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THE CAREC AND ITS NEIGHBORING REGIONS: A DIAGENOSTIC OF THE INTRA-BLOC AND EXTRA-BLOC TRADE

Junaid Ahmed
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November 2021

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Scholars were encouraged to research CAREC integration topics and undertake comparative analysis between (sub)regions to draw lessons for promoting and deepening regional integration among CAREC members, particularly as anticipated in the CAREC 2030 strategy and stated operational priorities.

This paper is written by Amjad Masood from Bahria University, Islamabad, Pakistan, and Junaid Ahmed from Pakistan Institute of Development Economics (PIDE), Islamabad, Pakistan, and Westminster International University in Tashkent, Uzbekistan.

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Abstract

This report examines the dynamics of intra-CAREC trade flows and trade potential to the neighboring regions—namely, Russia, Europe, the Mediterranean, the Middle East, and South Asia. The revealed comparative advantage shows that CAREC-WC (CAREC without China) countries have a higher comparative advantage in labor- and resource-intensive manufacturing sectors, which explains the overdependence of these countries on a few export industries. Similarly, trade complementarity is analyzed between CAREC members, CAREC exporters, and the neighboring regions. Furthermore, we examine the logistic performance and cost of exporting for CAREC members. There is an opportunity for trade expansion indicated by the Trade Complementarity Index; however, the dismal logistic conditions are acting as sand in the wheels of trade.

For empirical analysis, we estimated a structural gravity model to examine the trade effect of regional trade agreements (RTAs) on bilateral exports of eight CAREC members—namely, Afghanistan, Azerbaijan, Georgia, Kazakhstan, Kyrgyzstan, Mongolia, Pakistan, and Uzbekistan between 2000 and 2019. The estimates show a positive and statistically significant trade effect of the RTAs on intra-bloc trade. However, the effect of RTAs is trivial for exports outside the CAREC region. The underlying reason is that there are only a few trade agreements involving non-CAREC countries. Regarding individual exporting countries of the CAREC region, the trade-facilitating role of RTAs is evident for Kazakhstan, Pakistan, and Uzbekistan. On the other hand, exports of Mongolia seem to divert more towards non-RTA member countries. The findings of this report have implications along several policy dimensions with respect to the export potential of the region.

Keywords: CAREC, intra-bloc, extra-bloc, bilateral trade, trade agreements

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Abbreviations

ADB	Asian Development Bank
APTA	Asia-Pacific Trade Agreement
ASEAN	Association of Southeast Asian Nations
BRI	Belt Road Initiative
CAREC	Central Asia Regional Economic Cooperation
CAREC-WC	CAREC without China
CPEC	China Pakistan Economic Corridor
ECOTA	Economic Cooperation Organization Trade Agreement
EoDB	Ease of Doing Business
EU	European Union
FDI	foreign direct investment
FTA	free trade agreement
GATT	General Agreement on Tariffs and Trade
GCI	Global Competitiveness Index
GDP	gross domestic product
GlobalGAP	Global Good Agricultural Practice
GSP	Generalized System of Preferences
HHI	Herfindahl-Hirschman Index
HS	Harmonized System of Product Classification
ISO	International Organization for Standardization
LPI	Logistical Performance Index
NRCA	normalized revealed comparative advantage
NTB	non-tariff barrier
NTM	non-tariff measure
OLS	ordinary least squares
PPML	Poisson pseudo-maximum likelihood
PPP	purchasing power parity
PSA	partial scope agreement
PTA	preferential trade agreement
RCA	revealed comparative advantage
RTA	regional trade agreement
SAARC	South Asian Association for Regional Cooperation
SAFTA	South Asian Free Trade Agreement
SAPTA	South Asian Preferential Trading Arrangement
SEZ	special economic zone
SPS	sanitary and phytosanitary
TBT	technical barrier to trade
TCI	Trade Complementarity Index
WDI	world development indicators
WGI	world governance indicators
WITS	world integrated trade solution
WTO	World Trade Organization

1. Introduction

Economic integration can be defined precisely as an arrangement to encourage the cross-border movement of men, money, and materials to attain economic growth and development. Hence, the various dimensions of economic integration include—but are not limited to—trade, foreign direct investment, migration, and tourism. Trade agreements and economic corridors are important policy instruments to deal with the barriers, including tariffs and several types of other indirect cost such as non-tariff barriers, administrative hurdles, and contractual frictions leading to higher transaction costs. For instance, China's Belt Road Initiative (BRI) is a remarkable case for the economic integration of today's world (Derudder, Liu, and Kunaka, 2018).

Since the CAREC program is not a formal economic integration agreement, there is a policy question to explore the optimal level of integration considering the geographic and economic condition of the region. First, out of 11 CAREC countries, eight are landlocked. Therefore, there is a natural need for a policy to mitigate the geographic disadvantage. Second, the CAREC members are heterogeneous in their economic endowments, such as the difference in population, land, natural resources, market size, and living standards. In terms of trade, for instance, the share of agriculture in Chinese exports is less than 5 percent; for Georgia, it is almost one third; while for Afghanistan, around half of total exports are from the agriculture sector. Similarly, the exports of Mongolia, Azerbaijan, and Kazakhstan consist mainly of raw materials. All these factors need proper consideration to formulate a prudent regional integration program.

An earlier report (ADB, 2019) presents avenues for the process-based corridor performance measurement and monitoring methodology. The report identifies various corridors based on traffic volumes, population hubs, infrastructure, economic and financial sustainability, and other factors. In line with the study, we have analyzed the trade potential of CAREC with its neighboring regions, Europe, the Mediterranean, Russia, the Middle East, and South Asia; see Table A1 for details.

Although other aspects of regional integration have their importance, the present study focuses on intra-bloc and extra-bloc trade potential. Regarding the economic corridors in force, the policymakers need to seek answers to key questions—such as what the current geography of production looks like. In other words, what are the main goods being produced in the region of interest? Similarly, what is the existing logistic structure, and how does it facilitate the intra-bloc and extra-bloc trade?

We formulate two major objectives. First, we compute trade indicators related to logistic performance, revealed comparative advantage, and trade complementarity to analyze the trade potential within the CAREC bloc and with the adjacent regions: Russia, Europe, the Mediterranean, the Middle East, and South Asia. Second, the structural gravity model is applied to analyze the effect of RTAs on intra-CAREC and extra-CAREC trade flows. The advantage of the gravity model is that it rigorously accounts for the heterogeneity related to the exporters, importers, and country pairs. The Poisson pseudo-maximum likelihood (PPML) estimator is applied to account for zero trade and heteroscedasticity. We consider exports disaggregated in terms of different sectors and products classified based on the stage of processing—namely, the exports of raw materials, intermediate goods, consumption goods, and capital goods.

It is noteworthy that CAREC countries are highly heterogeneous in terms of export volumes and composition. China contributes about 94 percent of the total trade of the region (see Figure 2). While Chinese exports are relatively diversified, the rest of the CAREC members—especially Tajikistan, Azerbaijan, and Mongolia—are concentrated on a few products. Furthermore, most of the countries export primary goods and low-skilled manufacturing products. The performance of CAREC countries related to the logistics and exporting process is suboptimal, which impedes trade flow. Our gravity

analysis shows that the CAREC countries' trade agreements mostly play their role in relation to intra-bloc trade. While the share of intra-bloc trade is slightly increasing, it is still subdued. The study proposes a pan-CAREC trade agreement to allow for a uniform policy across the members to foster intra-CAREC exports. Pertaining to the extra-bloc trade, however, is a need to sign new trade agreements with countries belonging to the neighboring regions. To this end, comparative advantage, trade complementarity, and structural gravity estimates are imperative to provide guidelines for designing an effective system of trade integration.

The rest of the report is organized as follows. Section 2 offers a discussion on the socioeconomic situation and trade profile of the CAREC countries. The trade indicators are analyzed in Section 3, followed by the relevant literature and the structural gravity estimation of the trade agreements in Section 4. Finally, the report concludes with relevant policy implications in Section 5.

2. Profile of the CAREC Region

2.1. Socioeconomic picture

As a starting point, we spotlight the socioeconomic situation of the CAREC countries for 2019 in Table 1. The CAREC countries represent minimal shares of global gross domestic product (GDP), except for China. China registers about 91 percent of CAREC GDP, while the rest account for 9 percent including 4 percent of Pakistan, and roughly 2 percent of Kazakhstan. We used the purchasing power parity measure—to show the accurate account of the differences in the cost of living among these countries—especially in places where domestic labor and other inputs are relatively cheaper.

To gauge economic wellbeing, GDP per capita and the Human Development Index (HDI) are important indicators. Among the CAREC members, Kazakhstan has a higher per capita income account US$27,518 followed by China US$16,773, Turkmenistan US$16,196, and Georgia US$15,623. However, Pakistan, Tajikistan, and Afghanistan have the lowest GDP per capita in the region, accounting for US$4,889, US$3,733, and US$2,152, respectively. Similarly, Kazakhstan, with a value of 0.83, has achieved a high level of human development. On the other hand, Georgia, China, and Azerbaijan enjoy medium levels of development within the CAREC region. The remainder is still at a low development stage, with the lowest value for Afghanistan (0.51) and Pakistan (0.56), which places these countries on 154 and 169 global rankings, respectively.

Trade openness, a proxy commonly used for trade liberalization, is measured as the sum of imports and exports as a percentage of GDP in a given year. Except for China, the CAREC region has failed to reap trade and regional integration benefits, as eight countries out of 11 are geographically isolated. Pakistan has the lowest ratios in the region, accounting for only 30 percent, and China accounts for 36 percent as, in general, larger economies depend less on external markets to satisfy domestic demand. Unlike the landlocked countries, Pakistan is located on a major sea route. However, it still has a low trade to GDP ratio and is a net importer of commodities, reflecting that Pakistan failed to leverage export as an engine of growth.

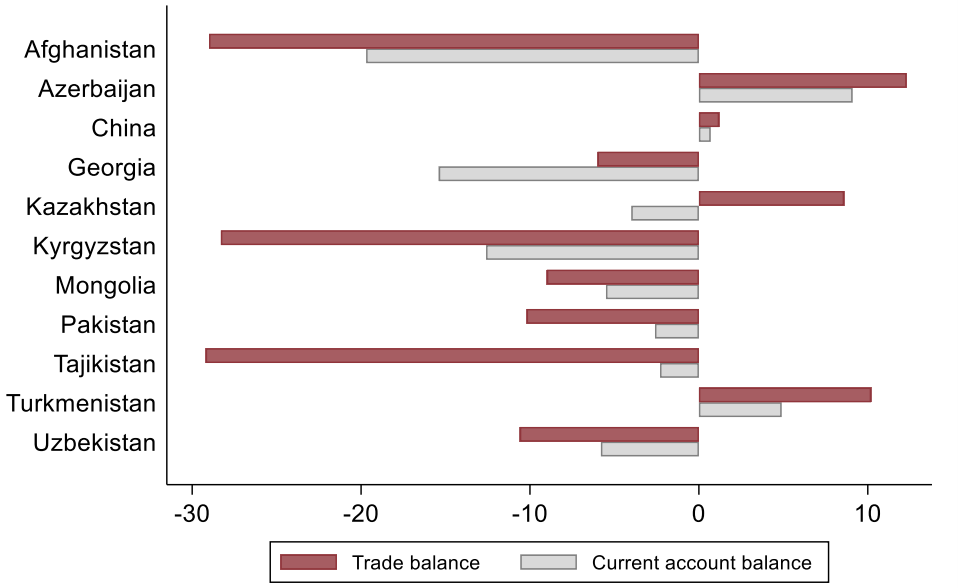
Table 1: Socioeconomic picture of the CAREC economies, 2019

Country	GDP (million US$)	GDP per capita (US$)	Trade (% of GDP)	Inflation rate	Unemployment rate	HDI Rank
Afghanistan	81,880	2,152	45	2.30	10.98	169
Azerbaijan	150,864	15,050	86	2.61	4.85	88
China	23,443,655	16,773	36	2.89	4.60	85
Mongolia	41,404	12,838	126	7.30	5.31	99
Kazakhstan	508,500	27,466	65	5.25	4.8	51
Kyrgyzstan	35,385	5,481	99	1.13	6.72	120
Georgia	58,121	15,623	119	5.19	11.57	61
Pakistan	1,058,754	4,889	30	10.58	3.98	154
Tajikistan	34,794	3,733	56	-	6.66	125
Turkmenistan	96,235	16,196	35	-	3.74	111
Uzbekistan	245,504	7,311	72	-	5.65	106

Note: The GDP purchasing power parity (PPP) taken in million US$ and GDP per capita presented in US$ (PPP). HDI statistic is retrieved from the UNDP; the trade statistics for Afghanistan are taken from UNCTAD; and data for other indicators are sourced from the WDI, World Bank.

Having the highest import penetration, Kyrgyzstan has a negative trade balance of 28 percent adjusted for GDP. Going further, the current account balance as a percentage of GDP is negative for all CAREC regions except Azerbaijan, China, and Turkmenistan (see Figure 1). For countries like Tajikistan and Pakistan, remittance flows account for 27 percent and 10 percent of GDP respectively, which neutralizes the current account deficit to a certain extent.

