Article

Correlation Analysis of the Trade Structure with China and the Demand for Business Chinese Education in the Five Central Asian Countries

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Abstract
Trade interaction is a key driver in the development of business foreign language education. In this context, researching business Chinese education (BCE) is of practical significance for deepening the economic and trade cooperation between the relevant countries and China, as well as for enhancing the resilience of their economic development. This paper, from the perspective of language economics, examines the correlation between the trade structures of the five Central Asian countries (Kazakhstan, Turkmenistan, Kyrgyzstan, Tajikistan, and Uzbekistan) with China and their demand for business Chinese talent. The study's findings are as follows: (1) For the five Central Asian countries, the demand for business Chinese talent is greater in their export trade with China than in their import trade. (2) In terms of exports, the demand for business Chinese talent is strongest in the mineral products sector. (3) In terms of imports, the demand for business Chinese talent is strongest in the manufactured goods sector. Based on these findings, this paper proposes several recommendations for the development of business Chinese education in the five Central Asian countries. These suggestions are intended to serve as a reference for policymakers in the respective nations, with the goal of strengthening bilateral trade cooperation and promoting sustainable development of the international economy.

1 Introduction

Language exhibits a close correlation with trade. On the one hand, international trade serves as a catalyst for the dissemination of language. As countries engage in trade activities, they adopt and utilize languages that facilitate communication and transactions. This leads to the widespread use and importance of specific languages in international business contexts. On the other hand, the global spread of languages helps to overcome language barriers, thereby reducing obstacles in communication and fostering the development of international trade. When individuals and businesses can communicate effectively in a common language, it enhances their ability to engage in trade, negotiate deals, and build

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relationships across borders. Understanding the relationship between international trade structures and foreign language education is of immense importance. Studying and analyzing this relationship can help policymakers and educators make informed decisions regarding language education, curriculum development, and training programs aimed at enhancing language proficiency and supporting international trade endeavors.

Business foreign language education is a subdivision of foreign language education specifically focused on the fields of economics and trade. The literature in this area has primarily focused on business English education. Research in business English education has concentrated on various aspects, including teacher training, material development, and corpus studies for specialized vocabulary items. For example, studies have examined effective methods for training teachers who specialize in teaching business English (Nazari, 2020). Additionally, there has been a focus on developing relevant and targeted materials that cater to the specific need of language for professionals in business and trade contexts. Corpus studies have also been conducted to identify and analyze specialized terminology and lexicon (Jendrych, 2013). Previous studies by economists have confirmed that there is a close relationship between BLE and international trade, as the demand for BLE is influenced by the dynamics of international trade. Hence, to ensure effective language education and training in international business contexts, it is crucial to understand the correlation between international trading structures and the demand for foreign language education. This understanding helps in tailoring language education programs to meet the specific needs of individuals and businesses engaged in international trade.

Developing business Chinese education (the following text is referred to as BCE) specifically targeted at countries along the "Belt and Road Initiative" has several benefits, particularly in reducing communication costs between China and these countries and promoting the healthy development of bilateral trade. The Belt and Road Initiative is a major global infrastructure development project led by China, aiming to enhance connectivity and economic cooperation between Asia, Europe, and Africa. The five Central Asian countries (the following text is referred to as FCACs), namely Kazakhstan, Turkmenistan, Kyrgyzstan, Tajikistan, and Uzbekistan, hold a significant geostrategic value within the Eurasian continent. These countries serve as crucial transportation hubs for the New Asia-Europe Continental Bridge, facilitating regional connectivity and trade. The FCACs predominantly have resource-oriented economies, with an abundance of natural resources that complement China's economic structure. This shared economic complementarity structure creates favorable conditions for closer economic ties, trade partnerships, and investment opportunities between China and the FCACs. Furthermore, the current surge in global commodity and raw material prices, coupled with the energy security challenges faced by China, has highlighted the pivotal role played by the FCACs in China's foreign trade. In this context, BCE can serve as a vital tool to bridge the language communication gap and stimulate bilateral trade between China and the FCACs. Hence, with a particular focus on the FCACs, this study aims to explore the correlation between the trade structures of FCACs and China and the demand for business Chinese talent (the following text is referred to as BCT). The goal is to understand how the utilization of the Chinese language in the fields of economics and trade can create economic sustainability and facilitate the enhanced utilization of BCE in strengthening the bilateral trade relationship between China and Central Asia.

