

XVIII. RESEARCH ON THE EXPORT TRADE POTENTIAL OF CHINESE AGRICULTURAL PRODUCTS WITH BELT AND ROAD COUNTRIES

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This paper focuses on the trade potential of agricultural products, exploring the development and application of the gravity model for measuring trade potential from both domestic and international perspectives. Scholars commonly use GDP, population, and spatial distance as primary indicators. From the perspective of the agricultural product trade potential, the paper analyses agricultural trade research between Belt and Road countries and other regions. It focuses primarily on measuring trade potential from China's perspective, with limited studies on other countries' trade potential with China. The analysis often involves comparative advantage and complementarity indicators, with limited use of the Trade Potential Index (TPI).

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1 Introduction

2013, during visits to Central and Southeast Asian countries, Chinese President Xi proposed a significant initiative to develop and continue the Maritime Silk Road Economic Belt. Under China's leadership as the economic locomotive, 65 countries, including those in East Asia, ASEAN, West Asia, South Asia, Central Asia, and the Commonwealth of Independent States, actively participated in constructing the Belt and Road economic initiative. Since then, stable financial and trade relations have been established between China and these 65 countries. This cooperation spans various fields, including infrastructure construction, opening of maritime port routes, and comprehensive agricultural development. The countries along the route possess abundant resources and diverse product categories, facilitated by convenient international transport, promoting frequent exchange of goods among these nations.

Notably, the Central Committee's No. 1 Document in 2024 explicitly emphasises the need to deepen agricultural cooperation with Belt and Road countries. This policy indicates China's increased focus on agricultural cooperation with Belt and Road countries, highlighting the importance of collaboration and communication in the agricultural sector. It further underscores the broader prospects for future farm cooperation and trade, providing robust policy support for more in-depth and comprehensive agricultural product collaboration between Belt and Road countries.

Research on the export trade potential of Chinese agricultural products in Belt and Road countries holds theoretical and practical significance. Firstly, as globalisation deepens and international economic interdependence increases, agricultural product trade plays a crucial role in international trade. Therefore, in-depth research on the trade potential of Belt and Road countries of Chinese farm products helps better understand and grasp the current global trends in agricultural product trade.

Furthermore, this study contributes to advancing the implementation of the Belt and Road initiative. Understanding the demand and potential for Chinese agricultural products in Belt and Road countries can optimise trade policies and promote sustainable agrarian trade development. It provides concrete and practical guidance for economic cooperation among Belt and Road countries, facilitating regional economic integration and achieving the strategic goals of the Belt and Road initiative. Understanding the demand and preferences of countries for Chinese agricultural

products can offer scientific policy recommendations, aiding in the formulation of flexible trade policies that adapt to market demands and enhance the efficiency of agricultural trade. Additionally, this research strengthens international cooperation and supports joint efforts to address global challenges. As agricultural trade is a crucial aspect of international economic cooperation, it involves food security and sustainable agricultural development. By thoroughly researching the trade potential of agricultural products between countries, new insights and directions can be provided for global agricultural cooperation, contributing to establishing cooperative mechanisms to address global challenges.

Therefore, in-depth research on the export trade potential of Chinese agricultural products in Belt and Road countries not only promotes the development of international trade but also provides more opportunities for cooperation among nations, contributing new knowledge and practical experience to global agricultural trade and sustainable development.

2 Trade potential research overview

Since the inception of the Belt and Road Initiative in 2013, there has been a continuous proliferation of literature on Belt and Road trade. Regarding trade potential, Kong and Dong (2015) posit that the trade potential among Belt and Road countries is substantial, with the size of trade potential positively correlated to a nation's economic prowess. Given that agriculture serves as the bedrock of a nation's economy and considering China's status as an agricultural powerhouse, special attention should be directed towards issues about the trade of farm products.

He (2008), employing the Revealed Symmetric Comparative Advantage (RSCA) index and regression analysis, notes a declining overall comparative advantage in China's agriculture, with more agricultural products lacking comparative advantage. Yet, stability persists in the agricultural trade pattern (He, 2008). Extending He's (2008) theoretical framework, Xian (2011) concludes that China's comparative advantage in agricultural products exhibits no discernible fluidity. Hence, research on Belt and Road countries' trade in Chinese agricultural products is imperative. Although there is currently limited literature on Belt and Road countries' exports of agricultural products to China, substantial research exists on trade potential and agricultural potential.

