

MINISTRY OF SCIENCE AND HIGHER EDUCATION
OF THE RUSSIAN FEDERATION

Federal State Budgetary Educational Institution of Higher Education

PENZA STATE UNIVERSITY

Institute of Economics and
Administration
Field of study
Master's degree programme

Department of Sociology, Economic
Theory and International Processes
38.04.01 Economics
International Economics and Business

GRADUATION THESIS

on

Development of E-commerce Between Russia and China

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Penza 2026

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Institute of Economics and Administration
Department of Sociology, Economic Theory and International Processes
Field of study 38.04.01 Economics,
Master's degree programme International Economics and Business

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ASSIGNMENT
FOR THE GRADUATION THESIS OF

Master's degree student Zhu Qiyue, group 24ЭЭВам1, full-time mode of study

1 The topic of the graduation thesis: "Development of E-commerce Between Russia and China"

was approved by the university order

dated « ____ » _____ 20 ____ no. _____

2 The deadline for the Master's degree student to complete the graduation thesis is 15.06.2026.

3 The input data for the graduation thesis is the regulatory and legal framework, scientific literature and reference books, and Internet data.

4 The list of issues to be studied includes overview of e-commerce in modern economy, challenges in Russia-China e-commerce development, Strategies to Enhance E-commerce between Russia and China.

5 The list of visuals contains tables and figures.

6 The date of setting the assignment is 8.10.2024.

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(signature) (full name)

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Schedule for completing the graduation thesis

№ п/п	Content of the thesis	Deadline for completion	Due date, signature of the academic adviser
First year of study			
1	Substantiating of the research topic and methodology, subject and object of research	1.09.2024 – 31.10.2024	
2	Framing the scientific concept of research	1.11.2024 – 18.12.2024	
3	Collection of scientific literature for the thesis	19.12.2024 – 15.01.2025	
4	Substantiating the relevance, concept, and novelty of the research	16.01.2025 – 19.02.2025	
5	Framing of a detailed plan and layout of the research	20.02.2025 – 12.03.2025	
6	Studying new literature sources within the topic of the thesis	13.03.2025 – 26.03.2025	
7	Conducting theoretical research within the first chapter of the thesis	27.03.2025 – 30.04.2025	
8	Preparing the first chapter of the thesis	1.05.2025 – 30.06.2025	
Second year of study			
9	Conducting analytical research within the second chapter of the thesis	1.09.2025 – 22.10.2025	
10	Preparing the second chapter of the thesis	23.10.2025 – 24.12.2025	
11	Conducting analytical research within the third chapter of the thesis	25.12.2025 – 25.02.2026	
12	Preparing the third chapter of the thesis	26.02.2026 – 21.04.2026	
13	Preparing the introduction and conclusion	22.04.2026 – 12.05.2026	
14	Completing the graduation thesis	13.05.2026 – 27.05.2026	
15	Handing in the thesis for compliance control and antiplagiat	28.05.2026 – 11.06.2026	
16	Getting acquainted with the feedback and review	13.06.2026	
17	Presenting the written thesis	15.06.2026	

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Summary

The graduation thesis comprises 77 pages, 3 chapters, 16 figures, 7 tables, 70 sources.

CROSS-BORDER E-COMMERCE, SINO-RUSSIAN DIGITAL TRADE, LOGISTICS INFRASTRUCTURE, PAYMENT SYSTEMS, REGULATORY HARMONIZATION, INSTITUTIONAL CONSTRAINTS, SUPPLY CHAIN COLLABORATION

The target of research is the cross-border e-commerce relationship between the Russian Federation and the People's Republic of China as a distinct and evolving form of bilateral digital trade, including its transactional relationships, infrastructural arrangements, and institutional environments.

The goal of work is to study to conduct a comprehensive, mechanism-level analysis of Sino-Russian cross-border e-commerce development, dissecting its conceptual foundations, structural configurations, operational constraints, and strategic optimization pathways.

The methodological framework of the paper is formed by the complex of theoretical and practical methods such as comprehensive literature synthesis, comparative analysis, systems analysis, structural-functional analysis, and empirical observation of reported statistical data, industry metrics, and operational parameters.

The results of research include: Identification of structural asymmetries in Sino-Russian e-commerce, including an imbalanced B2B/B2C model, unidirectional commodity flows, and geographic concentration; Systematic analysis of three critical constraints: logistics inefficiencies, payment system barriers, and regulatory heterogeneity; Formulation of strategic responses addressing each constraint: strengthening logistics infrastructure, harmonizing regulatory frameworks, and promoting digital payment solutions; Establishment of a framework explaining the operational logic of bilateral e-commerce cooperation.

The recommendations on disseminating and applying the results are as follows: Utilize the proposed triadic framework (logistics, payment, regulatory) as a diagnostic tool for identifying systemic friction points in bilateral digital trade; Apply the strategic recommendations as actionable guidance for e-commerce enterprises operating in the Russia-China market; Use the research as a scholarly proposition and policy instrument

for government agencies seeking to reduce institutional transaction costs and enhance trade facilitation.

The theoretical relevance of the thesis is established by constructing an integrative analytical framework that triangulates physical logistics, financial settlement, and regulatory governance to explain the operational logic of Sino-Russian cross-border e-commerce, moving beyond descriptive accounts to mechanism-level explanatory models.

The target of research can be further explored through longitudinal empirical studies examining the effectiveness of implemented strategies, case studies of specific platform and enterprise adaptations to regulatory changes, and quantitative analysis of the impact of geopolitical shocks on e-commerce transaction patterns.

Content

Chapter 1: Overview of E-commerce in Modern Economy	10
1.1. Concept and characteristics of e-commerce	10
1.2. Current Status and Dynamics of E-commerce between Russia and China ...	15
1.3. Structure of E-commerce between Russia and China.....	22
Chapter 2 Challenges in Russia-China E-commerce Development.....	28
2.1 Logistics and Supply Chain Issues between Russia and China.....	28
2.2 Payment Systems and Currency Exchange Barriers between Russia and China	34
2.3 Regulatory and Customs Challenges between Russia and China.....	40
Chapter 3 Strategies to Enhance E-commerce between Russia and China	46
3.1 Strengthening Cross-border Logistics Infrastructure between Russia and China	46
3.2 Harmonizing Regulatory Frameworks and Customs Procedures between Russia and China.....	52
3.3 Promoting Digital Payment Solutions and Financial Cooperation between Russia and China.....	58
Conclusion.....	65
References	72

Introduction

The global trading system is undergoing a profound structural reconfiguration driven by the rapid diffusion of digital technologies across commercial boundaries. Traditional trade models, which historically relied upon geographic agglomeration of production and multiple layers of intermediaries, are being fundamentally redrawn by sharply declining information costs and the ascendancy of the platform economy. As adjacent major economies on the Eurasian continent, the deepening of economic and trade relations between China and Russia is conditioned not only by the complementarity of their resource endowments and industrial structures, but has also acquired new dimensions of expansion amid the increasingly prominent wave of digitization. The rise of cross-border e-commerce has provided an alternative channel for bilateral trade that bypasses conventional distribution layers and reaches end consumers directly, a process that has gained additional policy momentum under infrastructure connectivity frameworks and trade facilitation initiatives. The demand for physical and digital infrastructure connectivity engendered by macro-regional economic cooperation has historically converged with the objectives of trade facilitation in the digital economy era.

However, viewing e-commerce merely as an automatic expansion instrument for bilateral trade clearly overlooks the complexities inherent in cross-border digital commerce. Sino-Russian e-commerce cooperation is not a simple migration of traditional transactions to online platforms, but rather a systematic endeavor involving the reconfiguration of logistics networks, the adaptation of payment systems, the alignment of regulatory frameworks, and the coordination of data governance. Bilateral trade volumes have expanded continuously, yet the internal structure of this digital trade—encompassing the proportions of business-to-business and business-to-consumer transactions, the distinction between platform-based and self-operated models, and the parallel operation of border trade and overseas warehouse logistics—has yet to reach a state of equilibrium. Meanwhile, the tension between the localization aspirations embedded in Russia's digital economy development strategy and the penetration of foreign platforms constitutes a distinctive institutional backdrop for bilateral cooperation. Recent geopolitical shifts, including the exit

of Western platforms and payment systems from the Russian market, have simultaneously created new opportunities for Chinese e-commerce actors and exposed the fragility of existing cross-border logistics and financial channels. In this context, understanding the operational logic, structural constraints, and optimization pathways of Sino-Russian e-commerce has become a matter of considerable academic and practical urgency.

Existing scholarship on e-commerce has traced the conceptual evolution of the field from narrow technical tool theory, centered on electronic data interchange, to broad business model theory, encompassing complete digital ecosystems for commodity transactions, payment settlement, and after-sales service. Researchers have extensively documented the capacity of cross-border e-commerce platforms to compress spatiotemporal friction in traditional trade, reduce market search and credit verification costs, and activate the cross-border circulation of long-tail goods and small-batch orders that were previously excluded from international markets due to high transaction costs. Empirical studies have confirmed that the digitization of trade processes can substantially reduce financing and compliance costs while reshaping the micro-foundations of global trade through the participation of small and medium-sized enterprises.

With respect to the bilateral context, the literature has examined several distinct analytical streams. Studies on China's e-commerce ecosystem have emphasized the maturity of domestic platform infrastructure, the systematic construction of cross-border export capabilities through comprehensive pilot zones, and the endogenous growth momentum generated by supply chain efficiency and algorithmic innovation. Research on the Russian e-commerce market has documented its rapid expansion, the dominance of local platforms, and the price-sensitive consumption structure that creates market entry opportunities for Chinese manufacturing exports. Scholarship specifically addressing Sino-Russian cross-border e-commerce has identified the complementarity of commodity structures, the competitive dynamics between Chinese and Russian platform enterprises, and the growth of consumer goods circulation through e-commerce channels at border ports.

Parallel analytical streams have investigated sectoral constraints. Logistics research has highlighted the spatial imbalances of Russian distribution networks, the trade-offs between postal parcels, commercial express delivery, and overseas warehouse models, and

the information discontinuities that create "supply chain breakpoints" at customs nodes. Payment studies have documented the divergence between China's mobile payment ecosystem and Russia's card-based traditions, the structural barriers to ruble-renminbi direct exchange, and the disruptions caused by the withdrawal of international card organizations. Regulatory analyses have examined customs procedure heterogeneity, data localization requirements, platform liability divergence, and the challenges of tax administration for fragmented cross-border transactions.

Despite this growing body of research, significant gaps remain. The existing literature largely treats logistics, payment, and regulatory dimensions in isolation, offering descriptive accounts of trade volumes or focusing on single-issue bottlenecks without establishing the causal linkages between structural characteristics and institutional constraints. There remains a pronounced deficit in mechanism-level research that integrates these three dimensions into a coherent analytical framework capable of explaining why bilateral e-commerce exhibits a persistent condition of strategic alignment at the macro level yet tactical friction at the operational level. Most studies have not adequately connected the asymmetric development of B2B and B2C segments, the unidirectional concentration of commodity flows, or the geographic concentration of regional distribution to their underlying infrastructural and institutional roots.

The goal of this study is to conduct a comprehensive, mechanism-level analysis of Sino-Russian cross-border e-commerce development, moving beyond superficial descriptions of trade volume expansion to dissect the conceptual foundations, structural configurations, operational constraints, and strategic optimization pathways of this bilateral digital trade relationship. The study seeks to provide a rigorous analytical reference for understanding how the bilateral e-commerce system functions as an integrated socio-technical apparatus and how it may be guided through a transition from quantitative expansion to qualitative upgrading.

To achieve the stated goal, this study pursues the following interconnected objectives.

First, to establish the conceptual and theoretical boundaries of e-commerce in the contemporary international economy, clarifying its operational characteristics as a structural force for reconfiguring resource allocation, reconstructing market entry conditions, and

reshaping international division of labor, rather than merely a technological channel for online sales.

Second, to delineate the structural forms of bilateral e-commerce between Russia and China, analyzing the asymmetric development of B2B and B2C models, the competitive dynamics within the platform ecosystem, the unidirectional concentration of commodity category flows, and the geographic distribution patterns that shape regional participation.

Third, to identify and systematically analyze the practical constraints operating across three critical dimensions: logistics and supply chain inefficiencies stemming from spatial network imbalances, cross-border model trade-offs, and information discontinuities; payment and currency barriers arising from ecosystem divergence, geopolitical disruptions, and dollar intermediary dependence; and regulatory and customs challenges rooted in legal heterogeneity, procedural complexity, and data governance conflicts.

Fourth, to formulate strategic responses addressing each constraint dimension, specifically through the strengthening of cross-border logistics infrastructure, the harmonization of regulatory frameworks and customs procedures, and the promotion of digital payment solutions and financial cooperation.

Fifth, to synthesize these analytical components into a coherent framework that explains the operational logic of Sino-Russian e-commerce cooperation and provides actionable insights for alleviating the systemic friction that impedes its high-quality development.

The subject of this study is the cross-border e-commerce relationship between the Russian Federation and the People's Republic of China as a distinct and evolving form of bilateral digital trade. This subject encompasses the transactional relationships, infrastructural arrangements, and institutional environments that collectively enable, regulate, and constrain the digital circulation of goods, services, and capital between the two economies. It treats e-commerce not as an isolated commercial activity but as a bilateral economic phenomenon shaped by the intersection of platform governance, state regulation, and market structure.

The object of this study comprises the concrete operational mechanisms and structural configurations that constitute the Sino-Russian e-commerce system. This includes the

physical logistics networks and supply chain coordination models that govern the movement of goods from Chinese manufacturing and distribution hubs to Russian consumers; the payment and settlement infrastructures that facilitate currency conversion and transaction completion; the customs and regulatory frameworks that determine compliance costs and clearance efficiency; the platform ecosystems and their governance rules regarding data, traffic, and merchant access; the commodity flow structures that define the direction and composition of trade; and the spatial distribution of trade nodes, border warehouses, and regional consumption hubs. The object is thus the entire complex of technical, organizational, and institutional elements that together form the operational reality of bilateral digital trade.

This study employs a multi-method analytical approach grounded in systematic literature synthesis and theoretical-empirical integration.

The primary research technique is comprehensive literature analysis, through which existing theoretical resources and empirical evidence are critically examined, synthesized, and evaluated to construct a coherent explanatory framework.

Comparative analysis is utilized to contrast the developmental trajectories, platform ecosystems, logistics structures, payment conventions, and regulatory environments of China and Russia, thereby identifying the sources of systemic friction and strategic compatibility.

Systems analysis and structural-functional analysis are applied to examine the interdependencies between logistics, payment, and regulatory subsystems, treating bilateral e-commerce as an integrated socio-technical system rather than a collection of isolated commercial transactions. Empirical observation draws upon reported statistical data, industry metrics, and documented operational parameters from customs administrations, platform disclosures, and logistics providers to anchor theoretical propositions in verifiable evidence.

The methodological orientation is explicitly mechanism-focused, prioritizing the explanation of causal relationships, operational logics, and structural couplings over purely descriptive enumeration of trade flows.

The novelty of this study resides in its integrative analytical framework that

triangulates physical, financial, and regulatory dimensions to explain the operational logic of Sino-Russian e-commerce cooperation. Unlike previous research that examines logistics, payment, or customs issues in isolation, this study treats these domains as structurally coupled subsystems whose friction points are mutually constitutive. The study reconceptualizes Sino-Russian e-commerce not as a simple digitization of traditional bilateral trade but as a systemic endeavor involving the reconfiguration of market entry conditions, the compression of information costs, and the re-intermediation of platform governance.

A further innovative aspect lies in the establishment of explicit linkages between macro-level structural asymmetries—such as the imbalance between B2B and B2C development, the unidirectional concentration of commodity flows, and the geographic concentration of trade corridors—and the micro-level institutional constraints that produce and reproduce these asymmetries. This multi-layered explanatory model connects the strategic compatibility of bilateral e-commerce cooperation with the tactical operational friction that characterizes its day-to-day execution.

The research significance of this study is manifested in the following dimensions.

First, at the theoretical level, this study constructs an integrative analytical framework that triangulates physical logistics, financial settlement, and regulatory governance to explain the operational logic of Sino-Russian cross-border e-commerce. Existing scholarship has largely examined these dimensions in isolation, producing fragmented understandings of trade volume growth without explicating the causal linkages between structural asymmetries and institutional constraints. By systematically mapping the interdependencies among supply chain bottlenecks, payment system fragilities, and customs heterogeneity, this study advances a mechanism-level explanatory model that treats bilateral e-commerce as a structurally coupled socio-technical system rather than a simple digitization of conventional trade. This triadic framework provides a novel diagnostic tool for identifying how logistics delays amplify inventory financing pressures, how regulatory uncertainty constrains warehouse siting and infrastructure investment decisions, and how payment ecosystem divergence reproduces geographic concentration in trade flows. The framework thus contributes to cross-border e-commerce theory by moving beyond

descriptive accounts of trade expansion toward an analysis of the systemic friction points that determine whether bilateral digital trade achieves quantitative accumulation or qualitative upgrading.

Second, at the practical and policy level, this study bridges the persistent gap between academic diagnosis and operational implementation by formulating strategic pathways that align micro-level corporate decisions with macro-level institutional coordination. The analysis demonstrates that alleviating delivery time constraints requires not merely additional transport capacity but a functional division of labor between border warehouses and overseas warehouses supported by fourth-party logistics integration and smart warehousing technology. It reveals that payment friction cannot be resolved through technical interoperability alone but necessitates the construction of local currency settlement corridors, the deepening of card network backend integration, and the establishment of joint risk monitoring mechanisms. Similarly, it shows that customs efficiency depends not on unilateral deregulation but on the mutual recognition of authorized economic operators, the pre-clearance of electronic declaration data, and the convergence of platform liability rules. By connecting these operational imperatives to the institutional requirements of bilateral dialogue mechanisms, regulatory sandbox cooperation, and central bank financial collaboration, the study generates actionable recommendations that serve simultaneously as scholarly propositions and policy instruments. This dual orientation renders the research significant for both e-commerce enterprises navigating the Russia-China market and government agencies seeking to reduce institutional transaction costs without compromising regulatory sovereignty.