2 Literature Review

The role of language in international trade can be compared to that of currency. Just as trading countries use the same currency for a settlement, a lingua franca reduces communication costs and promotes bilateral trade (Cremer & Willes, 1998; Ferro & Ribeiro, 2016). Communication costs are influenced by various factors, including information retrieval costs, negotiation costs, and supervision costs, all of which are closely tied to language (Zeng & Ge, 2025). The adoption of a lingua franca for commercial

communication leads to a reduction in the three aforementioned cost categories. Consequently, language embodies discernible economic value. In this context, Chinese likewise carries significant economic value as a lingua franca.

1.1 Chinese global spread and its economic value

In recent years, with the rapid growth of China's economy, there has been increasing academic attention to the economic value of Chinese in the realm of international trade. Previous research has primarily concentrated on three aspects, each of which will be explained in turn.

First, language distance is closely related to the cost of language learning. Non-linguistic factors like physical geography are all relevant in the design of effective and inclusive language policies (Litre et al., 2022). This is particularly evident in linguistically diverse regions like Central Asia, where post-Soviet language policies have created complex multilingual environments. The choice between promoting a national language (e.g., Kazakh), maintaining Russian as a lingua franca, or adopting a new international language (e.g., English or Chinese) involves intricate trade-offs between national identity, economic integration, and social cohesion (Liao, 2011). Effective global language spreading and efficient language acquisition can minimize the negative impact of language distance and promote the steady growth of bilateral trade volume. As previously mentioned, a lingua franca or language similarity is indispensable in international trade. Chinese can also become the lingua franca for bilateral trade between China and other countries, facilitating bilateral trade and developing the bilateral economy.

Second, the economic value of Chinese, while potentially significant, is not uniformly realized across different regions. The economic value of Chinese in a specific area can be influenced by the target country's level of legal enforcement and its geographical location. From the perspective of the economics of language, institutional factors such as a clear legal framework and efficient contract enforcement are fundamental to reducing transaction costs and fostering trade. Therefore, it is essential to consider the target country's contract of enforcement capabilities when evaluating trade negotiations. Meanwhile, logistics costs rooted in geographical distance remain a crucial factor affecting China's overseas investment. Compared with countries in other areas, Southeast Asian countries are geographically closer to China. For China, establishing Confucius Institutes in this area will contribute to the growth of China's outward foreign direct investment in the region (Yi & Chen, 2014). It indicates that the economic value of Chinese is shaped by a confluence of factors including institutional factors, geographic proximity, and so on.

Finally, cultural distance has a stable influence on the export of Chinese cultural products, while Chinese global spreading does not have a stable promoting effect on Chinese cultural product exports. The consumption orientation of cultural products in a nation is closely tied to the aesthetic preferences of its mainstream society (Cyrus, 2012). Northeast Asian and Southeast Asian countries share similar cultures with China; hence, the number of Confucius Institutes in these regions is inevitably associated with the scale of China's cultural production exports to those areas (Qu & Han, 2010). However, this association does not lie in Europe, Africa, or America, where there are significant cultural differences (Fang & Ma, 2018). Therefore, China has established Confucius Institutes worldwide to promote Chinese global spreading. However, there is no inherent connection between Chinese global spreading and the overseas spreading of Chinese cultural products.

1.2 Insights from previous research

Previous studies have indicated that variables such as language distance, institutional factors, geographical proximity can affect the economic value of Chinese in bilateral trade. Therefore, these

variables need to be taken into consideration and included as control variables in the model. At the same time, there are still the following issues that this article needs to address.

First, previous studies have mainly focused on the relevance of international trade and the international spread of Chinese (Yu et al., 2023). Chinese Global Spreading, pertaining to various types of Chinese education, where BCE is naturally linked with international trade. That is, BCE must develop in the field of international economy and trade, and in turn, it will promote the development of bilateral economic and trade cooperation. Therefore, this paper will focus on the relationship between BCE and international trade.

Second, the previous studies on the correlation between bilateral trading structure and the economic value of Chinese are inadequate. These studies have primarily focused on the overall trade volume without considering the impact of trade structure on the demand for Chinese education. However, given the disparity in economic endowments between China and other countries, trade structures tend to be nationalized and regionalized. It is crucial to investigate how this tendency influences the demand for Chinese education, which will provide academic reference for formulating plans for Chinese education. Therefore, the research direction of this paper can further focus on exploring the relationship between the FCACs' trade structure with China and their demand for BCE.

Finally, previous studies have primarily focused on the number of Confucius Institutes as a measure of Chinese education, which may potentially lead to statistical omissions. However, Chinese education has diversified in various fields. In addition to Confucius Institutes, there are primary and secondary schools, colleges, and Chinese language training institutions serving Chinese education. In view of this, we further quantify the indicator and take the number of BCT as the language variable.