Figure 1: Trade balance and current account balance



Note: Authors' graphic based on data from World Development Indicators Database

Concerning macroeconomic stability, inflation and unemployment rate are the two important barometers for comparing the CAREC countries. Pakistan has a 10.58 percent inflation rate, followed by Mongolia at 7.30 percent. Similarly, unemployment rates in the CAREC region range from 3.74

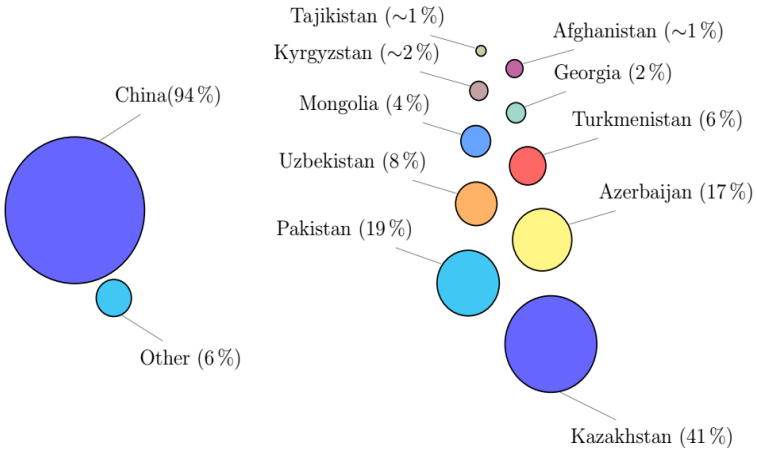
percent to 11.57 percent in 2019. Likewise, Georgia and Afghanistan have the highest unemployment, while Turkmenistan has the lowest unemployment. It is worth mentioning that most CAREC economies also feature widespread informal employment systems, and considerable underemployment (ILO, n.d.). Therefore, decent job creation is vital for the CAREC region, given current levels of unemployment and underemployment.

2.2. Export tendencies and heterogeneity

2.2.1. Export volumes

There is a great deal of heterogeneity in terms of individual country share in the total regional exports. For instance, China contributes 94 percent of the total CAREC exports. In 2019, total exports of China amounted to US$2,498,570 million. On the other hand, the rest of the countries have minimal export shares. For instance, the exports of Kyrgyzstan and Afghanistan are US$1,986 million and US$870 million, respectively. Figure 2 shows the heterogeneity in the export shares of CAREC economies.

Figure 2: Export shares of CAREC members

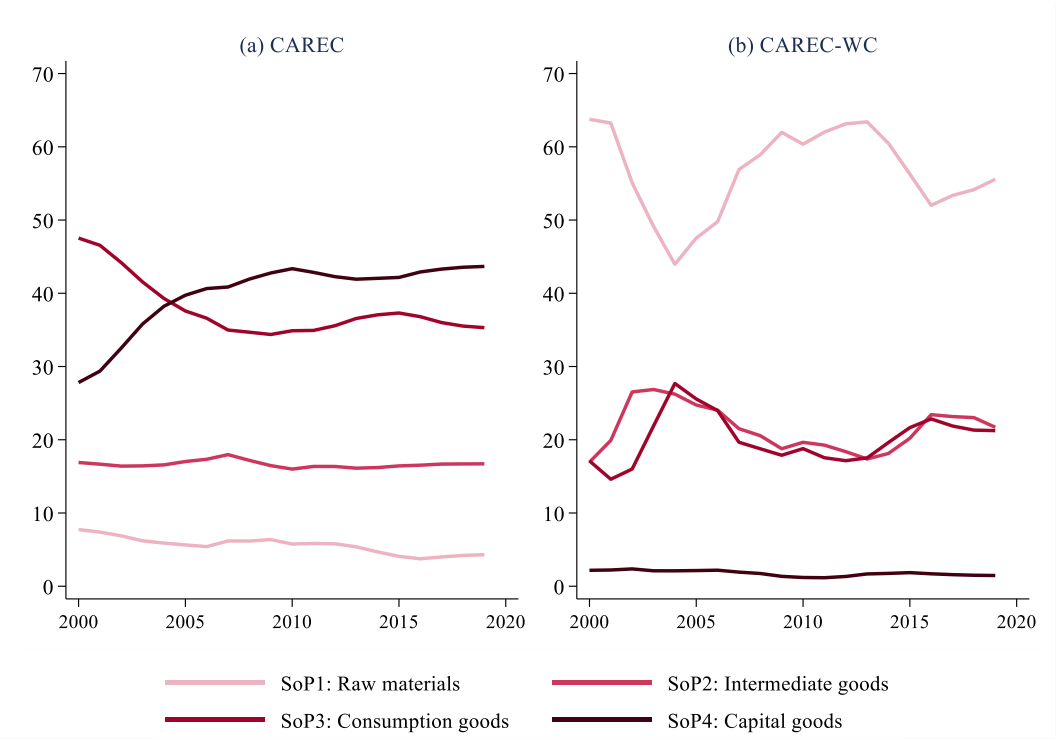


Note: Authors' graphics based on Comtrade database

2.2.2. Export composition

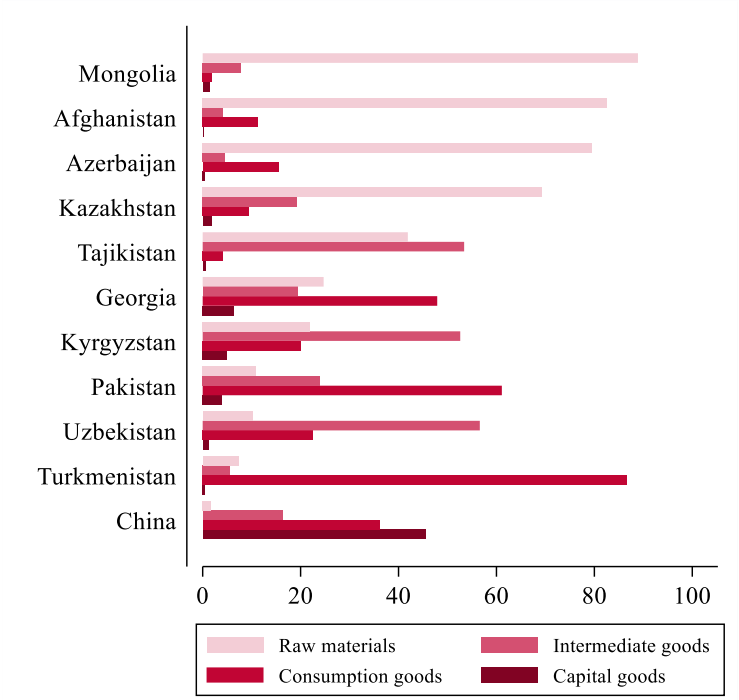
In tandem with the aggregate exports, it is interesting to analyze the national exports at a disaggregate level. For this, products are categorized in terms of processing stage into four groups: raw materials, intermediate goods, consumption goods, and capital goods. Figure 3 shows the composition of CAREC exports across each processing stage. The share of raw materials in total exports remains well below 10 percent for the region. It appears that the exports of the CAREC economies predominantly comprise highly processed consumption and capital goods. Nevertheless, panel (b) of Figure 3 depicts the opposite story. When we exclude China, raw materials constitute roughly 50 percent of the cumulative exports of the rest of the CAREC members.

Figure 3: Cumulative CAREC exports across stages of processing



Note: Authors' graphic based on Comtrade database

Figure 4: CAREC members export shares across stages of processing



Note: Authors' graphics based on COMTRADE database

To dig further, we analyzed the export composition of the individual economies, as shown in Figure 4. The exports of Mongolia, Afghanistan, and Azerbaijan predominantly comprise raw materials. On the other hand, only China has a sizable share of capital goods. Similarly, consumption goods account for the largest part of the exports of Turkmenistan and Pakistan.

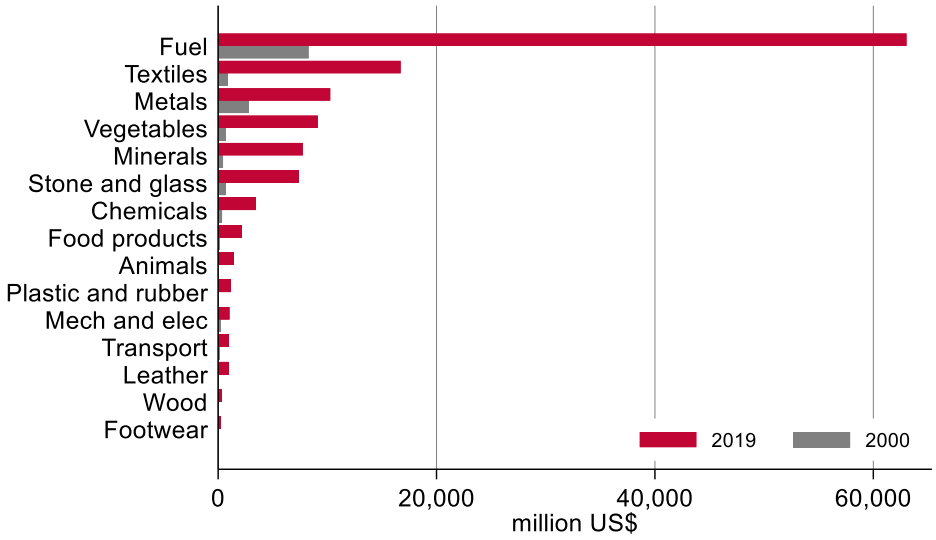
Table 2 presents the composition of merchandised trade for primary commodities, labor-intensive manufacturing, and low- to high-skill and technology-intensive manufacturing. Within the CAREC region, China's share of skill-intensive products is noticeable as the country increasingly began expanding into skills- and technology-intensive manufacturing. Its share of highly skilled and technology-intensive manufacturers picked up from 27 percent in 2000 to 36 percent in 2019. However, the change in the product composition for the rest of the CAREC region is trivial as most of these countries are stuck with the exports of primary products. Nevertheless, Pakistan has shown a shift from primary products to labor-intensive manufacturing—such as the textile industry—accounting for roughly 63 percent of the total exports in 2019.

Table 2: Composition of merchandised exports

	Primary commodities	Labor-intensive and resource-intensive manufacturing	Low-skill and technology-intensive manufacturing	Medium-skill and technology-intensive manufacturing	High-skill and technology-intensive manufacturing
Afghanistan	91.0	2.6	0.4	1.5	1.6
Azerbaijan	96.7	0.6	0.4	0.4	1.7
China	6.6	21.1	10.3	25.8	36.2
Georgia	46.1	5.1	11.1	25.8	11.7
Kazakhstan	86.9	0.5	6.3	1.1	5.1
Kyrgyzstan	76.8	10.6	1.9	6.6	4.1
Mongolia	97.9	1.0	0.1	0.5	0.3
Pakistan	25.6	62.9	1.7	3.2	6.7
Tajikistan	76.4	9.7	2.5	2.2	3.0
Turkmenista	93.9	3.4	0.2	0.3	1.9
Uzbekistan	72.8	15.2	1.3	2.6	8.0

Note: Authors' calculations based on UNCTAD data for 2019

Figure 5: CAREC-WC exports across standard product groups



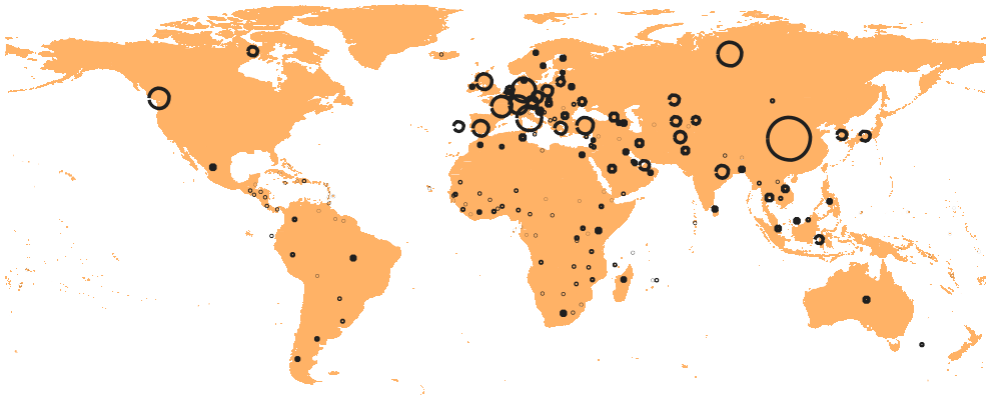
Note: Authors' graphics based on Comtrade database
Mech and elec = mechanical and electronics manufacturing

To disaggregate further, we look at exports across product groups. The export products are based mainly on fuel resources, textiles, metals, vegetables, stone, glass, and so on. This specifies that the leading export articles of CAREC are highly concentrated and dominated in low value-added products, primary products, and labor-intensive manufacturing. Major exports of the CAREC-WC are shown in Figure 5.