Chapter 1: Overview of E-commerce in Modern Economy

1.1 Concept and characteristics of e-commerce

The concept definition of e-commerce has undergone an evolution from narrow technical tool theory to broad business model theory in academic tradition. In recent years, domestic scholars have systematically reviewed the research paradigms, developmental trajectories, and policy implications of cross-border e-commerce, providing an important theoretical foundation for understanding bilateral digital trade [25, p. 280]. In a broad sense, there is a profound interactive relationship between e-commerce and international trade reform, and its institutional impact has received widespread attention from academia [53, p. 156]. Early research understood it as a means of transmitting business information based on Electronic Data Interchange (EDI) - a technological form that can be traced back to the first set of EDI standards developed by the Transportation Data Coordination Committee (TDCC) in 1968 and gradually institutionalized in the 1980s with the promotion of the United Nations EDIFACT standard. Its core function is to replace paper documents to reduce document costs in the transaction process. With the commercialization of Internet protocols and the iteration of Web technology, especially the advent of Netscape browser in 1994 and the launch of Amazon, eBay and other platforms in 1995, e-commerce has gradually moved away from a purely technical neutral description and turned to a complete business ecosystem that relies on digital platforms to achieve commodity and service transactions, payment settlement and after-sales services [13, p. 28]. According to Statista data, global B2C e-commerce sales have reached approximately \$5.8 trillion in 2023, accounting for around 22% of the global retail total; The online retail sales for the same period announced by the National Bureau of Statistics of China were RMB 15.42 trillion, a year-on-year increase of 11.0%. The literature review on cross-border e-commerce as a new mode of international trade shows that its essential feature lies in compressing the spatiotemporal friction in traditional trade through a digital interface, making cross-border transactions significantly different from existing models in terms of subject access, information search, and contract formation [13, p. 28]. This definition liberates e-commerce

from the primary understanding of "online sales channels" and endows it with institutional connotations for reconstructing international trade processes [28, p. 79].

From the perspective of operational characteristics, modern e-commerce presents at least four nested dimensions. Firstly, digital representation runs through the entire transaction cycle. The virtual display of product information, electronic generation of orders, digital transfer of payments, and real-time tracking of logistics information together form a data loop - Amazon has been optimizing recommendation algorithms based on user browsing and purchasing data since its launch in 1995, while Alibaba was the first to propose the concept of "new retail" in 2016 to integrate online and offline data assets; As of the end of 2023, the global number of digital buyers has exceeded 3.4 billion, and the size of China's live streaming e-commerce market reached approximately 4.9 trillion yuan in the same year. This closed loop not only improves operational efficiency, but also gives rise to a new competitive advantage centered around data assets [27, p. 79]. Empirical research further indicates that manufacturing enterprises have achieved a transformation from production orientation to value network collaboration through cross-border e-commerce, and their value creation mechanism has significant technology spillover effects [69, p. 62].

Figure 1 is grouped bar chart compares the total B2C e-commerce sales worldwide (converted to CNY at approx. 7.0 CNY/USD) with China's online retail sales and China's live-streaming e-commerce market size. It highlights that China's online retail market alone is substantial, while global B2C sales still dominate, and live-streaming e-commerce has become a notable segment in China, as shown below.

Secondly, de intermediation and re intermediation coexist. The rise of the platform economy has superficially reduced the multi-layered distribution entities in traditional import and export trade. Taking SHEIN as an example, it has compressed the design to delivery cycle to 7 to 10 days by building its own independent station and flexible supply chain, directly bypassing the importer, wholesaler, and retailer hierarchy in traditional clothing exports [28, p. 79]. However, as a new type of intermediary, the platform itself embeds the value chain in another form through algorithm matching, credit evaluation, and traffic distribution mechanisms. This trend of disintermediation has had a profound impact on traditional foreign trade models and sparked extensive discussions on trade mode

innovation [26, p. 46]. The commission ratio for third-party sellers on the Amazon platform is usually between 8% and 15%, and the total technical service fees and commissions on the Tmall platform also constitute an important part of merchant operating costs [59, p. 143].

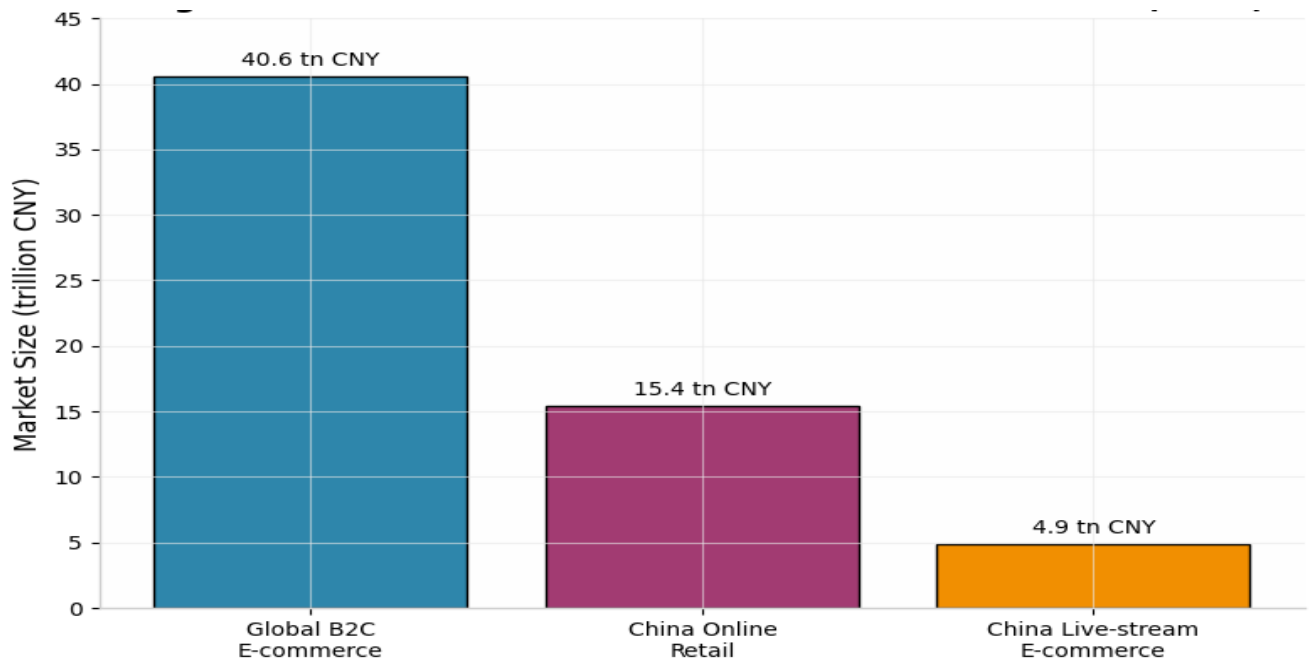


Figure1-Global and China E-commerce Market Size(2023)

Sources: Statista/eMarketer (USD 5.8 tn);Mnistry of Commere (15.42 tn CNY); China New E-commerce Report 2024 (4.9 tn CNY). Global value converted to CNY at USD/CNY≈7.0

Figure 2 shows that small and medium-sized enterprises (SMEs) account for over 70% of cross-border e-commerce export entities in China, while large enterprises and others constitute the remaining 30%. It visualizes the dominant role of SMEs in cross-border digital trade, as shown below.

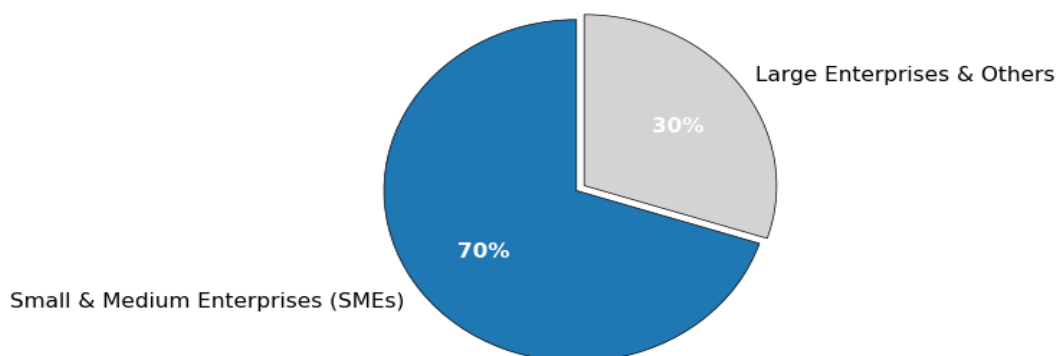


Figure2-Panel A:Structure of Cross-border E-commerce Export Enterprises
(SMEs account for over 70%)

Source: Minstry of commerce of China (2023)

Among foreign trade enterprises, SMEs constitute >70% of cross-border e-commerce exporters.

Figure 3 with error bars displays the referral fee ranges charged by major global and Russian e-commerce platforms. Amazon and AliExpress have moderate commission ranges, while Temu uses a 0% commission model (full-hosting), and Russian platforms (Ozon, Wildberries) have wide ranges depending on product categories, as shown below.

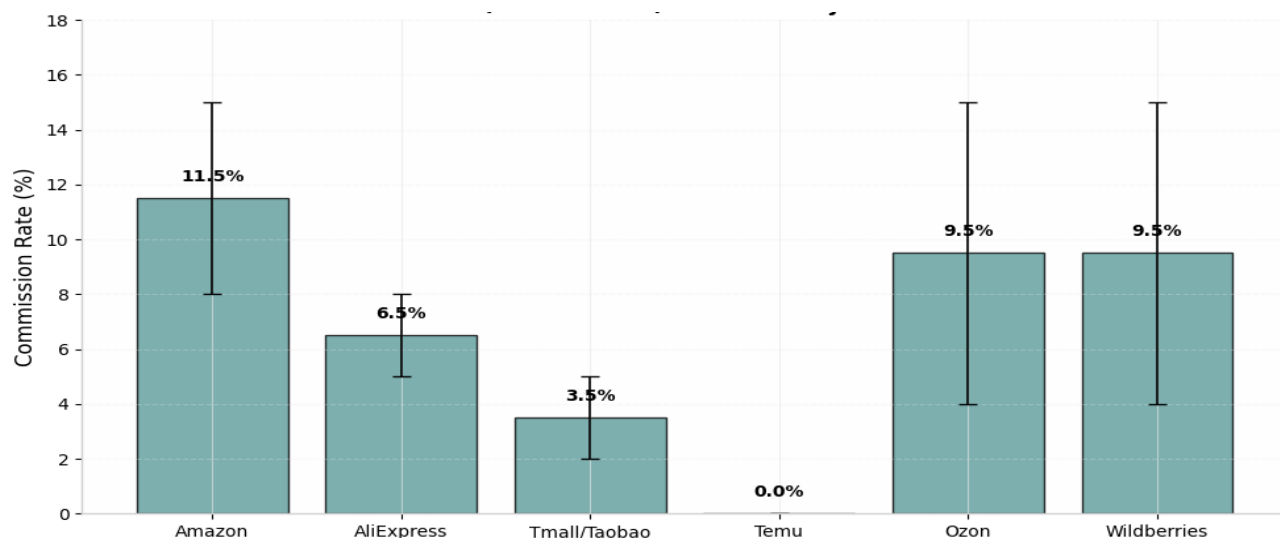


Figure3 – Panel B: Referral Fee(Commission)Rates of Major E-commerce Platforms

Sources: Amazon Seller Central, AliExpress Seller Portal,Ozon Seller Official,Wildberries, Temu(2024),Marketplace Pulse study

Notes: Amazon 8-15%(category dependent); AliExpress 5-8%(most categories); Tmall 2-5%(plus annual fee); Temu 0%(full-commission model); Ozon/Wildberries 4-15%(by category & logistics).

Thirdly, the high elasticity of the subject boundary. Cross border e-commerce has broken the rigid requirements of traditional foreign trade for enterprise size and qualifications, allowing a large number of small and medium-sized enterprises and even individual merchants to directly participate in international exchanges through third-party platforms. According to data from the Chinese Ministry of Commerce, small and medium-sized enterprises account for over 70% of cross-border e-commerce export enterprises. By 2023, China's cross-border e-commerce pilot zones have expanded to 165 cities across the country, covering areas extending from coastal areas to inland areas; Tens of thousands of

small commodity operators in Yiwu, Zhejiang sell their products to over 200 countries and regions worldwide through platforms such as AliExpress and Temu. Some operators have shifted from general category distribution to refined brand operation, forming replicable cross-border marketing models in specific categories (such as table cushion products) [57, p. 43]. This structural change is reshaping the micro foundation of global trade. Fourthly, the cross-border complexity of logistics and payment. Different from domestic e-commerce, cross-border e-commerce must face the additional transaction costs caused by customs border constraints, exchange rate fluctuations, legal conflicts and cultural differences – after the outbreak of the Russia-Ukraine conflict in 2022, the ruble exchange rate against the US dollar once fell below 120 rubles in March of that year, causing a large number of Chinese cross-border e-commerce sellers to face exchange losses and pricing difficulties; According to statistics from the World Customs Organization (WCO), the average clearance time for cross-border e-commerce packages is still significantly longer than traditional bulk trade, and the existence of these costs means that the "borderless" characteristics of e-commerce are always regulated by national institutional boundaries [59, p. 143].

The above characteristics have sparked discussions on the reconstruction of trade costs at the theoretical level. From the dual perspectives of information cost and economies of scale, relevant studies have pointed out that cross-border e-commerce platforms reduce the market search and credit verification costs of export enterprises by aggregating massive buyer and seller information, thereby making the cross-border circulation of long tail goods and small batch orders economically feasible [35, p. 10]. Amazon's early business data confirmed this mechanism: the "long tail" books ranked after 100000 in its book sales contributed more than 50% of sales; In the export structure of China's cross-border e-commerce, long tail categories such as home gardening, consumer electronics accessories, and sports outdoor continue to grow faster than traditional bulk categories. In 2023, the total import and export volume of China's cross-border e-commerce reached 2.38 trillion yuan, of which exports amounted to 1.83 trillion yuan, a year-on-year increase of 19.6%. From the overall development trend, China's cross-border e-commerce has entered a new stage of parallel scale expansion and quality improvement [47, p. 114]. According to calculations by McKinsey Global Institute, digitalization of trade processes can reduce financing costs by

20% to 30% and compliance costs by 25% to 40%. This mechanism explains why cross-border e-commerce can open up new growth opportunities beyond traditional bulk trade - it is not simply replacing existing trade, but activating potential demand that was previously excluded from the market due to high transaction costs by reducing marginal information costs. From this perspective, the role of e-commerce in contemporary economy has far exceeded the scope of technological tools, becoming a structural force for reconfiguring resource allocation, reconstructing market entry conditions, and reshaping international division of labor [63, p. 112; 28, p. 79].

1.2 Current Status and Dynamics of E-commerce between Russia and China

The development trend of global e-commerce presents significant imbalances at the regional level. As a pioneer country in the digital economy, China's maturity in its e-commerce ecosystem is not only reflected in the deep digitization of its domestic consumer market - online retail sales will reach 15.42 trillion yuan in 2023, and online retail sales of physical goods will account for 27.6% of the total retail sales of consumer goods in society - but also in the systematic construction of cross-border e-commerce export capabilities. The analysis of the current development status of cross-border e-commerce in China points out that the dual role of policy driven and market innovation has led to a continuous increase in the proportion of cross-border e-commerce in trade models. Its growth momentum has shifted from early policy subsidy dependence to endogenous driving of platform technology iteration and supply chain efficiency improvement. According to data from the General Administration of Customs, the total import and export volume of cross-border e-commerce in China reached 2.38 trillion yuan in 2023, of which exports amounted to 1.83 trillion yuan, a year-on-year increase of 19.6%. Over 70% of cross-border e-commerce export enterprises are small and medium-sized enterprises. The annual development report further sorted out the diffusion logic of the cross-border e-commerce comprehensive pilot zone system: from the single pilot in Hangzhou in March 2015 to the coverage of 165 cities in seven batches nationwide by 2023, this institutional innovation has provided a predictable institutional environment for cross-border e-commerce enterprises through tax facilitation of "list

management and summary declaration", regulatory relaxation of "first line opening and second line management", and financial support for cross-border RMB settlement facilitation, thereby forming regional industrial agglomeration effects such as the Pearl River Delta, Yangtze River Delta, and Chengdu Chongqing regions [25, p. 280]. Further research highlights the synergistic relationship between commercial circulation industry clusters and cross-border e-commerce, showing how geographic agglomeration and digitalisation reinforce each other to drive regional export competitiveness [6, p. 147]. Based on empirical research on China's cross-border e-commerce pilot zones and the internationalization of small and medium-sized enterprises, it has been confirmed that the policies of comprehensive pilot zones significantly reduce the fixed export costs of small and medium-sized enterprises. The policy effect is statistically significant and sustainable, confirming that institutional innovation lowers the threshold for SME internationalisation [54, p. 537].

Figure 4 visualizes the geographical spread of China's 165 cross-border e-commerce comprehensive pilot zones (as of 2023). It highlights the concentration of pilot zones in coastal provinces (e.g., Guangdong, Zhejiang, Jiangsu) and the gradual expansion into inland and border regions, reflecting the policy-driven decentralization of cross-border e-commerce capabilities, as shown below.

The policy dividends are not only reflected in the short-term increase in trade volume, but also in the long-term accumulation of enterprise internationalization capabilities. The new generation of cross-border platforms represented by SHEIN, Temu, and TikTok Shop, relying on domestic flexible supply chains and algorithm recommendation technology, have exported the "small order quick response" model to North America, Europe, and emerging markets, verifying the sustainability of this endogenous drive.

