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Research on Geo-economic Cooperation between China and the Five Central Asian Countries within the Framework of the Belt and Road Initiative

Ruyu Zhang, Xiuli Ma, Wenjing Yang, Songyu Hu, Xiaoying Shi, Meijuan Li

School of Business, Hebei University of Engineering Science, Shijiazhuang, Hebei, 050091

ABSTRACT
The Geo-economic cooperation between China and the five Central Asian countries under the Belt and Road Initiative framework has achieved remarkable results. By jointly building the Belt and Road initiative, the two sides have continuously deepened economic and trade cooperation and built a rich, dynamic, mutually beneficial relationship. To further explore the Geo-economic cooperation between China and the five Central Asian countries, this article specifically focuses on analyzing the current situation, identifying obstacles and problems, and correspondingly providing suggestions, hoping to contribute to the development of bilateral relations between China and the five Central Asian countries.

KEYWORDS
Geo-economic Cooperation; Five Central Asian Countries; Belt and Road Initiative

1 Introduction

In 1992, China sequentially established diplomatic relations with the five Central Asian countries (Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan), and these precious friendships have lasted for over 30 years. In May 2023, the first China-Central Asia Summit was successfully held in Xi'an, Shaanxi Province. This grand event not only witnessed the friendly exchanges between China and Central Asian countries but also symbolized the increasingly close unity and cooperation. It held milestone significance in the history of relations between China and Central Asian countries.

The full name of the Belt and Road Initiative (BRI) is the “Silk Road Economic Belt” and the “21st Century Maritime Silk Road”. Over the past decade, through solid foundation-building and framework establishment, the BRI has now become the most popular global public product and the international cooperation platform with the brightest prospects. Bordering China's northwest, the five Central Asian countries, as our friendly neighbors and comprehensive strategic partners, have been the earliest public supporters of the BRI and also the pioneers in cooperation. Over the past 10 years, China and the five Central Asian countries have achieved fruitful cooperation outcomes, which are widely recognized by all parties in the world. As a result, Central Asia has become a demonstration zone for high-quality co-construction of the BRI[1]. In the light of the remarkable success achieved in the past and the enormous potentials for the future, it is necessary to summarize the past cooperation conditions, identify existing problems, and propose feasible plans to further promote the Geo-economic cooperation between China and the five Central Asia countries under the framework of the BRI.

2 Literature Review

2.1 Literature on the Belt and Road Initiative

Since the Belt and Road Initiative was proposed, it has received extensive attention from scholars all over the world who have analyzed this great initiative from different perspectives based on different disciplines. Huang (2016) introduced the meaning of the BRI, the reasons behind it and the possible consequences for the Chinese and the world economies. In the article, the author precisely demonstrated that the motivation of the BRI is to stimulate economic growth in regions including Asia, Europe and Africa, which represents 64% of world population. Written in a relatively early time, instead of assessing the impacts directly, the article highlighted the great potentials and also pointed out several barriers such as lack of central coordination mechanism and the obvious political and economic differences among countries involved[2].

From the perspectives of a foreign scholar, Johnston (2018) elaborated the implications of the BRI in the aspects of economic history, geography, and demography, and proposed that the BRI is established to foster the ongoing development of China as well as generate development opportunities for other developing countries. Also, the author believed this would facilitate the internationalization of financial sector of China and the Renminbi[3]. Focusing specifically on Africa region, Komakech and Ombati(2023) confirmed the efforts China has made under the framework of the BRI to address the global infrastructures gap through constructing modern highways, airports, high-speed railways, bridges and so on. These moves undoubtedly strengthen the connectivity between Asia, Europe, and Africa. Based on the data from five African countries including Uganda, Kenya, Egypt, Djibouti, and Mozambique, the article proposed that the BRI has brought positive effects to these five African countries. However there are also some major challenges such as procurement corruption, insufficient involvement of stakeholders and some environmental hazards which need to be addressed in the future to fully unleash the potentials[4].

2.2 Literature on the regional cooperation between China and the Five Central Asian Countries

Given the strategic significance of the cooperation between China and the Five Central Asian Countries, various researches have been conducted on this particular area. Zhao, Liu and Ge (2020) evaluated trade data from 1992 to 2017 and proposed that with the continuous promotion of trade cooperation between China and Central Asia, China is generally in the position of trade surplus[5].

Zhang (2022) focused on the import and export volume data between China and the five Central Asian countries from 1995 to 2019, proposed that there is a long-term and stable dynamic relationship between China and the five Central Asian countries in economic cooperation, and the export trade between China and the five Central Asian countries can promote China's economic growth[6].

2.3 Literature on the cooperation between China and the Five Central Asian Countries in the context of the BRI

Jash, Gokireddy and S V (2024) discussed China’s approaches on Central Asian countries in the context of the BRI, and through profound researches, the authors concluded that the BRI has been proved to be largely beneficial for both China and Central Asian countries because the investment and relevant projects are crucial for the economic growth and development of these countries[7].

