

The impact of Chinese cross-border e-commerce development level on export trade

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Abstract. With the rise of trade protectionism, the growth rate of China's export trade has slowed down, but cross-border e-commerce exports have emerged as a "new engine" for China's foreign trade growth. The country has also begun to pay more attention to the development of cross-border e-commerce, introducing a series of policies and establishing many comprehensive cross-border e-commerce pilot zones. Against this background, Studying the impact of the development level of cross-border e-commerce on export trade can provide a basis for formulating policies related to cross-border e-commerce, promote the development of cross-border e-commerce in various regions, and drive China's export growth, thereby empowering China's foreign trade industry transformation and upgrading. This article selects the number of online shopping users in each city as a proxy variable for the development level of cross-border e-commerce. Through regression analysis, it can be concluded that the development level of cross-border e-commerce can significantly positively affect export trade, and the heterogeneity analysis results show that there are regional differences in the impact of cross-border e-commerce development level on export trade. Finally, policy recommendations were provided based on the research findings.

Keywords: Cross-border e-commerce; Mechanism analysis; Export trade

1. Introduction

In recent years, due to the impact of the COVID-19 and the growth of the anti-globalization trend, the growth rate of global foreign trade has slowed down. According to the data of the World Trade Organization, the growth rate of global trade has been less than 3% for five consecutive years since 2012. During 2011-2020, the average annual growth rate of China was only 3.41%, especially in the 15th and 16th years, there was even negative growth. It is not difficult to see that China's export trade today lacks growth momentum, we need to rely on new trade growth points to drive its development. At the same time, with the development of internet and information technology, cross-border e-commerce in China has developed rapidly. Not only are various e-commerce platforms actively expanding cross-border business, but many companies are also attempting to expand their overseas markets through cross-border e-commerce while undergoing digital transformation. According to statistics, the import and export scale of cross-border e-commerce in China reached 1.96 trillion yuan in 2021, a year-on-year increase of 15%. In 2022, the import and export scale of cross-border e-commerce in China exceeded 2 trillion yuan for the first time, reaching 2.1 trillion yuan, a year-on-year increase of 7.1%. Among them, exports reached 1.53 trillion yuan, an increase of 10.1%, accounting for 6.4% of the national total export value, imports reached 527.8 billion yuan, a decrease of 0.8%, and accounting for 2.9% of the national total import value. In the global cross-border e-commerce market, China accounts for one-third of the total size, while North America and Europe are also important regions in the cross-border e-commerce market, with market shares of 27% and 18%, respectively. Cross-border e-commerce has become an indispensable part of China's foreign trade and is expected to become a focus for promoting the development of foreign trade.

From a policy perspective, China also attaches great importance to the development of cross-border e-commerce. Premier Li Keqiang emphasized that establishing a comprehensive pilot zone for cross-border e-commerce and accelerating the development of cross-border e-commerce are conducive to stabilizing foreign trade imports and exports, and we should actively seize this new growth point in foreign trade. Since the State Council approved the construction of the Hangzhou

Cross border E-commerce Comprehensive Pilot Zone on March 7, 2015, the second batch, third batch, fourth batch, fifth batch, sixth batch, and seventh batch of cross-border e-commerce comprehensive pilot zones have been established in 2016, 2018, 2019, 2020, and 2022, respectively. Currently, there are a total of 165 cross-border e-commerce comprehensive pilot zones. The "14th Five Year Plan for E-commerce Development" released by the Ministry of Commerce is the first to establish a main indicator system for e-commerce development, determining three scale development indicators and three sub field development indicators. It analyzes the opportunities and challenges faced by e-commerce development during the "14th Five Year Plan" period, clarifies the guiding ideology, basic principles, and development indicators for e-commerce development, and proposes seven main tasks for e-commerce development. The 14th Five Year Plan also proposes development goals and tasks for cross-border e-commerce. According to the plan, by 2025, China's comprehensive competitiveness of cross-border e-commerce will be further enhanced, with retail imports accounting for over 20% of the total imports and exports accounting for over 10% of the total exports. At the same time, it will also promote the standardization, standardization, and sustainable development of cross-border e-commerce enterprises, promote the deep integration of cross-border e-commerce and the real economy, improve the quality and efficiency of cross-border e-commerce, and assist in the high-quality development of China's economy. It can be seen that promoting the development of cross-border e-commerce has risen to a strategic height at the national level.