2.2.3. **Geographic spread**

Going on, we look at the geographic spread of CAREC exports. Figure 6 shows the exports are primarily concentrated in Russia, China, the United States, and in European countries. The top destinations of CAREC exports include the United States, Hong Kong, Japan, South Korea, Vietnam, Germany, the Netherlands, India, the United Kingdom, and Russia. The shares of countries from the African and South American continents are rather meager. Despite its proximity to the world's most dynamic markets, the integration of CAREC into global value chains was limited. Concerning the biggest trading partners of the CAREC region, the larger share has been designated to Europe, amounting to US$42,177 million. The most significant trade partners in the European bloc are the United Kingdom, Germany, the Netherlands, Italy, Switzerland, and Spain. This is followed by the Mediterranean US$23,313 million, Russia US$8,127 million, the Middle East US$7,662 million, and South Asia US$2,769 million.

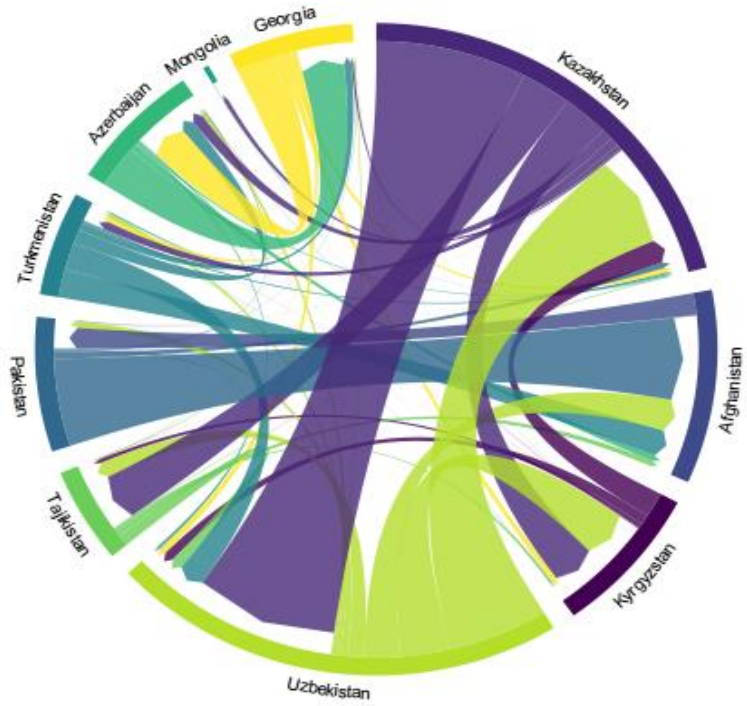
Figure 6: CAREC exports worldwide



Note: Authors' graphics based on COMTRADE database

Related to intra-CAREC trade, there are two major aspects to consider: First, it is dominated by trade from and to China. The total intra-bloc trade in the region amounts to US$87 billion, including US$47 billion exports from China to other member countries that constitute 54 percent of the total. Looking from the import side, China is also the destination for most of the exports of other members.

Figure 7: CAREC-WC intra-bloc trade flows

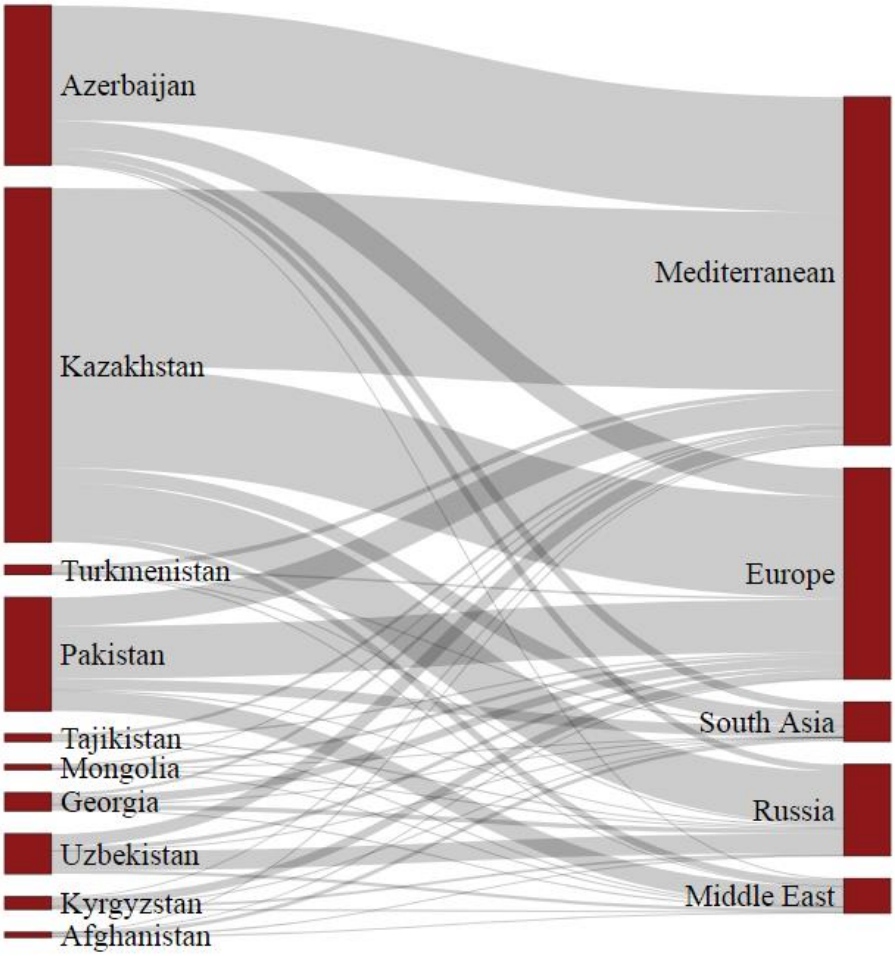


Note: Authors' graphics based on Direction of Trade database

Except for Afghanistan, Kyrgyzstan, and Georgia, other members export more than 50 percent of their intra-CAREC exports to China. The case of Mongolia is crucial as almost all its intra-bloc exports land in China. Therefore, the Chinese trade dominates the intra-CAREC trade flows. The second aspect of the intra-bloc trade flows is the geographic contiguity, whereby countries export mainly to their neighboring CAREC members. Figure 7 shows intra-bloc trade for CAREC-WC region. For instance, most of Pakistan's intra-CAREC exports are destined for China and Afghanistan. Similarly, large trade flows are observed between neighboring country pairs such as Kazakhstan–Uzbekistan and Azerbaijan–Georgia.

Figure 8 exhibits extra-bloc trade flows of the CAREC region to its neighboring regions—namely, Russia, Europe, the Mediterranean, the Middle East, and South Asia. Together these regions absorb 30 percent of the total CAREC exports. However, considering CAREC-WC, the export share climbs up to 60 percent. Around US$3 billion exports of Pakistan land into Middle Eastern countries, constituting about 9 percent of Pakistan's total exports. Afghanistan is the second largest contributor to the Middle East region, partly owing to its geographic proximity across the Arabian Sea. Similarly, the Mediterranean region imports mostly from Kazakhstan, Uzbekistan, and Pakistan, among the CAREC members. Export value to Europe from Kazakhstan, Pakistan, and Azerbaijan is US$10.8 billion, US$5.6 billion, and US$3 billion, respectively. Lastly, Russian imports from Kazakhstan and Uzbekistan amount to US$5.6 billion and US$2.1 billion, respectively.

Figure 8: CAREC-WC extra-bloc trade flows



Note: Authors' graphics based on Direction of Trade database

3. Review of Literature

Trade acts as an engine of economic growth and sustainable development (see Felbermayr and Groschl, 2013; Felipe and Lanzafame, 2020; Frankel and Romer, 1999; Gygli, Haelg, Potrafke, and Sturm, 2019) as it has the potential to spur economic activity, creating jobs, reducing prices thanks to market competition, increasing the variety of products for consumers, and helping countries acquire new technologies. In this regard, regional integration promotes trade flows among participating countries, thereby contributing to economic growth in the form of economies of scale, knowledge, and technology transfer (see Martínez-Zarzoso and Chelala, 2021; Nwosu, Orji, Urama, and Amuka, 2013). However, it fuels income divergence rather than convergence, which suggests the distribution of the gains from regional integration is captured in relatively more developed economies (Gammadigbe, 2021).

In addition to integration, value addition is a policy concern for CAREC exporters. It is evident that countries emphasizing manufacturing exports grow relatively faster than those primary product exporters (see Berg, Ostry, and Zettelmeyer, 2012; Hausmann, Hwang, and Rodrik, 2007). However, most CAREC countries depend on the exports of primary and labor-intensive products. In this regard, there is substantial potential for developing countries to upgrade quality in the primary sector, such as agriculture (Henn, Papageorgiou, Romero, and Spatafora, 2017).

There are studies for individual member countries: China (such as Antkiewicz and Whalley, 2011; Guo and Li, 2019; Sun, 2021), Pakistan (such as Uzair and Nawaz, 2020), and Uzbekistan (such as Ziyadullaev et al. (2020). Similarly, Shkvarya et al. (2017) discuss the small and medium-sized business in Kazakhstan related to the EAEU, whereas Dyuzheva and Shiolashvili (2021) analyze Georgian trade with the GUAM countries. Related to the CAREC region, Felipe and Kumar (2012) show that there have been significant gains in trade because of improving trade facilitation in Central Asian countries. The impact is more pronounced owing to the infrastructure improvement, followed by logistics and efficiency of customs procedures. Similarly, Kim and Mariano (2020) show trade gains resulting from the reduced time required by border compliance. In this regard, adopting a paperless trade processing approach can be more efficient (Roy and Xiaoling, 2020). Therefore, to optimize the effects on growth in all participating countries, policies aim to reduce non-tariff barriers to trade and to improve infrastructure.

At present, the CAREC countries are not well integrated into each other's production processes (Babych, Keshelava, and Mzhavanadze, 2019). Nevertheless, China's recent official development assistance under the BRI are a stepping stone for regional integration. The contribution of the present study is twofold. First, we provide a comprehensive diagnostic of the trade potential within the CAREC region. Second, it is pertinent from a policy perspective to examine the impact of RTAs on intra-bloc, and extra-bloc trade flows for the CAREC region.

4. Trade Indicators

4.1. Revealed comparative advantage

Revealed comparative advantage (RCA) measures the competitiveness of a product in a country's exports relative to the share of that product for the world as a whole, and thereby a high value of RCA denotes export competitiveness of a product. Countries with similar RCA profiles are unlikely to have high bilateral trade intensities unless they are involved in intra industry trade. The resurgence of interest in industrial policy urges trade economists to identify products of comparative advantage. Based on Balassa (1965), the RCA can be expressed as follows.

$$RCA_p^a = \frac{X_p^a / X^a}{X_p / X} \quad (1)$$

RCA is the ratio of product p's share in country a's exports to its world trade share. RCA>1 in sector p means that a country has a revealed comparative advantage in that sector. The RCA value for standard product groups[1] for 2019 are given in Table 3. The analysis shows the varying RCA across the products for different CAREC countries. Afghanistan, Azerbaijan, and Turkmenistan have a comparative advantage in only a few product categories. Afghanistan has a comparative advantage in vegetables, stone and glass, and minerals. Similarly, Azerbaijan has the advantage for products such as fuel and vegetables, whereas Turkmenistan has the advantage in fuel and textiles. Kazakhstan holds a higher position in products such as minerals, fuel, and metals.