2 Materials and Methods

2.1 Hypothesis

2.1.1 Theoretical model

The theoretical model of this study draws upon the *Structural Absorption Hypothesis* (Zeng & Ge, 2025), which is grounded in and extends the *factor proportions model* (H-O model). This hypothesis posits that the trade structure between the target country[1] and China has an absorptive effect on BCT. This effect can be described as follows:

(1) We assume that there is a set of industries Industry = {α, β}. Industry α produces product α', and industry β produces product β'. The production efficiency of China and the target country for the two types of products can be formulated as follows:

α': Proα' (Target country) > Proα' (China)

β': Proβ' (Target country) < Proβ' (China)

(2) The target country has developed BCE to cultivate BCT. These Chinese talents play the role of "information intermediaries" and have identified the following phenomena: Industry α is an advantaged industry of their country, but it is the disadvantaged industry of China; industry β is an advantaged industry of China, but it is the disadvantaged industry of their country.

(3) Based on their own interests, the target countries make the following trade strategies: for export trade with China, they focus on exporting their advantaged products α'; for import trade with China, they focus on importing China's advantaged products β'. To achieve these trade objectives, the BCT of the target country will gather toward the export trade to China and the import trade from China. Some BCT work in the export trade industry to China to provide language services for the export of products α'. Other BCT work in the import trade industry from China, providing language services for product β'.

Figure 1

Structural Adsorption Model
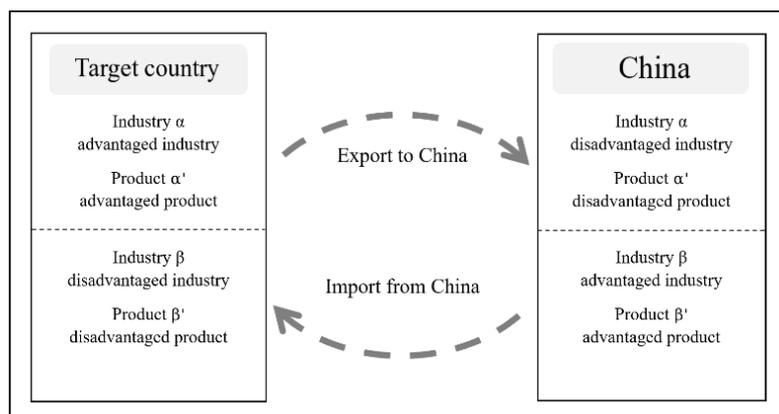
To study the correlation between the target country's trade with China and the flow of BCT is to reveal target countries' trade structure with China and their demand for BCE. Therefore, we focus on three types of issues:

(1) The correlation between the direction of import-export trade and the flow of BCT;

(2) The correlation between the export trade structure with China and the flow of BCT;

(3) The correlation between the import trade structure with China and the flow of BCT.

2.1.2.   Selection of the target country and research hypotheses

Before making assumptions, we first need to identify the target country. In this paper, we choose five Central Asian countries (Kazakhstan, Turkmenistan, Kyrgyzstan, Tajikistan and Uzbekistan) as research objects for the following reasons:

(1) The FCACs are developing countries similar to China with a similar level of economic development. Although the trade structure of each country in the FCACs is different, there is common ground in the FCACs' structure of trade with China.

(2) The FCACs are typically "resource-oriented" economies, where natural resources are abundant. The economic structure of these countries and China is highly complementary, and there is a great demand for talent in bilateral trade.

Based on the Structural Adsorption Hypothesis, we propose the following hypotheses:

H1. The demand for BCT in export trade with China is likely to be higher than in import trade. Countries engage in foreign trade to achieve a trade surplus. To obtain a trade surplus with China, the target countries need to ensure that the total volume of their exports to China surpasses the total volume of their imports from China. Consequently, BCT from the target countries prioritize gathering in the field of export trade with China.

H2. In the field of export trade with China, BCT from the FCACs will prioritize gathering in two major advantaged industries: export of farm products and mineral products to China. The FCACs are dependent on natural resources, and agriculture and mining are their prominent industries. In export trade with China, BCT from the FCACs tend to gather in the export of agricultural and mineral products, providing language services to earn foreign exchange through export.

H3. In the field of import trade with China, BCT from the FCACs will prioritize gathering in the sector of manufactured goods. The industrial foundation of the FCACs is weak, and their manufacturing capacities are unable to meet local market demands. In contrast, China possesses the most

comprehensive manufacturing system in the world. In the area of import trade with China, BCT from the FCACs tend to gather in the import of manufactured goods, providing language services for the import of manufactured goods needed by their countries.