2. Literature review

As an emerging model, cross-border e-commerce has more potential compared to traditional trade models [1]. Research suggests that cross-border e-commerce breaks down informal barriers in traditional trade and has more obvious advantages in terms of trade costs and logistics, moreover, the development of cross-border e-commerce helps to form cross-border social networks, effectively promote domestic and foreign trade subject links, and is more conducive to trade facilitation [2]. Some scholars also point out that cross-border e-commerce shortens the geographical distance of international trade and weakens the ability of national control [3]. Li and Chio et al. believe that the development of e-commerce has made the foundation for the formation of comparative advantages in traditional trade theory no longer limited to traditional elements such as land, labor, capital, and natural resources [4,5]. Lendle et al. believe that cross-border e-commerce can significantly reduce transaction costs for both trading parties, bringing consumer welfare up to 29% [6]. Gomez Herrera found that cross-border e-commerce increases language costs for both trading parties [7]. Ma Zhaoliang and Zhu Jun analyzed the impact of cross-border e-commerce on the geographical distance effect between the two countries, and the results showed that cross-border e-commerce can to some extent weaken the geographical distance effect [8]. Jin Weiwei examined the impact of cross-border e-commerce on international trade from the perspectives of information costs, negotiation costs, transportation costs, tariff costs, and intermediary costs [9]. Shi Liangping and Wang Suyu believe that the savings effects brought by cross-border e-commerce include cost savings in the pre transaction, transaction, and post transaction stages [10]. Benmamoun believes that the cross-border e-commerce market is an emerging market. [11].

3. Mechanism Analysis

3.1. Theoretical Basis

3.1.1 Comparative advantage theory

The theory of comparative advantage refers to the fact that in international trade, countries should focus on their own areas of advantage and achieve mutual benefit through trade cooperation. This theory was first proposed by British economist David Ricardo, who believed that countries should focus on their special advantages and achieve efficiency improvement and trade expansion through trade cooperation. The core idea of the theory of comparative advantage is that when producing a

certain commodity, countries should focus on their own areas of advantage, that is, they have lower opportunity costs and higher production efficiency compared to other countries in producing a certain commodity. In this way, countries can achieve mutual benefit and win-win situation in trade by exchanging their advantageous products with each other. For example, if a country excels in producing agricultural products while another country excels in producing industrial products, the two countries can engage in trade cooperation and exchange their advantageous products, thereby expanding trade and improving efficiency.

3.1.2 Transaction cost theory

The transaction cost theory refers to the various costs that trading parties need to pay in order to conduct transactions in a market economy, including information costs, negotiation costs, contract costs, supervision costs, execution costs, etc. This theory was first proposed by Williamson, who believed that transaction costs are an important factor affecting the organizational structure and market structure of enterprises. The core idea of transaction cost theory is that both parties in a transaction need to pay various costs, which will affect the efficiency and cost of the transaction. In a market economy, enterprises and markets are two forms of transaction organization. Enterprises allocate resources through internal transactions, while markets allocate resources through external transactions. The choice between enterprises and the market depends on the size of transaction costs.

3.2. Influencing Mechanism Analysis

3.2.1 Reduce transaction costs

Compared to traditional international trade, cross-border e-commerce has shortened the transaction process. Traditional international trade requires searching for information before transactions, including information about goods, exporters or importers, etc. And it is also necessary to sign contracts, formal invoices, etc. through fax or mail. Moreover, traditional international trade often revolves around stronger exporters, and consumers' wishes cannot be conveyed to importers, resulting in consumers being forced to accept information. In the cross-border e-commerce model, importers and exporters can connect online, and various cross-border e-commerce platforms have also launched paperless contracts, which greatly reduces transaction costs compared to traditional trade.

