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## Article

# Regional trade expansion opportunities in Central and South Asia: exploring trade complementarity, diversification and similarity

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*Suggested Citation:* Wani, Nassir Ul Haq; Rahman, Afzalur; Grover, Veena; Mirzakhidova, Shoiria; Rasa, Mohammad Mirwais (2024) : Regional trade expansion opportunities in Central and South Asia: exploring trade complementarity, diversification and similarity, Cogent Economics & Finance, ISSN 2332-2039, Taylor & Francis, Abingdon, Vol. 12, Iss. 1, pp. 1-19, <https://doi.org/10.1080/23322039.2024.2363461>

This Version is available at:

<https://hdl.handle.net/10419/321508>

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**To cite this article:** Nassir Ul Haq Wani, Afzalur Rahman, Veena Grover, Shoira Mirzakhidova & Mohammad Mirwais Rasa (2024) Regional trade expansion opportunities in Central and South Asia: exploring trade complementarity, diversification and similarity, Cogent Economics & Finance, 12:1, 2363461, DOI: [10.1080/23322039.2024.2363461](https://doi.org/10.1080/23322039.2024.2363461)

**To link to this article:** <https://doi.org/10.1080/23322039.2024.2363461>



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## Regional trade expansion opportunities in Central and South Asia: exploring trade complementarity, diversification and similarity

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### ABSTRACT

The study investigates the implementation of trade routes and their impact on the regional economic integration of Central and South Asia. It uses three indices, the Trade Complementarity Index (TCI), Similarity Index (SI), and Trade Diversification Index (TDI), to evaluate the level of regional economic integration from 2015 to 2021. The results suggest that the potential trade value in the two regions is twice as significant as the actual level. The study also highlights the importance of various governmental measures to promote and enhance trade and investment within and between the two regions. The study finds a positive correlation between an economy's size and level of development, suggesting that developed economies tend to have higher ratings. Several trade routes have shown advantages in promoting regional trade growth, such as augmenting price competitiveness, facilitating intra-industry trade and examining trade complementarities. The implications of these findings are significant for the effectiveness of trade-related policies, programs and institutional procedures in promoting enhanced trade within and between the two regions.

### IMPACT STATEMENT

The study contributes to the empirical literature in such a way as to provide (a) practical knowledge and methods for businesses to take advantage of Central and South Asia regional opportunities; (b) analytical tools for policymakers and researchers; and (c) policy and program recommendations for governments and development partners. It should be of interest to businesses, governments, international development partners, policymakers and researchers, and others concerned with Central and South Asia's trade and the potential for developing value chains or so-called 'trade in tasks' across the two regions.

### ARTICLE HISTORY

Received 16 February 2024  
Revised 22 April 2024  
Accepted 29 May 2024

### KEYWORDS

South Asia; Central Asia;  
trade complementarity;  
diversification; similarity

### JEL CODES

F11; F13; F17

### REVIEWING EDITOR

Goodness Aye, University of  
Agriculture, Makurdi Benue  
State, Benue, Nigeria

### SUBJECTS

International Trade (incl.  
trade agreements & tariffs);  
Development Economics;  
International Economics

## 1. Introduction

Historically, Central and South Asian regions have forged strong trading connections. There has been persistent movement of goods and people across diverse geographical areas (Hall, 2019). This interaction has significantly contributed to the establishment of cultural and religious ties while also exerting influence on political alliances. As a result of rapid economic transformation and globalization, Central and South Asia find themselves at a critical juncture that may necessitate a redefinition of their positions in international trade. Nevertheless, the existing level of trade between the two regions remains relatively insufficient, significantly lagging behind the levels witnessed in other geographical regions including Southeast Asia, Latin America, Africa and the Middle East (Brynjolfsson & McAfee, 2011). The intensity of trade metrics reveals that interregional trade constitutes a very small proportion, ranging from 0.2 to 4%, of the total trade volume encompassing all destinations (Jones & Salazar, 2021), thus, the flows are modest (Fidrmuc &

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Korhonen, 2010). In Central Asia, the share of intraregional commerce is estimated to be less than 5%, whereas in South Asia, it makes up approximately 1.5% of total trade with all nations (Chaturvedi et al., 2015). The significance of fostering trade, investment and economic cooperation between Central and South Asian countries cannot be overstated concerning the present economic growth and development of the nations encompassed by these regions (Yu, 2020). The areas described above refer to landlocked countries of Central Asia, including Afghanistan, from South Asia. The interdependence of these nations relies significantly on the establishment of land and air transportation connections, both among themselves and with neighbouring countries, to facilitate their access to regional and global markets (Lloyd, 2013). However, despite the significant potential to increase commerce and investment between Central and South Asia, there is currently a lack of economic integration in these regions (Karim & Islam, 2018; Ahmad & Wani, 2018). As a percentage of their total trade, the five Central Asian Republics (CARs) and three South Asian countries (Afghanistan, India and Pakistan) engage in slightly less than 1% of interregional trade (Anwar, 2020; Wani, 2019; Wani & Rasa, 2023). However, several initiatives are related to a transit agreement that spans across borders and encompasses Kyrgyzstan, Tajikistan and Afghanistan. Additionally, the South Asian Free Trade Agreement (SAFTA) and the Afghanistan-Pakistan Transit-Trade Agreement (APTTA) are two more agreements (Ahmadzai & McKinna, 2018; Wani & Rasa, 2023). Furthermore, international initiatives aim to improve market entry by facilitating the inclusion of Kazakhstan, Turkmenistan and Uzbekistan in the World Trade Organization (WTO). The United States Government's efforts to improve connectivity in South and Central Asia and restore Afghanistan's historical significance as a vital hub in the Eurasian region are based on the concept of the New Silk Road (Fedorenko, 2013a). A conceptual framework exists for creating innovative trade pathways. The European and Central-East Asian areas exhibit a sophisticated system of trade routes, comprising both north-south and east-west pathways in addition to interconnected energy grids and communication networks (Humbatov & Sari, 2017). The progress and establishment of newly formed routes were shaped by the Central Asia Regional Economic Cooperation (CAREC) initiative, sponsored by the Asian Development Bank (ADB) (Chatterjee, 2018). The program has effectively completed more than 100 projects in many domains, including regional transportation, trade facilitation, policy and energy. Moreover, it has significantly contributed to the advancement of infrastructure development and the attraction of investments, totalling more than \$20 billion in the Central Asia area (Cai, 2020).

In light of these key achievements, this study examines the function of trading channels in accelerating intra- and inter-regional trade in Central and South Asia. The objectives are accomplished by examining the trade competitiveness, complementarities and diversification of exports. This study uses quantitative methodologies to analyze both established and emerging trade channels, with a specific emphasis on a detailed degree of product categorization. Drawing inferences from the data, this study examines the adaptability of trade patterns to both intra- and cross-regional trade in Central and South Asian regions. Following this, an assessment is conducted to measure the effectiveness of several trade-related policies, programs and institutional procedures in promoting enhanced trading activity within and between the two regions. The purpose of this study is to provide practical insights and strategies for businesses to take advantage of opportunities in the Central and South Asian regions. Along with analytical tools for academics and decision-makers, it also aims to offer policy and program recommendations to government agencies and development partners. This subject is expected to garner the interest of many stakeholders, such as businesses, governments, international development partners, politicians, researchers and individuals, with a vested interest in the trade dynamics of Central and South Asia.

The rest of the study is divided into four sections with Section 2 highlighting the literature review focusing on the trade situation in Central and South Asia; and theoretical Foundations by analysing economic and policy initiatives for trade enhancement. Section 3 presents the research methodology and Section 4 presents the data analysis and findings. Finally, Section 5 highlights the broad conclusions of the study along with policy enunciations.