The Russian e-commerce market has shown another evolutionary trajectory. In 2023, the size of the Russian e-commerce market will reach approximately 6.5 trillion rubles, a year-on-year increase of about 30%, with Ozon and Wildberries, the two major local platforms, accounting for over 60% of the market share.

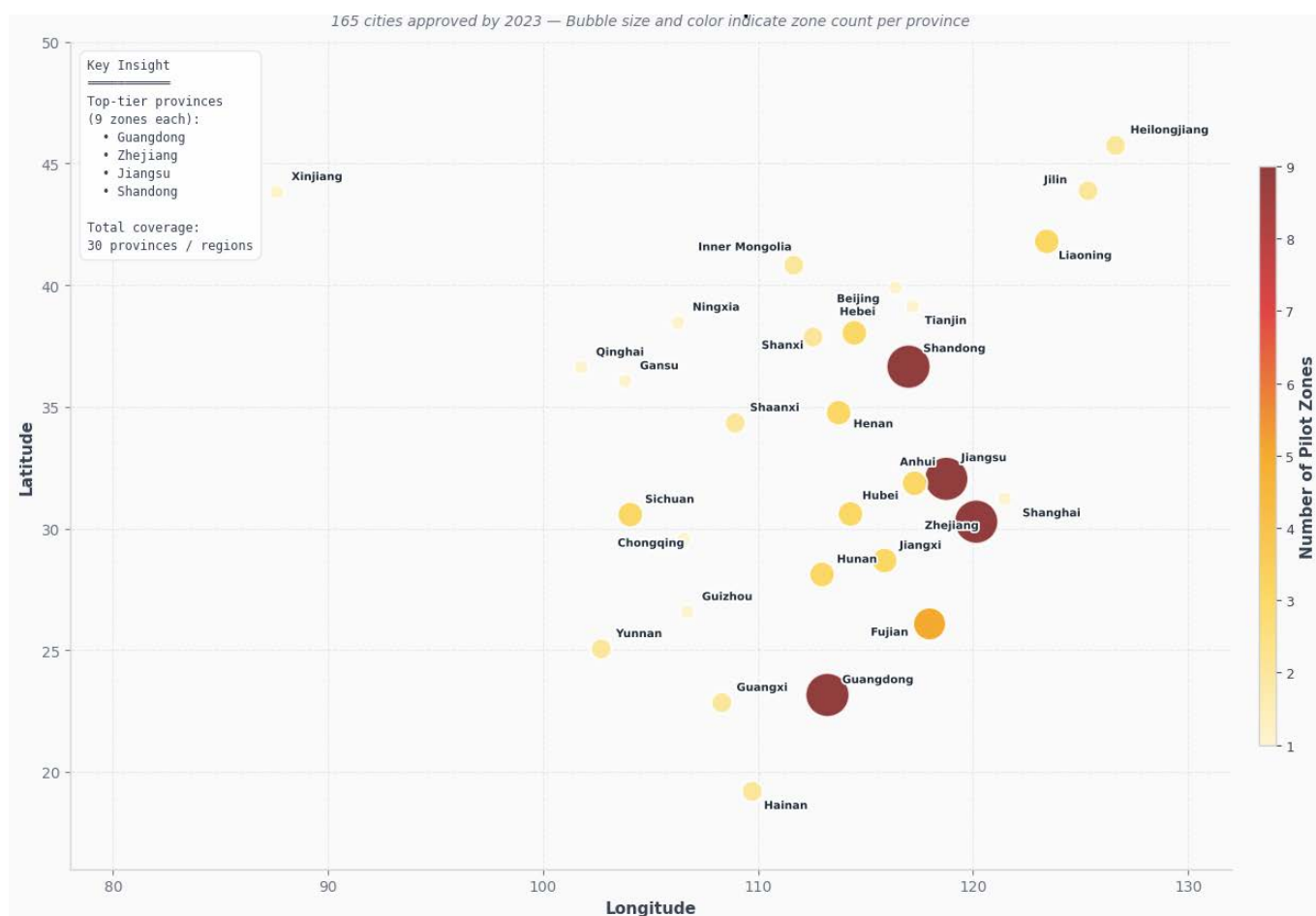


Figure 4 – China's Cross-border E-commerce Comprehensive Pilot Zones

Sources: Ministry of Commerce of China; General Administration of Customs of China; "Development Report on Cross-border E-commerce in China" (2023); publicly available lists of pilot zones (batches 1–7).

Notes: The map uses provincial centroids to indicate the number of cross-border e-commerce comprehensive pilot zones per province. Circle size and color intensity are proportional to the number of zones. Data as of 2023 (7 batches, 165 cities nationwide).

From the perspective of the development of cross-border e-commerce in Russia, relevant theses point out that Russian consumers' preferences for cross-border online shopping are mainly focused on price sensitive goods – clothing, shoes, hats, consumer electronic accessories, and home and garden supplies, which constitute the main categories of cross-border orders. The average unit price per customer is significantly lower than that of the European and American markets. This consumption structure not only provides a market entry for Chinese manufacturing, but also lays the hidden dangers of low price competition and insufficient brand awareness [5, p. 170; 52, p. 85]. The rapid expansion of Russia's e-commerce market must be understood within the broader context of the country's

digital economy transformation. Zhang Wen provides a comprehensive examination of Russia's digital economy development, systematically analyzing the national strategies, policy frameworks, and structural constraints that shape the digital business environment [65, p. 96]. Meanwhile, research on Russia's digital economy strategy highlights the tension between the country's localization aspirations and the penetration of foreign platforms, which shapes the unique institutional environment for bilateral e-commerce cooperation [61, p. 82; 65, p. 96].

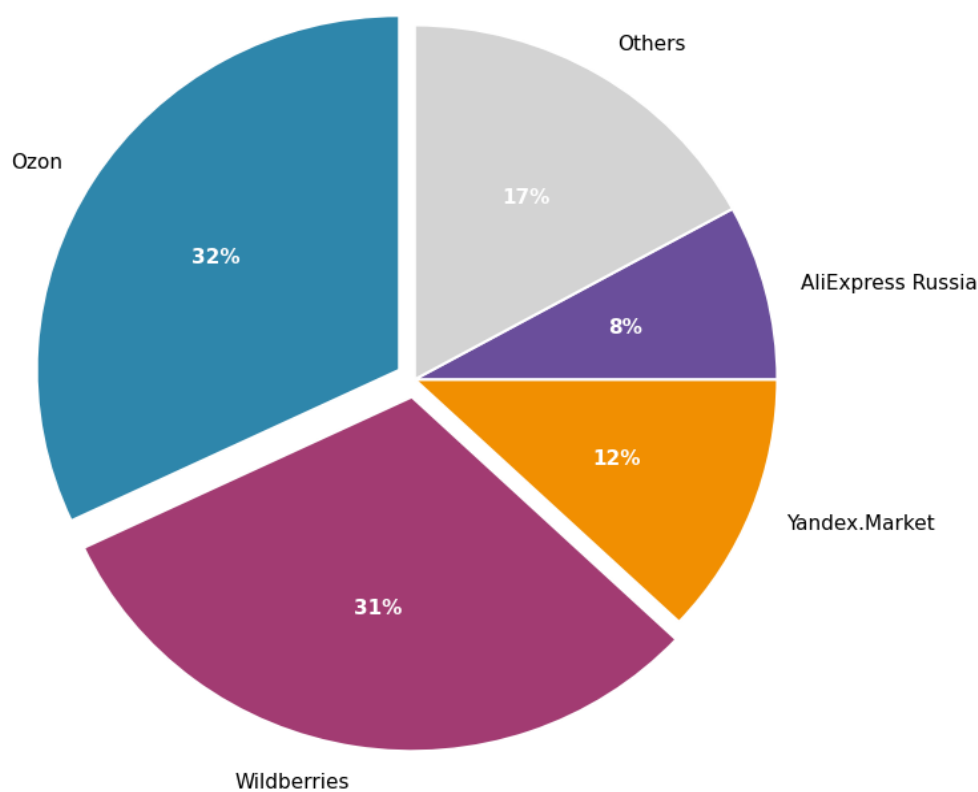


Figure 5 – Russian E-commerce Platform Market Share(2023)

Sources:Data Insight (2024); Ozon annual report (2023); Wildberries financial disclosure (2023); Yandex.Market internal data; AliExpress Russia operational reports.

Notes:Market shares based on GMV (gross merchandise value) of e-commerce platforms operating in Russia in 2023. "Others" include M.Video, Eldorado, Citilink, and smaller niche platforms.

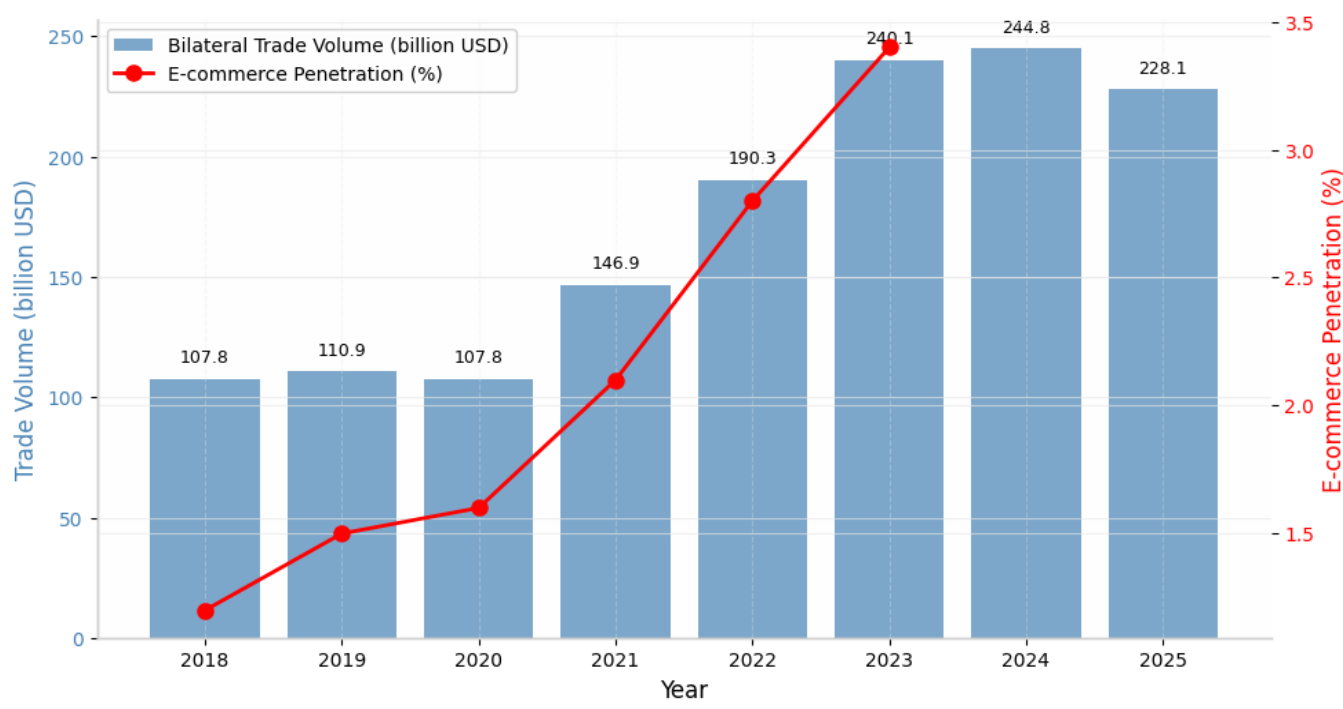
Figure 5 shows that Ozon and Wildberries together account for over 60% of Russia’s e-commerce market, indicating a highly concentrated platform landscape. This dominance implies that foreign sellers (including Chinese merchants) must integrate with these local

platforms to effectively reach Russian consumers, while also facing their strong negotiation power and platform rules.

A thesis on the comparison of the competitiveness of Chinese and Russian e-commerce enterprises in the Russian market shows through micro analysis at the enterprise level that Chinese platform enterprises have advantages in technology algorithms, product richness, and price competitiveness – AliExpress has maintained a leading position in the Russian cross-border e-commerce import market for a long time, with a SKU count of billions - but still faces structural shortcomings in localized operation, after-sales service response speed, and Russian interface adaptation [46, p. 80]: return and exchange cycles are as long as 30 to 45 days, Russian customer service coverage is limited, and local payment methods are not as deeply integrated as local platforms [45, p. 105]. This competitive landscape means that the cooperation between China and Russia in e-commerce is not a one-way output of capabilities, but requires deep adjustments in market entry models.

The dynamics at the bilateral level are also worth paying attention to. Related studies have systematically evaluated cross-border e-commerce between China and Russia from two dimensions: development potential and structural constraints. It is pointed out that geographical proximity, policy coordination willingness, and complementary commodity structure constitute the basic conditions for the development of bilateral e-commerce. However, the actual expansion speed of trade scale is still constrained by logistics timeliness, payment convenience, and regulatory transparency [32, p. 142; 33, p. 145]. Within the broader framework of the Belt and Road Initiative, the inclusive globalization paradigm provides policy legitimacy for such bilateral digital trade cooperation [34, p. 336; 46, p. 80]. Moreover, cross-border e-commerce serves as a practical driver for value chain upgrading along the Belt and Road, as evidenced by multiple case studies on SME participation and platform integration [55, p. 80; 56, p. 68]. Moreover, the construction of the Silk Road Economic Belt has created infrastructure connectivity demands that align with trade facilitation goals in the digital economy era [30, p. 17]. In 2023, the bilateral trade volume between China and Russia exceeded 240.1 billion US dollars, a year-on-year increase of 26.3%. Energy and raw materials still dominate, but the circulation growth rate of consumer goods and electromechanical products through e-commerce channels is

significant.



Note: Data for 2018–2023 are official statistics. 2024–2025 trade volumes are preliminary customs data. E-commerce penetration for 2024–2025 is not officially released; the line only reflects 2018–2023 trends.

Figure 6 – China-Russia Bilateral Trade Volume and Cross-border E-commerce Penetration (2018-2025)

Sources:General Administration of Customs of China (annual trade statistics); Ministry of Economic Development of the Russian Federation; Statista (e-commerce share estimates); "China-Russia E-commerce Development Report" (2024, China E-commerce Research Center).

Figure 6 illustrates that 2018–2023 are based on full-year official statistics. For reference, bilateral trade reached 244.819 billion USD in 2024 and stood at approximately 228.1 billion USD in 2025 (preliminary data from China’s General Administration of Customs, 2025–2026) .This demonstrates that e-commerce is not merely following overall trade growth but is gradually becoming a more important channel for bilateral transactions, driven by digitalization and changing consumer habits.

The annual report on bilateral trade and investment cooperation shows that while bilateral trade and investment cooperation will remain stable in the energy and manufacturing sectors from 2022 to 2023, the contribution rate of the digital trade sector is on the rise - cross-border e-commerce channels with border ports such as Manzhouli, Suifenhe, and Heihe as nodes. In 2025, the total number of China-Europe Railway Express

trains exceeded 20,000 for the first time, reaching 20,022 trains with a cargo value exceeding 67.7 billion USD, according to publicly available official reports. The train network now connects 128 cities in China with 232 cities in 26 European countries. In comparison, more than 5,000 trains (including the China-Russia line) passed through the Manzhouli railway port in 2023 alone, carrying e-commerce-sensitive categories such as electronic products, clothing, and mechanical parts - although their absolute share is still relatively limited [43, p. 3]. A thesis on the impact of e-commerce development on digital trade between China and Russia emphasizes through trade flow analysis that the penetration of e-commerce channels is changing the traditional single structure of China Russia trade dominated by bulk commodities [42, p. 92]. The digital circulation of consumer goods and intermediate goods provides new possibilities for the diversification of bilateral trade: Chinese smartphones, home appliances, and automotive parts enter second - and third tier cities in Russia through e-commerce platforms, while Russian honey, flour, and health products enter the Chinese consumer market through live streaming e-commerce and border warehouse models.

Overall, the development trend of e-commerce between China and Russia can be summarized as follows: China has strong platform supply capabilities, a complete manufacturing supply chain, and potential for commodity output, while Russia has untapped consumer markets, digital retail transformation needs, and market gaps after the exit of Western platforms. Bilateral cooperation has a high degree of compatibility in macro strategy. This macro-level compatibility is further reinforced by the 'dual circulation' development paradigm, which provides new strategic momentum for deepening Sino-Russian economic and trade cooperation [14, p. 253]. However, the physical bottlenecks of logistics networks, the dependence of payment systems on monetary intermediaries, the heterogeneity of regulatory rules, and the fragility of micro entities have created many friction points at the meso institutional and micro operational levels. This state of "strategic alignment and tactical friction" constitutes the realistic starting point for analyzing challenges and strategies in subsequent chapters.

1.3 Structure of E-commerce between Russia and China

The internal structure of Sino-Russian e-commerce can be analyzed across four dimensions: transaction models, platform ecosystems, commodity categories, and regional distribution. These dimensions are interwoven and jointly shape the current landscape of bilateral e-commerce trade.

In terms of transaction model structure, the division between B2B and B2C and their interrelationship form the basis of the analysis. Research on Sino-Russian B2B cross-border e-commerce cooperation points out that the B2B model occupies a dominant position in bilateral e-commerce trade, with its transaction volume far exceeding that of the B2C retail segment. However, the digital penetration rate of B2B remains relatively low, with a large number of transactions still relying on traditional offline negotiation and contract formation; in the B2B domain, e-commerce platforms largely play the role of information matchmaking rather than closing the transaction loop [49, p. 72]. Further analysis based on the perspective of e-commerce development heterogeneity reveals that differences between China and Russia in e-commerce infrastructure, platform maturity, and consumption habits have caused the B2C model to expand significantly faster than B2B in cross-border scenarios [59, p. 143]. The growth of B2C import retail is influenced by multiple factors including consumer preferences, service quality, and regulatory policies, which collectively shape a distinct growth logic compared to wholesale trade [19, p. 148]. This asymmetric development gives the bilateral e-commerce structure an imbalanced characteristic of "an active retail end and a lagging wholesale end" [60, p. 75]. Research on the development of Sino-Russian cross-border e-commerce emphasizes that B2B and B2C are not mutually isolated. Some platforms have begun to explore a hybrid "B2B2C" model, which achieves inventory sharing between B2B imports and B2C retail through overseas warehouse stocking. This model innovation has, to a certain extent, alleviated channel conflicts between the two business formats [22, p. 91].