2.2 Models

According to the trade gravity model (Hutchinson, 2005), the model in this study can be formulated as follows:

$$LnBCL_{tc} = a_1 LnGDP_{tc} + a_2 LnPOP_{tc} + a_3 LnPer\_Income_{tc} + a_3 LnP\_D_{tc} + a_4 LnL\_D_{tc} +$$
$$a_5 LnLaw\_Cap_{tc} + a_6 LnCorp\_Cap_{tc} + a_7 LnTrade_{tc} + \mu_0 \quad (1) \text{ Eq.}$$

In equation (1), "t" is the subscript of the data year, and "c" is the subscript of the data country. The explained variable is the number of BCT in the FCACs, which is obtained from the "Database of Global Chinese Spreading Dynamics"[2].

The explanatory variables (Trade) are goods trade data for the FCACs, which include nine types of variables: total exports to China (Export), total imports from China (Import), total farm products exports to China (FE), total mineral products exports to China (ME), total low-value-added manufactured goods exports to China (LME); total farm products imports from China (FI), total mineral products imports from China (MI), total low-value-added manufactured goods imports from China (LMI), and total high-value-added manufactured goods imports from China (HMI). The above data are obtained from the "Trade Database of the Ministry of Commerce of the People's Republic of China"[3].

We used China and the FCACs' GDP (GDP), total population (POP), per capita disposable income level (Per_Income), political distance (PD), language distance (LD), rule of law (Law) and the ability to control corruption (Corp) as the controlled variables. Data on GDP, POP, and Per_Income are from the IMF Global Key Country Economic Indicators database[4]. Data on PD, Law, and Corp are from the World Bank's Worldwide Governance Indicators (WGI) database[5]. Data on LD concern the linguistic characteristics of the official languages of both trading countries, and these data are taken from the ASJP database (Automated Similarity Judgment Program database)[6].

The data covered in this study span the period from 2005 to 2019 (due to the impact of the COVID-19 pandemic on global Chinese education, the correlation between trade data of 2020 to 2024 and BCT is not in line with the typical case under normal conditions, so this study excluded trade data from 2020 to 2024). A crawler script based on Python was written to capture the study data, and statistical analysis was conducted using R (built on R Studio 3.4.3). The descriptive statistics for the explanatory variables, the explained variables and the controlled variables are as follows (see Table 1).

3 Results

3.1 OLS results

3.1.1 OLS regression of import and export trade and the number of BCT

The OLS regressions were carried out by using the FCACs' total exports and imports as explanatory variables. The result of the regression shows that there is a stable positive effect in Model 1 and Model 2 (see Table 2). The economic implication of these models is that in the FCACs, each 1% increase in exports would increase the number of BCT by 85%, and each 1% increase in imports would prompt a 56% increase in the number of BCT (see Table 2).

Table 1

Descriptive Statistical Results

Variable name	Variable type	Sample capacity	Variable meaning (unit)	Mean (sd)
NCL	Explained variable	75	number of Business Chinese talents in each target country (Unit: Person)	1123 (±1121)
Export	Explanatory variable	75	total exports to China of each target country (unit: USD 100 million)	127.71 (±114.39)
Import	Explanatory variable	75	total imports from China of each target country (unit: USD 100 million)	107.57 (±103.9)
FE	Explanatory variable	75	total exports of farm products to China of each target country (unit: USD 100 million)	2.14 (±4.37)
ME	Explanatory variable	75	total exports of mineral products to China of each target country (unit: USD 100 million)	115.57 (±109.31)
LME	Explanatory variable	75	total exports of low-value-added manufactured goods to China of target country (unit: USD 100 million)	9.99 (±6.31)
FI	Explanatory variable	75	total imports of farm products from China of each target country (unit: USD 100 million)	0.50 (±0.32)
MI	Explanatory variable	75	total imports of mineral products from China of each target country (unit: USD 100 million)	0.51 (±0.30)
LMI	Explanatory variable	75	total imports of low-value-added manufactured goods from China of each target country (unit: USD 100 million)	63.16 (±50.63)
HMI	Explanatory variable	75	total imports of high-value-added manufactured goods from China of each target country (unit: USD 100 million)	44.40 (±43.49)
GDP	Controlled variable	75	total GDP of each target country (unit: USD 100 million)	4767.34 (±7242.98)
POP	Controlled variable	75	total population of each target country (unit: million people)	1771.10 (±1283.20)
Per_Income	Controlled variable	75	sum of per capita disposable income (USD)	11895.24 (±12934.78)
Law_Cap	Controlled variable	75	Strength of rule of law of each target country	-1.17 (±0.30)
Corp_Cap	Controlled variable	75	corruption control capacity of each target country	-1.20 (±0.21)
PD	Controlled variable	75	the political distance between each target country and China	0.13 (±0.55)
LD	Controlled variable	75	the language distance between the official language of each target country and Chinese	101.17 (±1.09)