## 2. Literature review

### 2.1. The historical background and present-day trade situation in Central and South Asia

The historical underpinnings of international trade in Central and South Asia are firmly grounded in their pivotal role as strategic nodes along the Silk Road. These connections facilitated the exchange of goods,

ideas, and civilizations between the East and West. The historical importance of Central Asia's participation in establishing cultural and religious connections that extend to various regions along the Silk Road was emphasized by Erkuziev (2020). Despite their extensive historical background, trade in these regions is presently less substantial than that of regions, such as Africa, the Middle East and Southeast Asia. Medukhanova et al. (2022) argue that a notable disparity exists between the regions' historical pre-eminence in global trade and their current state of underutilized trade potential. The disparity between their previous trading standings and present trading conditions gives rise to significant concerns over the barriers impeding the growth of trade between Central and South Asia, in addition to potential remedies for these impediments (Bergeijk & Barisitz, 2018). The historical role of Central and South Asia in international trade, primarily *via* the Silk Road, has received considerable attention in recent scholarly research. Central Asia, as observed has historically been an affluent region along the Silk Road, serving as the birthplace of multiple advanced civilizations and governments (Medukhanova et al., 2022). Lord (2015) emphasizes the historical significance of the enduring economic connections that link Central and South Asia, thus establishing political, religious and cultural bonds between these regions. Despite their extensive historical heritage, the present magnitude of trade in these regions remains relatively modest in comparison to other areas, such as Southeast Asia, the Middle East and Africa (Wani & Dharmi, 2018).

Research conducted by Gao Zhou et al. (2023) regarding the trading potential between China and Central Asian countries emphasizes the importance of several factors in shaping trade dynamics, such as the level of economic growth, transportation costs and regional integration frameworks. Feldbacher (2021) further examined the challenges confronting the Eurasian trade route in the twenty-first century, encompassing economic competition, security concerns and nationalism. These factors significantly impact Central and South Asia's trade capabilities. Jaiswal (2018) emphasizes the increasing influence of major powers, such as China and India, on the regional trade landscape, thus highlighting the critical strategic importance of energy resources in Central Asia. To provide a comprehensive understanding of the historical context of Central and South Asia, Kerr (1996) examined the interconnected domains of foreign economic ties, regional development and central and Northeast Asian politics. Pandey et al. (2019) examine the intricacies of banking sector integration in South Asia, a crucial body of research for understanding the financial dimensions of regional trade.

Recent research indicates that the trade activity between Central and South Asia has a respectable magnitude. As Lord (2015) noted, the extent of commercial activity across these regions remains modest. Specifically, intraregional commerce in Central Asia accounts for less than 5 percent of global trade, whereas it accounts for approximately 1.5 percent in South Asia. This suggests that there is substantial potential for enhancing trade and establishing economic connections. Afghanistan, by its geographical position as an intermediary between Central and South Asia, underscores the paramount importance of constructing robust transportation infrastructure to facilitate trade (Kumar, 2022). Additional substantiation for the necessity of goal-oriented policies and a robust political dedication to economic integration in the region is thus demanded (Wani, 2019).

## ***2.2. Theoretical foundations: analyzing economic and policy initiatives for trade enhancement***

Economic integration has expanded significantly in the world economy, and therefore trade liberalization may be seen as a useful strategy for influencing economic growth since it has helped promote regional and global economic integration by lowering investment and tariff barriers and increasing trade and investment among member states. The two most effective integration arrangements may be the growth of the EU and NAFTA. Asian nations launched and developed various economic integration initiatives during the same period. For instance, Kawai and Naknoi (2015) find that ASEAN underwent closer integration with other Asian countries during the 1980s and has seen significant growth in bilateral trade and capital inflows.

However, the effects of economic integration on growth are also discussed. According to the theory, economic integration may affect growth in both positive and negative ways. According to the standard Solow growth model (Solow, 1956); and Mankiw et al. (1992), an open economy cannot benefit from the long-term growth effects of economic integration. Following Solow's theory of economic growth, capital investment has diminishing returns in the face of ongoing depreciation, which results in a capital-to-labor ratio at which the economy will start expanding again. Since the size of an economy's capital stock

determines its national revenue, the exogenous pace of technological advancement may be the only factor that influences long-term growth. Better factor employment in the production process, however, will cause a shift in the equilibrium of the labour-capital ratio and, until a new steady state is reached, greater growth rates. Neoclassical growth theory contends that any type of economic policy, including economic integration, cannot impact a country's long-term growth and can only result in a level, not a scale, effect. As a result, Grossman and Helpman (1997) created several instances showing how having an open nature will hinder a country's long-term prosperity more than autarky. However, the second wave of endogenous growth theory suggests that the idea that economic integration can support long-term growth has micro-foundations. Endogenous growth theory suggests that technological diffusion, knowledge spillovers, and economies of scale brought about by economic integration may contribute to long-run economic development under the assumption of endogenizing technical advancement and non-diminishing returns to capital. First, compared with economies closer to them, countries that are part of the global economy have access to a larger body of information. Additionally, the amount of knowledge that exists may influence the rate at which new knowledge is created, potentially resulting in faster economic growth (Rivera-Batiz & Romer, 1991). Second, rising capital and commodity exchange rates and competition from overseas businesses encourage local companies to pursue cutting-edge technology, thus enhancing their incentives for R&D. Third, economic integration may significantly increase a company's potential customer base and enable free entry into an integrated market, deciding to refrain from innovating a losing one (Baldwin, 1993).

Efforts and policy deliberations have proliferated throughout Central and South Asia in an attempt to expand interregional trade. Studies have examined the potential and challenges of economic integration in the 'Heart of Asia,' which includes SAARC and other neighbouring countries and have emphasized the critical need for enhanced trade integration through membership in the WTO and the establishment of a Central Asia-South Asia Free Trade Area (CEPA) (Das, 2013; Taneja & Wani, 2014; Wani & Dhami, 2014; Wani & Dhami, 2016; Sadiqi & Wani, 2018). In addition, efforts are underway to incorporate Afghanistan, Kazakhstan, Turkmenistan and Uzbekistan into the World Economic Organization. These endeavours demonstrate the growing recognition of the critical nature of these regions within global trade networks (Fedorenko, 2013a, 2013b; Taj & Wani, 2019). Furthermore, the analysis conducted by Tu et al. (2019) scrutinized the economic diplomacy strategy employed by South Korea in Central Asia. The authors highlight the increased frequency of bilateral summits and the strengthening of commercial and trade relations. These discoveries add to several bodies of literature. The theoretical and policy discussions around the expansion of the welfare state in member nations through economic integration are the first connections that this study makes.

### 3. Research methodology

This study discerns the fundamental mechanisms of trading channels through a meticulous analysis of trade complementarities, diversification, and trade competitiveness and thus evaluates trade complementarity (TC), export diversification (ED) and export similarity (ES) for countries in Central and South Asia over a specified duration (2015–2021). Based on the wide usage of the trade indices (Nguyen et al., 2017; Liu et al., 2020; Karavdin, 2021; Finger & Kreinin, 1979; Wani et al., 2020; Wani, 2020; Kanupriya, 2020; Chen et al., 2020), this study employs the trade indices (viz, TC, diversification and similarity) to gauge the regional trade expansion opportunities in Central and South Asia.

#### 3.1. Export diversification index

ED shows how trade has developed insofar as it demonstrates the capability of an economy to produce a broad range of goods. Advanced economies often have diverse production structures, while many developing and transitional economies are labeled as mono-exporters because their export performance is dominated by a single kind of good. Diversification and other aspects of a nation's trade structure are measured using the following metrics:

**Top-traded goods:** The top ten goods that each nation exports to the global market and the regions of Central and South Asia are listed in this indicator. A nation's export product concentration – or, conversely, diversification – is gauged using the Herfindahl–Hirschman Product Concentration index.