Table 3: Revealed comparative advantage across product groups

Products	Afghanistan	Azerbaijan	China	Georgia	Kazakhstan	Kyrgyzstan	Mongolia	Pakistan	Tajikistan	Turkmenistan	Uzbekistan
Animals	0.17	0.06	0.28	0.81	0.34	1.68	0.49	1.59	0.02	0.02	0.06
Chemicals	0.01	0.08	0.54	1.20	0.58	0.26	0.01	0.14	0.10	0.05	0.27
Food products	0.30	0.13	0.29	6.30	0.24	0.61	0.23	1.17	1.33	0.01	0.22
Footwear	0.00	0.01	2.63	0.13	0.01	0.23	0.03	1.04	0.04		0.13
Fuel	0.32	7.13	0.11	0.47	4.61	0.19	3.79	0.14	0.04	5.85	0.93
Leather	0.69	0.16	2.03	0.17	0.06	1.75	0.23	6.98	0.11	0.08	0.48
Mech and elec	0.01	0.01	1.85	0.09	0.03	0.13	0.00	0.02	0.01	0.00	0.04
Metals	0.25	0.19	1.06	2.69	2.79	1.11	0.26	0.65	8.27	0.05	1.48
Minerals	1.33	0.20	0.11	8.92	4.63	6.17	20.1	1.06	0.15	0.09	0.28
Plastic and rubber	0.02	0.22	0.92	0.41	0.06	0.21	0.01	0.35	0.08	0.00	0.81
Stone and glass	10.1	0.26	0.50	0.94	0.37	11.7	2.00	0.37	0.01	0.05	10.5
Textiles	0.96	0.29	2.17	2.21	0.07	1.37	0.99	15.2	5.82	2.49	3.70
Vegetables	13.1	1.18	0.25	2.09	1.39	1.85	0.11	3.62	3.41	0.27	2.39
Wood	0.01	0.01	0.71	0.33	0.08	0.21	0.01	0.22	0.00	0.00	0.14

Note: Authors' calculations based on Comtrade database
Mech and elec = mechanical and electronics manufacturing

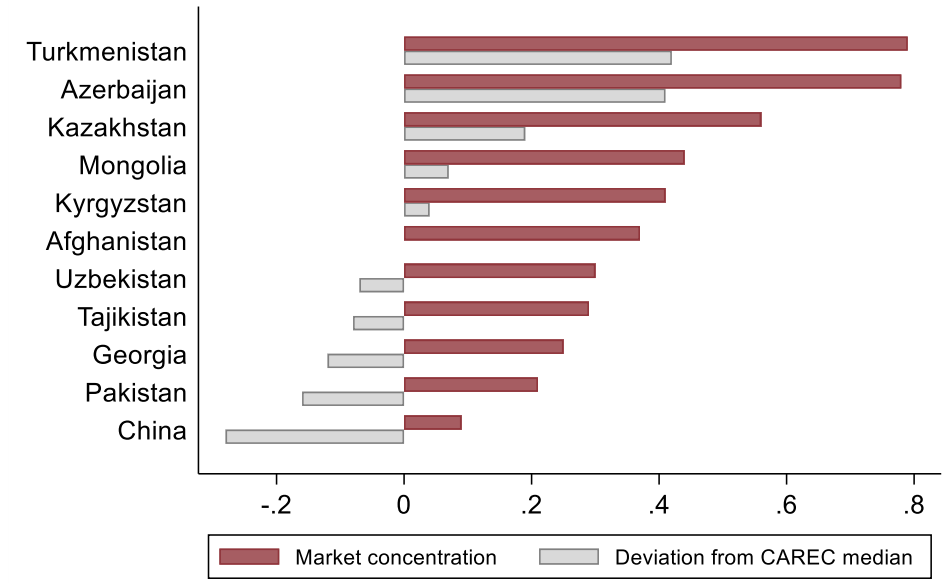
Similarly, Mongolia has a comparative advantage in minerals, followed by fuel, then stone and glass. Likewise, Georgia has revealed its comparatively advantageous position for the exports of minerals, food products, metals, textiles, and vegetables. In the case of Pakistan, there is a higher comparative advantage for exporting textiles, leather, vegetables, and animals. Tajikistan has relative strength with a higher RCA in metals, textiles, and vegetables. Likewise, Turkmenistan has an RCA in fuel and textiles, whereas Uzbekistan has an RCA in stone and glass, textiles, and vegetables. China has revealed a comparative advantage for several product groups, particularly for footwear, leather, textiles, and mechanical and electronics manufacturing. It is noticeable that only China exhibits a comparative

[1] For detail of the HS classification-based product grouping, see Table A2

advantage for mechanical and electronics manufacturing, placing China in a better position for high-tech manufacturing.

Concerning the RCA across products, the CAREC-WC region has a comparative advantage in primary commodities—namely fuel, minerals, vegetables, related materials, and labor-intensive products like textiles. Several of the CAREC members show a high value of the RCA for textiles. Textiles is a diverse sector with a long value-added chain involving multiple steps: cotton ginning, spinning, weaving, knitting, dyeing, and finishing. Garments and apparel products are relatively more labor-intensive, whereas other products are more capital-intensive. However, the textile exports of most of the CAREC countries are concentrated in low value-added products. In a nutshell, these results reinforce that all the CAREC countries, except China, have a higher comparative advantage in labor- and resource-intensive manufacturing sectors. Therefore, these countries depend primarily on few export industries. To delve further into the matter, we depict the export product concentration of the CAREC members in Figure 9.

Figure 9: Product concentration in exports



Note: Authors' graphics based on UNCTAD database

The export concentration is estimated using the Herfindahl-Hirschman Index (HHI) with respect to products. The index value ranges from 0 to 1: a value close to one indicates that exports are concentrated in a few products (low diversification), while a lower value implies higher product diversification. Based on the index, China is the least concentrated economy in the region, with a score of 0.09. In contrast, Azerbaijan and Turkmenistan are the least diversified economies, followed by Turkmenistan, Kazakhstan, and Mongolia with scores of 0.77, 0.56, and 0.46, respectively. Given this, the export diversification at the extensive margin (exports of new products or to new markets) inevitably lies at the core of future trade policy.

4.2. Trade complementarity

The Trade Complementarity Index (TCI) assesses the extent to which two countries are natural trading partners—that is, how much the exports of one country match with the imports of others.

$$TCI_b^a = 100\left[1 - \left(\frac{\Sigma_{p|M_p^a - X_p^b|}}{2}\right)\right] \quad (2)$$

Where M_P^a is product *p's* share in *a's* total imports from the world, and X_p^a is product *p's* share in *b's* total exports to the world. TCI value is zero when no goods are exported by one country or imported by the other, and 100 in the case of an exact match.

Table 4 offers information on how well a country's imports and exports match. The index provides important information on the trade prospects for the intra-bloc and extra-bloc trade. The CAREC region continues to face challenges related to a limited degree of complementarity. While China maintains moderately high trade complementarity, Afghanistan, Turkmenistan, and Tajikistan have lower complementarity. The finding shows that complementarities for the Chinese imports from other CAREC members range from 13 to 36. On the contrary, the complementarity of Chinese exports to the CAREC region remains as high as 50 or above. It implies that trade liberalization policy within the region has a greater scope for diverting existing imports of the CAREC region to China than Chinese imports from the CAREC region.

Table 4: Intra-bloc and extra-bloc trade complementarity

	Afghanistan	Azerbaijan	China	Georgia	Kazakhstan	Kyrgyzstan	Mongolia	Pakistan	Tajikistan	Turkmenistan	Uzbekistan
Afghanistan		14.6	40.6	30.3	17.7	24.7	11.5	25.3	15.1	16.7	20.0
Azerbaijan	28.2		58.5	29.3	19.6	39.0	12.7	24.6	29.7	7.8	31.3
China	13.5	23.0		35.8	32.9	36.2	33.3	19.7	21.1	18.9	33.4
Georgia	9.91	15.8	51.9		24.4	28.3	16.1	24.6	15.0	15.9	22.1
Kazakhstan	10.3	15.0	64.6	33.9		26.9	11.7	22.7	14.4	8.72	20.0
Kyrgyzstan	16.5	23.3	55.5	34.1	27.2		20.0	27.6	16.3	13.9	31.6
Mongolia	9.02	27.0	47.0	25.9	23.6	26.4		17.3	9.0	28.8	32.4
Pakistan	15.0	34.7	48.1	34.1	43.3	24.8	23.7		15.5	15.2	32.7
Tajikistan	11.3	18.3	49.8	33.5	30.1	24.0	16.6	28.6		19.8	28.1
Turkmenistan	9.01	7.7	56.8	26.7	15.5	20.9	6.71	19.9	10.5		14.3
Uzbekistan	9.11	10.3	54.8	29.9	23.2	24.4	10.2	20.3	10.8	7.33	
Europe	14.1	18.8	61.5	35.7	23.8	34.6	21.0	25.3	19.7	12.9	31.0
Middle East	18.2	19.5	54.3	38.1	33.4	41.1	29.2	23.5	16.8	11.4	43.8
Mediterranean	13.3	21.5	59.1	37.6	27.8	33.5	22.3	27.1	15.9	13.1	32.5
South Asia	25.3	39.4	46.9	33.9	45.2	35.4	43.0	16.9	27.3	18.3	43.0
Russia	9.42	9.21	67.7	30.6	13.8	27.4	8.21	26.0	12.3	7.36	19.3

Note: Exporters are given in the table header while importers are listed in the first column. Authors' calculations based on Comtrade database

In the case of individual countries, relatively high trade complementarity exists for some of the country pairs: Kazakhstan–Pakistan, Kyrgyzstan–Azerbaijan, Azerbaijan–Pakistan, Uzbekistan–China. However, Afghanistan, Tajikistan, Mongolia, and Turkmenistan had low trade compatibility with CAREC countries, which poses partial challenges for regional integration.

Except for China, the low values of trade complementarity in the region are because of the more or less similar industrial structure of CAREC countries. Most of the trade is based on primary goods, including food and agricultural raw materials, ores and metals, fuel, and labor-intensive semi-manufactured goods, with a low trade potential between the CAREC members. On the other hand, 93 percent of Chinese exports comprise manufactured goods, as shown in Table 2.

The trade complementarity between CAREC exporters and the neighboring regions is presented at the bottom of the Table 4. China has the prospect of increasing its exports across the board. Azerbaijan has higher complementarity with South Asia, whereas Uzbekistan has higher export potential for South Asian and Middle East markets. As a whole, it can be inferred that future trade and investment integration will significantly hinge on the ability to diversify production and trade for a better mutual fit.

4.3. Logistic performance and cost of exporting

Trade facilitation is a prerequisite for trade integration and competitiveness as it reduces costs, therefore increasing the efficiency of trading across borders. The greater trade facilitation is associated with lower transaction time and costs at ports and borders, thereby encouraging trade flow efficiency (Portugal-Perez and Wilson, 2012). A well-built trade logistics enables producers to take advantage of domestic and overseas markets (Azhgaliyeva, Mishra, and Yoshino, 2021; Foo, Lean, and Salim, 2020). As a result, the improved trade facilitation contributes to a significant gain in trade, and the effect is more pronounced in intra-regional trade. Notably, the larger increase in trade comes from infrastructure improvement, followed by logistics and customs efficiency (Felipe and Kumar, 2012). Moreover, reducing time at the importer border increases intra-regional trade (Kim and Mariano, 2020). In addition, Karymshakov and Sulaimanova (2021) underline that both the quality and quantity of infrastructure impact trade. Henceforth, to stimulate trade in the CAREC countries, improvement in trade facilitation efficiency could be an essential policy goal.

At this point, for a glimpse into the region's business environment, we discussed the Doing Business ranking (EoDB), which encompasses dimensions such as starting a business, getting credit, trading across borders, and enforcing contracts. The CAREC countries vary in terms of the overall scores. A score of 83.7 placed Georgia in seventh ranking and a score of 44.1 ranked Afghanistan at 173 out of 190 economies. Likewise, a similar picture emerges when looking at the Global Competitiveness Index (GCI) for the 141 countries. These rankings for the GCI vary considerably among the different CAREC economies, although China appears as the best performer, and Pakistan, the worst, ranked 110 globally.

Next, to review the trade facilitation performance of the CAREC region, we present the World Bank Logistical Performance Index (LPI), see Table 5. The LPI ranks countries on six dimensions: quality of logistics services; ease of arranging shipment; tracking and tracing consignment; timeliness of freight; customs performance; and infrastructure quality. Overall, the trade facilitation indicators paint a bleak picture for all CAREC countries except China. Likewise, only three out of 11 CAREC member countries are placed above 100 in LPI ranking: China placed at 27, followed by Kazakhstan at 71, and then Uzbekistan at 99. On the flip side, Afghanistan is the most underperforming country in the CAREC region; it ranks at 160, with the lowest score of 1.95.

Table 5: Logistics performance of CAREC countries

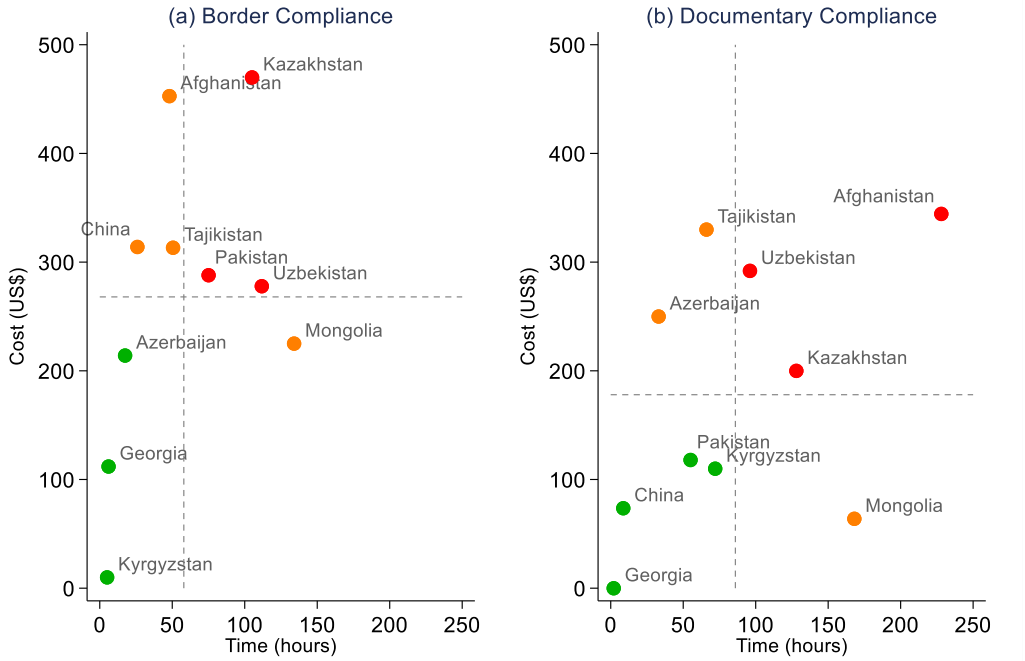
	Logistics quality and competence	Ease of arranging shipments	Consignment tracking	Timeliness of shipments	Customs clearance efficiency	Infrastructure quality	LPI (Overall)
Afghanistan	1.92	2.10	1.70	2.38	1.73	1.81	1.95
Azerbaijan	2.14	2.43	2.75	3.23	1.92	2.42	2.48
China	3.59	3.54	3.65	3.84	3.29	3.75	3.61
Georgia	2.26	2.38	2.26	2.95	2.42	2.38	2.44
Kazakhstan	2.58	2.73	2.78	3.53	2.66	2.55	2.81
Kyrgyzstan	2.36	2.22	2.64	2.94	2.75	2.38	2.55
Mongolia	2.21	2.49	2.10	3.06	2.22	2.10	2.37
Pakistan	2.59	2.63	2.27	2.66	2.12	2.20	2.42
Tajikistan	2.33	2.31	2.33	2.95	1.92	2.17	2.34
Turkmenistan	2.31	2.29	2.56	2.72	2.35	2.23	2.41
Uzbekistan	2.59	2.42	2.71	3.09	2.10	2.57	2.58

Note: LPI and the subcomponent value ranges from 1 (low) to 5 (high), with 5 being the most efficient. All data used from LPI 2018, except Azerbaijan, where it is taken from 2012 LPI. Source: World Development Indicator (WDI).

