, manufacturing goods, and commodity and transact.

Saudi Arabia

Besides, Pakistan and Saudi Arabia have warm political and economic relations but their RCA, DRCA, and RC results do not show tremendous values in the analysed period. However, among the analysed products, Pakistan has RCA and competitive advantage in food and animals, manufactured goods, and manufactured articles with a dynamic revealed comparative disadvantage.

United Arab Emirate

UAE is considering Pakistan's top export partners and having strong trade relations from the beginning. With UAE, Pakistan has the uppermost RCA and RC in food and animals, mineral fuel and lubricant, and manufactured articles. Moreover, Pakistan is having DRCA only for food and animals.

The commodities in which Pakistan has a maximum comparative and competitive advantage with the GCC region are, food and live animals and manufacturing goods and manufactured articles. Other than these commodities at an average of SITC level, no other sector rank amongst

Pakistan's top exported products to GCC in the particular periods of analysis.

Table 3

Pakistan Revealed Competitiveness Over GCC; 2003-2017

Country	Commodity	Year				
		2003-05	2006-08	2009-11	2012-14	2015-17
Bahrain	Food and animals	2.52	3.54	4.40	2.22	2.22
	Manufactured goods	0.55	0.87	1.25	1.91	0.98
	Commodity and transacts	2.5	-0.97	0.77	1.64	1.88
Kuwait	Food and animals	2.88	3.49	3.12	3.73	2.76
	Manufactured goods	1.8	1.33	0.91	1.77	1.13
	Manufactured articles	0.89	1.01	1.87	2.86	2.34
Oman	Food and animals	2.24	2.87	3.03	3.52	2.99
	Manufactured articles	0.03	0.81	1.04	1	1.52
Qatar	Food and animals	1.45	0.83	0.13	1.68	2.5
	Manufactured articles	0.66	0.19	-1.1	0.22	0.61
	Commodity and transacts	1.42	1.29	-0.16	1.73	1.23
Saudi	Food and animals	1.22	1.92	2.15	2.67	2.37
	Manufactured goods	0.7	0.49	0.38	0.39	0.44
	Manufactured articles	1.75	1.57	1.11	1.55	1.07
UAE	Food and animals	0.66	0.78	0.55	1.32	1.52
	Mineral fuels and lubricants	0.85	1.26	0.68	0.61	-0.28
	Manufactured articles	0.12	0.71	1.12	0.55	0.24

The Consistency of RCA

Cardinality Test

To measure the consistency of revealed comparative advantage, a correlation coefficient was used to scrutinize the cardinal consistency. The results of the cardinal consistency test of four RCA indices are presented in Table 4. The critical cut-off point to indicate consistency is > 0.70. For the SITC level, the test of consistency found that there are six possible pairs for each year of the analysis and only nine pairs out of 18 pairings or 50% indices indicated the high level of consistency for the three years (TE 2003, TE 2010, and TE 2017). These nine pairs showed consistency greater than

70% with each other. Among the RCA consistency results for the year 2003, RCA1 and RCA3, RCA1 and RCA4, and RCA3 and RCA4 pairs showed the highest correlation level. The results obtained from all four RCA indices showed lower consistency as a cardinal measure of comparative advantage.

Table 4

Cardinal Measure of Consistency Test

	TE 2003			TE 2010			TE 2017		
	RCA 1	RCA 2	RCA 3	RCA 1	RCA 2	RCA 3	RCA 1	RCA 2	RCA 3
RCA2	0.392			0.670			0.755		
RAC3	0.843	0.137		0.869	0.479		0.764	0.419	
RCA4	0.772	0.548	0.827	0.422	0.860	0.16	0.794	0.882	0.571

Ordinarily test is like the test of cardinality which is used for the measurement of indices consistency. However, in this method, the measurement is based on the rank correlation coefficient for each pairing.