The Herfindahl–Hirschman Product Concentration Index (HH) is as follows:

$$\text{HHPCI} = \frac{\sum_{k=1}^n \left(\frac{x_{ik}}{X_i}\right)^2 - \frac{1}{n}}{\frac{1}{n_i}}$$

where  $X$  is the total value of exports from reporter  $i$ ;  $x$  is the value of product  $k$  exports from country  $i$ ; and  $n$  is the quantity of goods exported by country  $i$ . An index close to zero represents a fully diversified portfolio, whereas a higher index (close to one) denotes a concentrated export market.

### 3.2. Trade complementarity index (TCI)

The degree of compatibility between a nation's exports and its trading partners' imports is measured by employing the Trade Complementarity Index (TCI), defined as follows.

$$\text{TCI} = 100 * \sum_k |m_{jk}/M_k - x_{ik}/X_i|/2]$$

Let  $x$  be the numerical value denoting the exports of product  $k$  from the reported nation  $i$ , and let  $X$  represent the aggregate value of the country  $i$ 's entire exports. The value of imports of product  $k$  in partner nation  $j$  is represented by variable  $m$ , whereas the overall value of imports in partner country  $j$  is denoted by variable  $M$ . The potential values encompass a spectrum from 0 to 100, with a rating of 100 denoting the compatibility of exported goods with imports from trading partners, and a rating close to 0 signifying a dearth of compatibility.

### 3.3. Export similarity index (SI)

SI measures the similarity of the exports of any two countries (or groups of countries) to a third market. The export SI takes values between 0 and 1. A higher value indicates that the trade pattern of the Member States is more similar to the average of the region. A value of 0 means that there is no product overlap between the exports (or imports) of the Member State and the rest of the region. A value of 1 means that the member state exports (or imports) every product in the same proportion as the rest of the regions (Finger & Kreinin, 1979; Wani et al., 2020; Wani, 2020; Kanupriya, 2020). The definition of SI between two nations is as follows:

$$SI_{ik} = 100 * \{1 - [GDP_i / (GDP_i + GDP_k)]^2 - [GDP_k / (GDP_i + GDP_k)]^2\} * 2$$

## 4. Analysis and discussions

### 4.1. Product concentration (amount of goods exchanged between and within regions)

The diversification of intra-regional trade among Central and South Asian nations surpasses that of inter-regional trade. Table 2 presents the data on the quantity of product exports, with an average value exceeding US\$10,000 between 2015 and 2021, categorized by country within the two specified regions. On average, there is a significantly higher volume of trade in goods between South Asian countries than between Central Asian countries, with the former engaging in trade approximately 4.5 times more frequently than the latter. Similarly, there is a notable disparity in trading patterns between Central Asian countries and South Asian countries, with Central Asian countries engaging in approximately four times the volume of trade among themselves compared to their trade with South Asian countries.

Significant variances existed among nations, as shown in Table 1. In South Asia, Afghanistan's exports to India and Pakistan collectively exceed those of Central Asian countries by a factor of more than 10. The volume of items exported to Kyrgyzstan is approximately twice that of the volume exported to Kazakhstan. In terms of both imports and exports, the amount of trade with Turkmenistan, Tajikistan and Uzbekistan was much less than that with Kyrgyzstan and Kazakhstan.

India can be considered an anomaly when it comes to the broad generalizations made regarding the trading of products within and between regions. The quantity of products exported within the region surpasses the quantity of products sent to Central Asia by a factor of three. Nevertheless, there is still a

**Table 1.** Average of over \$10,000 worth of products exported to each trading partner between 2015 and 2021.

		Import							
		Afghanistan	India	Pakistan	Kazakhstan	Kyrgyzstan	Tajikistan	Turkmenistan	Uzbekistan
Export	Afghanistan		106	140	17	32	3	4	1
	India	894		1120	844	168	182	243	444
	Pakistan	962	742		99	35	29	31	47
	Kazakhstan	231	152	40		477	409	349	503
	Kyrgyzstan	66	27	5	441		219	41	349
	Tajikistan	28	19	13	98	66		0	0
	Turkmenistan	15	18	12	45	7	0		0
	Uzbekistan	30	105	19	538	221	0	0	

Source: Derived from data in United Nations, COMTRADE database.

**Table 2.** The average of the Herfindahl–Hirschman product concentration index for each trading partner from 2015 to 2021.

		Importer								
		Afghanistan	India	Pakistan	Kazakhstan	Kyrgyzstan	Tajikistan	Turkmenistan	Uzbekistan	World
Exporter	Afghanistan		0.14	0.17	0.29	0.1	0.54	0.97	None	0.04
	India	0.04		0.05	0.07	0.12	0.08	0.04	0.06	0.05
	Pakistan	0.06	0.04		0.02	0.13	0.2	0.09	0.09	0.02
	Kazakhstan	0.23	0.43	0.17		0.05	0.15	0.03	0.12	0.41
	Kyrgyzstan	0.42	0.07	0.56	0.04		0.1	0.12	0.04	0.19
	Tajikistan	0.47	0.74	0.54	0.1	0.08		None	None	0.22
	Turkmenistan	0.7	0.41	0.68	0.84	0.21	None		None	0.54
	Uzbekistan	0.57	0.11	0.38	0.07	0.14	None	None		0.05
	World	0.03	0.09	0.06	0.01	0.04	0.01	0.01	0.05	

Source: Data calculations based on author's calculations from UNCOMTRADE.

Note. The figures are expressed as HHI values.

significant volume of exports to all Central Asian nations, with a particular emphasis on Kazakhstan and, to a somewhat lesser extent, Uzbekistan. In the context of Central Asia, Kazakhstan and Kyrgyzstan engage in a significantly greater volume of product commerce than the collective trade activities of the entire region. Tajikistan, Turkmenistan and Uzbekistan exhibit a significant export presence in Kazakhstan and Kyrgyzstan; however, their interregional trade remains limited or non-existent due to a multitude of factors, including religious and ethnic tensions, as well as territorial disagreements.

#### 4.2. Index of product concentration (Herfindahl–Hirschman)

To evaluate export concentration, a far more intricate metric is the HH product concentration index. It quantifies the extent to which a nation's export earnings are distributed across a wide range of goods or concentrated in a small number of goods. The degree of export concentration or diversification in Central and South Asia is determined by examining the export composition of each nation for (a) all destinations, (b) nations in the regional market and (c) nations outside the market.

The square root of the total squared market share of a nation's exports of its HS 6-digit items relative to all of its exports to a regional or international market is used to calculate the index. The interpretation of the indices is as follows: countries exhibiting a high degree of export concentration for a limited number of products are characterized by an index value near 1, whereas countries with a wide range of product exports demonstrate an index value close to 0. Product concentration typically serves as an indicator of a country's susceptibility to trade shocks.

Table 2 presents data on the degree of ED or concentration in Central and South Asian nations. India and Pakistan exhibit a high degree of ED, with Kazakhstan and Kyrgyzstan following suit. On the opposite end of the spectrum, the exports of Turkmenistan, Tajikistan and Afghanistan exhibit a notable concentration in a limited range of products. The export concentration of Uzbekistan is almost at the regional average.

Bilateral trade flows exhibit diverse outcomes. As an illustration, the export commodities from Afghanistan to Turkmenistan and Tajikistan exhibit a significant degree of concentration, with a limited



number of products dominating the trade. Conversely, exports to Kyrgyzstan, India and Pakistan display significantly higher levels of diversification, encompassing a wider range of goods. The only nations in the region that have continuously diversified their bilateral trade flows with every other nation are India and, to a lesser extent, Pakistan. In general, Central Asian nations exhibit a broad range of exports. However, when it comes to exports to South Asian countries, there is a tendency for these nations to concentrate their exports on a smaller number of products.