3.2.2 Lowered the export threshold

In traditional trade, exporters often have a larger scale and are the economically strong domestic parties. Some smaller companies or companies from economically underdeveloped countries are unable to directly participate in international trade. Cross border e-commerce has lowered the threshold for these companies to participate in international trade, enabling more and more small enterprises to export, thereby intensifying competition in international trade. The greater the competition, the greater the benefits consumers can receive from it, because only products with relatively low prices and better quality can gain a place in the fierce competition. Another advantage of lowering the export threshold is that scattered cross-border trade can be achieved, as in the past, only transactions with larger amounts could carry out cross-border trade.

3.2.3 Reduce trade barriers and improve customs clearance efficiency

Cross border e-commerce can connect buyers and sellers through the internet, eliminating geographical, cultural, and linguistic constraints on trade and breaking traditional trade barriers. Cross border e-commerce platforms can provide global sales channels for enterprises and help them enter more international markets.

Many cross-border e-commerce nowadays rely on platforms, which often provide customs clearance services. Cross border e-commerce platforms can also integrate information from e-commerce enterprises, logistics enterprises, customs, and other parties by establishing an information sharing platform, achieving information sharing and data exchange, and improving customs clearance efficiency. Cross border e-commerce platforms can also collaborate with logistics enterprises to

establish efficient logistics distribution networks, improve logistics efficiency and delivery speed, and thus accelerate customs clearance.

4. Empirical Analysis

4.1. Model Building

In order to examine the impact of the development level of cross-border e-commerce in various regions on their export trade, this article constructs the following model:

$$\ln EX_{ij} = \beta_1 + \beta_2 EC_{ij} + \beta_3 \ln GDP_{ij} + \beta_4 \ln FDI_{ij} + \gamma_i + \mu_j + \varepsilon \quad (1)$$

Among them, i represents the region, j represents the year, and the data year selected in this article is from 2017 to 2021. EX is the dependent variable, representing export volume, EC is the core explanatory variable of this article, representing the level of cross-border e-commerce development. This article selects the number of online shopping users in each province as the proxy variable, representing the level of cross-border e-commerce development, and FDI is the amount of outward investment, γ_i, μ_j represents regional fixed effects and time fixed effects, respectively, ε is the error term.

4.2. Regression Result Analysis

Table 1. Benchmark regression results

variable	lnEX
_cons	11.537*** (4.844)
EC	0.214*** (0.077)
FDI	0.151** (0.122)
GDP	0.781** (0.537)
Region fixed effects	YES
Time fixed effects	YES

Notes: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

From Table 1, the regression coefficient of EC_{ij} is 0.214, which is significant at the 1% level. This means that the higher the level of cross-border e-commerce development in a region, the more it can promote its export trade. Specifically, when the level of cross-border e-commerce development in a region increases by one unit, the region's export trade will increase by 21.4%. At the same time, the coefficients of FDI and GDP are also in line with estimates. The export trade of a region is directly proportional to its GDP and outward investment, and both coefficients are positive and statistically significant.

4.3. Heterogeneity Analysis

There are significant differences in the development level of cross-border e-commerce in different regions. The development level of cross-border e-commerce in coastal areas and first tier cities is relatively high, followed by some provinces that have established comprehensive cross-border e-commerce pilot zones earlier. In order to test whether there is regional heterogeneity in the impact of cross-border e-commerce development level on China's export trade, this article divides the samples into eastern regions, western regions, and central regions based on geographical location, The specific regression results are shown in Table 2.