Table 2

Baseline Regression Results of Total Import and Export Trade and the Number of BCT (OLS Regression)

	Model 1 The explanatory variable: Export	Model 2 The explanatory variable: Import
Explanatory variables	0.85***	0.56***
GDP	0.26***	0.89***
POP	0.41	0.48
Per_Income	1.50**	1.27***
Lan_D	-1.81***	-1.95***
P_D	1.80***	2.47***
Law_Cap	3.06***	3.47***
Corp_Cap	1.76***	1.44
Intercept	-758.70***	-948.95***
Adjusted R2	0.84	0.81
F value	35.77	39.21
sample num	75	75

Note: The values in the table are regression coefficients (significance marks: *** is $p<0.01$, ** is $p<0.05$, and * is $p<0.1$).

BCT refers to Business Chinese Talent, hereinafter the same.

3.1.2 OLS regression of the structure of exports to China and the number of BCT

The OLS regressions were carried out by using the FCACs' FE, ME, and LME as explanatory variables. The results of the regression show that there is a stable positive effect in Model 4, while Model 3 and Model 5 do not have a stable positive effect. The economic implication of Model 4 is that every 1% increase in FE would increase the number of BCT by 54% (see Table 3).

3.1.3 OLS regression of the structure of imports from China with the number of BCT

The OLS regressions were carried out by using the FCACs' FI, MI, LMI and HMI as explanatory variables. The results of the regression show that there is a stable positive effect in both Model 8 and Model 9. The economic implication of the two models is that every 1% increase in LMI would increase the number of BCT by 41%, and every 1% increase in HMI would increase the number of BCT by 40% (see Table 4).

3.2 The results of IV regression

The robustness tests were performed by IV regression. The F values of Models 1 to 9 are all greater than 10, indicating that the models do not suffer from weak instrumental variables (see Tables 2, 3 and 4). The exchange rate was chosen as the instrumental variable. The exchange rate is an important variable affecting the cost of trade. The IV regression related to exports uses the exchange rate of the RMB against the local currency as the instrumental variable, while the IV regression related to imports uses the exchange rate of the local currency against the RMB as the instrumental variable. In export trade with China, the exchange rate has a positive effect. In import trade with China, the exchange rate has a negative effect.

Table 3

The Regression Results of Export Trade to China and the Number of BCT (OLS Regression)

	Model 3 The explanatory variable: FE	Model 4 The explanatory variable: ME	Model 5 The explanatory variable: LME
Explanatory variables	0.05	0.54***	0.37
GDP	0.99	0.57	0.57
POP	0.68	0.30	0.86
Per_Income	1.29*	1.35***	1.57*
Lan_D	-1.66***	-1.45***	-1.39***
P_D	3.22***	2.13***	3.40***
Law_Cap	3.09*	3.15***	3.32**
Corp_Cap	1.21*	1.51**	1.01*
Intercept	-939.37***	-797.93***	-229.65***
Adjusted R2	0.76	0.81	0.78
F value	30.23	39.21	34.08
sample num	75	75	75

Table 4

The Regression Results of Import Trade from China and the Number of BCT (OLS Regression)

	Model 6 The explanatory variable: FI	Model 7 The explanatory variable: MI	Model 8 The explanatory variable: LMI	Model 9 The explanatory variable: HMI
Explanatory variables	0.10	0.07	0.41**	0.40***
GDP	1.02	0.95	0.95	0.99
POP	0.54	0.65	0.45	0.35
Per_Income	1.21	1.31	1.24	1.16
Lan_D	-1.95***	-1.68***	-1.42***	-1.87***
P_D	3.10***	3.19***	2.60***	2.59***
Law_Cap	3.18**	3.22**	3.27***	3.51***
Corp_Cap	1.39*	1.28*	1.11**	1.52**
Intercept	-936.83***	-243.61***	-937.59***	-921.24***
Adjusted R2	0.76	0.76	0.78	0.78
F value	30.79	30.40	34.28	34.49
sample num	75	75	75	75

3.2.1 IV regression of import and export trade and the number of BCT

Models 10 and 11 are the results of the IV regression for Model 1 (explanatory variable: export) and Model 2 (explanatory variable: import), respectively. Similar to the OLS results, there is a significant positive effect of the explanatory variables for both Model 10 and Model 11 (see Table 5). The economic implication of these models is that every 1% increase in exports would increase the number of BCT by 62%, and every 1% increase in imports would increase the number of BCT by 56%.