The overall index shows the highest score for China (3.61), followed by Kazakhstan (2.81) and Uzbekistan (2.58). Afghanistan has lower LPI scores across all dimensions in the region except for timeliness, where other countries have marginally better scores. Compared to other dimensions, custom efficiency is weak on average, and the timeliness of shipments is relatively better. For comparative purposes, the developed countries performed better—for example, Germany, the highest scoring country in the index, had a total score of 4.20, followed by Sweden with 4.05 and Belgium with 4.04.

The poor logistic conditions result in excessive costs stemming from border and documentary compliance related to the export process (see Figure 10). The required time and costs for border and documentary compliance vary considerably across countries. Related to border compliance, it takes 58 hours on average across the CAREC countries, whereas the average cost is US$268. Within the region, Kyrgyzstan, Georgia, and Azerbaijan show lower burdens in terms of time and cost. On the other hand, Kazakhstan and Afghanistan require more time and money for border compliance. Related to the documentary compliance, Georgia, China, Kyrgyzstan, and Pakistan perform relatively better in the region. In general, the higher average waiting time and costs reflect that most CAREC countries have inefficient border and documentary compliance.

Figure 10: Bureaucratic burden on exporting process



Note: Authors' graphics based on World Development Indicator database

In the CAREC region, China is championing industrialization to enhance intra-regional trade. However, the success of such initiatives depends partly on the development of soft and hard infrastructure in the region. Owing to cumbersome documentation and customs procedures, a timelier corridor-based approach to infrastructure development can be adopted. This may include reducing the documentation costs, adopting standard procedures in trade, and developing infrastructure covering transport, information and communication technologies, and energy that requires priority and special attention. Specifically, digitalization can further minimize procedural inefficiency, thereby reducing export costs.

5. Structural Gravity of the CAREC RTAs

5.1. CAREC trade agreements

Regional trade agreements (RTAs) have become a crucial component of the contemporary global economy as they offer economic gains in terms of trade creation (De Silva and Lee, 2018). Economic integration agreements lower tariff barriers to facilitate trade; and encourage circulation of capital, labor, and migration, thus deepening economic integration among member countries (Kahouli and Maktouf, 2015). RTAs have proliferated since the early 1990s, with over 349 RTAs in force worldwide as of 2021 (World Trade Organization, n.d.).

There are different forms of economic integration, including partial scope agreements (PSAs), free trade agreements (FTAs), customs unions, and economic integration agreements. While a PSA means lowering tariffs only for specific products, FTAs involve substantial reduction in trade barriers between the constituent territories. Taking most favored nations as default, PSAs and FTAs mark the initial level of economic integration, whereas custom union is a trade bloc with free internal trade and common external tariffs. Further economic integration includes free movement of capital, labor, and common economic policies.

Related to the CAREC region, there are several multilateral agreements. For instance, the GUAM (Georgia, Ukraine, Azerbaijan, Moldova) agreement was signed in 2003. Similarly, the South Asian Preferential Trade Agreement (SAPTA) was signed in 1995 which was later converted into the South Asian Free Trade Agreement (SAFTA) in 2006. A list of multilateral trade agreements of the CAREC region is presented in Table 6.

In addition, there are a number of bilateral agreements between a country and a bloc (see Table 7). For instance, the Eurasian Economic Union (EAEU) was signed in 2014. Iran and Vietnam got accession to the EAEU in 2016 and 2019, respectively. Georgia made an agreement with the European Union (EU) in 2014 and with the European Free Trade Association (EFTA) in 2017. Mongolia's only RTA was implemented in 2016 with a non-CAREC country, Japan. Other countries have a trade agreement with at least one other CAREC member. Georgia has the highest number of RTAs in the CAREC region, followed by China and Pakistan. Concerning extra-CAREC trade, there are a limited number of agreements. In the EAEU, the CAREC members Kazakhstan and Kyrgyzstan brought Russia, Belarus, and Armenia into a customs union. Later in 2019, Iran became a participant in the EAEU. Likewise, GUAM, Georgia, and Azerbaijan are part of an FTA with the non-CAREC countries Moldova and Ukraine.

Table 6: Multilateral regional trade agreements

Agreement	Type	Signatories
Eurasian Economic Union (2015)	CU	Armenia, Belarus, Kazakhstan, Kyrgyzstan Russian Federation
Commonwealth of Independent States Treaty (2012)	FTA	Armenia, Belarus, Kazakhstan, Kyrgyzstan, Moldova Russian Federation, Tajikistan, Ukraine
ECOTA (2008)	FTA	Afghanistan, Azerbaijan, Iran, Kazakhstan, Kyrgyzstan, Pakistan, Tajikistan, Turkey, Turkmenistan, Uzbekistan
SAFTA (2006)	FTA	Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, Sri Lanka
Common Economic Zone (2004)	FTA	Belarus, Kazakhstan, Russian Federation, Ukraine
GUAM (2003)	FTA	Azerbaijan, Georgia, Moldova, Ukraine
Russia–Belarus–Kazakhstan (1997)	CU	Belarus, Kazakhstan, Russian Federation
SAPTA (1995)	PSA	Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan Sri Lanka
Commonwealth of Independent States (1994)	FTA	Azerbaijan, Georgia, Turkmenistan, Uzbekistan
APTA (1976)	PSA	Bangladesh, China, India, South Korea, Laos, Sri Lanka

Note: World Trade Organization database; FTA database of the Asian Development Bank; and World Trade Organization PTA database. Note that the trade agreements are tabulated in descending order of the year of initial entry into force. Afghanistan accessed the SAFTA in 2011. Iran, Pakistan, and Turkey have been members of ECO since 1992. China accessed the APTA in 2002.

Table 7: Bilateral agreements between a country and a bloc

Agreement	Type	Signatories
EAEU–Iran (2019)	FTA	Iran with the EAEU members (Armenia, Belarus, Kazakhstan, Kyrgyzstan, Russian Federation, Vietnam)
EFTA–Georgia (2017)	FTA	Georgia with the EFTA members (Iceland, Liechtenstein, Norway, Switzerland)
EAEU–Vietnam (2016)	FTA	Vietnam with the EAEU members (Armenia, Belarus, Kazakhstan, Kyrgyzstan, Russian Federation, Vietnam)
EU–Georgia (2014)	FTA	Georgia with the EU members (Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovak Republic, Slovenia, Spain, Sweden)
ASEAN–China (2005)	FTA	China with ASEAN members (Brunei Darussalam, Myanmar, Cambodia, Indonesia, Laos, Malaysia Philippines, Singapore, Vietnam, Thailand)

Note: The information taken from World Trade Organization and Asian Development Bank. The trade agreements are tabulated in descending order of the year of initial entry into force.

Table 8: Bilateral regional trade agreements

Agreement	Type	Agreement	Type
China–Mauritius (2021)	FTA	Georgia–Armenia (1998)	FTA
United Kingdom–Georgia (2021)	FTA	Ukraine–Kazakhstan (1998)	FTA
China–United States (2020)*	FTA	Kyrgyzstan–Ukraine (1998)	FTA
Hong Kong, China–Georgia (2019)	FTA	Kyrgyzstan–Uzbekistan (1998)	FTA
China–Georgia (2018)	FTA	Tajikistan–Belarus (1998)	FTA
Japan–Mongolia (2016)	FTA	Azerbaijan-Kazakhstan (1997)	FTA
Australia–China (2015)	FTA	Uzbekistan–Kazakhstan (1997)	FTA
China–Republic of Korea (2015)	FTA	Georgia–Azerbaijan (1996)	FTA
Iceland–China (2014)	FTA	Ukraine–Azerbaijan (1996)	FTA
Switzerland–China (2014)	FTA	Azerbaijan–Uzbekistan (1996)	FTA
Indonesia–Pakistan (2013)	PSA	Azerbaijan–Turkmenistan (1996)	FTA
China–Costa Rica (2011)	FTA	Georgia–Ukraine (1996)	FTA
Peru–China (2010)	FTA	Kyrgyzstan–Moldova (1996)	FTA
China–Singapore (2009))	FTA	Tajikistan–Uzbekistan (1996)	FTA
China–New Zealand (2008)	FTA	Armenia–Turkmenistan (1996)	FTA
Turkey–Georgia (2008)	FTA	Ukraine–Uzbekistan (1996)	FTA
Pakistan–Malaysia (2008)	FTA	Azerbaijan–Moldova (1995)	FTA
Pakistan–China (2007)	FTA	Georgia–Uzbekistan1995)	FTA
Mauritius–Pakistan (2007)	PSA	Kyrgyzstan–Kazakhstan (1995)	FTA
Chile–China (2006)	FTA	Kyrgyzstan–Armenia (1995)	FTA
Kyrgyzstan–Tajikistan (2006)	FTA	Ukraine–Turkmenistan (1995)	FTA
Pakistan–Sri Lanka (2005)	FTA	Uzbekistan–Moldova (1995)	FTA
India–Afghanistan (2003)	PSA	Georgia–Russian Federation (1994)	FTA
China–Hong Kong (2003)	FTA	Russia–Azerbaijan (1993)	FTA
China–Macao (2003)	FTA	Kazakhstan–Russia (1993)	FTA
China–Thailand (2003)	FTA	Kyrgyzstan–Russia (1993)	FTA
Ukraine–Tajikistan (2002)	FTA	Tajikistan-Russia (1993)	FTA
Armenia–Kazakhstan (2001)	FTA	Russia–Turkmenistan (1993)	FTA
Georgia–Turkmenistan (2000)	FTA	Russia–Uzbekistan (1993)	FTA
Georgia–Kazakhstan (1999)	FTA		

Note: The information taken from World Trade Organization and Asian Development Bank. The trade agreements are tabulated in descending order of the year of entry into force.

5.2. Method and data

The gravity trade model was pioneered by Ravenstein (1885) and Tinbergen (1962). The basic idea is analogical to the Newtonian law of gravitation—that is, bilateral trade is directly proportional to economic masses of trading partners and inversely proportional to the distance between them. Anderson (1979) presented a theoretically founded gravity trade model based on the elasticity of substitution by origin. Later, Anderson and Van Wincoop (2003) provided the theoretical foundation of the current model involving the concept of multilateral resistance terms of exporting and importing countries. Outward multilateral resistance means the resistance faced by the exporting country *i* while exporting to its importing partner *j* relative to the overall resistance of all export destinations. Similarly, the resistance faced by a country *j* for its imports from a country *i* proportional to the overall resistance of importing from other countries.

The ordinary least square (OLS) estimation has traditionally been applied for statistical estimation of gravity equation. However, the OLS estimator is not suitable for bilateral trade analysis owing to heteroscedasticity and zero values of the dependent variable. Following the seminal studies of Silva and Tenreyro (2006) and Silva and Tenreyro (2011), the PPML estimations have now emerged as an alternative approach that allows for zero trade as well as heteroscedasticity. Santeramo and Morelli

(2016), Álvarez, Barbero, Rodríguez-Pose, and Zofío (2018), and Lien, Lo, and Bojanic (2019) are some of the recent studies using PPML estimator for gravity analysis.