Wang and Wang (2021) studied the agricultural cooperation between China and the five Central Asian countries in the context of the BRI, and proposed that with the promotion of the BRI, the agricultural cooperation between China and the five Central Asian countries will grow rapidly, and these parties should therefore deepen scientific and technological cooperation and optimize the agricultural investment cooperation platform[8].

Huang et al. (2019) based on the background of the BRI, analyzed China's GDP and the GDP of Central Asian partner countries, and predicted that China's exports to the five Central Asian countries will continue to rise steadily in the short term, which further reflected that China's export potential to the five Central Asian countries is relatively large[9].

Kohli (2017) analyzed the economic cooperation between China and Central Asian countries from the perspective of Central Asian countries.

The author pointed out that the expected investment scale under the BRI is huge. Even though in the current situation the most of the investment is concentrated in China, but with the participation of governments, multilateral institutions and more private enterprises, the investment situation will change[10].

In summary, domestic and international scholars have conducted sufficient researches from various perspectives, which indirectly confirms the importance of the present research topic. However, the emphasis has been put mainly in the implications.

The articles focusing on discussing the existing problems are scarce. Therefore, this article, with a view to the issues on Geo-economic cooperation between China and the Five Central Asian Countries within the framework of the BRI, will analyze cross-border panel data such as import and export trade and investment between China and the five Central Asian countries from 2005 to 2023 to assess current situations, diagnose issues and correspondingly propose solutions, hoping to further strengthen and facilitate the long-term cooperation.

3 The Current Status of Geo-economic Cooperation between China and the Five Central Asian Countries

3.1 The trade volume has shown an upward trend amid fluctuations

The proposal of the BRI not only brings new opportunities for trade cooperation between China and the five Central Asian countries, but also deepens the economic cooperation. The Geo-economic cooperation between China and the five Central Asian countries has a very deep practical foundation. Since the economic development of the five Central Asian countries is relatively backward, the BRI can meet the development needs of them[6].

Table 1 shows the bilateral trade volume between the five Central Asian countries and China in the past 19 years from 2005 to 2023. The data are all from Belt and Road Portal (the official website of the BRI) to ensure the reliability and authenticity of subsequent analysis. On the other hand, table 2 shows the growth rate of the bilateral trade volume between the five Central Asian countries and China from 2006 to 2023.

Table 1 Total Import and Export Volume between the Five Central Asian Countries and China from 2005 to 2023 Unit: Ten Thousand US Dollars

Year	Kazakhstan	Kyrgyzstan	Tajikistan	Turkmenistan	Uzbekistan
2005	680611	97220	15794	10996	68056
2006	835775.37	222570.11	32378	17858.29	97209.03
2007	1387776.57	377923.13	52405.05	35267.84	112818.89
2008	1755233.83	933337.76	149992.63	83037.61	160669.61
2009	1412913.26	533027.56	140669.22	95743.87	192087.12
2010	2044851.7	419963.5	143256.3	156963.6	248326.8
2011	2496123.31	497645.2	206900.52	547733.58	216661.37
2012	2568157.1	516231.6	185669.9	1037249.9	287518.8
2013	2859596.2	513769.6	195811.5	1003090.1	455144.8
2014	2245167.18	529794.38	251593.52	1047043.99	427612.42
2015	1429018.8	434069.4	184742.3	864313	349582.5
2016	1309766.8	567669	175634.2	590177.4	361460.9
2017	1794313.4	542386.3	134811.2	694324.3	422087.2
2018	1987813.7	561112	150592.6	843629.5	626919.1
2019	2200277.05	634656.13	167468.75	911687.60	721286.98
2020	2150823.48	290016.67	106213.56	651536.97	662202.47
2021	2524982	755374	185862	735743	803706
2022	3109028	1542368	257059	1117411	970012
2023	4102116.63	1980414.03	392623.12	1059006.68	1403281.76

Data from Belt and Road Portal

Table 2 the Growth Rate of Total Import and Export Volume between the Five Central Asian Countries and China from 2006 to 2023

Year	Kazakhstan	Kyrgyzstan	Tajikistan	Turkmenistan	Uzbekistan
2006	22.80%	128.93%	105.00%	62.41%	42.84%
2007	66.05%	69.80%	61.85%	97.49%	16.06%
2008	26.48%	146.96%	186.22%	135.45%	42.41%
2009	-19.50%	-42.89%	-6.22%	15.30%	19.55%
2010	44.73%	-21.21%	1.84%	63.94%	29.28%
2011	22.07%	18.50%	44.43%	248.96%	-12.75%
2012	2.89%	3.73%	-10.26%	89.37%	32.70%
2013	11.35%	-0.48%	5.46%	-3.29%	58.30%
2014	-21.49%	3.12%	28.49%	4.38%	-6.05%
2015	-36.35%	-18.07%	-26.57%	-17.45%	-18.25%
2016	-8.35%	30.78%	-4.93%	-31.72%	3.40%
2017	36.99%	-4.45%	-23.24%	17.65%	16.77%
2018	10.78%	3.45%	11.71%	21.50%	48.53%
2019	10.69%	13.11%	11.21%	8.07%	15.05%
2020	-2.25%	-54.30%	-36.58%	-28.54%	-8.19%
2021	17.40%	160.46%	74.99%	12.92%	21.37%
2022	23.13%	104.19%	38.31%	51.88%	20.69%
2023	31.94%	28.40%	52.74%	-5.23%	44.67%