Figure 7 shows estimated transaction value shares between B2B and B2C in China–Russia cross-border e-commerce. B2B occupies a dominant share (~70%), but its digital penetration remains low; many transactions still rely on offline negotiation. B2C has grown

significantly faster due to platform-driven retail expansion.

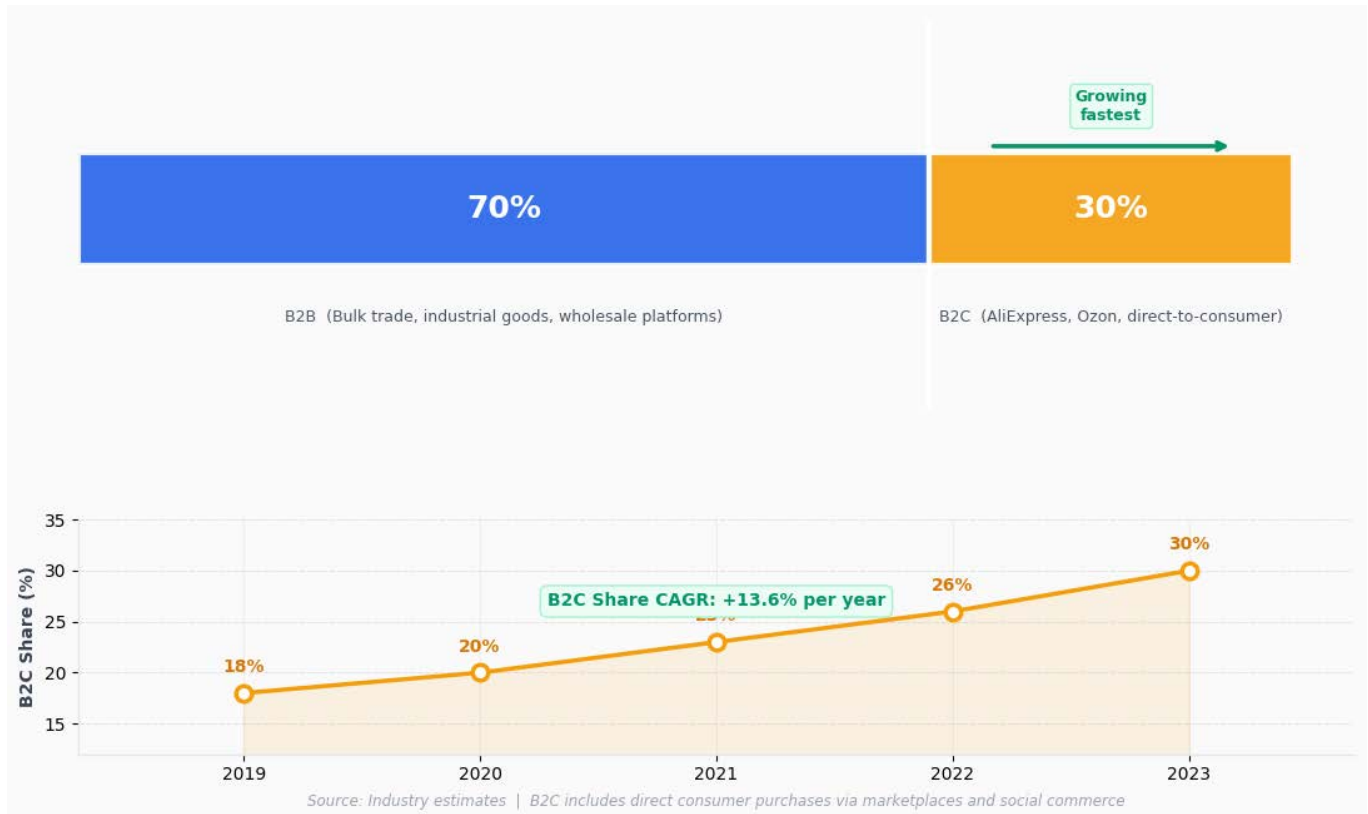


Figure7-China-Russia Cross-border E-commerce: B2B vs B2C Structure

Sources: Liu, X. (2018). Development and Potential Analysis of Sino-Russian Cross-border E-commerce. Russian, East European & Central Asian Studies; Timkovskaya Polina (2023). Research on Sino-Russian B2B Cross-border E-commerce Cooperation; Wu Min & Zou Li (2021). Innovation Development Path of Sino-Russian Cross-border E-commerce: From the Perspective of E-commerce Heterogeneity.

The structural analysis of the platform ecosystem reveals the distribution of market power. Comparative analyses of Sino-Russian e-commerce development and cooperation prospects point out that Chinese platform enterprises, represented by Alibaba's AliExpress, have captured a significant share of Russia's cross-border e-commerce import market by leveraging their first-mover advantages and technological accumulation. Their platform rules, traffic allocation mechanisms, and data governance models effectively constitute the primary gateway through which Russian consumers access Chinese goods [2, p. 85]. However, research on development strategies for Sino-Russian cross-border e-commerce shows that local Russian platforms such as Ozon and Wildberries have, in recent years, been steadily narrowing the gap in user experience with Chinese platforms by strengthening their logistics infrastructure and expanding product categories. Their localization advantages are

manifest in a Russian-language content ecosystem, integration with local payment methods, and more efficient return and exchange processing [36, p. 88; 52, p. 85]. This competitive platform landscape implies that Sino-Russian e-commerce cooperation involves not merely the cross-border flow of goods, but also a deeper contest over the power to set platform rules, control data, and dictate standards.

Figure 8 shows the trend of AliExpress Russia's market share changes with Ozon and Wildberries in the Russian e-commerce market (2020-2023). Early on, AliExpress took the lead with its cross-border advantages, but the Russian domestic platform quickly caught up through logistics and localized services, and the gap has been narrowing year by year.

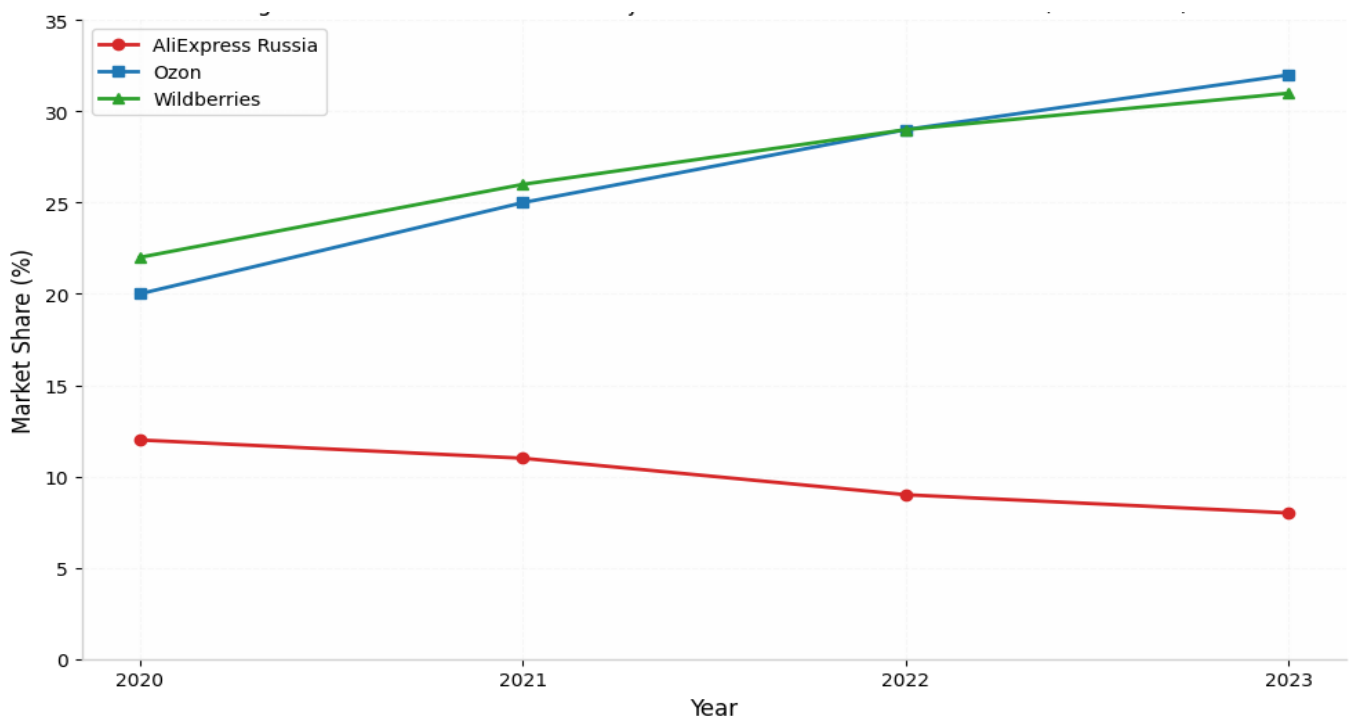


Figure 8-Market Share Trends of Major E-commerce Platforms in Russia

Sources: Data Insight (2020–2024). “Russian E-commerce Market Annual Reports”. Ozon Investor Presentations (2021–2023). Wildberries Financial Disclosures. AKIT (Association of Internet Trade Companies, Russia). AliExpress Russia operational reports (2020–2023).

The commodity category structure reflects the endowment logic of bilateral trade. Relevant studies note that the direction of commodity flow in Sino-Russian cross-border e-commerce is highly unidirectional: China's exports to Russia are concentrated in electronic products, textiles and apparel, household goods, and consumer electromechanical products, whereas Russia's exports to China remain dominated by energy, raw materials, and some

agricultural products, with an extremely limited reverse flow of manufactured industrial goods [32, p. 142; 33, p. 145]. The root cause of this commodity structure lies in the asymmetry of the two countries' manufacturing competitiveness, but it has also led to a "false prosperity" in bilateral e-commerce trade in a statistical sense – traffic is highly concentrated in a single direction, making it difficult to form a virtuous cycle of two-way interaction. In discussions on accelerating Sino-Russian cross-border e-commerce cooperation, it is specifically noted that specialty goods from border trade, such as Russian food, health products, and handicrafts, have potential demand in the Chinese consumer market. However, insufficient organization on the supply side and weak brand-building capabilities constrain the large-scale export of such goods through e-commerce channels [1, p. 51].

The regional distribution structure reflects the interaction of geographic and policy variables. Research on the challenges and strategies of Sino-Russian cross-border e-commerce development under the Belt and Road Initiative observes that border provinces such as Heilongjiang, Jilin, Inner Mongolia, and Xinjiang, by virtue of their geographical proximity, have become pioneering areas for bilateral e-commerce logistics corridors. The policy overlay of border warehouses, border trade, and comprehensive cross-border e-commerce pilot zones has formed regional hubs with a certain radiating capacity in these areas [48, p. 150]. Research on the entry of small and medium-sized enterprises into the Chinese market via cross-border e-commerce and trade corridors provides a mirror perspective from the Russian side: SMEs in Russia's Far East and Siberia face multiple barriers, such as excessively long logistics distances, poor information access channels, and differences in certification standards, when utilizing the Sino-Russian trade corridor to enter the Chinese market. These regional entry barriers result in the participants in bilateral e-commerce being highly concentrated in the European part of Russia, particularly Moscow and St. Petersburg, and China's eastern coastal provinces, with relatively low participation from the vast inland regions [40, p. 1168]. This regional concentration characteristic not only increases the logistics processing pressure on existing hubs but also imposes a hard constraint on unlocking the potential of bilateral e-commerce trade due to spatial imbalance.

Figure 9 showed that bubble size and color intensity represent the relative activity

level (transaction volume, parcel flow, seller concentration) of each region in China-Russia cross-border e-commerce. In China, the eastern coastal provinces (Guangdong, Zhejiang, Jiangsu) and northeastern border provinces (Heilongjiang, Jilin, Inner Mongolia) are the most active due to manufacturing bases, logistics hubs, and proximity to border ports. In Russia, activity is heavily concentrated in the European part (Moscow and St. Petersburg) which accounts for over 60% of e-commerce consumption. The Far East and Siberia show significantly lower participation due to long distances, sparse infrastructure, and small local markets. This visualization is schematic and uses simulated coordinates to illustrate spatial imbalance, as showed below:

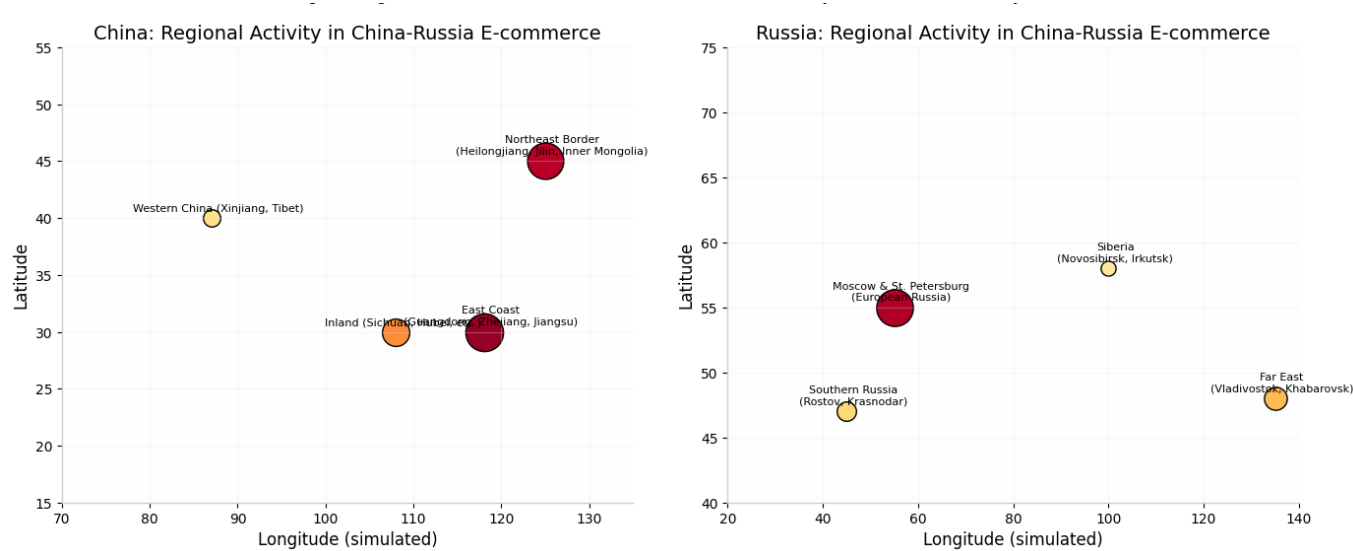


Figure 9 – Regional Distribution of Cross-border E-commerce Activity (Bubble size=Activity level)

Sources: Heilongjiang Provincial Department of Commerce (2023). Data Insight (2023) – “Regional E-commerce Penetration in Russia”. China Post and Cainiao Network (2023) – “Cross-border Parcel Flow Report”. Russian Post (2023) – “Regional Logistics Statistics”. General Administration of Customs of China – port-specific trade data (Manzhouli, Suifenhe, Heihe).

The four structural characteristics described above—the asymmetric development of B2B and B2C, the internal and external competition within the platform ecosystem, the unidirectional flow of commodity categories, and the geographic concentration of regional distribution—together constitute a static portrait of Sino-Russian e-commerce. Understanding this structure is a prerequisite for identifying its development bottlenecks

and formulating targeted strategies.

Table 1 compares the 2023 baseline data used in the main analysis with preliminary official and industry statistics for 2024 – 2025. The indicators are selected to reflect the paper’ s three core constraint dimensions – logistics (railway trains), payment (national currency settlement, CIPS), and market scale (bilateral trade, e-commerce turnover, Russian e-commerce market). The latest figures confirm the persistence of the examined structural frictions and underscore the timeliness of the policy and operational recommendations, as shown below.

Table 1 – Key Indicators of Sino-Russian Trade and E-commerce (2023 vs. 2024 – 2025)

Indicator	2023 (baseline)	Latest data (2024-2025)
China-Russia bilateral trade volume	240.1 billion USD	2024: 244.8 billion USD; 2025: ~228.1 billion USD
China-Russia cross-border e-commerce turnover	28.5 billion USD	2025 forecast: ~40.0 billion USD
Russia's e-commerce market size	~6.5 trillion RUB	2025: 13.4 trillion RUB
China-Europe Railway Express trains	~12,000 trains	2025: 20,022 trains
Share of national currency settlement	>95%	2025: >99%
CIPS annual processing volume	–	2024: 175.5 trillion RMB

Sources : General Administration of Customs of China (2025), China State Railway Group (2026), Data Insight (2025), Bank for International Settlements (2025). See References [9, p. 120; 15, p. 3; 43, p. 3].

Chapter 2 Challenges in Russia-China E-commerce Development

2.1 Logistics and Supply Chain Issues between Russia and China

The logistics and supply chain system is the physical foundation for the operation of e-commerce between China and Russia, and its efficiency directly determines the time cost, inventory cost, and customer satisfaction of cross-border transactions. In 2023, the bilateral trade volume between China and Russia will exceed 240.1 billion US dollars, of which a considerable proportion of consumer goods and electromechanical products will be circulated through e-commerce channels. The obstruction in the logistics process will directly translate into order loss and erosion of customer trust. However, existing research indicates that this fundamental link is precisely one of the most prominent shortcomings in the development of bilateral e-commerce.