Earlier gravity models used traditional gravity variables such as GDPs, bilateral distance, shared borders, and language commonality to explain bilateral trade. For instance, the country's GDP is included to capture the country's economic size: the larger the economic size, the higher the exports, *ceteris paribus*. In the same way, bilateral trade between a country pair is expected to be higher if the countries are members of an RTA. However, a structural gravity equation including exporter-time fixed effects, importer-time fixed effects, and country-pair fixed effects is the recent approach (for example, Anderson and Yotov, 2020; Freeman and Pienknagura, 2019; Gil-Pareja, Llorca-Vivero, and Martínez-Serrano, 2017; Oberhofer and Pfaffermayr, 2021). With the inclusion of the fixed effects, country-specific, time-specific, and country-pair specific unobserved heterogeneity is captured effectively. We specified our econometric model as :

$$\mathrm{X}_{ijt} = \exp\left(\alpha \mathrm{RTAintra}_{ijt} + \beta \mathrm{RTAextra}_{ijt} + \gamma_{ij} + \psi_{it} + \phi_{jt}\right) + \epsilon_{ijt} \quad (3)$$

$$\mathrm{X}_{ijt} = \exp\left(\alpha \mathrm{RTAintra}_{ijt} + \sum_{r=1}^{5} \beta_r \left(\mathrm{RTA}_{ijt}\right)_r + \gamma_{ij} + \psi_{it} + \phi_{jt}\right) + \epsilon_{ijt} \quad (4)$$

Note that the dependent variable is bilateral exports taken in levels. RTAs are treated as binary variables to denote the existence of an RTA between the country pair. γ_{ij}, ψ_{it} and φ_{jt} denote country-pair fixed effects, exporter-time fixed effects, and importer-time fixed effects, respectively. In Eq. 3, $\mathrm{RTAintra}_{ijt}$ takes value equal to 1 for the RTAs when the importing country belongs to the CAREC region. Conversely, $\mathrm{RTAextra}_{ijt}$ captures the impact of RTAs with non-CAREC countries from the neighboring regions. In this way, we can isolate the effect of RTAs for intra-bloc and extra-bloc trade. We split the $\mathrm{RTAextra}_{ijt}$ term into five variables accounting for the impact of the RTAs for the regions: Russia, Europe, the Mediterranean, the Middle East, and South Asia.

Next, we reformulated the variables for RTAs for each of the eight CAREC exporting countries—namely, Afghanistan, Azerbaijan, Georgia, Kazakhstan, Kyrgyzstan, Mongolia, Pakistan, and Uzbekistan—to assess the effectiveness of their regional integration policies.

$$\mathrm{X}_{ijt} = \exp\left(\sum_{x=1}^{8} \beta_x \left(\mathrm{RTA}_{ijt}\right)_x + \gamma_{ij} + \psi_{it} + \phi_{jt}\right) + \epsilon_{ijt} \quad (5)$$

The RTA and PTA databases of the World Trade Organization are the main sources of information on RTAs. Additional information is supplemented by the FTA database of the Asian Development Bank. There is a burgeoning literature on trade-related issues of the CAREC economies. Studies specific to the trade effect of RTAs are also available for individual CAREC countries, including China and Pakistan. However, literature on gravity estimation of the RTAs of the entire CAREC region is scant, primarily owing to the lack of available data. The gravity trade model requires bilateral trade flows across country pairs for each exporting country under study. In the CAREC region, the bilateral export data—particularly for Tajikistan and Turkmenistan—is unavailable at the United Nations Comtrade database, the main source of bilateral export data. An alternative data source is the Direction of Trade (DOT) database of the International Monetary Fund (IMF). The disadvantage of the DOT data is that it provides only aggregate bilateral exports, and there is no provision of exports of different sectors—such as agriculture and industry. Second, the DOT and the Comtrade data do not show convergence to a reasonable extent for our sample. Therefore, we decided to rely on the Comtrade data, excluding the two exporters Tajikistan and Turkmenistan. Furthermore, China constitutes 94 percent of the CAREC exports, as shown in Figure 3. Therefore, including China in the sample overrides the cumulative effect of the rest of the CAREC members. Given this, we ended up with a sample including eight exporting countries: Afghanistan, Azerbaijan, Georgia, Kazakhstan, Kyrgyzstan, Mongolia,

Pakistan, and Uzbekistan in gravity estimation.

Concerning importing countries, we started data compilation of all 196 United Nations member countries. Owing to excessive missing data, we limited our sample to include 170 importers. Nevertheless, the sample still includes missing data on bilateral trade flows. Dropping out the missing cases would reduce the sample size and thus raise the problem of selection bias. Therefore, we dealt with the remaining missing values in the following way. As the exports of agricultural goods and industrial goods sum up to total exports, we replaced the missing value for agricultural exports as the difference between total exports and industrial exports. Similarly, the missing values for industrial exports are deduced where applicable. Second, we used the mirror data in addition to the direct data of bilateral trade flows. For cases where the exporting country does not report data, but the importing country's non-zero import value is reported, the computed export value is adjusted for the CIF (cost, insurance, and freight) factor. This approach is better than assuming the missing values as zero exports. However, when both exporting and importing countries do not report any data, the value is assumed to be zero. Given the quality of sample data, we believe that while the estimates based on this data are not completely error free, our analysis provides a reasonably robust estimation of the trade effect of the RTAs.

5.3. Structural gravity estimates

Table 9 shows estimates to assess the RTAs for their intra-CAREC and extra-CAREC trade effect. There is a positive and statistically significant trade effect of the RTAs in the case of intra-bloc trade. However, the estimations show that the RTAs of the CAREC countries do not play any significant role in their exports outside the CAREC region.

Table 9: Gravity of CAREC exports: aggregate level

	(1)		(2)	
RTA_{Intra}	0.616	(0.202)***	0.613	(0.203)***
RTA_{Extra}	-0.133	(0.200)		
RTA_{Europe}			0.160	(0.330)
RTA_{Russia}			-0.433	(0.235)*
$RTA_{MiddleEast}$			-2.065	(0.225)***
$RTA_{Mediterranean}$			-0.192	(0.253)
$RTA_{SouthAsia}$			-0.253	(0.657)
N	20,529		20,529	

Note: Robust standard errors clustered over importers are given in parentheses. Significance levels are denoted as *** p<0.01, ** p<0.05, * p<0.1. All specifications include exporter-time, importer-time, and pair-fixed effects whose estimates are omitted for brevity.

The last two columns of Table 9 reveal estimates of extra-bloc trade separately for Russia, Europe, the Mediterranean, the Middle East, and South Asia. We observe that the trade effect of RTAs for these regions remains trivial. In fact, we obtained a negative coefficient value corresponding to the Middle East region, which implies that the trade has been substituted away from the Middle East region to other countries.

Table 10 presents the estimates corresponding to Eq. 4 for bilateral exports at disaggregate levels. The gravity estimation for agricultural and industrial exports are reported in Column (1) and Column (2), respectively. Here again, the role of RTAs is limited only to intra-bloc trade. Related to extra-bloc trade, the impact of RTAs is observed only for agricultural exports to the South Asian region consequent to SAFTA and the FTA with Sri Lanka. Note that the coefficient values for the Middle East remain negative for both agricultural and industrial exports.

A challenge in obtaining reliable estimates of the effects of the RTAs by gravity estimation is that the trade policy variables and bilateral costs are endogenous. As the trade policy variables may suffer from reverse causality because a given country is more likely to liberalize its trade with another country that is already a significant trade partner. The issue of endogeneity of trade policy is well known in the trade literature (Trefler, 1993). In this regard, several past studies relied on the instrumental veriabe approach; however, Baier and Bergstrand (2007) argued that these studies showed an inconclusive evidence of isolating the effect of RTAs on trade flows. Nevertheless, more recent approaches in this context show that the pair-fixed effects are a better measure (Egger and Nigai, 2015; Agnosteva et al., 2014).

Table 10: Gravity of CAREC exports: disaggregate level

	Agriculture	Industry	Low value-add	High value-add
	(1)	(2)	(3)	(4)
RTA_{Intra}	0.288	0.452**	0.488**	0.379*
	(0.273)	(0.181)	(0.217)	(0.221)
RTA_{Europe}	-0.441*	0.523	0.219	0.287
	(0.263)	(0.395)	(0.421)	(0.249)
RTA_{Russia}	-0.147	-0.412	-0.475	-0.603***
	(0.385)	(0.275)	(0.346)	(0.219)
$RTA_{MiddleEast}$	-2.959***	-1.990***	-2.261***	-1.834***
	(0.601)	(0.174)	(0.253)	(0.271)
$RTA_{Mediterranean}$	-0.456**	-0.209	-0.392	0.862**
	(0.201)	(0.286)	(0.310)	(0.356)
$RTA_{SouthAsia}$	2.103***	-2.171***	-0.550	1.392**
	(0.590)	(0.731)	(0.610)	(0.553)
N	18,454	19,573	19,436	19,379

Note: Robust standard errors clustered over importers are given in parentheses. Significance levels are denoted as *** p<0.01, ** p<0.05, * p<0.1. All specifications include exporter-time, importer-time, and pair-fixed effects whose estimates are omitted for brevity.

Furthermore, we analyze the exports disaggregated across product value-addition. Here, it is worth mentioning that raw materials and intermediate goods are lumped into low value-added products. In contrast, finished consumption goods and capital goods are dubbed as high value-added products. The last two columns of Table 10 refer to the estimates of RTAs trade effect for the low value-added and high value-added exports. Corroborated with the earlier finding, the positive effect of RTAs is limited to intra-regional trade. Nevertheless, the effect is more pronounced for the low value-added exports. Concerning the extra-bloc trade, the estimates show a trade creation effect for the Mediterranean and South Asian regions and a trade diversion effect for the Middle East and Russia.

Table 11: Gravity of CAREC exports: exporter wise RTAs

$RTA_{Afghanistan}$	0.604	(0.601)
$RTA_{Azarbaijan}$	0.271	(0.273)
$RTA_{Georgia}$	-0.123	(0.213)
$RTA_{Kazakhstan}$	0.764	(0.267)***
$RTA_{Kyrgyzstan}$	-0.378	(0.292)
$RTA_{Mongolia}$	-1.143	(0.203)***
$RTA_{Pakistan}$	0.492	(0.160)***
$RTA_{Uzbekistan}$	0.605	(0.359)*
N	20,529	

Note: Robust standard errors clustered over importers are given in parentheses. Significance levels are denoted as *** p<0.01, ** p<0.05, * p<0.1. All specifications include exporter-time, importer-time, and pair-fixed effects whose estimates are omitted for brevity.

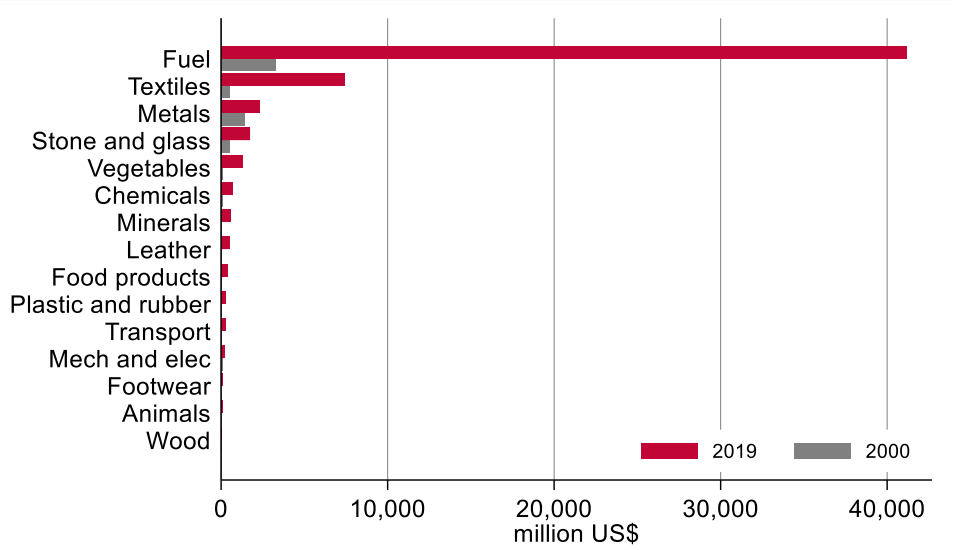
Finally, we look at the scenario with respect to the exporting countries, corresponding to Eq. 5. The cumulative trade effect of the RTAs of Kazakhstan is positive and statistically significant (see Table 11). Similarly, the trade-facilitating role of the RTAs is evident in the case of Pakistan and Uzbekistan. On the other hand, exports from Mongolia seem to divert more towards non-RTA member countries. The coefficient values are not statistically different from zero for the rest of the exporters—namely, Afghanistan, Azerbaijan, Georgia, and Kyrgyzstan. This indicates that, while individual agreements may or may not have a positive effect, the cumulative impact of the RTAs of each of these countries is insignificant.

The CAREC Program is a partnership of 11 countries to facilitate development through cooperation, leading to spur economic growth and poverty reduction. However, it is not a free trade area comparable to those of the ASEAN and the SAARC. There are several bilateral and multilateral agreements currently in force between various CAREC member countries. Nevertheless, there is a great scope for a pan-CAREC trade agreement—that is, a Central Asian free trade area, as such an arrangement would be advantageous in many ways. First, the intra-bloc trade would slightly improve over time, but would remain suboptimal. A free trade area would thereby facilitate trade flows among the CAREC countries. Second, instead of the spaghetti bowl of existing agreements, a single uniform agreement would offer a more explicit analytical framework for policy adjustments over time. In addition to trade, the agreement may involve regional integration in terms of other economic policies related to investment, migration, and transportation.