Calculated via data in Table 1

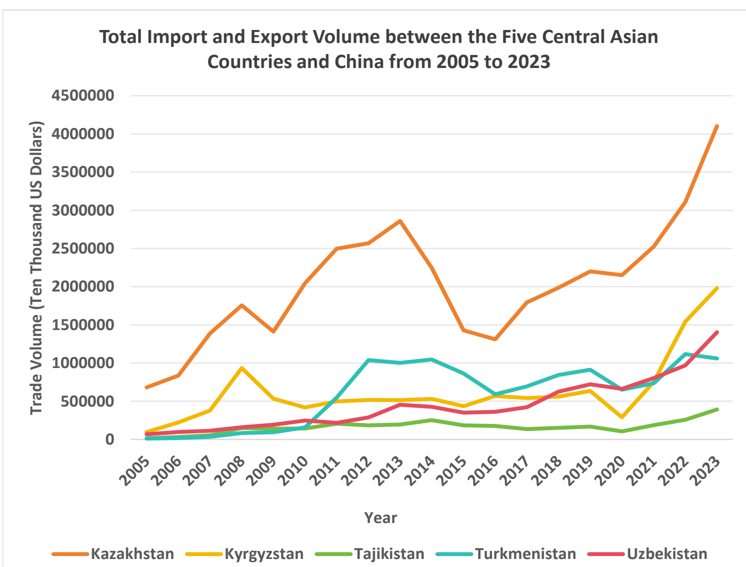

Figure 1 Total Import and Export Volume between the Five Central Asian Countries and China from 2005 to 2023 Unit: Ten Thousand US Dollars

Figure 1 is made based on the data from Table 1 and provides a more intuitive view of the trade tendency. As clearly shown in Table 1-2 and Figure 1, the bilateral trade volume between Kazakhstan and China has exceeded that of the other four Central Asian countries in the past 19 years. One objective explanation for that is Kazakhstan is the largest economy in Central Asia. Its economic policies and development model have had a demonstrative effect on other Central Asian countries[11]. However, even though the bilateral trade volume between Kazakhstan and China increased more than five times from 2005 to 2023 (in 2005 the amount is 680611 while in 2023 the amount is 4102116.63), from Table 2 and Figure 1, it is clearly that the volatility of bilateral trade volume is very high, and the growth rate has been fluctuating greatly, with some years even experiencing negative growth (2009,2015,2015,2020).

Simply from a quantitative perspective, the bilateral trade volume between Tajikistan and China has been the lowest among these countries since 2010. The economic development level also results in this situation to some extent. According to the latest data from World Bank, in 2023, Tajikistan's GDP is 12.06 billion US dollars, while the GDP of Kazakhstan, Kyrgyzstan, Turkmenistan and Uzbekistan are 261.42 billion US dollars,13.988 billion US dollars, 59.89 billion US dollars and 90.89 billion US dollars respectively, which means Tajikistan has the lowest GDP among the five Central Asian countries. In the meanwhile, the bilateral trade volume between China and other central Asian countries have also shown significant fluctuations. Take Kyrgyzstan and Tajikistan as examples, the bilateral trade volume reached a triple digit growth rate in some years, but the growth rate was negative in some years, which also reflects the enormous volatility. The positive sign is that the bilateral trade volume between China and all five countries show more or less upward trends since 2020. According to the latest information from General Administration of Customs of China, in April of this year, the monthly import and export volume between China and the five Central Asian countries exceeded 50 billion yuan for the first time. And in the first four months of 2024, the import and export volume between China and the five Central Asian countries increased by 37.3%[12]. With the slow recovery of economies after the epidemic, the economic and trade cooperation between the five Central Asian countries and China is constantly developing towards a positive direction.

3.2 Continuous optimization of bilateral trade commodity structure

With the continuous deepening of economic and trade cooperation between China and the five Central Asian countries, the structure of trade commodities is also constantly improving. In 2005，the products imported by China from the five Central Asian countries are mainly energy and raw material products. Energy products mainly include petroleum and its products, natural gas, chemicals, and plastic products, while raw material products mainly include cotton, scrap metals, and cowhide. The products exported by China to the five Central Asian countries are mainly finished goods, including clothing, shoes and hats, textiles, household appliances, communication and mechanical products. In that period, bilateral trade lacks diversity in commodity varieties, with resource intensive and labor-intensive products being the main traded goods, and the proportion of capital intensive and technology intensive products being relatively low[13]. In recent years, with the joint efforts of China and Central Asian countries, the bilateral trade structure has been continuously optimized. In the first half of 2023, in addition to traditional energy trade, China's exports to Central Asia mainly consist of machinery and parts, as well as industrial products such as television and electrical equipment. At the same time, China has increased its exports of wood pulp, textiles and other related products, with exports of sugar related products increasing by 1677.64% and textile products such as plant textiles and fibers increasing by 1169.12%. China's imports of optical, photographic and other instruments and equipment, as well as their components, from Central Asia increased by 1532.51%, while essential oils and fragrances, aromatic products and cosmetics and toiletries increased by 1010.90%[14]. These data indicate that the economic and trade structure between China and Central Asian countries is developing towards diversification, which is of great significance for optimizing bilateral trade structure and improving trade quality.