### 4.3. Trade complementarities

This study focuses on assessing potential trade prospects in a dynamic context by considering the minimal disparities in natural resources and technological capabilities between nations. This involves investigating the level of industry concentration or agglomeration, which has historically been observed, as countries have used multinational corporations to centralize industrial activities in specific regions. In contemporary discourse, there is growing recognition of the potential of regional trading arrangements to facilitate the attainment of agglomeration objectives by nations. Agglomeration economies are linked to economies of scale and network effects and arise when businesses within proximity collaborate to leverage the advantages stemming from their spatial arrangement of upstream and downstream activities.

The degree of TC between an exporting nation's export composition and that of its regional trading counterparts is the primary determinant of the nation's capacity to change its comparative advantage. This study uses the TCI to assess the potential for regional export expansion and employs performance indicators to assess the competitive capabilities of each country in those markets. The extent to which economies can adjust their comparative advantage in the international market is determined by how well they perform in export markets, as evidenced by the notable increase in exports and rising market share.

The TCI in Central and South Asia encompasses three key aspects: the entirety of exports from each country, performance measures related to individual products at the HS level, six digits and data analysis conducted over the most recent seven years for which the data are accessible. The results indicate that India's exports are similar to the nature of the goods imported by the region, mainly in terms of imports from Kyrgyzstan, Afghanistan and Pakistan. Pakistan's exports are compatible with the imported items of Central and South Asian nations, albeit to a lesser extent than India's exports. Kazakhstan has significant prospects for augmenting its export activities with Pakistan, whereas Kyrgyzstan has the potential to enhance its commercial relations with all trading partners within the two areas.

Regarding medium- to large-scale exports, South Asian nations show the highest TC in terms of regional imports. On the other hand, when it comes to small-scale and emerging exports, Tajikistan, Kyrgyzstan and Kazakhstan exhibit the highest levels of complementarity. By contrast, Turkmenistan and Uzbekistan exhibit the strongest trade complementarities in terms of medium-sized exports.

In certain instances, the degree of TC on a bilateral trade basis exceeds the overall level of export compatibility between each country and imports of the two areas. The bilateral trade between the two regions with TC indices greater than 35 is shown in [Table 5](#). The findings are remarkable. In contrast to the limited commercial compatibility shown in Afghanistan's aggregate export figures with the two areas, there exist significant trade opportunities on a bilateral level. Notably, Afghanistan demonstrates substantial trade potential through its substantial exports to Pakistan as well as its smaller-scale exports to Kazakhstan, Kyrgyzstan and Turkmenistan. India exhibits a significant degree of commercial compatibility with Kazakhstan across several export categories as well as with other nations in the region, excluding Uzbekistan. Pakistan's medium-sized exports to India and large exports to Uzbekistan account for the majority of its export compatibility in the region. Notably, Kyrgyzstan has the greatest number of bilateral trade compatibility indices among Central Asian states. However, exports from Uzbekistan show a high degree of compatibility with Kazakhstan in several product categories. Tajikistan exhibits a significant degree of economic compatibility with South Asian countries across various product categories ([Table 3](#)). Conversely, Turkmenistan demonstrated notable trade compatibility with India and Uzbekistan.

The exports of medium- and large-sized South Asian countries mostly consist of essential commodities, such as cement, non-crude fuels, coal, fruits and vegetables, other agricultural goods, pharmaceuticals and medical devices, textiles, and vehicle parts. Kazakhstan, Kyrgyzstan and Tajikistan export a wide range of manufactured goods, minerals, agro-food products, and raw agricultural and mineral materials. Their exports were small and were expanding. With a moderate volume of exports, fruits and vegetables, as well as agricultural and mineral raw resources, make up the majority of Turkmenistan and Uzbekistan's export composition.

#### 4.4. Matching product exports to dynamic regional markets

One method of assessing export prospects in the Central and South Asian markets involves analyzing the extent to which countries in the region have targeted dynamic product markets. In addition, it is important to investigate whether exporters have been actively growing their presence in these markets. Central and South Asian markets exhibit promising prospects for the expansion of enterprises and industries, as evidenced by notable increases in export growth rates and the concurrent rise in market shares. This study indicates the likelihood of current and future market expansion for exporters in the region.

The measurement of export growth in various product markets within Central and South Asian countries is conducted through an analysis of trend growth rates in four distinct product categories: large, medium, small, and emerging exports. Additionally, the ratio of product exports concerning the imports of these specific products in Central and South Asia is considered. The export performance of each country can be categorized into four distinct classifications.

**Table 3.** Trade complementarity export-size-weighted indicators of Central and South Asian exports.

			Imports							
			Afghanistan	India	Pakistan	Kazakhstan	Kyrgyzstan	Tajikistan	Turkmenistan	Uzbekistan
Exports	Afghanistan	Large size exports		37	45	26	19	19	13	20
		Medium size exports		28	26	28	29	20	5	23
		Small size exports		31	25	44	53	26	44	35
		Emerging exports		21	16	20	28	17	21	25
	India	Large Size exports	51		49	56	48	56	22	35
		Medium size exports	23		30	35	33	22	31	25
		Small size exports	31		36	38	37	37	23	41
		Emerging exports	39		41	41	27	28	33	37
	Pakistan	Large Size exports	22	30		26	18	30	40	19
		Medium size exports	18	43		26	21	30	25	23
		Small size exports	14	27		22	24	21	10	10
		Emerging exports	20	29		11	11	30	13	8
	Kazakhstan	Large size exports	9	15	41		11	23	8	34
		Medium size exports	35	21	27		35	30	17	31
		Small size exports	25	36	34		29	26	22	37
		Emerging exports	25	31	25		32	31	36	42
	Kyrgyzstan	Large size exports	20	21	15	27		21	26	23
		Medium size exports	19	31	32	41		38	32	20
		Small size exports	41	36	45	49		54	45	29
		Emerging exports	26	20	34	62		44	38	39
	Tajikistan	Large size exports	9	18	11	18	8		11	17
		Medium size exports	20	27	30	30	20		23	16
		Small size exports	35	45	20	35	24		31	27
		Emerging exports	37	51	42	43	34		34	33
	Turkmenistan	Large size exports	14	19	19	25	21	16		17
		Medium size exports	277	44	23	33	24	19		27
		Small size exports	20	37	34	32	15	14		12
		Emerging exports	8	8	33	31	29	28		36
	Uzbekistan	Large Size exports	17	31	28	39	26	18	19	
		Medium size exports	15	41	25	48	42	20	23	
		Small size exports	21	19	29	40	23	12	29	
		Emerging exports	20	35	36	46	25	31	13	

Source: COMTRADE database, United Nations.

Note. The following is how the figures in the Table should be interpreted: When the score is close to 100, it means that the exported goods are compatible with the imports of trading partners; when it is close to 0, it means that the products are not compatible with the imports of trading partners.

The highlighted bold numbers reflect the number of the highest occurrences of the commodity's trade within each country. The definition for the commodities is based on the trade values. This includes: Large-size exports (LS) =  $LS > US\$ 4,500,000$ ; Medium-size exports (MS):  $\$1,500,000 < MS < \$4,500,000$ ; Small-size exports (SS):  $\$750,000 < SS < \$1,500,000$ ; Emerging exports:  $\$200,000 < MS < \$400,000$ .

- **Capitalizing on Market Opportunities:** This refers to products that exhibit a growing market share in a particular country, while imports from Central and South Asia are seeing an expansion.
- **Enhancing Market Penetration in Declining Markets:** This pertains to products that demonstrate an increasing market share in a specific country, despite a contraction in imports from Central and South Asia.