Table 5

Regression Results of Total Export and Import Trade and Number of BCT (IV Regression)

	Model 10	**Model 11**
	The explanatory variable: Export	**The explanatory variable: Import**
explanatory variables	0.62***	0.56***
GDP	2.57***	2.71***
I(Exchange)	8.14***	-16.19***
POP	2.21***	2.61***
Per_Income	4.41***	4.83***
Lan_D	-1.33***	-1.29***
P_D	1.73***	2.13***
Law_Cap	2.39***	2.54***
Corp_Cap	1.91**	1.73**
Intercept	-564.80***	-654.96***
Adjusted R2	0.87	0.86
sample num	75	75

3.2.2 IV regression of the structure of exports to China and the number of BCT

Model 12, Model 13 and Model 14 are the results of the IV regression for Model 3 (explanatory variable: FE), Model 4 (explanatory variable: ME) and Model 5 (explanatory variable: LME), respectively. Similar to the OLS results, Model 12 and Model 14 do not present a significant positive effect of the explanatory variables. This suggests that the FCACs' FE and LME have difficulties creating a stable adsorption effect on BCT. In contrast, Model 13 presents a stable positive effect of the explanatory variables (see Table 6). The economic implication of Model 13 is that a 1% increase in the FCACs' ME would increase the number of BCT in these countries by 56% (see Table 6).

3.2.3 IV regression of the structure of imports from China and the number of BCT

Models 15, 16, 17 and 18 are the results of the IV regression for Model 6 (explanatory variable: FI), Model 7 (explanatory variable: MI), Model 8 (explanatory variable: LMI) and Model 9 (explanatory variable: HMI), respectively. Similar to the OLS, Model 15 and Model 16 do not present a significant positive effect of the explanatory variables. In contrast, Model 17 and Model 18 present a stable positive effect of the explanatory variables (see Table 7). The economic implication of the above models is that every 1% increase in the FCACs' LMI would increase the number of BCT in these countries by 47%, and every 1% increase in HMI would increase the number of BCT by 40% (see Table 7).

Table 6

The Regression Results of the Structure of Export Trade to China and the Number of BCT (IV Regression)

	Model 12 The explanatory variable: FE	Model 13 The explanatory variable: ME	Model 14 The explanatory variable: LME
explanatory variables	0.13	0.56***	0.16
GDP	3.12***	2.61***	2.87***
I(Exchange)	8.14***	4.82***	6.34***
POP	2.79***	2.32***	2.84***
Per_Income	5.19***	4.58***	4.99***
Lan_D	-1.24***	-1.98***	-1.94***
P_D	2.52***	1.99***	2.75***
Law_Cap	2.49***	2.38**	2.39***
Corp_Cap	1.66**	1.73**	1.48**
Intercept	-642.57***	-577.79***	-619.20***
Adjusted R2	0.85	0.87	0.85
sample num	75	75	75

Table 7

The Regression Results of the Structure of Import Trade from China and the Number of BCT (IV Regression)

	Model 15 The explanatory variable: FI	Model 16 The explanatory variable: MI	Model 17 The explanatory variable: LMI	Model 18 The explanatory variable: HMI
explanatory variables	0.14	0.08	0.47***	0.40***
GDP	3.03***	3.05***	2.71***	2.69***
I(Exchange)	-8.16***	-7.78***	-6.37***	-6.40***
POP	2.85***	2.95***	2.62***	2.55***
Per_Income	5.17***	5.24***	4.84***	4.80***
Lan_D	-1.02***	-1.32***	-1.25***	-1.92***
P_D	2.48***	2.60***	2.26***	2.22***
Law_Cap	2.22**	2.29***	2.38**	2.55***
Corp_Cap	1.84*	1.65*	1.49**	1.78**
Intercept	-601.93***	-548.40***	-568.70***	-555.98***
Adjusted R2	0.85	0.85	0.86	0.86
sample num	75	75	75	75

4 Discussion

4.1 The correlation between trade direction and demand for BCT

The trade between the FCACs and China stimulates a stable demand for BCT in both the FCACs' local markets and their trade with China, encompassing both export and import. However, the intensity of this demand differs depending on the direction of trade. In comparison to the import trade from China, the FCACs have a higher demand for BCT in the export trade to China. This finding is in line with existing literature and lends further support to the established view (Zeng et al., 2024; Zeng & Ge, 2025).

Trade cooperation between China and countries globally serves as the social foundation for the development of BCE. Therefore, the trade cooperation model between China and specific countries can influence the demand for BCE in those countries. Our analysis reveals a correlation between FCACs' trade direction and their demand for BCT, indicating that the trade interests of the FCACs impact the flow of BCT. Export trade with China provides trade benefits to the FCACs, while import trade from China requires them to forego certain trade benefits. As anticipated, countries involved in foreign trade often aim to achieve a trade surplus. To accomplish this, the target countries must ensure that the total value of their exports to China exceeds the total value of their imports from China. By doing so, they seek to maintain a favorable trade balance and generate economic benefits. Under equal conditions, the BCT in these countries will preferentially gather in the field of export trade to China. Therefore, the FCACs have a stronger demand for BCT in export trade with China.