3.3 New forms and models of trade empower economic and trade cooperation between China and certain Central Asian countries

In recent years, with the continuous development of digital technologies, new forms and models of foreign trade have developed rapidly and become an important force to promote high-level opening up in China. In 2022, the cross-border e-commerce trade volume between China and Central Asia increased by 95% year-on-year. China and five Central Asian countries have held various e-commerce events to facilitate more distinctive products to be imported from Central Asia to China[1]. The development level of cross-border e-commerce in the five Central Asian countries is generally improving, thanks to their continuous investment in Internet infrastructure construction and logistics system construction. However, there are also significant differences in the level of cross-border e-commerce development among these countries, with Uzbekistan having the highest level of development, followed by Kazakhstan, Kyrgyzstan, Turkmenistan, and Tajikistan[15].

With China's continuous emphasis in building digital Silk Road and developing intelligence logistics, the new forms and models of foreign trade will keep enlarging the cooperation scale of China and the five central Asian countries.

3.4 The bilateral investment between China and the five Central Asian countries is mainly focused on China's investment in Kazakhstan

The investment cooperation between China and Central Asian countries has been mainly based on China's one-way investment for a long period. And China's investment in Central Asian countries varies greatly. Kazakhstan is a major investment destination for China's investments in Central Asia, with investments in Kazakhstan exceeding the total investments in the other four countries[16]. However, China's direct investment flow to Kazakhstan also shows significant instability. According to Statistical Bulletin of China's Outward Foreign Direct Investment, from 2019 to 2023, Kazakhstan has only been ranked among the top 20 countries in China's outward foreign direct investment flow for two years, which 2019 (ranked no.19, outbound direct investment flow of 790 million US dollars) and 2023 (ranked no.12, outbound direct investment flow of 1.62 billion US dollars) [17]. Although it shows a clear upward trend because the outbound direct investment flow increased a lot in 2023 compared to 2019, the obvious fluctuation cannot be ignored by both parties. With the constant enlargement of the BRI, it is believed that investment cooperation between China and other Central Asian countries will also be greatly developed in the future.

3.5 The completion amounts of foreign contracted projects vary significantly, with Uzbekistan showing strong momentum

According to China Statistical Yearbook 2015-2024, as shown in Table 3, Table 4 and Figure 2, there is a significant difference in the completion amount of China's foreign contracted projects to the five Central Asian countries. From 2014 to 2021, China's completed revenue from contracted projects in Kazakhstan remained the highest midst the five central Asian countries.

From 2022 to 2023, China's completed revenue from contracted projects in Uzbekistan exceeded that in Kazakhstan. What's more, China's completed revenue from contracted projects in Uzbekistan showed a relatively obvious upward trend when compared to other four countries, which means the economic cooperation between China and Uzbekistan is deepening gradually, and both sides have continuously achieved mutual benefit and win-win results in economic interests. It can also be seen from Table 4 that the growth rate of China's completed revenue from contracted projects in five Central Asian countries varied from 2015 to 2023. The instability needs to be addressed in the future to maintain the sustainable cooperation.

Table 3 China's completed revenue from contracted projects in five Central Asian countries from 2014 to 2023 Unit: Ten Thousand US Dollars

Year	Kazakhstan	Kyrgyzstan	Tajikistan	Turkmenistan	Uzbekistan
2014	235768	58736	40931	124000	49772
2015	234700	54857	64377	68921	61241
2016	275779	55663	70787	31916	49111
2017	223838	47998	19042	25264	50320
2018	221357	21049	30848	27398	105564
2019	198174	26562	23957	33699	88881
2020	149105	13765	36891	16522	95709
2021	116299	18988	50630	27420	104002
2022	116515	16707	46730	41204	150550
2023	135901	15224	34468	32677	307244

Data from China Statistical Yearbook 2015-2024

Table 4 the Growth Rate of China's completed revenue from contracted projects in five Central Asian countries from 2015 to 2023

Year	Kazakhstan	Kyrgyzstan	Tajikistan	Turkmenistan	Uzbekistan
2015	-0.45%	-6.60%	57.28%	-44.42%	23.04%
2016	17.50%	1.47%	9.96%	-53.69%	-19.81%
2017	-18.83%	-13.77%	-73.10%	-20.84%	2.46%
2018	-1.11%	-56.15%	62.00%	8.45%	109.79%
2019	-10.47%	26.19%	-22.34%	23.00%	-15.80%
2020	-24.76%	-48.18%	53.99%	-50.97%	7.68%
2021	-22.00%	37.94%	37.24%	65.96%	8.66%
2022	0.19%	-12.01%	-7.70%	50.27%	44.76%
2023	16.64%	-8.88%	-26.24%	-20.69%	104.08%