**Unexploited Market Potential:** Products exhibiting a decline in market share for a particular country, despite the growth of imports in the Central and South Asian regions.

- **Diminished Market Presence in Declining Markets:** Products seeing a decline in market share for a specific country, coinciding with a contraction in the Central and South Asia markets. The best-case scenario involves exporters either taking advantage of market opportunities, in which case their products have effectively entered dynamic markets, or missing market opportunities, in which case, if they increase their competitiveness and fulfil market access requirements, there is a significant amount of room for export growth.

#### **4.5. Matching exports to dynamic markets**

As shown in Table 4, machinery components emerged as the major category of items in the exports of various countries. These products have witnessed significant growth in the marketplaces of Central and South Asia, where producers from these regions have successfully expanded their market presence. Some of the sectors seeing strong growth in the region are footwear, jewelry, fresh and processed fish and foods and motorcycle parts and bicycles. However, exporters from nations in the region have observed a decline in their market share in these sectors because of slow exports. On the other hand, it is worth noting that exports have experienced significant growth in markets characterized by sluggish or stagnant conditions in Central and South Asia. This growth is most apparent in the fresh animal products, rubber goods, low-tech machinery and electrical product industries. As evidenced by the region's exports of cement, plastics, paper and fresh and chilled seafood growing slowly, the markets in Central and South Asia are stagnant.

Central and South Asian markets have developed significantly in the export of medium-sized products, such as textiles, machinery, electronics and processed foods. Exporters from countries in these regions have successfully expanded their market presence. Several Central and South Asian markets have experienced rapid growth, yet exporters from these regions have struggled to expand their market share in certain sectors. These industries include processed foods (chocolate products), chemicals (acyclic alcohols), soaps, amino compounds, plastic containers, t-shirts, electric motors and generators, televisions and radio parts and furniture (seats). Exporters in the region have experienced significant growth in several Central and South Asian markets that have been characterized by sluggish or stagnant conditions. These markets include prepared mollusks and crustaceans, plastic plates, textile-based upper shoes, cigars and cigarettes, electrical transformers and accumulators, radios and electrical switches. Exporters in the area have seen a reduction in their market share in unmatched stagnant markets, such as plastics, low-tech audio equipment, batteries and completed clothing.

The export of numerous large-sized commodities, such as tires, refined copper and nickel metallurgy, motor vehicle components, copper ore and concentrates and palm oil, has increased significantly in Central and South Asia. These regions have witnessed rapid expansion in their export activities. However, the exports of the regions mentioned have exhibited a lack of growth in the rapidly expanding markets of furniture, raw crustaceans, plywood, coffee, motor vehicles and footwear with leather uppers. Exports have experienced significant growth in various Central and South Asian markets, characterized by slow or stagnant economic growth. Mineral resources are the source of these exports, which include ammonia in chemical form, cocoa beans, nickel ores, wire insulation, iron rods, copper wire, and fatty acids made from both vegetable and animal fats.

The observed trend reveals that specific industries and certain markets, such as those for prepared foods, sophisticated machinery and electronics and transportation equipment, are experiencing strong growth, whereas the performance of other markets is more uneven. In industries lacking a discernible

**Table 4.** Matching high-growth exports with dynamic regional Imports, 2015–2021.

Export growth	Increased penetration in stagnant market	Exploited market opportunities	Reduced penetration in stagnant market	Missed market opportunities
Afghanistan	Ferrous waste or scrap, nes (720,449); Leguminous vegetables dried, shelled (720,449); Iron or steel structures and parts (071,390); Medicaments nes, in dosage (730,890); Insecticides, packaged for retail sale (380,810); Saffron (091,020); Antiques older than one hundred years (970,600); Natural steatite, not crushed (252,610); Marble and travertine, crude (251,511); Cotton, not carded or combed (520,100).	Tomatoes, fresh or chilled (70,200); Onions and shallots, fresh or chilled (70,310); Figs, fresh or dried (80,420); Mixtures of edible nuts, dried fruits (81,350); Lentils dried, shelled (71,340); Oil seeds and oleaginous fruits, nes (120,799); Waste or scrap, of cast iron (720,410); Coffee extracts (210,110); Plants and parts for pharmacy, perfume (121,190); Almonds, fresh or dried, shelled (80,212)	Natural gum, resin, gum-resin (130,190); Fruits, dried nes (081,340); Pistachios, fresh or dried (080,250); Caraway seeds (90,940); Sheep or lamb skins, raw, wool (410,210); Handmade rugs (570,210); Bovine hides, whole, fresh or wet-salted (410,121); Logs, non-coniferous nes (440,399); Raw Persian and similar lamb furskins (430,130); Fine animal hair, not carded or combed (510,210).	Sesamum seeds (20,740); Vegetable products (121,299); Melons and watermelons, fresh (80,710); Fruits, fresh nes (81,090); Carpets of wool or fine animal hair (570,110); Apricots, dried (81,310); Grapes, fresh (80,610); Apples, fresh (80,810); Almonds in shell fresh or dried (80,211); Grapes, dried (80,620).
India	Motoreycles engine of 50–250 cc (871,120); Flat-rolled iron or non-alloy steel (721,049); Polypropylene in primary forms (390,210); Diamonds unworked or simply sawn (710,231); Tugs and pusher craft (890,400); Ferro-chromium, >4% carbon (720,241); Cotton yarn >85% single (520,523); Aircraft parts nes (880,330); Coal tar distillation products nes (270,799); Cotton, not carded or combed (520,100)	Maize except seed corn (100,590); Pipe-line submerged steel (730,511); Jewellery precious part metal not silver (711,319); Bovine cuts boneless, frozen (020,230); Locus bean mucilages and (711,319); Bovine cuts boneless, frozen (020,230); Locus bean mucilages and thickeners (130,232); Jewellery part silver (711,311); None crude oils petroleum (271,000); Automobiles engine of 1000–1500 cc (870,322); Ferro-silico-manganese (720,230); Copper cathodes unwrought (740,311)	Shrimps and prawns, frozen (030,613); Mens, boys shirts, of cotton, not knit (620,520); T-shirts, singlets cotton (610,910); Antibiotics nes, in dosage (300,420); Medicaments nes, in dosage (300,490); Insecticides, packaged for retail sale (380,810); Automobiles engine of <1000 cc (870,321); P-xylene (290,243); Motor vehicle parts (870,899); Organic compounds (294,200).	Womens, girls dresses cotton (620,442); womens, girls blouses and shirts cotton (620,630); Rice, semi-milled or wholly milled (100,630); Soya-bean oil-cake (230,400); Castor oil or fractions not chemically (151,530); Diamonds but not mounted or set (710,239); Iron ore, concentrate, not iron pyrites (260,111); Cashew nuts, fresh or dried (80,130); Cut or sawn slabs of granite (680,223); Cast articles of iron or steel (732,599)
Pakistan	Mens, boys shirts, of materials nes, knit (610,590); Plain weave cotton (521,011); Denim cotton >85% >200 g/m <sup>2</sup> (520,942); Twill weave cotton, > 85% > 200 g/m <sup>2</sup> , dyed (520,532); Bovine and equine leather (410,431); Bed linen, of textile knit (630,210); Chromium ores and concentrates (261,000); Cotton yarn >85% multiple uncombed, 520,532; Cotton, not carded or combed (520,100); Plain weave cotton unbleached (520,911).	Rice, broken (610,590); Mens, boys jackets and blazers (521,011); Plain weave cotton unbleached (520,942); Jewellery parts of precious metal not silver (520,332); Hosiery nes, of cotton, knit (261,000); Undenatured ethyl alcohol (520,532); Twill weave cotton unbleached (410,431); Bed linen, of material nes, nes (630,210); Woven plain polyester and cotton (520,100); Portland cement (520,911).	Vegetable fats oils (151,620); Cotton Toilet or kitchen linen (630,260); Cotton yarn uncombed (520,511); Plain weave cotton (521,051); Floor and dish cloths, dusters (630,710); T-shirts, singlets and other vests cotton (610,910); Leather sports gloves (420,321); Leather gloves and mittens not sports (420,329); Medical instruments (901,890); Goat or kid skin leather (410,620); Cotton Toilet or kitchen linen (630,260).	Cotton yarn uncombed (520,512); Mandarin, clementine and citrus hybrids (80,520); Rice, semi-milled or wholly milled (100,630); Articles of leather (420,310); Women's full, knee length hosiery (611,520); Polyethylene terephthalate primary forms (390,760); Womens, gitsl trousers and shorts cotton (620,462); None crude oils petroleum, bituminous (271,000); Mens, boys trousers and shorts, of cotton (620,342); Inflatable balls (950,662)
Kazakhstan	Wheat or meslin flour (110,100); Non crude oils petroleum,	Iron ore, concentrate (260,112); Semi-finished product, iron	Lead refined unwrought (780,110); Zinc, not alloyed, unwrought	Bituminous coal, not agglomerated (270,112); Wheat