2.1 Trade potential

Trade potential, measuring the benefits a country can accrue when transitioning from a market with trade barriers to one without, is primarily analysed through the gravity model. Foreign research on trade potential dates back to the last century. Drawing inspiration from Newton's law of universal gravitation, Tinbergen (1962) and Pöyhönen (1963) utilised the gravity model to analyse bilateral trade between countries, reaching a consensus that the scale of trade between two countries is directly proportional to their economic size and inversely proportional to the distance between them. Economic size reflects potential supply and demand capacities, while distance constitutes a trade barrier.

Building on these studies, Aigner and Schmidt (1977) proposed the stochastic frontier estimation method. Anderson and Van Wincoop (2001) derived an operationally robust gravity model based on the constant elasticity of the substitution expenditure system. This provided theoretical support for the gravity model and helped explain various issues and differences in empirical applications, gradually dispelling longstanding doubts about its "lack of theoretical foundation."

Subsequent scholar Batra (2006) utilised an enhanced gravity model with 146 countries as samples, concluding that India and China exhibit tremendous trade potential. Ravishankar and Stack (2014), analysing panel data of 17 Western European countries' bilateral exports to 10 new member countries between 1994 and 2007, identified Hungary, Estonia, and Poland as possessing the most significant trade potential in Eastern Europe. Viorica (2015), using the stochastic frontier gravity model, compared Romania with other EU member states to estimate the trade potential of Romania and EU countries. Tamini and Abbassi (2016) used the stochastic frontier gravity model to analyse the trade potential and realised trade between North African trading partners.

Domestically, research on trade potential is equally profound. Gu (2001) economically analysed the gravity model's theoretical foundation and construction methods, verified it through mainstream international trade models, and proposed a preliminary plan for constructing China's trade gravity model. Lin and Wang (2004), based on Gu (2001), conducted empirical tests, concluding that given limited trade development potential, China should fully utilise domestic resource endowments to

deepen domestic trade. Liu and Jiang (2002) classified trade potential into potential reshaping, potential exploration, and substantial potential types based on the ratio of bilateral trade to predicted bilateral trade. Lu and Zhao (2010) estimated China's export potential using the stochastic frontier gravity model.

Bi and Shi (2010), as well as Wang and Wu (2016), established stochastic frontier gravity models to estimate the trade potential, trade inefficiency level, and influencing factors of the Silk Road Economic Belt. They concluded that China's trade inefficiency with Iran, Kyrgyzstan, Ukraine, and Russia is relatively high, and there is significant room for improvement in trade efficiency with these countries.

The diverse range of research methodologies and findings from both international and domestic perspectives contribute to a comprehensive understanding of trade potential within the Belt and Road framework. These studies provide valuable insights for policymakers and contribute to the overall knowledge base of Belt and Road trade dynamics.

2.2 Agricultural product potential

Numerous scholars have put forth their perspectives on the trade potential of agricultural products within the Belt and Road Initiative. Li (2016), employing the stochastic frontier gravity model, examined the agricultural trade potential and influencing factors between China and 30 Belt and Road countries from 2005 to 2014. They concluded that total population and per capita GDP exhibit a significant positive correlation with agricultural trade potential, while geographical distance demonstrates a significant negative correlation.

Using the stochastic frontier gravity model, Li and Zhong (2016) reexamined China's agricultural trade with Central and Eastern European countries. The results indicated a low average efficiency in agricultural trade between China and Central and Eastern European countries, highlighting substantial trade potential. Furthermore, China's import and export markets predominantly focus on a few countries, such as Poland, Romania, the Czech Republic, and Lithuania, showcasing strong complementarity in agricultural trade with these Central and Eastern European nations.

Using the trade intensity index, Yang and Tian (2018) analysed the trade potential characteristics of agricultural products between China and countries along the 21st Century Maritime Silk Road. The conclusion was that China possesses significant trade potential with Maritime Silk Road countries, particularly with ASEAN nations such as Malaysia, Indonesia, and Thailand.