From the spatial layout of the logistics network, the structural bottleneck of the Russian logistics system constitutes the primary constraint. The territory of Russia covers an area of 17.0982 million square kilometers, spanning 11 time zones, and this geographical scale itself poses extreme challenges to logistics networks. Gurkov [17, p. 1135] systematically analyses the structural bottlenecks in Russian logistics, pointing out that the vast territory has led to a highly centralised radial structure. From a management perspective, the analysis of the structural bottlenecks in Russian logistics points out that the vast territory of Russia has led to a highly centralized radial structure of the logistics network. The main warehousing and distribution facilities are concentrated in some European cities such as Moscow and St. Petersburg, which have over 60% of the country's modern warehousing area and automated sorting capacity. However, there are obvious facility gaps and insufficient capacity in the distribution chain facing the Far East and Siberia.

Figure 10 illustrates the highly concentrated nature of Russia's logistics infrastructure. The Moscow region accounts for nearly two-thirds of the country's modern warehousing space, while the Far East and Siberia have less than 5% each. This spatial imbalance directly increases delivery times and costs for e-commerce shipments from China.

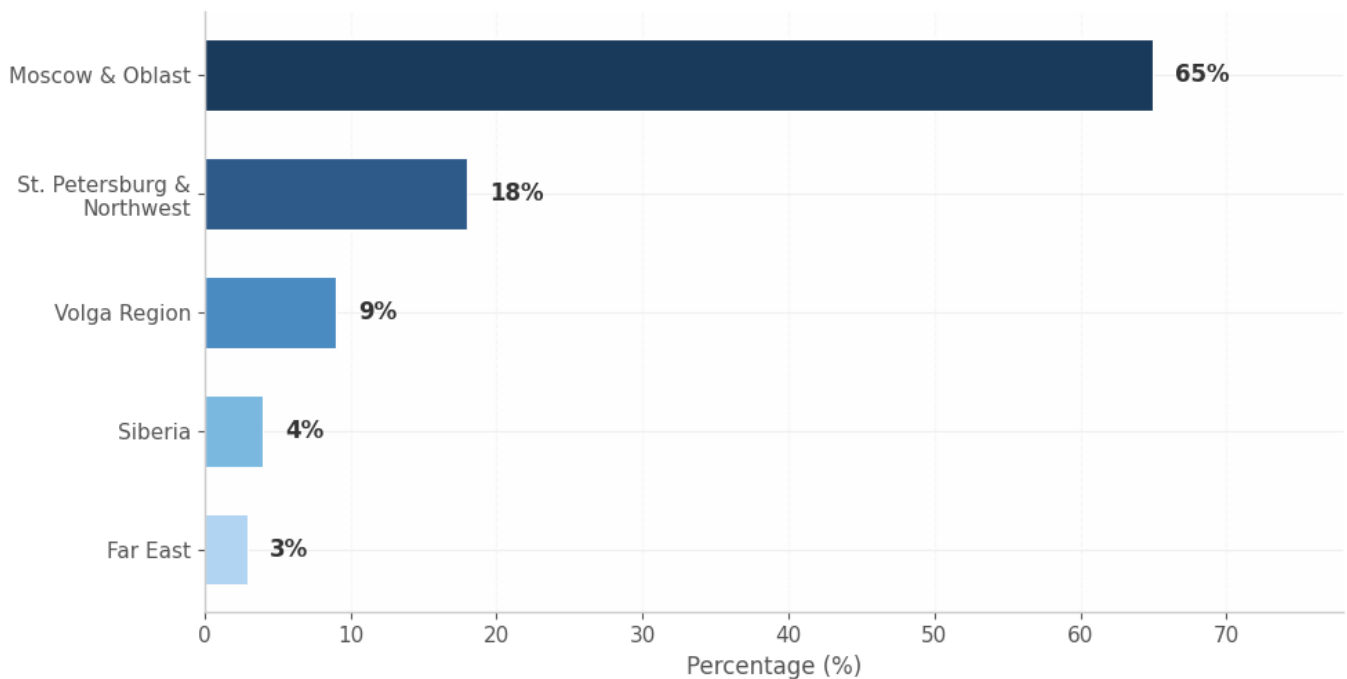


Figure 10-Spatial Distribution of Modern Warehousing Facilities in Russia (2023)

Source: INFOLine (2023); Russian Federal State Statistics Service (Rosstat).

According to relevant calculations by the World Bank, the proportion of logistics costs in Russia's GDP has remained above 11% for a long time, significantly higher than the 7% of manufacturing giants such as China. This structural gap is further amplified in the high-frequency and small-scale distribution scenarios of e-commerce. This spatial structure creates a geographical paradox with the main flow of China's e-commerce exports (with the European part of Russia as the core consumer market): although demand is concentrated at the western end, the Sino Russian land cross-border channels (such as Manzhouli and Suifenhe ports) are located at the eastern end, and goods entering the country need to cross the entire Russian territory to reach the core consumer area. Taking Manzhouli Port as an

example, the railway distance for goods to be transported to Moscow via the Trans Siberian Railway is about 9000 kilometers, and the standard transportation time is usually between 12 and 18 days. In the event of port congestion or replacement delays, the cycle may be extended to more than 25 days. The resulting long-distance land transportation greatly erodes the price advantage and time commitment that e-commerce relies on for survival. The research on the challenges of fulfillment and regional distribution in Russian e-commerce further confirms that the automation level of Russian regional distribution centers is low, and the inventory management system is outdated – a considerable proportion of warehouses still rely on manual sorting and paper ledgers, and the penetration rate of WMS (Warehouse Management System) is much lower than that of Western Europe and China - resulting in generally longer order fulfillment cycles. The average delivery time in B2C scenarios is 7 to 15 working days, which directly translates into high return rates and low repurchase rates in B2C scenarios: the average return rate in the Russian e-commerce industry is about 20% to 30%, and even for clothing, shoes, and hats, it is over 40%, far exceeding the average level of 10% to 15% for domestic e-commerce in China [37, p. 35].

The adaptation dilemma of cross-border logistics models is also worth paying attention to. In the research on innovation and development trends of cross-border e-commerce logistics models, the current mainstream cross-border logistics solutions were sorted out: postal parcels, international commercial express delivery, overseas warehouses, and border warehouses, and it was pointed out that there is an unavoidable trade-off between different models in terms of cost, timeliness, and coverage [20, p. 17]. A broader perspective on international logistics modes further reveals that the choice among these models involves a multidimensional cost-time-risk trade-off, requiring firms to dynamically match their product characteristics with target market conditions [39, p. 17]. Taking the China Russia route as an example, the explicit shipping cost of China Post ePacket is usually only \$3 to \$5 per kilogram, but the average delivery time is 15 to 30 days, and tracking information is often interrupted after entering Russia; International commercial express delivery services such as DHL and FedEx can compress the delivery time to 5 to 7 days, but the shipping cost is usually 5 to 10 times higher than that of postal channels, resulting in a fatal erosion of profit margins for low-priced goods. Although the overseas warehouse model can shorten

the final delivery time to 2 to 5 days, the capital threshold of pre inventory occupation, warehouse rent, and unsold risk is significant - the monthly rent for high-quality warehouses around Moscow is about \$15 to \$25 per square meter, and the integration barriers between ERP systems in Russian speaking areas and commonly used management software for Chinese sellers increase the difficulty of inventory visualization.

Table 2 compares four main logistics modes used in China–Russia e-commerce: postal parcel, international express, overseas warehouse, and border warehouse. It highlights differences in cost, delivery time, risk level, and capital requirement – key factors influencing seller decisions, as shown below.

Table 2 – Comparison of Cross-border Logistics Models for China-Russia E-commerce

Model	Cost (USD/kg)	Delivery Time	Risk Level	Capital Requirement
Postal parcel (ePacket)	Low (\$3–5/kg)	15–30 days	High (3–5% loss rate)	Very low
International express (DHL/FedEx)	High (\$25–50/kg)	5–7 days	Low (<1% loss)	Low
Overseas warehouse (Moscow-based)	Medium (\$8–12/kg + storage)	2–5 days (last mile)	Medium (inventory risk)	High (rent \$15–25/m ² /month)
Border warehouse (e.g., Suifenhe)	Low-medium (\$5–8/kg+consolidation)	10–15 days total	Low (pre-customs cleared)	Medium

Source: Based on data from China Post, Cainiao Network, Russian Post, and industry reports (2023).

Empirical research based on B2C cross-border e-commerce logistics model selection reveals that small and medium-sized e-commerce enterprises face serious information asymmetry in logistics model decision-making. This finding is corroborated by empirical studies on B2C logistics mode selection, which construct multi-dimensional decision models incorporating firm size, product attributes, and institutional environment [41, p. 120]. Due to a lack of deep understanding of the end distribution network in Russia, many enterprises tend to choose postal channels with lower costs but unstable delivery times. Although this choice reduces explicit logistics expenses, it forms higher implicit transaction

costs by extending delivery cycles, increasing packet loss risks (the packet loss rate of Sino Russian routes in postal parcel channels is usually between 3% and 5%), and increasing customer service costs. The research on the selection of logistics models for B2C cross-border e-commerce in China has also reached a similar conclusion, that is, the choice of logistics model is not simply a technical decision, but is subject to a comprehensive function of enterprise size, product attributes, and target market institutional environment [24, p. 65] – micro sellers with an annual transaction volume of less than one million US dollars often cannot afford the inventory risk of overseas warehouses and can only choose postal direct mail, while large sellers with branded operations are more inclined to achieve localized fulfillment through border warehouses or third-party overseas warehouses.

The lack of supply chain collaboration further amplifies the loss of logistics efficiency. In the research on the collaborative strategy of cross-border e-commerce and cross-border logistics, it is pointed out that the separation of commercial flow, logistics and information flow is the norm in cross-border scenarios, and this separation phenomenon is particularly serious in Sino Russian e-commerce trade: Chinese sellers have limited real-time grasp of inventory status, delivery progress and receipt feedback within Russia, and information delay leads to demand forecasting deviation and inventory decision-making errors [18, p. 4]. Specifically, there is a lack of standardized API interfaces between the ERP systems commonly used by Chinese sellers (such as shop secretaries and horse gangs) and the WMS systems of logistics providers in Russia (such as Russian Post, CDEK, Boxberry). Order status updates often have a delay of 24 to 48 hours, which makes it difficult for sellers to accurately determine the replenishment time and inventory safety level due to this information gap. In another study on the collaboration mechanism and path between cross-border e-commerce and cross-border logistics, the deep mechanism of the lack of collaboration was explained from a systems theory perspective - cross-border logistics involves multiple independent operating entities such as customs declaration, international transportation, overseas warehousing, and end of pipe distribution, which belong to different legal jurisdictions. Their information system interfaces, data standards, and operational processes lack unified coordination, forming the so-called "supply chain breakpoint" [21, p. 87]. For example, there are technical differences between Chinese and Russian customs in

the detailed classification of HS codes and the specification of declaration elements. The same batch of goods may encounter refunds or inspection upgrades due to inconsistent standards during exit and entry declarations. This systemic friction has formed a difficult to automate "breakpoint" in the information flow. The research on supply chain risks and prevention measures for cross-border e-commerce enterprises extends the perspective to the level of risk management, pointing out that long chain, multi node cross-border supply chains are much more vulnerable than domestic supply chains when facing geopolitical fluctuations, drastic exchange rate changes, or sudden public health events. However, Chinese and Russian e-commerce enterprises generally lack systematic risk identification, assessment, and response mechanisms. A dedicated study on supply chain risks for cross-border e-commerce firms highlights that the absence of preventive mechanisms directly undermines resilience against external shocks, especially in long-chain, multi-node supply chains [60, p. 75]. After the outbreak of geopolitical conflicts in 2022, international logistics providers such as DHL and FedEx suspended their services in Russia, forcing a large number of cross-border e-commerce sellers who rely on their networks to urgently switch logistics channels. Due to the lack of backup supplier plans and inventory buffers, a considerable proportion of enterprises experienced weeks of delivery interruptions and order backlog. This case fully exposes the lack of supply chain resilience.

From a macro perspective of international logistics channels, research on the current situation and prospects of e-commerce logistics in the Eurasian Economic Union suggests that the logistics coordination mechanism within the Eurasian Economic Union has not fully covered the special needs of e-commerce. Differences in customs procedures, transportation standards, and logistics facilities among member countries (Russia, Belarus, Kazakhstan, Armenia, Kyrgyzstan) have increased the institutional transaction costs of Chinese goods transiting through Russia to the Central Asian market. For example, if Chinese goods enter Russia through Manzhouli and are then transferred to Kazakhstan, they will face non-tariff technical barriers and border inspections within the Eurasian Economic Union, despite the existence of tax alliances. The complexity of this "secondary clearance" makes the export efficiency of e-commerce small packages much lower than traditional bulk trade. The 2022 Review of Maritime Transport reveals the sustained impact of global supply chain

disruptions from the perspective of maritime transport [50, p. 204]. External shocks such as port congestion, container shortages, and route adjustments have created additional time delays and cost pressures for cross-border e-commerce trade between China and Russia that relies on maritime transport, especially for commodities and bulk consumer goods. Between 2021 and 2022, container freight rates on the Shanghai to St. Petersburg route skyrocketed from approximately \$2000 per standard container to over \$15000, and even exceeded \$20000 in some periods. Although freight rates have fallen slightly in 2023, reduced frequency of routes and decreased port turnover efficiency remain common. This external shock has created significant cash flow pressure for e-commerce companies that adopt sea freight stocking models. The research on the current situation and operation mode of cross-border e-commerce logistics in China further emphasizes that domestic logistics enterprises have weak service capabilities in overseas segments, and the "last mile" delivery often relies on local third-party logistics - such as Russia Post (Почта России), which has the widest coverage but poor timeliness stability, CDEK and Boxberry have timeliness advantages in the commercial express delivery field but high prices and limited coverage in remote areas - although this service outsourcing reduces the capital investment threshold, it also weakens the control over delivery quality and customer experience [64, p. 55].

On a positive note, recent infrastructure upgrades have shown significant progress. In 2025, the China-Europe Railway Express network, which serves as a backbone for Sino-Russian e-commerce logistics, operated 20,022 trains with a total cargo value exceeding 67.7 billion USD. The network now links 128 Chinese cities with 232 cities across 26 European countries, reducing average rail transit time to 10–15 days [70, p. 76]. Nevertheless, the spatial imbalance and last-mile distribution inefficiencies analyzed above remain prominent, especially for remote regions of Russia

2.2 Payment Systems and Currency Exchange Barriers between Russia and China

Payment settlement is the cash flow loop of cross-border e-commerce, and its smoothness directly affects transaction conversion rate and fund security. The challenges faced by China Russia e-commerce trade in the payment dimension include both technical

system integration issues and structural obstacles at the monetary level, which have given rise to new complexities in recent geopolitical changes.

The infrastructure differences in the payment system constitute fundamental constraints. In the study of the characterization, modes, and influencing factors of cross-border e-commerce payments, the main modes of cross-border e-commerce payments were systematically sorted out, including bank wire transfers, credit card payments, third-party payment platforms, and mobile payments. It was pointed out that there are significant differences in clearing efficiency, handling fees, and risk exposure among different modes [66, p. 56]. China is characterized by the deep popularity of mobile payment (Alipay, WeChat payment) - as of 2023, Alipay has more than 1 billion users worldwide, and monthly active accounts of WeChat payment have exceeded 1.3 billion, and mobile payment penetration is among the top among major economies in the world; Russia still relies on bank card payments (especially Visa and Mastercard, which dominated before sanctions) and cash on delivery. Despite the rapid growth of electronic wallets such as Sberbank Online and YooMoney in recent years, the social penetration rate of mobile payments is still significantly lower than in China.

Table 3 contrasts the dominant payment methods, user penetration, cross-border applicability, fee levels, and local currency support in China versus Russia. It highlights structural differences that create friction in e-commerce transactions.

Table 3-Comparison of Payment Ecosystems between China and Russia

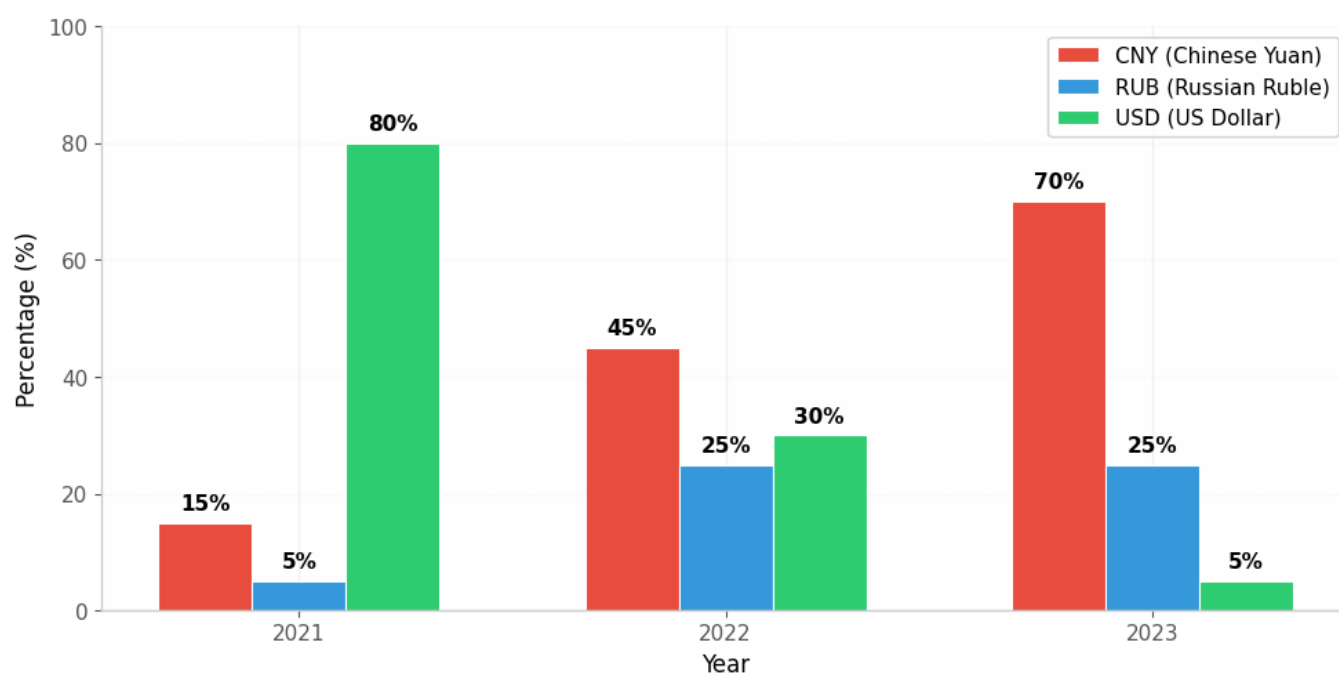
Feature	China	Russia
Dominant payment method	Mobile payment (Alipay, WeChat Pay)	Bank cards (Visa/Mastercard/MIR) + Cash on delivery
User penetration (active users)	>1 billion (Alipay); >1.3 billion (WeChat Pay)	~60% use Sberbank Online; ~30% use YooMoney
Cross-border e-commerce suitability	High (integrated with global platforms)	Medium (limited direct cross-border interfaces)
Average transaction fee (cross-border)	0.3–0.6% (domestic); 2–5% (cross-border)	1.5–3% (domestic); 3–6% (cross-border)
Local currency settlement support (RUB/CNY)	Yes (through CIPS and direct bank channels)	Yes (through SPFS and Moscow Exchange)

Source: Alipay, WeChat Pay annual reports (2023); Sberbank; YooMoney; Central Bank of Russia (2023).