(continued)

Table 4. Continued.

Export growth	Increased penetration in stagnant market	Exploited market opportunities	Reduced penetration in stagnant market	Missed market opportunities
	bituminous (271,000); Iron ore, concentrate, not iron pyrites (260,111); Zinc ores and concentrates (260,800); Ferro-silico-chromium (720,250); Natural uranium, its compounds (284,410); Chromium ores and concentrates (261,000); Natural gas in gaseous state (271,121); Gold, semi-manufactured forms (710,813); Ferro-chromium, <4% carbon (720,243)	(720,720); Fixed wing aircraft weight > 15,000 kg (880,240); Wire of refined copper > 6 mm wide (740,811); Propane, liquefied (271,112); Documents of title (490,700); Sulfur, crude or unrefined (250,310); Petroleum gases liquefied (271,119); Coal except anthracite or bituminous (270,119); Butanes, liquefied (271,113).	(790,111); Ferro-chromium, >4% carbon (720,241); Copper ores and concentrates (260,300); Phosphorus (280,470); Silver in unwrought forms (710,691); Gold in unwrought forms non-monetary (710,812); Titanium, unwrought, waste (810,810); Flat rolled iron or non-alloy steel (721,012); Cotton, not carded or combed (520,100).	except durum wheat and meslin (100,190); Hot rolled iron or non-alloy steel (720,824); Crude oils bituminous minerals (270,230); Aluminum oxide not artificial corundum (281,820); Ferro-silico-manganese (720,230); Ferrous waste or scrap, nes; (720,449); Copper and sections of cathodes (740,311); Flat rolled iron or non-alloy steel (721,049); Aluminium unwrought, not alloyed (760,110)
Kyrgyzstan	Milk powder < 1.5% fat (40,210); Transmissions for motor vehicles (870,840); Dump trucks (870,410); Beverage waters, sweetened (220,210); Copper/ copper alloy waste or scrap (740,400); Bovine meat prepared and preserve (160,250); Automobiles engine of >3000 cc (870,324); Cartons, boxes & cases, folding (481,920); Anicles of cement (681,039)	Cherries, fresh (80,920); Apricots, fresh (80,310); Edible brassicas nes, fresh or chilled (70,430); Peaches, nectarines and fresh (80,930); Onions and shallots, fresh or chilled (70,310); Hosiery nes, of cotton, knit (611,592); Womens, girls dresses, synthetic fibres (254,431); Portland cement (252,329); Womens, girls skirts snythetic fibres (620,453); Apples, fresh (80,810)	Tobacco, unmanufactured, not stemmed (240,110); Hot rolled iron or non-alloy steel (720,842); Plastic carboys, bottles and flasks (392,330); Silver in unwrought forms (710,6391); Gold in unwrought forms non-monetary (710,812); Electrical energy (271,600); Paper cartons, boxes and cases (481,910); Motor vehicle parts nes (870,833); filament lamps, except ultraviolet (853,922); filament lamps <= 200 Watt.> 100 volts (853,922).	Carrots and turnips, fresh or chilled (70,610); Walnuts, fresh or dried, shelled (80,232); Womens, girls trousers, shorts (620,463); Mens, boys trousers shorts (620,343); Milk not concentrated nor sweetened (40,120); Kidney beans dried shelled (71,333); Non Crude oils petroleum, bituminous (271,000); Butter and other fats from milk (40,500); Ferrous waste or scrap, nes (720,449); Radiators for motor vehicles (870,831)
Tajikistan	Wire, aluminium not alloyed, $t < 7$ mm (760,511); Wire, aluminium alloy, $t < 7$ mm (760,529); Bovine hides, whole, fresh or wet-salted (410,121); Lead ores and concentrates (260,700); Gold in unwrought forms non-monetary (710,812), Cotton yarn single combed 192–125 dtex (520,524); Cotton yarn single combed 232–192 dtex (520,523); Liquorice extract (130,212); Antimony ores and concentrates (261,710); Alkyd resins, in primary forms (330,750)	Apricots, fresh (80,910); Apples, dried (81,330); Cotton yarn single combed 714–232 dtex (520,522); Fish fillets, frozen (30,420); Onions and shallots, fresh or chilled (70,310); Rice, semi-milled or wholly milled (100,630); Grapes, fresh (80,610); Wheat or meslin flour (110,100); footwear leather, strap instep (640,320); chocolate/ cocoa food preparations (180,690)	Grapes, dried (80,620); Mens, boys trousers and shorts cotton (620,342); Fruits, dried nes (81,340); Mens, boys garments cotton (621,132); Aluminium unwrought, alloyed (760,120); Aluminium unwrought, not alloyed (760,110); Polyethylene primary form (390,120); Copper ores and concentrates (260,300); Monoculars, telescopes (900,580); Cotton not carded or combed + B2 (520,100)	Walnuts, fresh or dried, shelled (80,232); Plain weave cotton, >85% 100–200 g/m <sup>2</sup> (520,812); Mixtures of edible nuts preserved fruits (81,350); Fruits, fresh nes (81,090) Cotton yarn single uncombed 714–232 dtex (520,512); Ground-nuts shelled, not roasted (120,220); Prunes, dried (81,320); Apricots, dried (81,310); Ground-nuts in shell not roasted (120,210); Kidney beans dried shelled (71,333).
Turkmenistan	Electrical energy (520,522); Petroleum coke, calcined (520,812) Terry towelling cotton (510,220) cotton yarn single	Cotton yarn single combed 714–232 dtex (870,423); Plain weave cotton unbleached (121,190) warp knit fabric of cotton, nes (271,113)	Bed linen, of cotton, printed, not knit (630,221); cotton yarn single uncombed > 714 dtex (520,511) Knit or crochet fabric of cotton, nes	Bed linen, of cotton, nes (630,231); woven cotton unbleached (520,919) Cotton yarn single uncombed 714–232 dtex (520,512)

(continued)