Table 5

Coefficient of Variation (in %)

Products	RCA1	RCA2	RCA3	RCA4
0	63.43	64.82	95.65	73.56
1	74.76	-39.57	-264.44	-352.02
2	82.55	-57.82	-46.37	-35.41
3	84.81	379.80	159.85	350.49
4	78.85	-38.29	-295.41	-59.05
5	68.84	-46.01	-34.74	-42.45
6	65.69	-183.61	2264.97	-4696.71
7	63.00	-30.27	-135.19	-63.95
8	24.47	89.22	89.50	67.90
9	259.33	-23.95	-435.04	4009.11

Table 5 showed that for the SITC level, 8 pairs out of 18 pairs or 44.44 % showed the higher level correlation. Their results indicated that these indices are less consistent in ranking, while more consistent in cardinal product groups by revealed comparative advantage.

Stability Test

Table 5 presents the percentages of coefficient variation for the period 2003-2017. Their results showed that the RCA indices are stable over the 15 periods.

The second measure of RCA stability used in the current study is the correlation between the index in the base year (TE 2003) and the index in the subsequent years (TE 2010, TE 2017). Their results are depicted in Table 6. The results showed that six pairs out of 8 paired have a greater value than 0.70 that elaborate that there is a virtuous level of stability amongst the RCA indices.

Table 6

Stability of Revealed Comparative Advantage

RCA^1 (2003)		RCA^2(2003)		RCA^3(2003)		RCA^4 (2003)	
RCA^1 (2010)	0.803	RCA^2 (2010)	0.623	RCA^3 (2010)	0.892	RCA^4 (2010)	0.657
RCA^1 (2017)	0.763	RCA^2 (2017)	0.787	RCA^3 (2017)	0.896	RCA^4 (2017)	0.764

Gravity Model Outcomes and Trade Potential

Recently published work on gravity model supports the evidence to directly estimate equation (Shahriar et al., 2019; Martin & Pham, 2020; Irshad et al., 2021; Oberhofer & Pfaffermayr, 2021; Golovko & Sahin, 2021; Ebaidalla & Ali, 2022). The estimated results of PPML are given in Table 7. Silva and Tenreyro (2006, 2011, 2022), applied the PPML estimator which effectively handles the presence of zero trade flows, making it a very attractive choice for empirical gravity analysis. It is also known as workhorse gravity model estimator which is efficient in robust check. All the variables are statistically significant and have the expected sign. This study evaluates Pakistan's trade potential with the GCC individual countries and with the region as a whole. The results depicted that the joint GDP of Pakistan and the GCC region has a significant and positive association with their bilateral trade. A distance used as a proxy of transportation cost has a negative but significant connection to trade and serves as the major barriers to Pakistan and the GCC trade flow. Theoretically, the tariff rate having a negative correlation with trade cause the improvement of a country's trade when its decreases; similar results are obtained in our analysis. Pakistan's bilateral trade with the GCC countries

can be improved and enhanced further by reducing tariff rates which can only be possible by the trade agreement. Therefore, Pakistan needs to sign FTA with the GCC before boosting their mutual trade. However, the exchange rate has a negative relation with trade which cause a reduction of Pakistan bilateral trade by 30% if there would be a 1% increase in the exchange rate. Pakistan's trade openness has a negative association with trade and responsible for the 34% of the trade reduction. In contrast, the GCC region's trade openness has a positive relationship with trade. If the GCC economies would reduce their trade barriers and open the way of trade for Pakistan by 1%, it would stimulate their bilateral trade by 26%.

Table 7
Pakistan-GCC PPML Estimators

Bilateral Trade	Coefficient	*t*
$(\boldsymbol{Y_{it} * Y_{jt}})$	0.1839***	0.011
$(\boldsymbol{TO_{jt}})$	0.2664***	0.045
$(\boldsymbol{TO_{it}})$	-0.3452***	0.173
$(\boldsymbol{ExR_{ijt}})$	-0.3041***	0.072
$(\boldsymbol{D_{ijt}})$	-0.3787***	0.065
$(\boldsymbol{Trf_{ijt}})$	-0.6281**	0.366
Constant	0.1237**	0.021
R-squared	0.77	