Calculated via data from Table 3

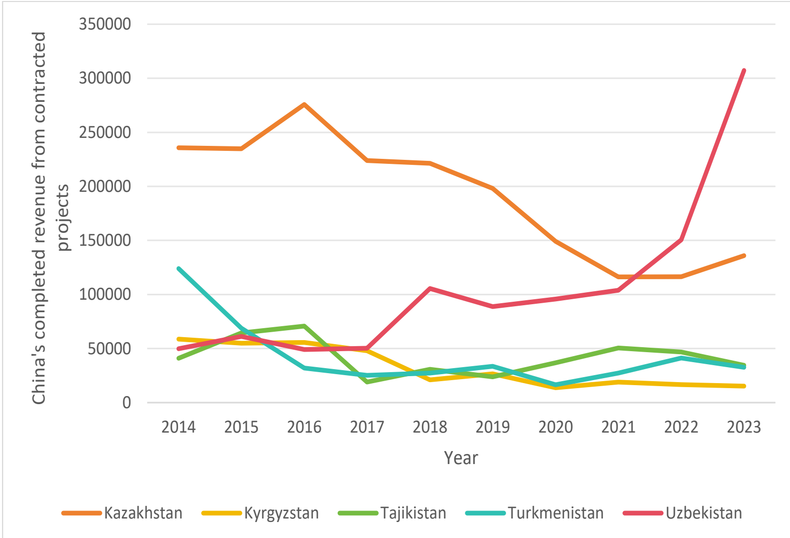

Figure 2 China's completed revenue from contracted projects in five Central Asian countries from 2014 to 2023 Unit: Ten Thousand US Dollars

4 Existing problems in the Geo-economic cooperation between China and the Five Central Asian Countries in the context of the BRI

4.1 The significant imbalance of economic development among the five central Asian countries

The gap in economic development levels among the five Central Asian countries is quite significant, which hinders the deeper Geo-economic cooperation between China and the five central Asian countries and affect other forms of cooperation under the framework of the BRI. Table 5 and Graph 3 show the Gross Domestic Product (GDP) conditions of the five central Asian countries. It is clear that Kazakhstan's economic development level has consistently ranked first among the five Central Asian countries, while Kyrgyzstan and Tajikistan have relatively low levels of economic development. These gaps will adversely affect the economic and trade cooperation between China and the five Central Asian countries under the the Belt and Road framework in many ways. For example, the difficulty of building cooperation mechanisms has correspondingly increased. The imbalance of the economic development level of the five Central Asian countries has increased the difficulty in building the cooperation mechanism of the "the Belt and Road". There are differences in economic development needs, policy formulation, and implementation among different countries, which makes it difficult to unify and coordinate cooperation mechanisms.

To be more specific, countries with different levels of economic development will have different interest demands when participating in the BRI construction. Economically developed countries (such as Kazakhstan) focus more on market expansion and industrial upgrading, while economically underdeveloped countries (such as Kyrgyzstan and Tajikistan) may focus more on infrastructure construction and poverty alleviation. This difference in interest demands may lead to disagreements and conflicts during the cooperation process.

Gaps in the levels of economic development will also result in differences in investment environment. Kazakhstan has the best business environment among the five Central Asian countries. In fact, it has attracted the most foreign investment among the five Central Asian countries in recent years, becoming one of the key countries for China to give priority to production capacity cooperation along the BRI. Uzbekistan has shown the most significant improvement in its investment environment, while Tajikistan has the worst investment environment and the lowest level of economic development[16].

The differences in economic development levels among the five Central Asian countries also lead to differences in the degree of application of new forms and models of foreign trade. The development level of cross-border e-commerce in the five Central Asian countries shows significant differences, ranked from high to low as Uzbekistan, Kazakhstan, Kyrgyzstan, Turkmenistan, and Tajikistan[15]. Countries with higher levels of cross-border e-commerce development (such as Kazakhstan and Uzbekistan) have relatively mature e-commerce platforms and consumer groups, providing more opportunities for Chinese goods to enter these markets. Take Kazakhstan as an example, consumers in Kazakhstan mainly shop online through e-commerce platforms such as Kaspi. kz, AliExpress, Wildberries, Ozon, and Sulpak[18]. With the increase of Internet penetration and smartphone use, more and more Kazakh consumers are beginning to enjoy the convenience of online shopping, which will facilitate the development of new trade forms and models and gradually accelerate the process of bilateral trade between China and Kazakhstan. By contrast, cooperating with countries with lower levels of cross-border e-commerce development (such as Turkmenistan and Tajikistan) contains more challenges in terms of applying online platforms.