**Table 4.** Continued.

Export growth	Increased penetration in stagnant market	Exploited market opportunities	Reduced penetration in stagnant market	Missed market opportunities
	combed 232–192 dtex Coarse animal hair (520,210) Cotton yarn waste (271,121) Natural gas in gaseous state (140,420) Cotton linters (520,293) Liquorice extract (130,212) Cotton, not carded or combed (520,100)	Butanes, liquefied (271,600) Plants and parts pharmacy use (271,312) wedding of cotton not sanitary article (580,211) Diesel-powered trucks (410,121) Sheep or lamb skins, raw (600,242) Cotton waste, except garnetted stock (520,523) Bovine hides, whole, fresh or wet-salted (560,121)	(600,292) Polypropylene in primary forms (390,210) Aluminium unwrought, not alloyed (760,110) Denim cotton >85% >200 g/m <sup>2</sup> (520,942) Cargo vessels other than tanker (8,901,909) cotton yarn single uncombed 232–192 dtex (520,513) Gold, semi-manufactured forms (710,813) Degreased shorn wool (510,121)	Grapes, fresh (80,610) Carbon (280,300) Non crude petroleum oils (270,900) womens, girls trousers and shorts cotton iodine (280,120) Oils petroleum, bituminous and distillates (271,000) Mens, boys trousers and short cotton (620,342)
Uzbekistan	Non crude oils petroleum, bituminous (271,000); Pullover, cardigans, etc., of cotton, knit (611,020) t-shirts, singlets and other vests, of cotton (610,910) Polyethylene primary form (390,120) Boring machinery not self-propelled –843,043 Ammonium nitrate (310,230) Automobiles engine of < 1000 cc (870,321) Zinc, not alloyed, unwrought, <99% pure –730,112 Natural gas in gaseous state (271,121) Wastelscrap, precious metals (711,290)	Cherries, Fresh (80,920); Apricots, fresh (80,310) Edible brassicas nes, fresh or chilled (70,490) Peaches, nectarines and fresh (80,930) Plums, sloes and fresh (80,940) Mineral waxes nes (271,290) Cotton yarn single uncombed 192–125 dtex (520,514); Fruits, fresh nes (81,030); Wire of refined copper > 6 mm wide (740,811); Portland cement (252,329)	Automobiles engine of 1000–1500 cc (870,322); copper and sections of cathodes (740,311); Tobacco, unmanufactured (240,110); Natural uranium (284,410); Gold in unwrought forms non-monetary (710,812); Cotton yarn single combed (192,125); dtex (520,524); Cotton yarn single uncombed (232,192); dtex (520,513); Cotton yarn multiple uncomb (714,232); dtex (520,532) Cotton yarn single combed 232–192 dtex –520,523 Cotton, not carded or combed (520,100)	Cotton yarn single combed 714–232 dtex (520,522); Tomatoes, fresh or chilled (70,200); Vegetables, fresh or chilled nes (70,990); Urea (310,210); Melons [including watermelons], fresh (80,710); Plain weave cotton (520,812); Cotton yarn single uncombed (714,232), dtex (520,512); Grapes, fresh (80,610); Electric conductors (854,459); Grapes, dried (80,620)

Source: Based on information from the COMTRADE database of the United Nations.

Note. The matching representation of the countries exposes each country's high-growth exports with dynamic regional imports of central and South Asia Market.

industry-wide development trajectory, there are robust markets for specific categories, such as furniture, various types of footwear, specific chemical goods and jewelry. Typically, primary commodities exhibit less market dynamism than processed goods do. This is evident in several ways, including the difference between raw fruits and vegetables and processed food items; raw metals, minerals and chemicals and their processed equivalents; and lumber and unfinished wood *versus* wood products and furniture.

#### 4.6. Trade within industries: an example of cross-national similarity and two-way trade

According to Wani and Dhimi (2017), the idea of traditional comparative advantage refers to specialization in the exchange of uniform goods within a perfect competition framework. The foundation of this specialization is the variations in factor endowments and production technologies among trading partners. A significant proportion of commerce, particularly in developed economies, comprises bilateral trade involving goods manufactured within the same industry. Intra-industry trade of this nature occurs within an environment characterized by imperfect competition and product differentiation. It is quantified by the volume of items exported and imported simultaneously within the same industry, including trading partners.

Two distinct forms of intra-industry commerce have transpired within varying settings. The initial category is distinguished by the presence of horizontally differentiated products, which arise from



consumers' preferences for a diverse range of commodities in their purchasing decisions. Economies of scale in the production and trade of vertically differentiated goods lead to the second phenomenon. The available empirical evidence suggests that economic growth is more likely to facilitate economic growth than inter-industry trade. Trade between industries usually takes place between nations with comparable factor endowments, so they can benefit from economies of scale. In the context of a regional trading environment, such as in Central and South Asia, the process of trade facilitates the exchange of technology across nations within the geographical region.

Consequently, this knowledge transfer may encourage greater trade within the industry and advance economic convergence. The discovery that there is a positive correlation between GDP growth and intra-industry trade suggests that Afghanistan and other landlocked and least-developed countries in Central and South Asia could gain from enhanced connectivity and collaboration with these more economically developed nations. This partnership would help promote cross-border investments, as well as intra- and inter-regional trade.

The quantification of economic convergence is assessed using Helpman's index of similarity, which serves as a metric to gauge the level of bilateral commerce between nations within a specific industry. Tables 5 and 6 show the similarity between the economies of Central and South Asia using two different metrics. Based on the 2015 GDP in current US dollars, expressed as billions of gross national income, Table 5 compares the economic sizes of the nations. To find country similarities, Table 6 uses the per capita income in US dollars for 2015.

The outcomes of the two methods were radically different. Table 5 demonstrates that there are few close matches between the countries in the two regions when it comes to country similarities based on country size. When present, they are indicated by the high similarity scores between Turkmenistan and Uzbekistan, Kyrgyzstan, Tajikistan, Afghanistan, Turkmenistan, Kazakhstan and Pakistan. Notable parallels exist between Afghanistan and Tajikistan, Afghanistan and Uzbekistan, and Kazakhstan and Uzbekistan, albeit to varying degrees. On the other hand, Table 6's calculation of similarity indices using per capita income shows several similarities between the nations in the two regions. There are a total of 13 pairs of countries that exhibit similarity indices beyond 90, in addition to two pairs that demonstrate similarity indices ranging between 80 and 90.

As an illustration, the per capita income of Afghanistan exhibits a notable resemblance to that of Tajikistan and Kyrgyzstan. India and Pakistan share similarities in their per capita income, which is also observed in Kyrgyzstan, Tajikistan and Uzbekistan.

**Table 5.** Similarity indices between exports from central and South Asia based on GDP size.

	Income	Afghanistan	India	Pakistan	Kazakhstan	Kyrgyzstan	Tajikistan	Turkmenistan	Uzbekistan
Afghanistan	21.5		4.3	29.1	36	73.5	79.5	93.6	79.3
India	1,960.10	4.3		40.3	32.8	1.4	16	7.1	111
Pakistan	251	29.1	40.3		98.3	10.4	12.1	43.9	60.6
Kazakhstan	193.8	36	32.8	98.3		13.2	15.4	52.3	70.5
Kyrgyzstan	6.9	73.5	1.4	10.4	26.5		99.3	53.8	38.2
Tajikistan	8.1	79.5	2.5	12.1	15.4	99.3		59.9	43.3
Turkmenistan	36.1	93.6	7.1	43.9	52.9	53.8	59.9		94.8
Uzbekistan	57.4	79.3	11.1	60.6	70.5	38.2	43.3	94.8	

Note. In 2015, per capita income was expressed in billions of current US dollars as the gross national income (GNI). (Source: Online World Bank database).