Table 2. Regression results from different regions

Variable	Eastern	Central	Western
_cons	9.134*** (7.231)	5.722*** (2.134)	7.091*** (2.955)
EC	0.297** (0.035)	0.201* (0.073)	0.176 (0.093)
FDI	0.102** (0.020)	0.087** (0.033)	0.100** (0.029)
GDP	0.587** (0.170)	0.734** (0.069)	0.499* (0.021)
Region fixed effects	YES	YES	YES
Time fixed effects	YES	YES	YES

Notes: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

From the regression results, the regression coefficient of the development level of cross-border e-commerce in the eastern region is still significant and higher than the coefficients in the total sample regression results. The coefficients of other indicators are also consistent with expectations, indicating that the development level of cross-border e-commerce has a significant impact on the export trade of the eastern region. The coefficient of cross-border e-commerce development level in the central region is also significant, but only significant at the 10% level. The coefficient in the western region is even less significant and the coefficient is also small, indicating that there is indeed regional heterogeneity in the impact of cross-border e-commerce development level on export trade.

5. Advice

5.1. Strengthen and intensify the cultivation of cross-border e-commerce talents

Cross border e-commerce plays an increasingly important role in China's economic development. As a "new engine" for China's foreign trade growth, the country needs to attach importance to the cultivation of corresponding talents and provide excellent composite talents for cross-border e-commerce. Cross border e-commerce, as a combination of traditional foreign trade and e-commerce, requires a high level of professional competence from corresponding practitioners. In order to cultivate corresponding talents, China can introduce corresponding support policies for cross-border e-commerce enterprises to provide enterprises with the human capital they need to cultivate employees. It can also cooperate with universities to establish new majors or launch some cross-border e-commerce competitions similar to Internet plus, encouraging students to exercise their corresponding abilities through these competitions. Only the cultivation of cross-border e-commerce talents and the synchronous development of cross-border e-commerce can complement each other and fully leverage the promoting role of cross-border e-commerce in foreign trade.

5.2. Improve the construction of cross-border e-commerce pilot zones

China has currently established many comprehensive cross-border e-commerce pilot zones, which can provide convenience and preferential treatment for cross-border e-commerce enterprises through policy and institutional innovation, promote the development of cross-border e-commerce, and promote the growth of cross-border trade. The cross-border e-commerce comprehensive pilot zone can also promote trade facilitation and provide a more convenient trade environment for cross-border e-commerce enterprises by optimizing customs clearance processes, improving customs clearance efficiency, and reducing customs clearance costs. The cross-border e-commerce comprehensive pilot zone can further promote the development of the digital economy, promote the development of digital economy industries such as e-commerce, logistics, and payment, and promote the integration of the digital economy and the real economy. The cross-border e-commerce comprehensive pilot zone can

attract international cross-border e-commerce enterprises to settle in, promote international trade and investment, and promote the global development of cross-border e-commerce by promoting international cooperation. In summary, cross-border e-commerce comprehensive pilot zones can quickly promote the development of local cross-border e-commerce and drive the growth of export trade. However, with the increasing number of cross-border e-commerce comprehensive pilot zones established, they have become more and less refined, and the construction of pilot zones in many regions is still not complete enough. While ensuring quantity, attention should also be paid to improving quality.

5.3. Promote the construction of infrastructure and increase customs clearance efficiency

Each region should accelerate the construction of the infrastructure required for cross-border e-commerce, with logistics and customs clearance efficiency being the focus. Fast and reliable logistics and high customs clearance efficiency can provide good guarantees for the development of cross-border e-commerce. In terms of logistics, it is necessary to improve its efficiency and stability, while also paying attention to the digitization of cross-border logistics to ensure that consumers can check the real-time dynamics of express delivery online. In terms of customs clearance efficiency, the review speed can be improved through artificial intelligence and digital information technology. The country should also accelerate the integration construction of various customs departments, promote cross-border e-commerce to empower China's foreign trade industry transformation, and improve the quality and growth rate of cross-border e-commerce development.

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