Table 5 The Gross Domestic Product (GDP) of the five Central Asian countries from 2015 to 2023 Unit: Million US Dollars

Year	Kazakhstan	Kyrgyzstan	Tajikistan	Turkmenistan	Uzbekistan
2015	184388.4	6678.18	8271.43	35799.71	86196.26
2016	137278.32	6813.1	6992.42	36169.43	86138.29
2017	166805.79	7702.94	7536.4	37926.29	62081.32
2018	179339.98	8271.11	7765	40765.43	52870.11
2019	181667.18	9371.28	8300.81	45232.86	60283.5
2020	171082.37	8270.47	8133.96	45818	60224.7
2021	197112.26	9249.13	8937.81	50007.43	69600.61
2022	225496.33	12134.93	10713.53	56542.86	81140.82
2023	261421.12	13987.63	12060.6	59887.33	90889.15

Data from Belt and Road Portal

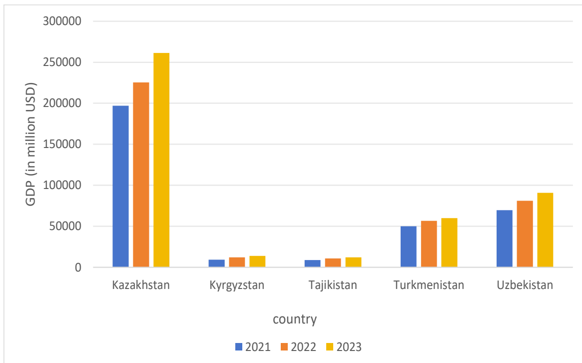

Figure 3 the Gross Domestic Product (GDP) of the five Central Asian countries from 2021 to 2023 Unit: Million US Dollars

Data from Belt and Road Portal

4.2 Political risks may hinder cooperation

The various contradictions accumulated by Central Asian countries over the past 30 years of independence have made the complexity of Central Asian security increasingly prominent. Maintaining regional stability and long-term peace has become more and more important in terms of the Geo-economic cooperation between China and the five central Asian countries. In recent years, several public safety incidents and border conflicts have occurred in Central Asia. All of these facts potentially may affect the sustainable cooperation between China and the five central Asian countries in the context of the BRI. The interweaving of new and old security issues in Central Asia not only tests the security governance system and governance capabilities of Central Asian countries, but also puts higher demands on China's economic and trade cooperation with Central Asian countries. The current world situation is particularly complex and tense in terms of geopolitics, with multiple regions such as Russia, Ukraine, and the Middle East continuously experiencing conflicts. These conflicts often stem from historical legacy issues, resource disputes, and external interference, which not only have a profound impact on relevant countries, but also affect global economic stability and international order, testing the wisdom and cooperation of the international community. It is urgent for all parties to seek peaceful solutions through dialogue and cooperation.

4.3 The limitations of geographical location and poor infrastructure construction level

From a geographical perspective, all five Central Asian countries are located inland, so they lack sea transportation conditions and have significant limitations in transportation. The influence of this characteristic could be multifaceted. Compared to sea transportation, land transportation is more expensive and time-consuming, which undoubtedly increases the logistics and time costs of bilateral economic and trade cooperation, thereby reducing the competitiveness of trade. At the same time, transportation costs and time constraints also affect the scale and variety of trade, and some large, heavy, or low value goods may not be suitable for trade through land transportation. In addition, the lack of maritime transportation conditions in landlocked countries also makes the supply chain more fragile. Once land transportation is obstructed or interrupted, such as border congestion, natural disasters, or political conflicts, it will have a serious impact on the economic and trade cooperation between the two sides. Therefore, in promoting economic and trade cooperation between China and the five Central Asian countries, it is necessary to fully consider the challenges brought by these geographical features and take corresponding measures to cope with them.

In terms of the infrastructure development, as landlocked countries, the five Central Asian countries mainly rely on highways and railways for transportation. And for Kazakhstan, which has achieved success in traditional infrastructure, the momentum of new infrastructure is rising and the process of digital infrastructure construction is accelerating[19].

To be more specific, in recent years, infrastructure construction in Central Asia has made some progress under the promotion of the joint construction of the BRI, but the internal transport links in Central Asian countries are not optimistic, and many regions lack the necessary transport infrastructure[14]. The Belt and Road Initiative (BRI) Country Infrastructure Development Index is a comprehensive index reflecting the development environment, development demand, development heat and development cost of the infrastructure industry in the co-construction countries. The higher the score, the better the prospects of a country's infrastructure industry, and the greater the attractiveness for enterprises to invest and operate in the infrastructure industry in that country[20]. Table 6 shows the BRI infrastructure development index of several regions from 2022 to 2023. From these data, it is obvious that central Asia area has relatively lower index both in 2022 and 2023, which indicates that the infrastructure development level in central Asia area is relatively low. To compare the specific index situation of the five Central Asian countries, Table 7 shows the index score and the corresponding rank of these five countries respectively. According to Table 7, Uzbekistan and Kazakhstan has relatively high index score while Turkmenistan has the lowest index score. In addition, the infrastructure development index of the five Central Asian countries also has significant differences, with the highest scoring country (Uzbekistan) and the lowest scoring country (Turkmenistan) showing significant differences in scores and rankings. Relatively lower infrastructure development level and obvious internal differences will undoubtedly bring multiple challenges into the Geo-economical cooperation between China and the five central Asian countries under the framework of the BRI.