In the context of extra-bloc trade, the cumulative effect of the current RTAs is negligible. Several CAREC members are recipients of tariff concessions under the Generalized System of Preferences (GSPs). However, unilateral agreements are subject to the conditions of the donor country; hence, they are vulnerable at any time to policy changes (Gil-Pareja et al., 2017)—for instance, the EU calls to reassess the GSPs for Pakistan (Muhammad, 2015; Rehman, 2021). A more sustainable solution is a bilateral or multilateral RTA. In this regard, it is pertinent to consider comparative advantage and trade complementarity measures of the potential agreement participants to formulate an effective agreement. Economic integration lies at the core of macroeconomic policy for export promotion; however, it needs a more prudent strategy for integration (Kohl, 2014). Whether a trade agreement would yield any considerable impact on exports depends on the partner country's choice and the coverage of the tariff lines (Dür, Baccini, and Elsig, 2014). At present, most of the CAREC economies are stuck with exporting primary goods and low value-added products. To promote exports of high value-added products, coverage of the tariff lines must be carefully negotiated. To this end, it is necessary to negotiate lower tariffs on the imports of inputs that go into the production of high value-added products and the exports of high value-added products.

Non-tariff measures (NTMs) are policy measures other than tariffs that can have an economic effect on international trade flows. There is a wide range of NTMs, including sanitary and phytosanitary (SPS) measures, technical barriers to trade (TBTs) such as restrictions on toxins in children's toys, pre-shipment inspection procedures, and other price and quantity control measures. With the advent of WTO policy on trade liberalization, the NTMs relative to tariffs has become increasingly important. In addition to the tariffs, therefore, appropriate consideration of NTMs is essential to formulate a policy for trade facilitation.

Figure 11: CAREC-WC exports to Europe



Note: Authors' graphic based on Comtrade database
Mech and elec = mechanical and electronics manufacturing

Europe is the largest market for exports from CAREC-WC countries. The United Kingdom, Germany, the Netherlands, and Switzerland are the main export destinations for fuel, textiles, metals, stone and glass, and vegetables (see Figure 11). From US$8,285 million in 2000, the region's fuel exports to the world increased six times to US$63,038 million in 2019. Remarkably, the export of fuel expanded roughly 12 times over the period 2000-2019. Other main exporting products include textiles from Pakistan and metals from Georgia, Kazakhstan, and Kyrgyzstan. Likewise, Figure 12 portrays CAREC exports to the Mediterranean countries. The top three exports with a large share are fuel, textiles, and metals. The exports landed mainly in Turkey, Italy, and Spain.

Total exports to Europe and the Mediterranean amounted to US$42.2 billion and US$23.3 billion respectively. It is citable that the exports of the CAREC-WC for the European and Mediterranean regions is similar and largely comprises primary goods—such as fuel, minerals, and metals—and labor-intensive manufacturing—such as apparel and clothing. There is an urgent need for diversification in order to attain sustainable export growth. It is apposite that the share of vegetable exports to Europe increases ten times over the period. Growing vegetable exports for the European market can be instrumental to trade gain. For this food quality standard, GlobalGAP can play a vital role in accessing markets with a premium price (see Box 1) and thereby improve export diversification.

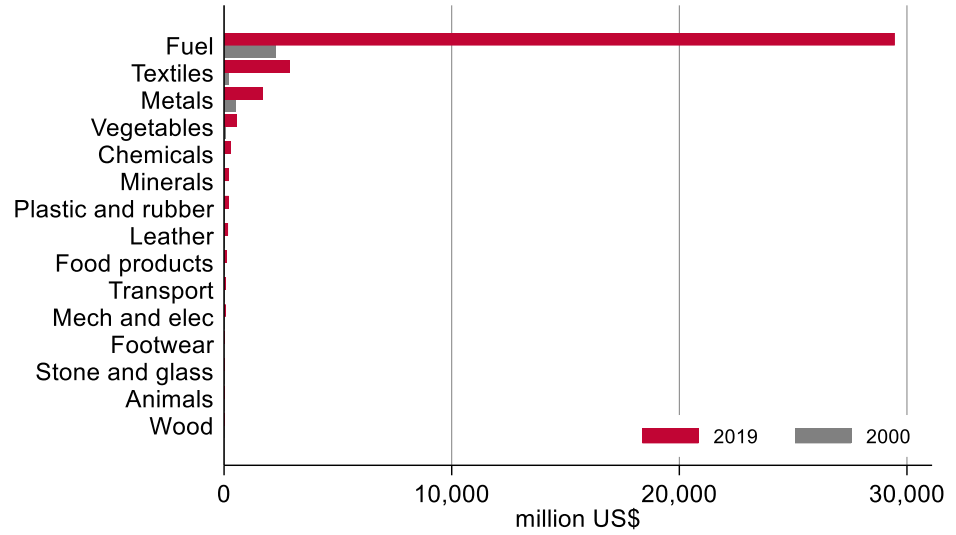
One of the top exporting sectors for several CAREC members, textiles is particularly suitable for an export diversification policy. Textiles and clothing products are diverse, with physical-capital-intensive processes (spinning and weaving) and labor-intensive ones (clothing assembly). CAREC exports are largely concentrated in the first stage of production along the value-added chain, starting with raw cotton. However, there is a need to add value to these labor-intensive industries. In terms of market access, compliance to international standards can make a significant difference. For instance, ISO certification may help to support exports, particularly in the case of exporters belonging to countries with low repute (Rodriguez-Arnaldo and Martínez-Lorente, 2020).

Box 1: GlobalGAP certification and market access

Food quality standards are proliferating in response to increasing awareness among consumers particularly in high-income countries (Swinnen, 2016). Agricultural value chains are increasingly being governed by food safety standards. Unlike, *de jure* mandatory public standards, private standards are voluntary. Nevertheless, the proliferation of private standards and the increasing market power of multinational retail chains have made the compliance with these standards mandatory *de facto*. In this regard, the GlobalGAP standard is one of the foremost private standards emerging as a quasi-mandatory precondition to access various high-value markets in the global agri-food sector.

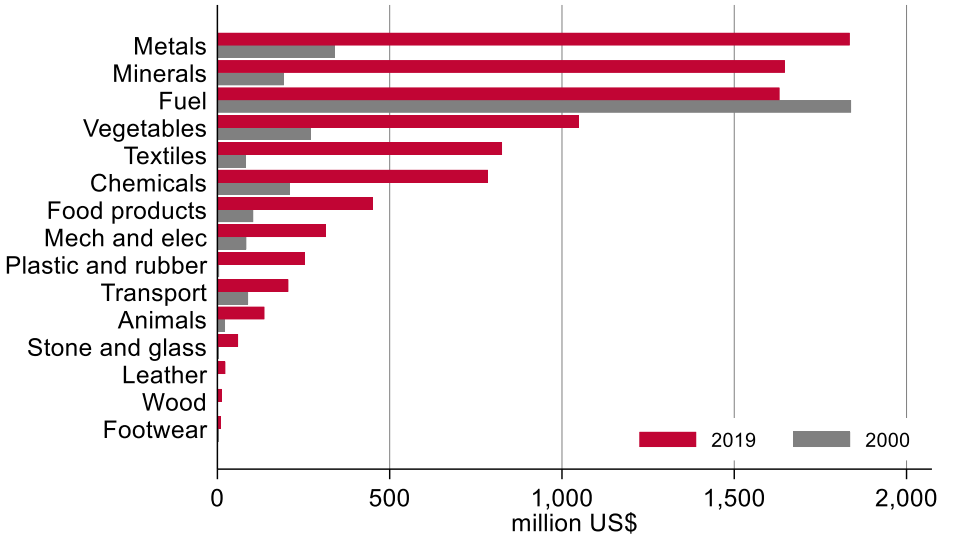
Literature, for instance Fiankor et al. (2020), shows that GlobalGAP certification promotes exports to European Union. However, the magnitude of the effect of the certification is heterogeneous for different agricultural products. Meeting GlobalGAP requirements involves passing several control points based on food safety, traceability, environmental sustainability, and worker occupational health (GlobalGAP, 2015). Thus, compliance to GlobalGAP certification requires extra cost, which can be a barrier to resource-constrained producers (Lippe and Grote, 2017) and thus hinder market access. There is already some incidence of GlobalGAP certification in Central Asia (GlobalGAP, 2020). The group certification option offered by the GlobalGAP standard may help the smallholders in the CAREC region to get into the certification network. Furthermore, auditing cost is a major component of the compliance cost. A domestically available auditing facility would reduce this burden. Studies show that support by donors, exporters and public-private partnerships are vital to enable small-scale farmers to adopt GlobalGAP certification (Kersting and Wollni, 2012). The diffusion of GlobalGAP certification, in this way, can enhance exports from the CAREC region to EU countries, region into the Middle East and South Asia.

Figure 12: CAREC-WC exports to the Mediterranean



Note: Authors' graphic based on Comtrade database
Mech and elec = mechanical and electronics manufacturing

Figure 13: CAREC-WC exports to Russia



Note: Authors' graphic based on Comtrade database
Mech and elec = mechanical and electronics manufacturing

Next, Figure 13 portrays the CAREC-WC exports to Russia. Russia is the largest and most accessible regional market for the CAREC countries, sharing a border with Azerbaijan, Kazakhstan, Mongolia, and China. The exports shipped mainly from the Central Asian countries, Uzbekistan, followed by Tajikistan, Georgia, Turkmenistan, Kyrgyzstan, and Azerbaijan. The key exports to Russia include metals, minerals, fuel, vegetables, textiles, and chemicals. It is noticeable that exports of metals, textiles, minerals, and vegetables have grown exponentially over the last two decades. For instance, exports of metals accounted for US$340 million in 2000 and US$1,835 million in 2019, showing a four-fold growth in exports. Similarly, exports of textiles, minerals, and vegetables to Russia grew by 896 percent, 753 percent, and 288 percent, respectively. On the contrary, exports of fuel—the major exporting product of most CAREC countries—have plummeted over time.

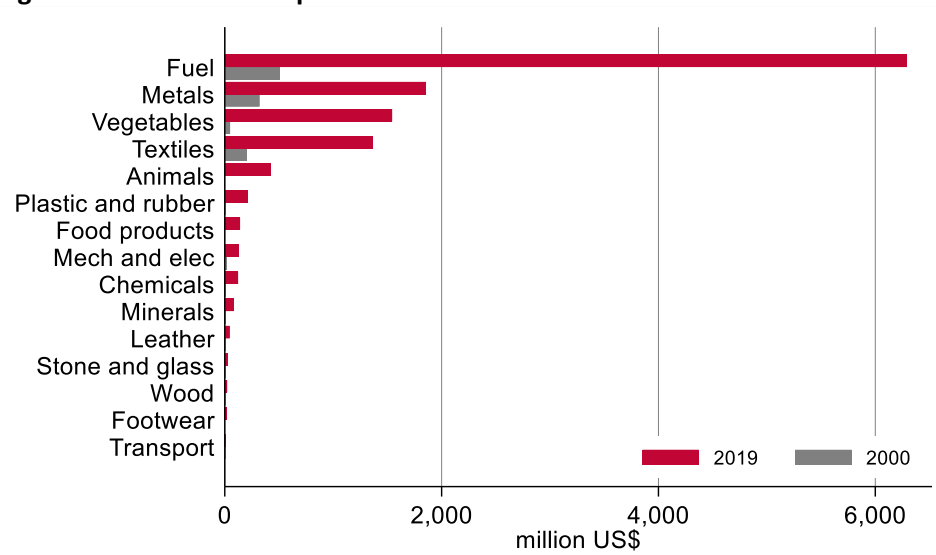
However, the cumulative export share of CAREC region to Russia has declined over time. The gravity estimates show that CAREC exports divert away from Russia, particularly in the high value-added products. Although Georgia, Kazakhstan, Kyrgyzstan, and Mongolia have revealed a higher advantage for exports in minerals, Tajikistan in metals, and Pakistan in textiles. Nevertheless, the export portfolio should be diversified beyond these products.

Figure 14 illustrates CAREC-WC exports to the Middle East. The top five exports are fuel, metals, vegetables, textiles, and animals. The CAREC members from South Asia—Pakistan and Afghanistan—are the largest exporters to three Middle Eastern countries, including Saudi Arabia, the United Arab Emirates, and Iran. While exports of fuel, textiles, and vegetables soared, other products—such as stone and glass, leather, and plastic and rubber—have been included in the export portfolio.

Next, Figure 15 illustrates CAREC exports to South Asia. The exports land mainly in India, the largest South Asian export market for Afghanistan. Similarly, Pakistan mostly exports to Bangladesh in this region. In 2000, the CAREC-WC exports to South Asia were minimal; however, fuel, textiles, vegetables, chemicals, minerals, and stone and glass have been the top exports over time. Moreover, there is potential to diversify the exports for products such as leather, food products, and plastic and rubber. It is noteworthy that Figures 12 to 16 show exports of product groups based on the Harmonized System of Product Classification—for example, HS chapters 6 to 15 cover vegetables (see Table A2).