4.2 The correlation between the structure of exports to China and demand for BCT

In the field of export trade with China, our findings indicate that the BCT in the FCACs predominantly concentrate in the export of mineral products to China, while the export trade of farm products to China has relatively limited attractiveness for the BCT from these countries.

A country's economic development model affects the distribution of its workforce across industries. Advantaged industries have a stronger attraction to the workforce than disadvantaged industries. Consequently, a country invests in education based on the demand for a skilled labor force in advantaged industries so that education serves its economic development. Rich in natural resources, the FCACs are typically "resource-oriented" economies, with agriculture and mining being the main industries. Therefore, we assume that FE and ME will generate a steady demand for BCT in the area of export trade to China.

However, the modeling results suggest that whether the industrial advantages of the FCACs generate a steady demand for BCT is also related to the "scarcity" of this product for China. For example, the FCACs' farm exports to China are mainly wheat, rice, cotton, mutton, and beef (Erokhin et al. 2020). However, China has always maintained high self-sufficiency levels for the abovementioned farm products[7]. As a result, it becomes challenging for the FCACs to generate a steady demand for BCT in FE. In contrast, China's energy and mineral reserves follow a pattern of "less oil and much coal," while the FCACs possess abundant oil and gas reserves (Wu & Chen, 2004; Amirbek et al. 2020). The two sides exhibit strong complementarity in the field of energy trade. Based on this objective fact, the FCACs demonstrate a steady demand for BCT in the mining industry (ME).

4.3 The correlation between the structure of imports from China and demand for BCT

In the area of import trade from China, the FCACs' demand for BCT is mainly in the import of manufactured goods. The demand for BCT for LMI is slightly higher than the demand for BCT for HMI.

FCACs, being resource-oriented economies, rely on imports because their manufacturing abilities cannot meet domestic demand (Wu & Chen, 2004). China, with its comprehensive manufacturing system, serves as a source for meeting the FCACs' domestic needs (Wu & Chen, 2004). Consequently, BCT from the FCACs mainly flow through the import of manufactured products from China and provide relevant language services.

In international trade, the difficulty of completing a transaction is often correlated with the added value of a product. Compared to low value-added industrial goods, high value-added products pose greater transactional challenges, necessitating high-quality business information transmission and creating a stable demand for foreign language talent (Zeng & Ge, 2025). However, this phenomenon is not observed in the context of import trade to China for the FCACs. One possible explanation is that while China possesses a comparative advantage in technology and high-value-added labor in the China-Central Asia bilateral trade system, it has not yet developed a brand effect aligned with developed Western countries. This lack of brand recognition affects the FCACs' perception of China's high-value-added manufacturing products. As a result, in the field of import trade to China, the FCACs' demand for BCT in HMI is slightly weaker than that in LMI.

5 Implications and Suggestions

5.1 Targeted and refined: Strategic cultivation of BCT by trade direction

The premise for formulating high-quality policies for BCE is understanding the correlation between international trade and the demand for BCT. From the perspective of trade directions, there are two distinct demands for BCT in trade. First, there is demand from the "language-exporting country", which pertains to FCACs' import trade from China. In this scenario, China directly benefits from foreign exchange and should thus shoulder the obligation of cultivating BCT. Second, there is demand from "language-importing countries", referring to FCACs' export trade to China. In this case, FCACs directly benefit from foreign exchange and should assume the responsibility of training BCT for such purposes. In line with this viewpoint. Our study found that there is a higher demand for BCT in FCACs' export trade to China than in their import trade. Our findings suggest the need for targeted and refined cultivation of BCT in these countries. Local BCE institutions should conduct research on the demand for BCT in the export trade with China and formulate policies for BCE, innovate teaching materials, develop innovative teaching materials, and reform teaching methods to enhance the effectiveness of BCE. These efforts aim to better serve international trade cooperation with China.