Using the stochastic frontier gravity model, Yang and Qi (2023) analysed the agricultural trade potential of countries along the Silk Road Economic Belt from an income perspective for 1995-2016. The findings indicated that the Central Asian Economic Belt countries possess the highest overall agricultural trade potential, followed by countries surrounding the Central Asian Economic Belt, with the countries along the Asia-Europe Economic Belt exhibiting minor potential.

Beyond the Belt and Road Initiative, research on the trade potential of agricultural products in other regions is also substantial. Zhao and Lin (2008), through quantitative analysis using the gravity model, assessed the agricultural trade between China and the 10 ASEAN countries. They identified factors such as total GDP, population size, and spatial distance as primary influencers of bilateral agrarian trade flow between China and the ASEAN 10, predicting significant untapped trade potential and emphasising substantial room for developing bilateral agricultural trade.

Tan and Chen (2016), based on agricultural trade data from 1995 to 2013, employed the gravity model to analyse the current status and structure of China's agricultural trade with the five Central Asian countries. Their study estimated the trade potential values for four major agricultural product categories and classified agricultural products, revealing considerable untapped potential in overall agrarian trade between China, Kazakhstan, and Tajikistan across these four categories (Tan & Chen, 2016).

Li and Zhou. (2021), examining agricultural trade data between 2000 and 2020 among BRICS countries, focused on agricultural trade characteristics. The results indicated that economic size and market share positively impact trade, while economic distance has a negative effect. They concluded that China's agricultural trade with BRICS countries falls under the "trade exploration" category, suggesting untapped potential and room for improvement (Li & Zhou, 2021).

3 Review of relevant studies

An analysis of the literature reveals a rich and multidimensional exploration of trade and agricultural trade potential, yielding significant outcomes. Most scholars conducting trade potential research utilise the gravity model, which evolved from the field of physics, for analysis. The gravity model has been continually refined throughout numerous studies, gaining scientific and empirical validity and gradually dispelling doubts about its theoretical foundation. Nevertheless, the gravity model itself has limitations. Most scholars analyse factors influencing trade potential from an economic perspective, such as GDP, per capita GDP, and integration levels, or consider geographical factors like distance and shared language. In comparison, fewer scholars explore factors influencing trade potential from non-economic perspectives, such as history, religion, geopolitical relations, and culture. This is attributed to the difficulty of quantifying these non-economic factors with specific indicators or data, making their integration into the gravity model for regression analysis challenging.

In China, research on trade potential predominantly focuses on studying outward agricultural trade potential with China as the main subject. Due to the complementary nature of China's agricultural trade with many countries worldwide, other nations should also exhibit potential for agricultural trade with China. However, there is limited in-depth analysis of trade potential and trade efficiency from Belt and Road countries regarding their export of agricultural products to China. Furthermore, Chinese research on agricultural trade potential often stays at the competition and complementarity levels, with limited utilisation of other measurement indicators.

In light of the above, this paper proposes using the Trade Potential Index (TPI) to assess the trade potential of Belt and Road countries in exporting agricultural products to China. The gravity model will be incorporated to address the limitation of TPI, which can only measure overall trade potential and cannot distinguish between import and export trade potential. This approach aims to estimate the trade efficiency of Belt and Road countries in exporting agricultural products to China and identify factors influencing this efficiency, ultimately calculating the trade potential and expansion space for agricultural export trade.

4 Conclusion

Our research delved into the export trade potential of Chinese agricultural products in Belt and Road countries. The agricultural sector has immense trade potential between China and Belt and Road countries. Comparative analysis shows that these countries possess rich resources and diverse product demands, which China's agricultural exports can fulfil, further deepening trade cooperation. Implementing the Belt and Road Initiative has been pivotal in driving agricultural trade between China and these countries. Progress in infrastructure development, trade facilitation, and policy communication has created a more favourable environment and opportunities for agricultural trade.

Government policy support is crucial for fostering agricultural trade cooperation among Belt and Road countries. Governments should increase policy support, formulate more flexible trade policies, and promote healthy agricultural trade development. Additionally, the establishment of cooperation mechanisms is paramount. Strengthening international cooperation mechanisms to facilitate information exchange, technological cooperation, and market expansion will collectively drive agricultural trade development. Sustainable development is crucial in agricultural trade. In the future, emphasis should be placed on environmental protection, sustainable resource utilisation, and agricultural technology innovation to achieve sustainable development goals in agricultural trade.

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