Table 8 presents Pakistan's trade potential with the GCC region and their economies from 2003-2017. The results showed that there is no big difference between Pakistan and the GCC countries' trade potential. According to Liu and Jiang, if the value of trade potential exceeds 0.8, it displays the massive trade potential between the trading partners. If the trade potential value exceeds 1.2, it would show that trading partners in a situation where the potential to be created means that Pakistan trade to the GCC has been completely developed. The results of Pakistan trade potential with the whole region from 2003-2017 is greater than 1.2 except for some years of UAE, which means that Pakistan trade potential to the GCC region and the GCC countries has been fully developed. However, among the GCC

countries, Pakistan has the highest trade potential with Bahrain, Kuwait, and Qatar. In contrast, with UAE and Saudi Arabia, Pakistan has a lower trade potential than the rest of the countries.

Table 8

Pakistan-GCC Countries Trade Potential (2003-2017)

Year	Bahrain	Kuwait	Oman	Qatar	Saudi	UAE	GCC
2003	1.90	1.71	1.88	1.92	1.36	1.22	1.66
2004	1.97	1.75	1.83	1.89	1.42	1.88	1.78
2005	1.87	1.73	1.82	1.89	1.41	1.21	1.66
2006	1.85	1.74	1.81	1.85	1.45	1.21	1.65
2007	1.75	1.69	1.69	1.69	1.46	1.14	1.57
2008	1.71	1.62	1.45	1.54	1.39	1.15	1.48
2009	1.76	1.71	1.58	1.58	1.39	1.19	1.53
2010	1.73	1.69	1.60	1.65	1.40	1.16	1.54
2011	1.72	1.70	1.55	1.65	1.39	1.15	1.53
2012	1.75	1.73	1.60	1.74	1.38	1.10	1.55
2013	1.67	1.69	1.54	1.74	1.37	1.17	1.53
2014	1.71	1.68	1.55	1.75	1.36	1.22	1.54
2015	1.74	1.67	1.56	1.79	1.39	1.28	1.57
2016	1.77	1.67	1.67	1.78	1.40	1.29	1.60
2017	1.87	1.7	1.64	1.77	1.43	1.27	1.61

Conclusion

Pakistan and the GCC region share the common religion and cultural characteristics, to promote economic, cultural, and technical co-operation with GCC members, Pakistan is committed to signing a free trade arrangement with GCC. Among the GCC countries, Pakistan has the highest comparative and competitive advantage with Bahrain, Saudi Arabia, and UAE. The commodities in which Pakistan has maximum comparative and competitive advantage are; food and live animals, manufacturing goods,

and manufactured articles. Other than these commodities at the average, no other commodities ranked on top in Pakistan's export products to the GCC countries in particular period of analysis. However, RCAs' consistency indicated that all RCAs indices were less consistent in ranking, while more consistent in cardinal product groups

Among the GCC countries, Pakistan has the highest trade potential with Bahrain, Kuwait, and Qatar. In contrast, with UAE and Saudi Arabia, Pakistan has the lower trade potential than the rest of the countries. Therefore, Pakistan needs to sign FTA with the GCC countries before boosting their mutual trade and cooperation.

Future Recommendations

To make free trade arrangements government of Pakistan should target the commodities in which Pakistan has the highest competitiveness with the GCC economies and should try for zero tariff rates on the products of supply-side. Furthermore, government should eliminate the tariff, especially from oil and fuels because in these products, Pakistan has the highest comparative disadvantage. Among the GCC countries, Pakistan needs to enhance their trade with Bahrain, Kuwait, and Qatar which are the most potential destinations for Pakistan. Study advocates Pakistan to strengthen the macroeconomic environment for investment and encourage capital investment in labour-intensive industries, both of which require improvement. Future research should focus on identifying the microeconomic and macroeconomic reasons that contributes to Pakistan's primary labour-intensive companies' along with the loss of competitiveness with the mutual agreement of GCC countries in both the industrial and agriculture sectors.

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