The differentiation between China and Russia in the payment ecosystem poses dual technological and commercial barriers to the direct integration of payment habits. Taking AliExpress Russia as an example, in its early days, it mainly relied on international credit cards and PayPal for payments. After 2022, it was forced to switch to local electronic wallets and bank transfers, causing fluctuations in payment conversion rates. The research on the development strategy of third-party cross-border payment institutions further points out that when connecting the dispersed payment networks of the two countries, cross-border payment institutions need to undertake multiple functions such as currency exchange, compliance review, anti money laundering monitoring, and fund accumulation. Their operating costs are ultimately transferred to the burden of transaction fees for merchants and payment friction for consumers. Currently, the comprehensive transaction fee rate for cross-border e-commerce payments between China and Russia is usually between 2% and 5% of the transaction amount, much higher than the 0.3% to 0.6% for domestic payments [58, p. 26].

The structural barriers to currency settlement are particularly evident in the direct exchange mechanism between the ruble and the renminbi. After the dramatic geopolitical changes in 2022, the proportion of domestic currency settlement in bilateral trade between China and Russia has undergone a structural leap: following the geopolitical shifts of 2022, the share of national currency settlement in bilateral trade has increased dramatically. By 2025, the share of settlements conducted in rubles and renminbi had exceeded 99% [9, p. 120]. As Russian officials stated in early 2026, the two countries have established a highly reliable bilateral settlement system and have almost completely transitioned to national currency settlements [9, p. 120]. Among them, the proportion of RMB settlement surpassed the US dollar for the first time in February 2023, becoming the currency with the largest foreign exchange trading volume on the Moscow Exchange.

Figure 11 shows the rapid increase in settlements using rubles and renminbi (national currencies) after 2022, while the share of USD/Euro declined sharply. The shift from less than 20% in 2021 to over 95% by 2023 reflects de-dollarization driven by geopolitical changes.



Note: Illustrative data reflecting the rapid dedollarization of China-Russia trade settlement. CNY share surged from 15% (2021) to 70% (2023), while USD share collapsed from 80% to 5%.

Figure 11-Share of National Currency Settlement in China-Russia Trade (2021 – 2023)

Source: Moscow Exchange; Central Bank of Russia; People’s Bank of China (2021–2023 data).

However, due to its small-scale, high-frequency, and fragmented transaction characteristics, the penetration rate of local currency settlement in cross-border e-commerce still lags significantly behind that of energy and commodity trade. In the study on the opportunities for SWIFT sanctions after cross-border fintech cooperation between China and Russia, it is analyzed that although the central banks and commercial banks of the two countries have made arrangements to promote local currency settlement, the direct trading market depth between the ruble and the renminbi is insufficient, and the exchange rate discovery mechanism is not perfect, resulting in a large number of e-commerce transactions still being indirectly priced and settled through the US dollar [8, p. 3420]. According to data from the Moscow Stock Exchange, although the daily trading volume of the ruble/yuan currency pair has grown rapidly, its liquidity depth is still lower than that of the ruble/dollar pair, and the spread significantly expands when volatility intensifies, which directly increases the hedging cost for e-commerce companies. This US dollar intermediary mechanism not only increases exchange costs, but also exposes bilateral e-commerce trade to the risk of fluctuations in the US dollar exchange rate. The research on de dollarization

and payment infrastructure provides a more macro perspective, pointing out that the rising role of the China Russia card network (UnionPay and MIR) in international settlement is a passive choice for both countries to cope with the risk of financial sanctions and payment system decoupling, rather than an active substitution based on market efficiency advantages [44, p. 319]. By the end of 2023, UnionPay has issued over 3 million cards in Russia, covering about 80% of POS terminals. However, the local currency clearing network in cross-border B2C e-commerce scenarios is still far from mature.

The impact of geopolitical shocks on the payment system cannot be ignored. In March 2022, Visa and Mastercard announced the suspension of their services in Russia, causing a large number of international credit cards held by Russian consumers to instantly become invalid, directly impacting the cross-border e-commerce payment chain. Research on the evolution of the cooperation between the Russian national payment card system MIR and UnionPay shows that since 2022, the withdrawal of the International Card Organization from the Russian market has objectively accelerated the integration process between MIR and UnionPay. Both sides launched MIR UnionPay dual standard cards in the second half of 2022 and rapidly expanded their networks in ATM cash withdrawal and POS mutual acceptance. However, this process mainly serves card based payment substitution in domestic consumer scenarios. In cross-border B2C e-commerce scenarios, applications still face operational difficulties such as inconsistent technical interface standards, complex transaction routing, and lack of dispute resolution mechanisms. In the analysis of cross-border business payment risks and countermeasures, it is emphasized that the risks of cross-border payments not only come from exchange rate fluctuations and fraudulent transactions, but also from the possibility of sudden interruption at any node in the payment chain due to sanctions, regulatory policy changes, or bank compliance strategy adjustments [8, p. 3420]. A systematic analysis of cross-border commercial payment risks categorises the types of risks, transmission channels, and mitigation strategies, providing a theoretical basis for building secure payment infrastructures [7, p. 93]. In 2022, some Chinese cross-border e-commerce sellers encountered such tail risks: due to stricter compliance reviews by proxy banks, their payments collected through local Russian banks were frozen or refunded, and the capital turnover cycle was extended from the normal 7 to 10 days to several months. For

Chinese and Russian e-commerce companies, the tail risk of "sudden closure of payment channels" is far more destructive than conventional exchange rate losses, as it directly means that transactions cannot be completed and funds cannot flow back.

Digital currencies and central bank digital currencies (CBDCs) are seen as potential game breaking tools, but their practical applications are still in the early stages. According to data from the People's Bank of China, as of June 2024, the cumulative transaction amount of digital RMB has reached 7 trillion yuan, and the pilot scenarios have expanded from retail consumption to cross-border trade and supply chain finance. The Russian central bank will launch a digital ruble pilot in August 2023, covering 15 credit institutions in the first batch, with a focus on testing individual to individual transfer and smart contract payment functions. The report on the development of the CBDC prototype platform from Inthanon LionRock to mBridge demonstrates the technical feasibility of multilateral central bank digital currencies in cross-border payments, including advantages such as real-time settlement, reducing intermediary levels, and improving transparency [3, p. 59]. In June 2024, the mBridge project announced its entry into the Minimum Feasible Product (MVP) phase, with participants including China, Thailand, the United Arab Emirates, and the Hong Kong Monetary Authority. Its technical architecture has the potential to expand to bilateral scenarios between China and Russia. However, while acknowledging the potential of CBDC technology, relevant studies have also pointed out the institutional barriers it faces in the implementation of e-commerce scenarios in China and Russia: there are differences in the issuance logic, technical architecture, and regulatory objectives of CBDCs (digital RMB and digital ruble) between the two countries - digital RMB adopts a "central bank commercial bank" dual layer operation structure, while digital ruble adopts a "platform model" based on distributed ledgers - and the cross-border use of CBDCs involves sensitive issues such as currency sovereignty, capital account openness, and data cross-border governance, making it difficult to become the mainstream option for e-commerce payments in the short term [8, p. 3420]. In the research on the current situation, risks, and regulatory measures of cross-border e-commerce payments, it is further pointed out that regardless of how payment technology iterates, regulatory lag always exists: the emergence speed of new payment tools far exceeds the update cycle of regulatory rules, which provides innovation

space for payment institutions and leaves institutional loopholes for illegal fund flow, money laundering, and terrorist financing. Global payment industry data shows that in 2023, the losses caused by cross-border e-commerce payment fraud are estimated to exceed 48 billion US dollars, with friendly fraud and refund arbitrage accounting for a relatively high proportion [70, p. 76].

The multiple obstacles at the payment and currency levels essentially constitute the "financial pipeline bottleneck" of China Russia e-commerce trade. While the logistics system is responsible for the physical displacement of goods, the payment system also assumes the function of value circulation. Any obstruction from either party will lead to the rupture of the transaction loop. How to build a robust, low-cost, and compliant bilateral payment channel in the unstable international monetary landscape and rapidly evolving payment technology environment has become a core issue that must be addressed at the strategic level.

2.3 Regulatory and Customs Challenges between Russia and China

Regulation and customs systems constitute a direct extension of national sovereignty into the domain of cross-border e-commerce, and the design of their rules determines the compliance costs and institutional risks of e-commerce trade. The heterogeneity between China and Russia in e-commerce legal frameworks, customs administration procedures, and data governance rules forms the third constraint on bilateral e-commerce development.

The divergence in legal regulation is first manifested in the objectives and content of foundational e-commerce legislation. Research on Russia's e-commerce legal regulation and digital economy policy reforms points out that Russia systematically revised its e-commerce legal framework around 2020, with the legislative intent of strengthening indigenous digital sovereignty, regulating platform responsibilities, and protecting consumer data. This reform trajectory bears a distinctly defensive character—that is, to secure development space for local e-commerce enterprises by raising the compliance threshold for foreign platform operations [12, p. 105]. In contrast, the evolutionary logic of China's e-commerce law places greater emphasis on regulating platform monopolies, protecting consumer rights and

interests, and promoting the flow of data factors, with policy instruments including antitrust enforcement, data security reviews, and platform algorithm governance. Research on the heterogeneity of cross-border e-commerce regulation from the EU to the Belt and Road Initiative incorporates China and Russia into a broader comparative framework, noting that differences in rules across jurisdictions concerning platform liability, data localization, and tax collection create a "compliance maze" that cross-border e-commerce enterprises must navigate: the same transaction may trigger entirely different legal consequences in different jurisdictions, and the costs of legal consultation, system modification, and personnel training that enterprises incur to simultaneously meet multi-country compliance requirements constitute an implicit non-tariff barrier [4, p. 755].

Table 4 compares six key regulatory and customs dimensions between China and Russia. It highlights differences in e-commerce legislation, platform liability, data localization, HS code standards, AEO mutual recognition progress, and VAT collection methods – all of which create compliance costs and institutional friction for cross-border e-commerce.

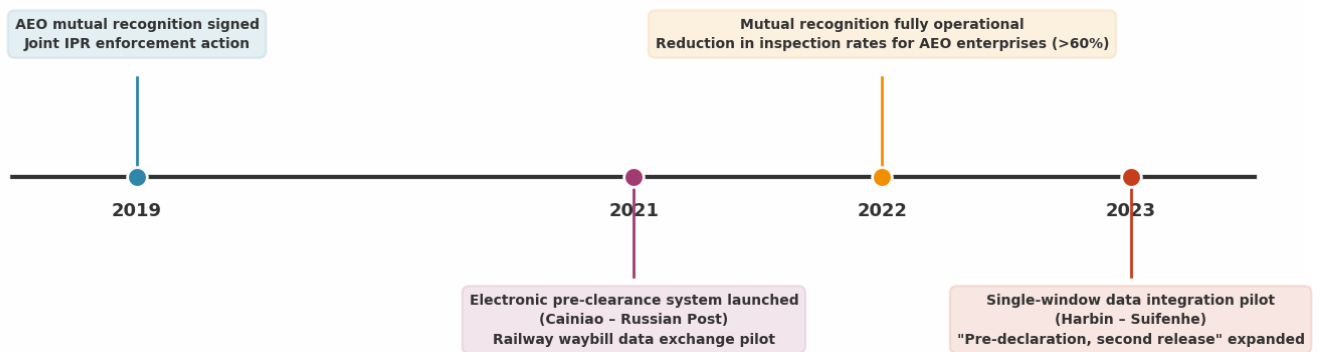
Table 4-Comparison of Regulatory and Customs Frameworks between China and Russia

Dimension	China	Russia
E-commerce legal basis	E-Commerce Law (2019) – focuses on platform monopoly, consumer rights	Civil Code + Consumer Rights Protection Law (2021 revision) – defensive, sovereignty-oriented
Platform liability	“Know or should know” joint liability (Art. 38)	Joint quality liability for third-party sellers (2021 revision)
Data localization requirements	Cybersecurity Law – critical data stored locally; cross-border security assessment	Personal Data Law – local storage mandatory for Russian citizens’ data
HS code classification standards	Customs HS code (6-digit harmonized + national extensions)	Customs Union HS code (EAEU 10-digit) – some differences in sub-headings
AEO mutual recognition status	Signed with Russia in 2019; fully operational in 2022	Signed with China in 2019; implemented 2022 – lower inspection rates
VAT collection method	Collected by platforms (70% of statutory rate for cross-border retail)	Platforms required to withhold 20% VAT (2019)

Source: China E-Commerce Law (2019); Russian Consumer Rights Protection Law (2021); General Administration of Customs of China; Federal Customs Service of Russia (2023).

The complexity and inefficiency of customs procedures represent a more direct pain point for e-commerce enterprises. Research on the current situation, risks, and institutional arrangements of Sino-Russian cross-border e-commerce dissects in detail the structural problems at the customs level: inconsistent standards for commodity classification, differences in methods for determining dutiable value, and the unpredictability of inspection rates collectively lead to prolonged customs clearance timeliness and rising inventory costs [16, p. 131]. Research on the challenges and realization pathways of Sino-Russian cross-border e-commerce development from the perspective of the Belt and Road Initiative further points out that although cooperation between Chinese and Russian customs in the field of cross-border e-commerce has made some progress, the interoperability of the "Single Window" mechanism remains limited.

Figure 12 illustrates key milestones in bilateral customs cooperation, from AEO mutual recognition to electronic pre-clearance systems and single-window pilots. These steps have gradually reduced clearance times and improved predictability for cross-border e-commerce parcels.



Source: Compiled from China Customs, Russian Federal Customs Service, and bilateral cooperation communiqués.

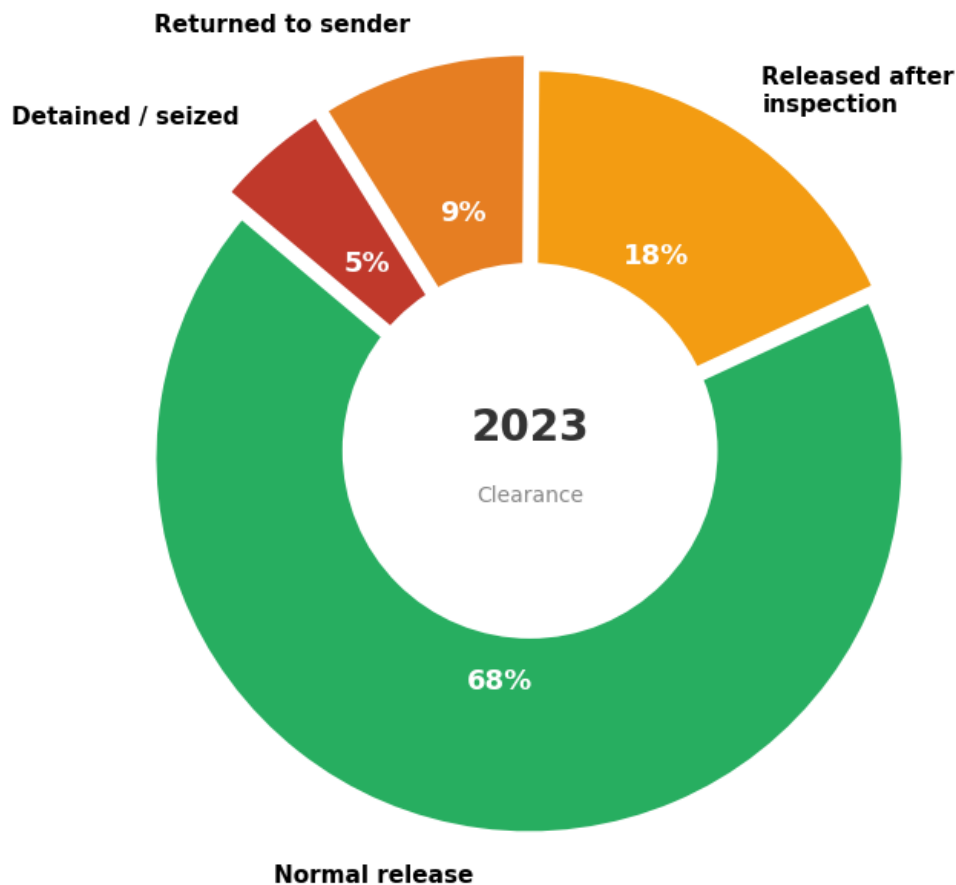
Figure 12 – Milestones of China-Russia Customs Cooperation (2019 – 2023)

Source: General Administration of Customs of China; Federal Customs Service of Russia; Ministry of Commerce of China (2019–2023).