Table 6 Changes in Infrastructure Development Index in Various Regions from 2022 to 2023

	Southeast Asia	West Asia and North Africa	South Asia	CIS and Mongolia	Latin America and the Caribbean	Sub Saharan Africa	Central Asia	Central and Eastern Europe
2022	126	113	115	114	108	109	109	106
2023	127	118	115	114	114	114	112	108

Table 7 the Belt and Road Initiative (BRI) Country Infrastructure Development Index 2023

	Kazakhstan	Kyrgyzstan	Tajikistan	Turkmenistan	Uzbekistan
Index	115	107	113	104	119
Rank	29	65	35	74	11

5 Measures to promote Geo-economic cooperation between China and the five Central Asian countries under the framework of the BRI

5.1 Develop different Geo economic cooperation strategies based on the situation of different countries

Although the five Central Asian countries have different levels of economic development, they all show great potential to deepen Geo economic cooperation with China under the BRI. To address the potential challenges generated due to the unbalance economic development status of the five countries, the key is to develop targeted and tailor-made cooperation plans based on the specific conditions of each country. Based on the different levels of economic development and resource endowments of the five Central Asian countries, with the general objective of further expanding the scale of trade, China should cooperate with different countries in various fields. Due to the abundant oil and gas energy and other natural resources in Kazakhstan, Uzbekistan, and Turkmenistan, China can explore clean and renewable energy cooperation such as wind and solar energy while continuously expanding investment and trade in the energy sector[16]. Regarding Tajikistan, which has a relatively low level of economic development, given its reputation as the "country of high mountains" with abundant snowmelt and huge terrain differences, China can continuously strengthen cooperation in hydropower generation based on existing achievements. China has the world leading technology and equipment manufacturing capabilities in the field of hydropower generation, and has accumulated rich experience in construction and operation. Although Tajikistan has abundant water resources, it is relatively backward in terms of technology and equipment. Both parties can leverage their respective strengths to achieve technological complementarity and resource sharing. Also with the constant development of Tajikistan, the country’s electricity demand will keep growing and correspondingly brings broad prospects for cooperation between both parties. Under the framework of the BRI, the two sides can establish a closer cooperation mechanism and platform to promote the implementation of hydropower projects. For example, a special fund can be jointly established to provide financial support for hydropower projects. Since the BRI was put forward, national, provincial and municipal governments, domestic and foreign financial institutions, private enterprises and other entities have set up special funds to jointly participate in the construction of "the Belt and Road" key projects[21]. As for the above-mentioned fund, it can be funded by both governments or attract third-party investors or financial institutions to participate. At the same time, it is necessary to establish a specialized management agency to strengthen the daily management and operation of the fund, and efficiently and reasonably use the fund mainly to support the planning, design, construction, operation, and maintenance of Tajikistan's hydropower projects.

5.2 Strengthen high-level dialogue and leverage the government's leading role

The issue of security and stability in Central Asia has always been a key focus of bilateral cooperation. In the context of the BRI, to booster the Geo-cooperation, the construction of cooperation mechanisms between China and the five Central Asian countries has achieved initial results in the past few years. China and the five Central Asian countries place greater emphasis on innovative cooperation mechanisms at the government level, such as the China Central Asia Summit Mechanism, the China Central Asia Mechanism Secretariat, and the China Central Asia Emergency Management Cooperation Mechanism[22]. In order to further deepen the economic and trade cooperation between China and the five Central Asian countries under the BRI framework, and to minimize the possible adverse impact of political and social stability in Central Asia on bilateral cooperation, China and the Central Asian countries should strengthen cooperation among countries, jointly address regional security challenges and economic risks, create a stable external environment for bilateral trade, and promote regional security and cooperation through diplomatic channels and regional cooperation mechanisms. Some Chinese enterprises, especially small and medium-sized enterprises with poor risk resistance, also have inadequate ability to handle emergencies when conducting economic and trade cooperation with Central Asian countries. To address that, the government should play a leading role and closely monitor the political dynamics and political stability of the five Central Asian countries, and regularly assess the impact of political risks on bilateral trade. Correspondingly, the government should flexibly adjust trade strategies and market layouts to reduce the adverse effects of potential risks on bilateral trade. Also the risk assessment system should contain multiple aspects including trade, investment, finance, etc. The assessment bullet-points should be released regularly and literally reach the front-line companies. In case of the real emergencies which are difficult to be handled by small and medium size (SME) companies, the government should provide necessary professional legal consulting services for enterprises and provide certain financial subsidies to enterprises that suffer significant economic losses. All in all, risks in politics and society are difficult to be detected, prevented and quickly responded by SMEs. Therefore, in this aspect, the government must play a leading role and take necessary responsibilities.