**Table 6.** Per capita income-based similarity indicators between exports from Central and South Asia.

	Per Capita Income (US\$)	Afghanistan	India	Pakistan	Kazakhstan	Kyrgyzstan	Tajikistan	Turkmenistan	Uzbekistan
Afghanistan	704		85.6	89.5	219	93.1	97.2	33.7	78.9
India	1,565	85.6		99.6	42.5	98.3	94.9	60.4	99.1
Pakistan	1,378	89.5	99.6		38.5	99.5	97.3	55.6	97.5
Kazakhstan	11,376	21.9	42.5	38.5		34.6	23.4	93.9	49
Kyrgyzstan	1,203	93.1	98.3	99.5	34.6		99	50.7	95
Tajikistan	987	97.2	94.9	97.3	29.4	99		43.9	90
Turkmenistan	6,880	33.7	60.4	55.6	93.9	50.7	43.9		67.8
Uzbekistan	1,898	78.9	99.1	97.5	49	95	90	67.8	

Note. In 2015, per capita income was calculated using the gross national income (GNI) in US dollars. World Bank web database as a source.

It is difficult to compute meaningful statistics on two-way trade, particularly when using the intra-industry trade index. Typically, a numerical value approaching 100 on the index signifies a degree of similarity between countries, whereas a value approaching 0 implies dissimilarity between them. It is anticipated that there will be significant bilateral trade of goods coming from the same industries if international trade is representative of the intra-industry trade patterns seen in other countries. If the level of similarity is not notably high, it should be higher than that of the trading partners with low similarity indices.

Table 6 shows the relationship between the number of two-way trade volumes related to a particular industry or product and the similarity between nations. This analysis demonstrates the correlation between countries' size, as assessed by gross national income. Currently, our focus is on evaluating the degree to which increased levels of national similarities in the two regions are correlated with larger values of intra-industry trade. The pattern demonstrates that when the level of similarity between trading partners increases, there is a notable increase in the magnitude of intra-industry trade. However, it is crucial to remember that this increase, while significant, is still very small compared to that in advanced economies. The trend that has been fitted to the data exhibits an exponential form and displays concavity in the upward direction. At lower levels of similarity, it can be observed that trading partners in Central and South Asia exhibit minimal, or perhaps negligible, levels of intra-industry trade. However, the extent of intra-industry trade increases more than proportionately as the degree of similarity between trading partners in the two regions increases. There is also empirical evidence in mature economies that supports a positive correlation between national similarities and intra-industry trade. Nevertheless, when considering industrialized nations, the fitted curve exhibits a concave downward shape, implying that even when there are modest levels of similarities, trading partners exhibit a reasonably high proportion of intra-industry commerce. Additionally, when the similarities among trading partners increase, the amount of Intra-industry trade does not increase in a commensurate manner.

## 5. Conclusion and recommendation

The study reveals that intra- and inter-regional trade in Central and South Asia is estimated to be twice the current value, based on the assumption that nations can export to their regional trading counterparts without facing price, non-price, or structural barriers. The three aspects of regional commerce examined were ED, trade complementarities, intra-industry trade and similarity patterns. Larger economies tend to receive higher ratings than smaller, less-developed nations, indicating that regional trade development is significantly shaped by size and level of development.

There are many opportunities for regional commerce with a diverse range of policy measures that can facilitate and enhance trade and investment within and between the two regions. However, over-reliance on a small number of export commodities reduces productivity and makes a country more susceptible to significant reductions in terms of trade. Countries that implement export-oriented growth strategies may reduce the negative effects of external shocks by diversifying their export portfolios across multiple items and destinations.

Central and South Asian economies face substantial trade costs including charges associated with border-related activities and those arising within their respective borders. Non-tariff trade barriers account for a substantial amount, potentially reaching 90%, of trade costs, primarily arising from indirect expenses related to compliance with domestic and international standards. The existence of many licenses, permits and certificates has significant implications for the international competitiveness of businesses in these areas as well as the ability of small enterprises to fully understand the complexities associated with regulatory provisions.

The presence of inventories containing delicate and prohibited goods often conflicts with the potential for inter-industry trade opportunities. Sometimes, the overall expenses associated with bilateral commerce exceed 300% ad valorem equivalent, with agricultural commodities often encountering notably higher levels of safeguarding compared to non-agricultural commodities. Central Asian countries, including Afghanistan, are situated in the bottom 3% of the global rankings for the facilitation of cross-border trade. Without meaningful reforms, the growth of intra- and inter-regional businesses may be hampered by an inability to control these trade costs.

### **5.1. Policy implications**

The interdependence of regional policies is evident in the numerous opportunities for trade within and between Central Asia and South Asia. The primary objective of ED initiatives is to provide favorable outcomes for all parties involved, with a focus on expanding the range of goods and services exchanged. Central and South Asian countries with a higher degree of diversification in their export portfolios have demonstrated more favorable outcomes than those that largely depend on a restricted range of products for their exports. The adoption of policies designed to promote a broader array of exports is anticipated to bolster the market share of exports, whereas maintaining a narrow focus on a limited range of export commodities is likely to hinder the development of new export prospects.

Central and South Asian economies persistently encounter substantial trade costs, including charges associated with border-related activities and those arising within their respective borders. Central Asian countries, including Afghanistan, are situated in the bottom 3% of the global rankings for the facilitation of cross-border trade. In the absence of meaningful reforms, the growth of intra and interregional businesses may be hampered by an inability to control these trade costs.

Efforts focused on augmenting regional trade facilitation should include the recently suggested provisions outlined in the WTO's Agreement on Trade Facilitation (ATF). The opportunity for significantly enhancing trade facilitation measures in both sectors exists through the adoption of the new requirements of the ATF. This adoption effectively addresses the current low ratings and results in significant improvements.

These economies may experience an increase in regional export competitiveness as a result of the transmission of exchange rate variations. The introduction of floating exchange rates, inflation targeting and the abolition of capital restrictions may enhance exchange rate pass-through, the process by which changes in exchange rates are transferred to the level of domestic prices. However, the process of fortifying these transmissions comes with some costs, particularly those related to potential output increases and variations in inflation. Even though the shift from fixed to flexible exchange rate regimes makes it easier for market signals to be transmitted, it is not always assumed that a floating exchange rate regime is the best option for Central and South Asian economies.

In conclusion, there are many opportunities for trade within the region, and policy measures that could be implemented to support and encourage investment and trade within and between the two regions are essential. By considering the interdependence of regional policies, the adoption of new requirements of the ATF and implementing policies that promote diversity and diversification, the economies of Central and South Asia can achieve greater success in their trade endeavours.

### **5.2. Limitations and future scope of the study**

Based on an economic analysis, this study examined opportunities and barriers for intra- and inter-regional trade in Central and South Asia through an analysis of trade diversification, competitiveness and complementarities between the economies of the region. The analysis only considers CARs (Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan) and South Asian countries (India, Pakistan and Afghanistan). Future studies should include all SAARC countries for better results. Apart from the methods employed, this study also recommends the use of comparative advantage, disadvantage, export penetration and survival rates to better gauge the trade latency within and between the regions. Based on the recommendations suggested above, further investigation is required to conduct a comprehensive analysis of these issues before devising specialized recommendations for individual countries.

### **Authors contribution**

The authors confirm their contribution to the article as follows: study conception and design: NHW; data collection: MMR; analysis and interpretation of results: NHW, AUR, VG and SM; draft manuscript preparation: NHW and MMR. Revisions: NHW, AUR, VG, SM and MMR; All authors reviewed the results and approved the final version of the manuscript.

## Disclosure statement

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

We declare that the work described has not been published previously (except in the form of an abstract, a published lecture or an academic thesis, see 'Multiple, redundant or concurrent publications' for more information), that it is not under consideration for publication elsewhere, that its publication is approved by all authors and tacitly or explicitly by the responsible authorities where the work was carried out, and that, if accepted, it will not be published elsewhere in the same form, in English or any other language, including electronically without the written consent of the copyright holder.

## Funding

No funding was received.

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## Data availability statement

The data that support the findings of this study are available at demand. These data were derived from the resources available in the public domain: (UNCOMTRADE, WITS, OEC and World Bank).

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