5.2 Suggestions for FCACs: Cultivating BCT in the mineral industry

Our findings indicate that BCT in the FCACs are primarily concentrated in the export of mineral products to China (ME) rather than the export trade of farm products (FE). Considering this, China could leverage local Confucius Institutes and prioritize the demand for BCT in the energy trade sector. For example, Confucius Institutes can develop Chinese teaching materials specifically tailored for the energy industry, providing specialized language training and knowledge relevant to this sector. These customized materials will enhance the linguistic proficiency and industry-specific skills of BCT involved in the energy trade. Moreover, it is crucial to establish a professional evaluation system to ensure the quality and competence of BCT. Through assessments and evaluations, this system can verify their language proficiency, understanding of business practices, and industry-specific knowledge, ensuring that they possess the necessary qualifications for successful engagement in the energy trade sector. In addition, enhancing the training plan for BCT is essential. This can include comprehensive programs that cover language proficiency, cultural understanding, negotiation skills, and industry-specific knowledge related to the energy sector. Regular workshops, seminars, and exchange programs can be organized to provide

continuous learning opportunities for BCT. Furthermore, China can collaborate with local institutions to establish a "Central Asian-China Energy Cooperation" aimed at setting standards and guidelines for BCE. This alliance can facilitate better practices, promote cooperation among educational institutions, and provide language services to protect and support China's overseas energy supply demands.

5.3 Suggestions for China: Developing BCE in the manufacture industry

In the realm of import trade from China, China holds a direct advantage of earning foreign exchange in the bilateral trade system with Central Asia. As a result, it is imperative for Chinese universities to play a pivotal role in cultivating BCT specializing in FCACs' import trade from China. To achieve this, Chinese universities should initially conduct thorough assessments of the demand for low-value-added manufactured goods consumption in the FCACs. Subsequently, these universities can develop tailored Business Chinese courses that address the specific needs of the market. Additionally, Chinese universities need to introduce international students from the FCACs to emerging facets of the Chinese economy, such as smart manufacturing, cross-border e-commerce, and mobile payment systems. This initiative aims to showcase China's achievements in high-value-added manufacturing to the FCACs while also enhancing local populations' recognition and appreciation of China's high value-added products. By aligning with China's strategy of "going out", this approach will contribute to expanding China's influence in the high-value-added manufacturing sector within the FCACs.

6 Conclusion

This paper, from the perspective of Language Economics, studies the correlation between the FCACs' trade structures with China and the demand for BCT in these countries. The study found the following: There is a stronger demand for BCT in export trade than in import trade with China for the FCACs. In the area of export trade with China, demand for BCT is the highest in the exports of mineral products. In the area of import trade with China, demand for BCT is the highest in the import of manufactured goods. Moreover, the demand for BCT for low-value-added industrial product imports is slightly greater than that for high-value-added industrial product imports. The above findings can provide an academic reference for BCE development planning for FCACs. However, the correlation between international trade and the demand for BCT is complicated. In the future, further research could expand the sample countries (Southeast Asia, Western Europe, Central and Eastern Europe, the Americas, Africa, and other regions), investigating the correlation between the trade structure with China and the demand for BCT in different countries and providing a holistic understanding of this topic.

Notes

1. The term "target countries" in this study denotes the five Central Asian countries (Kazakhstan, Turkmenistan, Kyrgyzstan, Tajikistan, and Uzbekistan).
2. http://hanyudb.com/home
3. http://www.mofcom.gov.cn/article/tongjiziliao/fuwzn/index.shtml.
4. https://www.imf.org/en/Publications/SPROLLS/world-economic-outlook-databases#sort=%40imfdate%20descending.
5. http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1682130.
6. http://asjp.clld.org.
7. http://zdscxx.moa.gov.cn:8080/nyb/pc/index.jsp.

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中亚五国对华贸易结构与商务中文教育需求的相关性分析

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摘要
贸易互动是推动商务中文教育发展的关键因素。在此背景下，开展商务中文教育研究对深化相关国家与中国的经贸合作、增强其经济发展韧性具有现实意义。本文从语言经济学视角，探讨了中亚五国（哈萨克斯坦、土库曼斯坦、吉尔吉斯斯坦、塔吉克斯坦、乌兹别克斯坦）对华贸易结构与其商务中文人才需求之间的相关性。研究发现如下：（1）中亚五国的对华出口贸易对商务中文人才的需求大于进口贸易；（2）就出口而言，矿产品领域对商务中文人才的需求最旺盛；（3）就进口而言，工业制成品领域对商务中文人才的需求最旺盛。基于上述发现，本文为中亚五国商务中文教育的发展提出了相关建议，以期为相关国家政策制定者提供参考，进而助力深化双边经贸合作，推动国际经济可持续发展。

关键词
中文教育，贸易结构，语言经济学，中亚五国

葛旭蕾，北京语言大学国际中文学院在读博士生，曾在 SAGE OPEN、《语言文字应用》等刊物发表论文，被教育部中外语言交流合作中心采纳研究报告，曾获得第二十届汉语国际教育学术研讨会（ICCSL 20）青年学者优秀论文一等奖，现担任 SSCI 审稿人，主要研究方向为语言经济学、国际中文教育。