5.3 Strengthen high-level interconnectivity cooperation and promote cross-border infrastructure construction

In the context of the BRI, China and Central Asian countries have extensive and in-depth cooperation in infrastructure construction. In June of 2024, the signing ceremony of the trilateral agreement on the China- Kyrgyzstan-Uzbekistan railway project was held in Beijing. As a strategic project for China's connectivity with Central Asia, the completion of the China-Kyrgyzstan-Uzbekistan Railway is of great significance in further enhancing regional connectivity and promoting economic and social development along the route[23].Obviously, the infrastructure construction in transportation plays an important role in promoting economic and trade exchanges between China and the five Central Asian countries. Therefore, the cooperation emphasis for the next stage would be constantly promoting the construction of China-Central Asia Transport Corridor. As mentioned in previous chapter, all five Central Asian countries are landlocked, so sea transportation is not an option for bilateral trade. As a result, the focus of cooperation between China and Central Asian countries in transportation infrastructure construction should be on railway transportation, road transportation, and air transportation. By accelerating the construction of cross-border railway projects such as the China-Kyrgyzstan-Uzbekistan Railway, optimizing the operation of China Railway Express, promoting road connectivity and facilitation measures, and encouraging the development and cooperation of air transportation, the aim is to enhance regional connectivity, reduce logistics costs, and promote economic and trade exchanges and efficient cooperation. What's more, as a leading country in infrastructure technology, China should play a leading role in promoting the alignment of technical standards between China and Central Asian countries in the field of transportation infrastructure construction, strengthening experience exchange and cooperation, and ensuring the quality and safety of projects. To adapt to the changes of the times and the needs of mutual development, it is necessary to promote the application of technologies such as intelligent transportation systems and the Internet of Things in transportation infrastructure construction in specific cooperation projects, in order to improve transportation efficiency and safety. Enterprises and civil organizations also play important roles. In the process of strengthening cooperation in transportation infrastructure construction between China and Central Asian countries, it is necessary to further encourage and support deep cooperation between enterprises and civil organizations from both sides. This cooperation can not only jointly promote the smooth implementation of transportation infrastructure projects, but also achieve mutual benefit and win-win results through technology transfer, talent cultivation, and experience exchange. Enterprises should actively seek partners, jointly explore new cooperation models and technological innovations, and provide more solid support for regional connectivity and economic and trade exchanges. At the same time, non-governmental organizations should also leverage their own advantages to promote cultural exchange and mutual learning, adding more humanistic colors and friendly atmosphere to the cooperation between the two sides.

The e-commerce market in Central Asia is still in the development stage, but it is showing a good momentum of growth. Therefore, in terms of fully utilizing new cross-border trade platforms and models, both governments should strengthen cooperation between customs, inspection and quarantine departments, and promote the simplification and optimization of cross-border customs clearance processes. Also, promoting information platforms such as electronic ports and single windows to improve customs clearance efficiency and transparency is necessary at the policy level. China has a relatively mature e-commerce market and enormous developed e-commerce platforms and enterprises. To truly utilize cross-border e-commerce models to increase bilateral trade volumes, China should hold more cross border e-commerce forums, exhibitions, and other activities to strengthen communication and cooperation between both parties. And universities, enterprises and other institutions from both sides should be encouraged to increase communications to strengthen cooperation and jointly cultivate professional talents in the field of cross-border e-commerce. The cross-border payment industry in China has achieved significant development in recent years, which is closely related to the continuous growth of the Chinese economy and the policy of opening up to the outside world. Since 2017, the market size of this industry has grown from 0.47 trillion yuan to 1.98 trillion yuan in 2022, showing a compound annual growth rate of 33.54%. It is expected that in the next five years, with the rapid development of the digital economy and the in-depth implementation of the "the Belt and Road" initiative, the cross-border payment industry will continue to grow at a compound annual growth rate of 8.15%[24]. Therefore, China should play a leading role in promoting cross-border payment cooperation between China and Central Asian countries, and establishing a secure and convenient cross-border payment system. In the meanwhile, China should promote new payment methods such as mobile payments and digital currencies to improve the convenience and security of cross-border payments.

6 Conclusion

Under the BRI, the Geo-economic cooperation between China and the five central Asian countries is in good condition. However, there are still some problems such as the significant imbalance of economic development among the five central Asian countries, some political risks that may hinder cooperation, and the limitations of geographical location and poor infrastructure construction level. Based on that, several methods need to be taken such as develop different Geo economic cooperation strategies based on the situation of different countries, strengthen high-level dialogue and leverage the government's leading role, and strengthen high-level interconnectivity cooperation and promote cross-border infrastructure construction. Under the impetus of the BRI, China and the five Central Asian countries have broad prospects for cooperation. China and the five Central Asian countries will rely on deepening Geo economic ties to jointly address challenges, tap cooperation potential, achieve mutual benefit, win-win results and sustainable development, and work together to build a closer economic destiny community.

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About the Author

Ruyu Zhang(Feb. 1994-), female, Han nationality, born in Anping County, Hengshui City, holds a master's degree and currently serves as a lecturer at the School of Business, Hebei University of Engineering Science. Her research interests include regional economy, digital transformation, and change management.

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