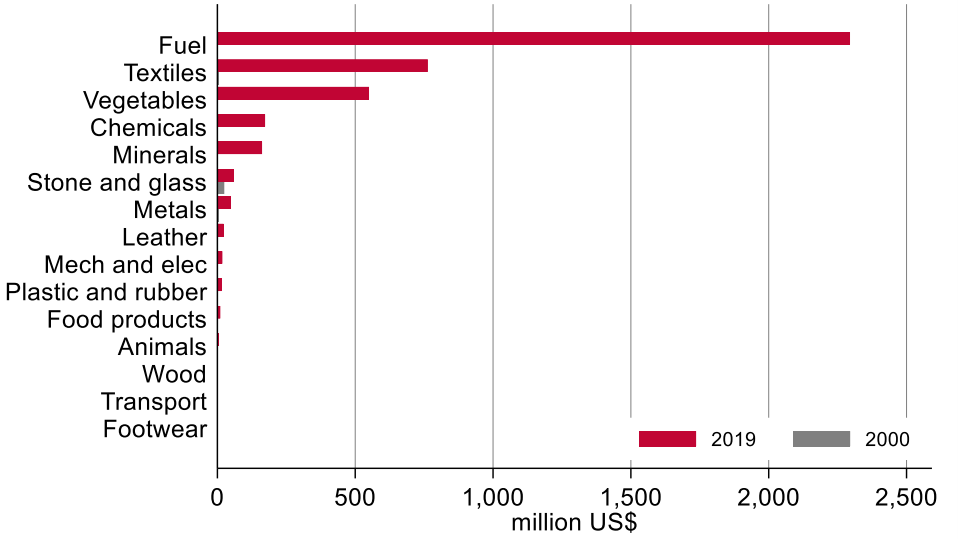
Despite exports to the Middle Eastern and South Asian regions amounting to roughly US$7.7 billion and US$2.8 billion respectively, connectivity to these regions faces hostile conditions impeding the pace of the integration process. In general, institutional quality and political stability are poor across the region; however, the political situation in Afghanistan is of primary concern (see Box 2).

Figure 14: CAREC-WC exports to the Middle East



Note: Authors' graphic based on Comtrade database
Mech and elec = mechanical and electronics manufacturing

Figure 15: CAREC-WC exports to South Asia



Note: Authors' graphic based on Comtrade database
Mech and elec = mechanical and electronics manufacturing

Box 2: Regional integration and political stability

Tackling corruption, strengthening the rule of law, political stability, and regulatory quality is essential to develop a favorable business climate and regional integration (Yu, 2010). The improved institutions facilitate contracts and long-term agreements, boost investments and productivity, and offset unforeseeable events (Martínez-Zarzoso and Márquez-Ramos, 2019). An improvement in governance, therefore, fosters trade flows among countries (Bojnec, Ferto, and Fogarasi, 2014; Francois and Manchin, 2013; Horsewood and Voicu, 2012; Yushi and Borojo, 2019).

Experiencing almost two decades of direct international intervention, both in terms of financial and military support (Thier and Worden, 2017), Afghanistan lags behind other countries in the CAREC region. It performs worst in political stability and the rule of law. The plans—such as building a railway to connect Pakistan, Afghanistan, and Uzbekistan (Ollard, 2021)—depend upon political stability along the route. Political stability in the region, particularly in Afghanistan, is vital for the effective integration of the CAREC region.

6. Conclusion and Policy Remarks

This report presents a comprehensive diagnosis of intra-bloc and extra-bloc trade for the CAREC region. First, we analyze the revealed comparative advantage to identify the export competitiveness of various product groups. The findings show that only China exhibits a comparative advantage in mechanical and electronics manufacturing, placing China in a strong position for high-tech manufacturing. Other countries reveal advantages in exporting primary goods and labor-intensive manufacturing. Subsequently, we offer the analysis based on trade complementarity among CAREC members and between CAREC and its neighboring regions. Excluding China, the low values of trade complementarity indicate that the industrial structures of CAREC countries are almost identical to each other. Finally, we apply structural gravity to assess the role of regional integration agreements for the creation of trade. The findings corroborate the intra-bloc trade facilitating role of the RTAs, whereas their role is found to be trivial in the case of extra-bloc trade.

The CAREC Program is a partnership of 11 countries to promote development through cooperation. As eight of the CAREC members are landlocked, it warrants a trade policy suitably tailored for the region. To enhance intra-bloc and extra-bloc trade, there are opportunities paired with multiple challenges. Pertaining to intra-bloc integration, there is great scope for a pan-CAREC trade agreement instead of the spaghetti bowl of multiple bilateral and multilateral agreements currently in force between various CAREC members. Such a uniform policy across the region would allow for a precise analytical framework. Presently, there are RTAs signed among CAREC members as well as between CAREC members and non-CAREC countries. With the implementation of a pan-CAREC trade agreement, the existing intra-bloc agreements would be redundant; nevertheless, the extra-bloc RTAs may remain intact.

While a pan-CAREC FTA would cushion the intra-bloc trade flow, there is a drive for new regional agreements to promote trade with neighboring regions. However, whether a trade agreement would generate any sizable impact on exports depends on the choice of partner country and the coverage of the tariff lines. In general, tariffs have been lowered under the trade liberalization campaign of the WTO, still trade is being distorted by NTMs as they accrue an additional cost of market entry. Therefore, NTMs should also be included to negotiate an effective trade agreement parallel with the tariffs.

It is evident that CAREC exports mostly comprise primary commodities, and labor-intensive manufacturing, restraining the potential for intra-CAREC trade. While China's exports are the most diversified, for countries such as Turkmenistan, Azerbaijan, Kazakhstan, and Mongolia product concentration is high. However, the CAREC countries would benefit from greater specialization and diversification to boost competitiveness and growth. A well-managed value chain network is required to rescue these countries from the low value-added export trap. In this regard, the freer movement of raw materials and intermediate goods across the region can play a pivotal role. Furthermore, arrangements are required to lower tariffs on the exports of high value-added goods and the imported inputs that go into the production of high value-added products.

Apart from value-addition, other challenges include exporting costs and logistics. Efficient logistics enable producers to take advantage of domestic and overseas markets. Given this, trade facilitation can be viewed as a prerequisite for trade integration and competitiveness as it reduces costs and increases the efficiency of trading across borders. Similarly, the cumbersome administrative procedures pertaining to border and documentary compliance lead to extended transit costs and delivery times in several CAREC countries. Hence, improving the soft infrastructure and institutional quality would help to reduce the transaction costs associated with the exporting process.

Clearly, there is a need for a major revamp of the exporting policies of the CAREC members. China, the leading exporter in the region, is unfolding a phenomenal campaign of regional integration in the form of the BRI. Therefore, the regional countries need to align their trade policies to capture the benefits from the changing landscape of the regional political economy. It is evident that the successful implementation of special economic zones (SEZs) contributes to economic growth, employment, trade, and technology transfer for rapid industrialization (Wang, 2013). Ambroziak and Hartwell (2018) argued that the inclusion of small firms into the framework of a SEZ is essential to maximize gains. In addition, the exporting sectors in the SEZs should be incentivized on the degree of value-addition it brings to the production process. Given this, it is recommended to develop SEZs at strategic locations within the CAREC region as well as along the various corridors connecting it to the neighboring regions to promote regional integration. For instance, the development of SEZs under the China–Pakistan Economic Corridor (CPEC). Such an approach can be instrumental in spurring economic activity in generating decent employment, promoting skills via vocational and technical training, and amalgamating domestic firms with international firms promoting trade-related domestic industries. On this subject, other CAREC members can take advantage of China's experience with the SEZs.

The report offers a holistic picture of the intra-CAREC trade and the potential for deepening integration with neighboring regions—namely Russia, Europe, the Mediterranean, the Middle East, and South Asia. This study faces two major challenges: first, a lack of data available for some of CAREC countries. Consequently, we used mirror data to compute trade indicators where direct data was not available. Likewise, we could not include Tajikistan and Turkmenistan in the gravity estimation. This calls for the establishment of a database of 'CAREC Stats' to ensure data availability for policy evaluations at national and regional level. Second, aggregate analysis is advantageous as it presents the broader picture; however, some particularities are lost in the bringing together of the heterogeneous economic structure of individual countries. Therefore, in addition to aggregate analyses, studies with a focus on the disaggregated trade of individual countries—such as Pakistan's exports to the United Arab Emirates—can put forward a more detailed view for policy guidance.

Appendices

Table A1: Definition of the regions

Regions	Countries
CAREC	Afghanistan, Azerbaijan, China, Georgia, Kazakhstan, Kyrgyzstan, Mongolia, Pakistan, Tajikistan, Turkmenistan, Uzbekistan
Europe	Andorra, Austria, Belarus, Belgium, Bulgaria, Czech Republic, Denmark, Estonia, Finland, Germany, Hungary, Iceland, Ireland, Latvia, Lithuania, Luxembourg, Macedonia, Moldova, Netherlands, Norway, Poland, Slovakia, Sweden, Switzerland, Ukraine, United Kingdom
Mediterranean	Albania, Algeria, Bosnia and Herzegovina, Croatia, Cyprus, Egypt, France, Greece, Israel, Italy, Jordan, Libya, Malta, Monaco, Montenegro, Morocco, Palestine, Portugal, Slovenia, Spain, Syria, Tunisia, Turkey
Middle East	Bahrain, Iran, Iraq, Kuwait, Lebanon, Oman, Qatar, Saudi Arabia, United Arab Emirates, Yemen
Russia	Russia
South Asia	Bangladesh, Bhutan, India, Maldives, Nepal, Sri Lanka

Note: The regional demarcations are overlapping in the sense that some European and Middle Eastern countries are located in the Mediterranean region. However, this does not affect the analysis.

Table A2: Product grouping based on HS classifications

HS code	Product group description
HS01-HS05	Animals
HS06-HS15	Vegetables
HS16-HS24	Food products
HS25-HS26	Minerals
HS27	Fuel
HS28-HS38	Chemicals
HS39-HS40	Plastic and rubber
HS41-HS43	Leather
HS44-HS49	Wood
HS50-HS63	Textiles
HS64-HS67	Footwear
HS68-HS71	Stone and glass
HS72-HS83	Metals
HS84-HS85	Mechanical and electronics manufacturing
HS86-HS89	Transport
HS90-HS99	Miscellaneous

Table A3: List of importing countries

Afghanistan	Djibouti	Liberia	El Salvador
Albania	Dominica	Libya	San Marino
Algeria	Dominican Republic	Lithuania	Sao Tome and Principe
Andorra	Ecuador	Luxembourg	Senegal
Angola	Egypt	Macedonia	Seychelles
Argentina	Equatorial Guinea	Madagascar	Sierra Leone
Armenia	Eritrea	Malawi	Singapore
Australia	Estonia	Malaysia	Slovakia
Austria	Ethiopia	Maldives	Slovenia
Azerbaijan	Fiji	Mali	Solomon Islands
Bahamas	Finland	Malta	South Africa
Bahrain	France	Marshall Islands	South Korea
Bangladesh	Gabon	Mauritania	Spain
Barbados	Gambia	Mauritius	Sri Lanka
Belarus	Georgia	Mexico	Sudan
Belgium	Germany	Moldova	Suriname
Belize	Ghana	Mongolia	Swaziland
Benin	Greece	Morocco	Sweden
Bhutan	Guatemala	Mozambique	Switzerland
Bolivia	Guinea	Myanmar	Syrian Arab Republic
Bosnia and Herzegovina	Guinea-Bissau	Namibia	Tajikistan
Botswana	Haiti	Nepal	Tanzania
Brazil	Honduras	Netherlands	Thailand
Brunei Darussalam	Hungary	New Zealand	Togo
Bulgaria	Iceland	Nicaragua	Trinidad and Tobago
Burkina Faso	India	Niger	Tunisia
Burundi	Indonesia	Nigeria	Turkey
Cambodia	Iran	Norway	Turkmenistan
Cameroon	Iraq	Oman	Tuvalu
Canada	Ireland	Pakistan	Uganda
Cape Verde	Israel	Panama	Ukraine
Central African Republic	Italy	Papua New Guinea	United Arab Emirates
Chad	Ivory Coast	Paraguay	United Kingdom
Chile	Jamaica	Peru	United States of America
China	Japan	Philippines	Uruguay
Colombia	Jordan	Poland	Uzbekistan
Congo	Kazakhstan	Portugal	Vanuatu
Costa Rica	Kenya	Qatar	Venezuela
Croatia	Kuwait	Russian Federation	Vietnam
Cuba	Kyrgyzstan	Rwanda	Yemen
Cyprus	Laos	Saint Vincent and the Grenadines	Zambia
Czech Republic	Latvia		Zimbabwe
Denmark	Lebanon	Saudi Arabia	

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No.376 Nanchang Road,Urumqi
Xinjiang Uygur Autonomous Region
People's Republic of China
f:+86.991.8891151
km@carecinstitute.org
www.carecinstitute.org