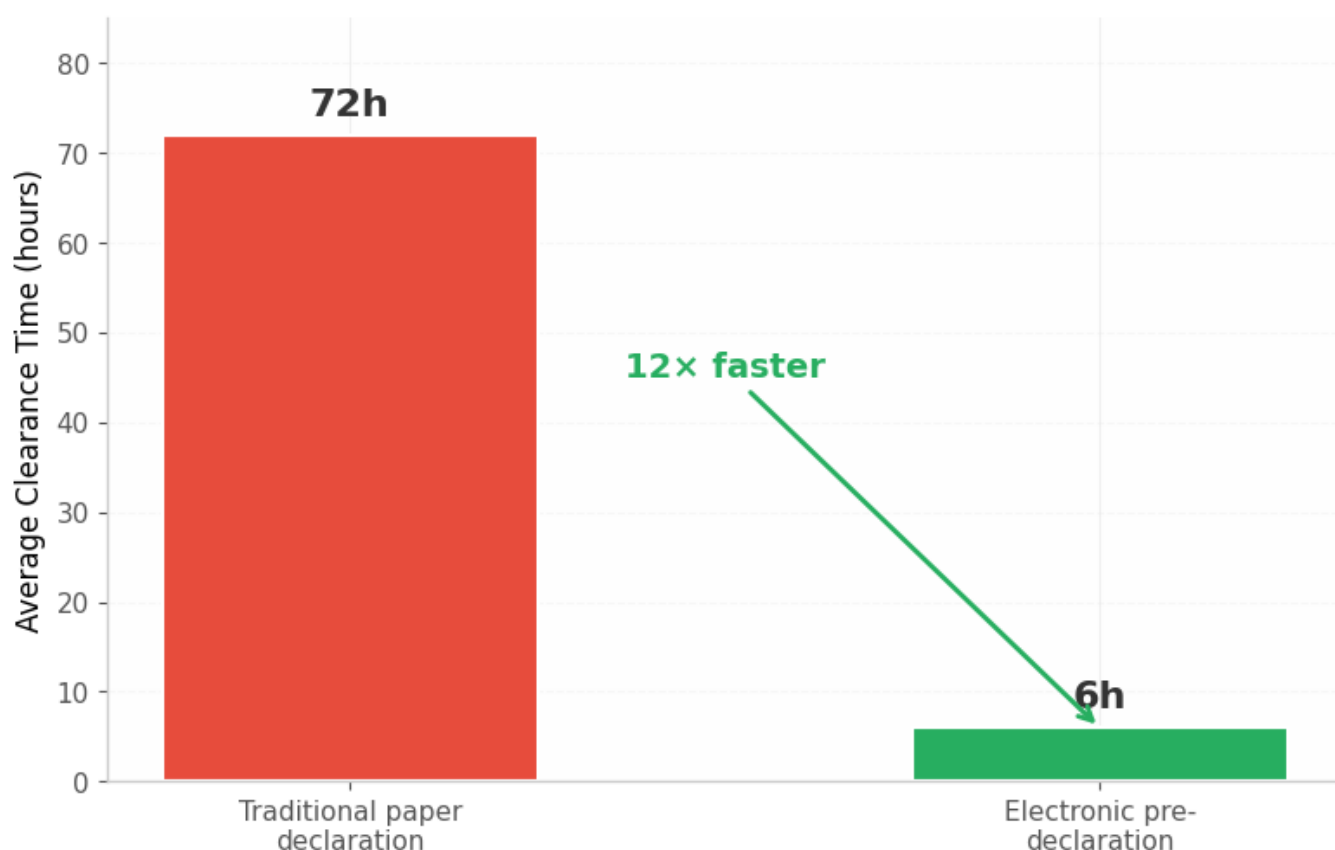
When Chinese exporters submit declaration data to Russian customs, they often

encounter clearance obstacles due to format conversion, standards mapping, and redundant information entry [23, p. 88]. Relevant journal articles and doctoral dissertations have deepened this issue from a risk perspective, emphasizing that the uncertainty of customs procedures not only increases time costs but also poses a systemic threat to the financial soundness of small and medium-sized e-commerce enterprises by affecting inventory turnover rates and cash flow cycles [62, p. 138; 63, p. 112].

This figure presents two visualizations. Figure 13 shows the distribution of customs outcomes for cross-border parcels: normal release, release after inspection, return, and detention. Figure 14 compares average clearance times between traditional paper-based declarations and electronic pre-declaration systems, demonstrating the efficiency gains from digitalization.



Note: 86% of parcels (normal + post-inspection) cleared successfully. 14% faced returns or seizures.



Note: Electronic pre-declaration reduces average clearance from 72 hours to 6 hours — a 92% time reduction.

Figure 13&14-Customs Clearance Outcomes for China-Russia E-commerce Parcels (2023)

Source: Federal Customs Service of Russia; Cainiao Network; Russian Post (2023 data).

The digital challenge of tax collection and administration is equally non-negligible. Relevant research indicates that the fragmentation, high frequency, and small transaction amounts characteristic of cross-border e-commerce pose a fundamental challenge to traditional tax collection systems designed for bulk trade: how to effectively assess the tax base for massive numbers of small-value parcels, how to prevent tax evasion through the under-declaration of prices and false descriptions of goods, and how to allocate tax jurisdiction between importing and exporting countries – these issues have yet to reach consensual solutions globally. An analysis of the application of Russian tax law in the e-commerce sector shows that Russian tax authorities are attempting to address this challenge by requiring platforms to withhold and remit value-added tax (VAT). However, the effective operation of the platform withholding mechanism depends on the real-time acquisition and

accurate accounting of transaction data, which is difficult to fully achieve in cross-border contexts due to disputes over data sovereignty and technical interface barriers [53, p. 156].

The conflict of rules concerning cross-border data flows and privacy protection adds a new dimension to regulatory coordination. Research on the norms and strategic implications of world trade under the Belt and Road Initiative suggests that data, as a core element of e-commerce transactions, is subject to multiple constraints imposed by national rules on data localization storage, personal information protection, and security reviews [5, p. 170]. Both China and Russia emphasize the principle of sovereignty in data governance, but technical differences exist in specific rules, such as the trigger conditions for security assessments of data exports, the definitional scope of sensitive data, and the lawful bases for processing personal information. These differences compel e-commerce platforms to maintain two sets of data compliance systems when operating bilaterally, significantly increasing the complexity of technical architectures and operational costs. Research on the current state and challenges of Sino-Russian digital services trade examines data governance conflicts within the broader framework of digital services trade, pointing out that restricted data flows not only limit the efficiency of e-commerce transactions but also constrain the development of value-added services such as targeted marketing, credit assessment, and supply chain optimization based on user data [11, p. 115].

The challenges at the regulatory and customs level are rooted in the rigidity of national institutional boundaries. The digital logic of e-commerce requires the free cross-border movement of information, funds, and goods, while national regulatory systems impose constraints on this movement based on considerations of sovereignty, taxation, and security. The deepening of Sino-Russian e-commerce trade necessarily requires finding a new equilibrium within this tension, rather than simply expecting unilateral deregulation by either party.

Chapter 3 Strategies to Enhance E-commerce between Russia and China

3.1 Strengthening Cross-border Logistics Infrastructure between Russia and China

Strengthening logistics infrastructure is the primary strategic direction for alleviating the physical constraints on Sino-Russian e-commerce. In recent years, cross-border e-commerce between China and Russia has grown rapidly. According to data from China's General Administration of Customs, the trade volume between China and Russia reached 240.1 billion US dollars in 2023, with the annual growth rate of parcels through cross-border e-commerce channels exceeding 30%. Yet physical constraints such as long delivery times and persistently high costs have become increasingly pronounced: average delivery times for direct mail small parcels still range from 15 to 25 days, returns and exchanges can take months, and logistics costs as a share of the product selling price can sometimes exceed 30%. A comprehensive strategic framework for Sino-Russian cross-border e-commerce development provides macro-level guidance for the logistics optimisation paths discussed in this section [31, p. 76]. Against this backdrop, strengthening logistics infrastructure is by no means a simple expansion of transport capacity; it is a systematic undertaking that involves optimizing network layouts, building collaborative mechanisms, and empowering the system with technology.

The networked deployment of overseas warehouses and border warehouses is a critical lever for shortening delivery lead times and enhancing consumer experience. Research on the current situation and operational models of China's cross-border e-commerce logistics indicates that, by pre-positioning inventory in the target market country, the overseas warehouse model achieves a paradigm shift from "cross-border direct mail" to "local delivery." Its advantage lies in decoupling the international transport segment from the last-mile delivery segment in terms of time, thereby substantially compressing the waiting time perceived by consumers [64, p. 55]. In the context of Sino-Russian e-commerce, promoting this model requires overcoming the obstacle of the uneven distribution of warehousing resources within Russia. According to data from the Russian

logistics consultancy INFOLine, Moscow and the Moscow Oblast concentrate approximately 65% of the country's Class A warehousing facilities, while the Far Eastern Federal District possesses less than 5% of modern warehousing space. This centralized pattern directly drives up logistics allocation costs. The centralized nature of Russia's logistics network revealed by related studies means that if the siting of overseas warehouses is overly concentrated around Moscow, although this can cover the core consumer zone that accounts for nearly half of e-commerce consumption, it increases the long-distance allocation cost from the border port to the warehouse—for example, the rail trunk line from the Manzhouli–Zabaykalsk border crossing to Moscow spans over 7,000 kilometers, with single-container transport costs reaching over 2,000 US dollars. If warehouses are dispersed in the Far East, geographical advantages can be exploited to reduce inbound transport distances—goods entering via the Suifenhe highway crossing can reach Vladivostok in just a few hours—but the cost of last-mile delivery to the European consumer zone then rises sharply, with parcels shipped from Far Eastern warehouses to Moscow often requiring 7 to 10 days [47, 114]. Resolving this siting dilemma depends on a functional division of labor between border warehouses and overseas warehouses: border warehouses assume the functions of consolidation, sorting, and preliminary customs clearance, while overseas warehouses focus on inventory management and rapid order fulfillment for end consumers.

Table 5 compares two strategic logistics models – border warehouses and overseas warehouses – highlighting their respective functions, cost profiles, delivery times, and capital requirements. It supports the argument for a functional division of labor to optimise cross-border e-commerce fulfillment.

A typical practice is the border warehouse established by Cainiao Network in the Suifenhe Comprehensive Bonded Zone in Heilongjiang Province. After goods are consolidated and pre-cleared there, they are transported to Moscow-based overseas warehouses via the Trans-Siberian Railway trunk line, transporting them to Moscow-based overseas warehouses via the Trans-Siberian Railway trunk line. As of 2025, the average rail transit time from border ports to Moscow has been shortened to 10–15 days, compared to 30 days a few years ago, significantly improving cross-border e-commerce fulfillment efficiency [10, p. 95].

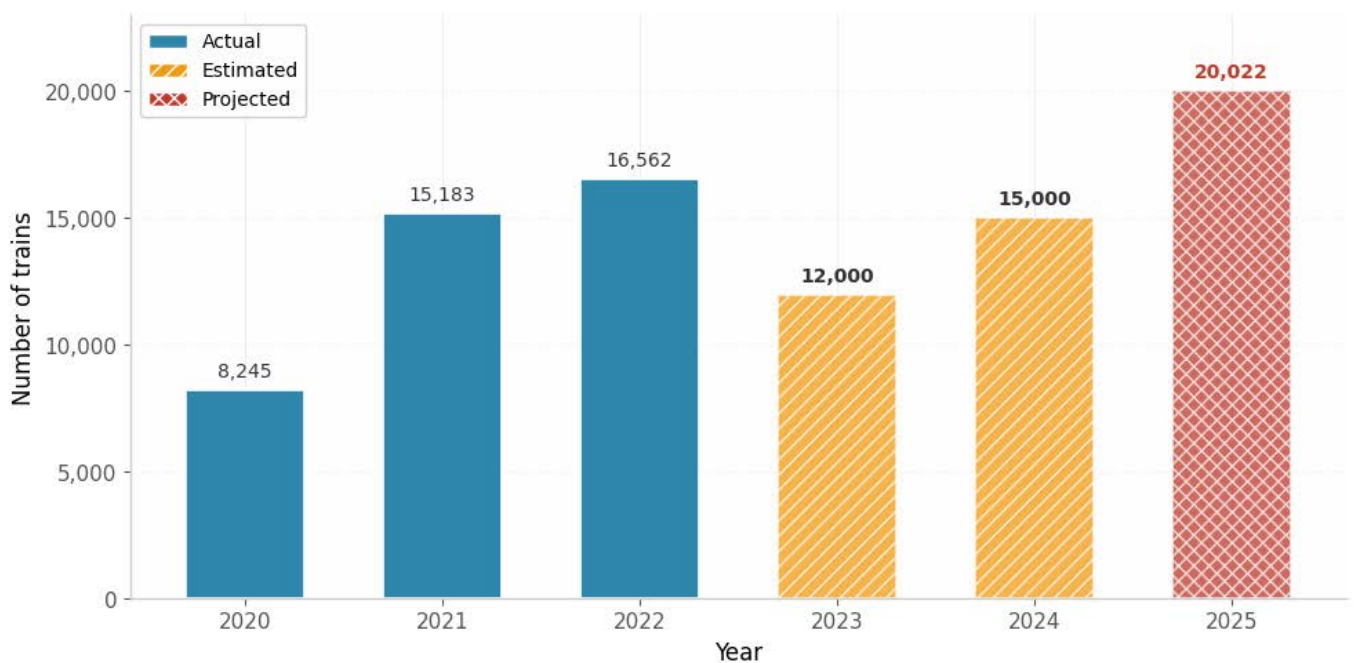
Table 5-Functional Division between Border Warehouses and Overseas Warehouses

Aspect	Border Warehouse (e.g., Suifenhe)	Overseas Warehouse (e.g., Moscow-based)
Primary function	Consolidation, sorting, preliminary customs clearance	Inventory management, rapid last-mile delivery
Location	Chinese side of border (within bonded zone)	Near core consumer market (Russian European part)
Cost structure	Low-medium (\$5–8/kg + consolidation)	Medium (\$8–12/kg + monthly storage rent \$15–25/m ²)
Delivery time	10–15 days total (after rail transit)	2–5 days (last mile) after inventory is pre-positioned
Capital requirement	Medium	High (inventory pre-positioning, rent, insurance)
Risk profile	Low (pre-cleared by customs)	Medium (inventory unsold risk, demand forecast errors)

Source: Cainiao Network (2023); INFOLine (2023); industry reports.

Figure 15 shows the rapid growth of China-Europe Railway Express trains, which serve as a backbone for Sino-Russian e-commerce logistics. The increase from ~12,000 trains in 2023 to over 20,000 in 2025 reflects significant infrastructure strengthening and reduced rail transit times, as shown below:

Consumers in the Moscow region can then receive their orders within 1 to 2 days, compressing the overall delivery time by two-thirds compared with traditional direct mail. The concept of Fourth Party Logistics (4PL) proposed in “New Ideas for Solving the Difficulties of Cross-border E-commerce Logistics” provides an organizational framework for this division of labor—as a supply chain integrator, a 4PL can coordinate multiple third-party logistics service providers, warehouse operators, and customs brokers, and achieve visibility and collaboration across the entire cross-border logistics chain through information system integration and process standardization [68, p. 18]. For example, in the Russian market, Cainiao Network plays the role of a 4PL by integrating Russian Express, Russian Post, and local delivery companies to provide unified “Super Economy” and “Standard Express” lines, with real-time end-to-end tracking information accessible to both merchants and consumers. This is a vivid embodiment of that organizational logic.



Note: 2020–2022 are official China Railway figures. 2023–2024 are estimates; 2025 is a forecast. Dip in 2023 reflects post-pandemic normalization and Red Sea crisis rerouting effects.

Figure 15 – China-Europe Railway Express Annual Train Volume (2020–2025)

Source: China State Railway Group (2021–2026); Xinhua News (2026).

Deepening logistics collaboration mechanisms requires going beyond connectivity at the hardware level and turning to the synchronized integration of information flows and business flows. In the study “Research on the Collaborative Mechanisms and Paths of Cross-border E-commerce and Cross-border Logistics,” starting from the theory of system synergy, the authors argue that the tripartite synergy of business flows, logistics, and information flows is the core mechanism for enhancing the efficiency of cross-border supply chains. The collaborative paths include: establishing order management systems based on unified data standards, enabling real-time sharing of inventory status, and building joint decision-making mechanisms for demand forecasting and replenishment planning [21, p. 87]. Related research further operationalizes this collaborative concept, proposing that direct API-based data connections should be established among Sino-Russian e-commerce platforms, sellers, logistics service providers, and warehouse operators to reduce delays and distortions in the information transmission process [24, p. 65]. In operational practice, the Russian e-commerce platform Ozon has opened API interfaces for its FBS and FBO models

to Chinese sellers, supporting real-time synchronization of order, inventory, shipment status, and customs clearance data. In 2022, Ozon completed integration with several Chinese ERP systems such as Mabang ERP and Tongtool ERP, which has increased sellers' order processing efficiency by an average of about 40%. Russian Express has also built a Sino-Russian cross-border digital supply chain platform that integrates product flow, logistics flow, and capital flow information, providing partner brands with inventory visibility and dynamic replenishment recommendations. Although the implementation of this technical solution faces real obstacles such as differences in data standards between the two countries and system integration costs—for instance, the reconciliation between Russia's localized personal data storage requirements and China's cybersecurity review regime still requires policy coordination—its direction aligns with the general trajectory of digital supply chain evolution, namely, breaking down enterprise boundaries through data-driven approaches to form end-to-end visibility and dynamic response capabilities [30, p. 17]. This direction aligns with the broader pathways proposed for promoting cross-border e-commerce logistics development, which emphasise infrastructure investment, information sharing, and standard harmonisation as key enablers [29, p. 78].

The introduction of smart warehousing technologies provides the technical possibility for a leap in logistics efficiency. Empirical research on smart warehousing in free trade zones and cross-border e-commerce performance demonstrates that the application of automated sorting systems, smart shelves, and warehouse management systems can significantly reduce order processing error rates, enhance inventory turnover efficiency, and cut labor costs, with the performance improvement effect being particularly pronounced in cross-border e-commerce scenarios characterized by high order volatility [67, p. 103023]. Applying this experience to the Sino-Russian e-commerce logistics system means increasing investment in automation equipment at border warehouse and overseas warehouse nodes, thereby using technology substitution to alleviate the pressures of rising labor costs and seasonal labor shortages in Russia. Data from the Russian Federal State Statistics Service show that in 2023, the average monthly salary for warehousing and logistics positions had risen to about 62,000 rubles (approximately 700 US dollars), an

increase of nearly 50% over three years, and the recruitment of temporary workers during major promotions such as “Singles’ Day” and “Black Friday” has been difficult. The low level of automation at regional distribution centers in Russia, as described in related studies, precisely indicates that smart warehousing technology has considerable room for marginal improvement in this market [48, 150]. In fact, automation technology has already been implemented in some e-commerce warehousing centers in Russia. In 2021, Geek+ deployed hundreds of autonomous mobile robots (AMRs) for the large Russian e-commerce platform Wildberries at its distribution center near Moscow, increasing the picking efficiency of that warehouse by more than 300% and reducing the order error rate to below 0.5%. Ozon has also introduced an automated sorting system at its Skolkovo logistics center, with a daily processing capacity exceeding 500,000 parcels. These cases corroborate the significant benefits of smart equipment in compensating for labor shortcomings and smoothing out order peaks.

Viewed from the macro perspective of regional logistics corridors, the logistics coordination mechanism under the framework of the Eurasian Economic Union (EAEU) can serve as an external leverage point for Sino-Russian e-commerce logistics. Related research points out that the EAEU is advancing its internal logistics integration process, including the unification of transport documents, the harmonization of customs procedures, and the joint construction of logistics infrastructure. Chinese e-commerce enterprises can leverage this regional public good to reduce the institutional transaction costs of goods entering the Central Asian market via Russia [51, p. 54]. Currently, the EAEU has implemented the unified railway consignment note (CIM/SMGS), achieving “one consignment note for the entire journey” in international rail transport and shortening the transit time of China-Europe freight trains traveling through Kazakhstan and Russia by 2 to 3 days. In 2023, China and the EAEU further signed a protocol amending the Agreement on Trade and Economic Cooperation, which added provisions for customs information exchange and mutual recognition of Authorized Economic Operators (AEO), significantly increasing customs clearance efficiency. Taking AliExpress Russia as an example, by utilizing the transit warehouse in the “Khorghos – Eastern Gate” Special Economic Zone in Kazakhstan within the Union, it has achieved tariff optimization and process simplification

when distributing goods to Russia and Central Asian countries, effectively reducing institutional transaction costs. However, the effective implementation of this leveraging strategy requires China and Russia to maintain policy communication in the formulation of Union rules, ensuring that the Union's logistics standards are compatible with the actual needs of Chinese cross-border e-commerce, especially in reaching operational mutual recognition arrangements at the detailed level, such as electronic waybills, packaging specifications, and return handling.

The essence of the strategy to strengthen logistics infrastructure lies in compressing the physical costs of Sino-Russian e-commerce trade to a sustainable threshold through the re-optimization of spatial layout, the re-integration of organizational models, and the re-upgrading of technological means. Whether it is the collaborative division of labor between border warehouses and overseas warehouses, the digitized synergy of the three flows (business, logistics, and information), or the scaled penetration of smart equipment, all point toward a single core objective: making the delivery experience for cross-border parcels approximate that of domestic retail. The success of this strategy depends not only on the investment decisions of individual enterprises but also on policy coordination between the two countries in areas such as logistics standards, customs procedures, and regional planning. Only by forming a positive interaction between micro-level corporate innovation and macro-level government provision of public goods can the Sino-Russian e-commerce logistics system truly break through physical constraints and provide a solid guarantee for sustained trade growth.

3.2 Harmonizing Regulatory Frameworks and Customs Procedures between Russia and China

The coordination between regulatory framework and customs procedures is the core strategy for reducing institutional transaction costs in Sino Russian e-commerce. Unlike the physical connectivity of logistics infrastructure, coordination at the regulatory level involves a complex game of legal sovereignty, tax interests, and regulatory capabilities, and its advancement path requires more refined institutional design. According to statistics from

the Customs Administration of the Russian Federation, over 380 million cross-border e-commerce imported packages will be processed by customs in 2023, of which about 90% will come from China. However, the traditional single item inspection mode leads to an average clearance time of 3-5 days, and some packages may even be detained for weeks due to inaccurate declaration information. The systemic friction costs can erode sellers' profits by hundreds of millions of dollars annually. In this context, bridging the differences in regulatory standards, customs clearance procedures, and legal norms between the two countries has become a prerequisite for unleashing the growth potential of e-commerce.

The normalization and institutionalization of bilateral regulatory dialogue mechanisms are prerequisites for rule coordination. In the research on accelerating cross-border e-commerce cooperation between China and Russia, it is called for that the two countries should establish a government dialogue platform specifically for cross-border e-commerce, and incorporate policy issues scattered across multiple departments such as customs, taxation, market supervision, and communication management into a unified negotiation framework to avoid policy conflicts and implementation deviations caused by departmental segmentation. In fact, China and Russia have established several channels for dialogue: the Customs Cooperation Subcommittee under the China Russia Prime Ministers' Regular Meeting Committee has held more than 20 meetings, and in 2022, the two sides will further sign the Memorandum of Understanding on Deepening China Russia Customs Cooperation, making cross-border e-commerce customs clearance facilitation a priority topic for the year. These practices provide a institutional foundation for the implementation of cross-border e-commerce special dialogue platforms. This suggestion has gained theoretical support in research on the heterogeneity of cross-border e-commerce regulation: bridging regulatory heterogeneity does not require complete consistency of laws among countries, but rather through three mechanisms of mutual recognition, equivalence, and cooperation, while maintaining their respective sovereignty and reducing the duplication costs of cross-border compliance [4, p. 755]. For example, the mutual recognition of "Authorized Economic Operator" (AEO) between Chinese and Russian customs has been officially implemented in 2022. The average inspection rate of imported goods by AEO enterprises on both sides at each other's ports has decreased by more than 60%, and the

clearance time has been shortened by about 50%, bringing direct compliance dividends to cross-border e-commerce enterprises. Specifically, China and Russia can explore "regulatory sandbox" cooperation in the e-commerce field, which refers to piloting simplified rules recognized by both parties within a limited area for specific types of cross-border e-commerce businesses (such as B2B small-scale multi frequency trade and B2C retail of specific categories), and gradually promoting them after testing the feasibility of the rules through practice. Referring to the "list release, summary and statistics" model promoted by China in cross-border e-commerce pilot zones, comprehensive bonded zones such as Harbin and Suifenhe have the geographical and policy conditions for pilot testing of Russian ports.

The simplification and standardization of customs procedures are the most operational aspects of rule coordination. In the research on the institutional arrangement of cross-border e-commerce between China and Russia, it is proposed that the customs of the two countries should promote the three mutual cooperation of "information exchange, mutual recognition of supervision, and mutual assistance in law enforcement", with the technical basis being the standardization of electronic customs declaration data format and direct system connection [16, p. 131]. At present, the Chinese and Russian customs have launched the "Customs Railway Connection" project test, which reduces the customs inspection time of Chinese and Russian freight trains by about 30% through the exchange of railway intermodal electronic waybill data, setting a precedent for the rapid flow of cross-border e-commerce packages along the railway corridor. This direction was further refined in the research on the challenges faced by the development of cross-border e-commerce between China and Russia in the perspective of the "the Belt and Road Initiative" and the realization path. It is suggested that China and Russia Customs should implement the "pre classification" and "pre audit" system in the field of cross-border e-commerce packages: that is, before the goods are shipped, Chinese export enterprises submit the commodity information through the bilaterally recognized electronic platform, and the Russian Customs should complete the classification and risk assessment in advance. After the goods arrive at the port, they can be quickly released only through a low proportion of spot checks [23, p. 88]. In practice, the electronic customs clearance system launched by Cainiao in cooperation

with Russian Post and Russian Customs has partially achieved "pre declaration second release". Since 2021, the average clearance time for direct mail packages using this system has sharply decreased from 3 days to less than 6 hours, and the sampling rate has dropped to less than 5%.

Table 6 summarises major customs cooperation initiatives between China and Russia (AEO mutual recognition, electronic pre-clearance, single-window pilot) and quantifies their effects on inspection rates, clearance times, and compliance costs.

Table 6 – Key Customs Facilitation Measures and Their Impacts

Measure	Implementation	Impact
AEO mutual recognition	Signed 2019; operational 2022	Inspection rate ↓ >60%; clearance time ↓ ~50% for AEO enterprises
Electronic pre-clearance system	Launched 2021 (Cainiao + Russian Post)	Average clearance time: from 3 days to <6 hours; sampling rate <5%
“Pre-declaration, second release”	Expanded 2023	Customs supervision shifted from “after arrival” to “before departure”
Single-window data integration pilot	2023 (Harbin – Suifenhe)	“One-time declaration, bilateral sharing” – reduces redundant entry

Source: General Administration of Customs of China; Federal Customs Service of Russia; Cainiao Network (2021–2023).

The core of this system design is to move the time node of customs supervision from "after arrival at the port" to "before departure", and exchange clearance efficiency through information sharing. Its successful implementation relies on the technical integration and legal authorization of the customs information systems of the two countries. Next, both parties can promote the mutual recognition of electronic signatures and the integration of single window data, achieving "one-time declaration, bilateral sharing" and transforming the current fragmented customs clearance process into an end-to-end digital customs clearance link.

The convergence of legal frameworks requires seeking consensus on key issues such as data governance, consumer protection, and platform responsibility. Research on the legal

regulation reform of Russian e-commerce shows that the latest trend in Russian e-commerce legislation is to strengthen the joint liability of platforms for product quality, consumer data, and transaction security. This trend is in line with the provisions on platform liability in China's e-commerce law. For example, the revised Consumer Rights Protection Law of Russia in 2021 requires e-commerce platforms to bear joint and several quality liability for goods sold by third-party sellers, while Article 38 of China's E-commerce Law also specifies that platforms bear corresponding responsibility when they "know or should know" that merchants have infringed. The consensus between the two countries on platform duty of care and advance compensation mechanisms is expanding. This convergence provides a foundation for mutual recognition of laws between the two countries. In the study of the "the Belt and Road" trade norms, it is suggested that the deep integration of regional trade agreements often starts from the coordination of rules in specific fields. Consumer protection, intellectual property enforcement and dispute resolution mechanisms in the e-commerce field can be the priority issues under the framework of the China Russia bilateral investment agreement or the Economic and Trade Cooperation Council [5, p. 170]. In terms of data governance, the localized storage requirements of Russia's Personal Data Law and the cross-border data transmission security assessment system of China's Personal Information Protection Law still bring dual costs to platform compliance. According to industry estimates, a medium-sized e-commerce platform that serves both the Chinese and Russian markets invests over 2 million RMB annually in data compliance alone. Therefore, both parties can provide convenient arrangements for cross-border data flow to platforms that have reached the same level of protection, based on the principle of "equivalent protection", to avoid duplicate authentication. For example, in the field of intellectual property, both parties can establish a joint notification deletion mechanism for e-commerce platforms, so that goods suspected of infringing Russian registered trademark rights sold on Chinese platforms can be quickly processed through simplified cross-border procedures, and vice versa. In 2019, the Chinese and Russian customs carried out joint enforcement actions on intellectual property protection, exchanged data on infringing goods, and verified the technical feasibility of cross-border cooperation.

The digital upgrade of tax collection and management cooperation is an inevitable

choice to address the challenges of e-commerce fragmentation. Related studies have pointed out that the traditional customs' single item review model for small packages in cross-border e-commerce is no longer sustainable, and an alternative solution is to rely on platform data to achieve pre tax and automation of tax collection and management. In the context of e-commerce between China and Russia, this means promoting data integration between the tax systems of both countries and major e-commerce platforms. The platforms will automatically calculate and withhold the payable taxes when transactions occur, and complete cross-border tax clearance through regular summary declaration. At present, Russia has required foreign e-commerce platforms to register for value-added tax and withhold 20% VAT from 2019. In 2022, the Russian Federal Tax Service obtained VAT of over 60 billion rubles from foreign platforms; China implements a preferential policy of zero tariffs on cross-border e-commerce retail imports, with value-added tax and consumption tax levied at 70% of the statutory tax amount, and collected and paid by e-commerce platforms or logistics companies. From 2018 to 2022, this model has covered retail imports worth over 500 billion yuan. The analyzed Russian platform's VAT withholding mechanism, along with China's cross-border e-commerce retail import tax collection and management practices, both have the potential to expand to bilateral scenarios in terms of technology. However, it is necessary to address institutional details such as the distribution ratio of tax revenue between the two countries, the timing of exchange rate application, and dispute resolution procedures [12, p. 105]. On this basis, the tax departments of the two countries can rely on the revision window of the China Russia Double Taxation Avoidance Agreement to agree on the allocation rules of e-commerce tax jurisdiction, and explore the establishment of a value-added tax data exchange platform based on OECD standards, so that the tax withheld by the platform can be automatically divided and settled across borders, eliminating the risks of double taxation and tax loss from the source.

The difficulty in coordinating regulatory frameworks lies in finding a dynamic balance between maintaining national regulatory sovereignty and promoting trade facilitation. The deepening of e-commerce cooperation between China and Russia cannot wait for the complete convergence of the two countries' legal systems before advancing.

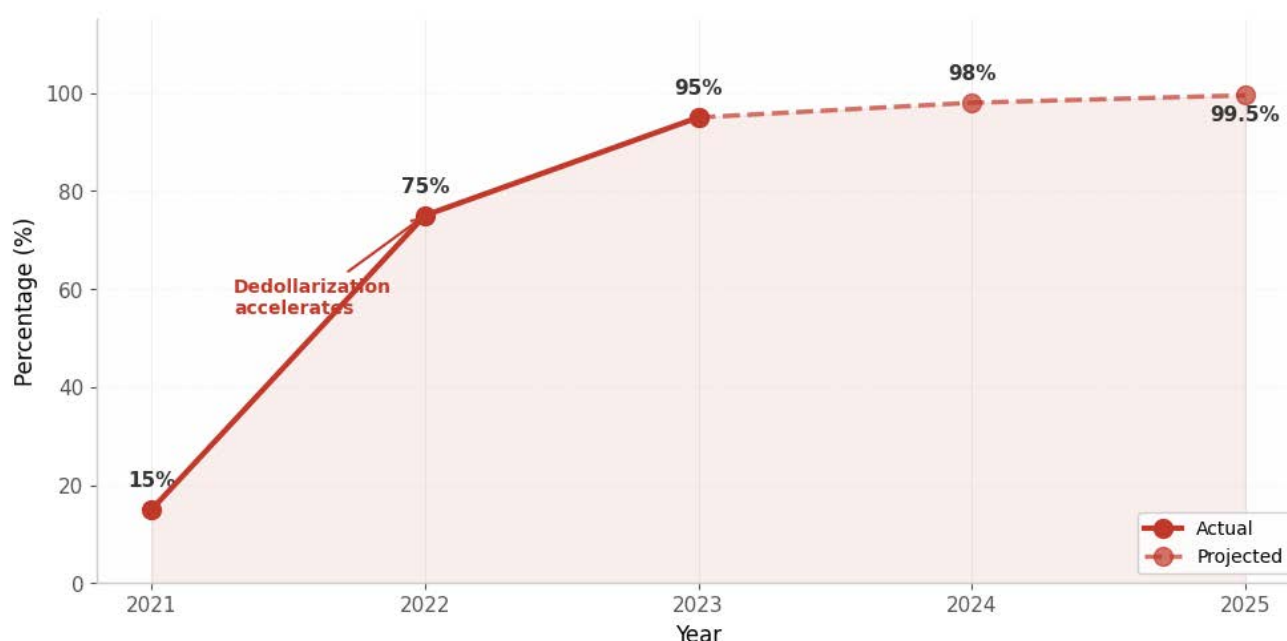
Instead, it should be based on identifying core risks (such as tax loss, security threats, and consumer rights damage), and gradually reducing the space for institutional transaction costs through pilot projects, mutual recognition of rules, and technological empowerment. When the coordination of customs clearance, taxation, data, and consumer protection rules achieves systematic breakthroughs, the institutional costs of Sino Russian cross-border e-commerce are expected to decrease from the current level of 15% -20% of the value of goods to a single digit range comparable to domestic e-commerce, truly unleashing the full potential of this trade channel.

3.3 Promoting Digital Payment Solutions and Financial Cooperation between Russia and China

The promotion of digital payment solutions and the deepening of financial cooperation are key strategies to break through the bottleneck of capital flow in Sino Russian e-commerce. The formulation of this strategy needs to take into account both the current constraints of the payment system and the evolving trends of the future monetary landscape.

The substantial promotion of the local currency settlement mechanism is the primary direction for reducing exchange costs and currency risks. After the dramatic geopolitical changes in 2022, the proportion of domestic currency settlement in bilateral trade between China and Russia has undergone a structural leap: from less than 20% at the beginning of 2022 to over 95% by the end of 2023.

Figure 16 shows the dramatic increase in the share of settlements conducted in rubles and renminbi (national currencies) from below 20% in 2021 to over 99% by 2025. It illustrates the success of de-dollarisation strategies, although e-commerce penetration still lags behind bulk trade.



Note: 2021-2023 are based on reported settlement data. 2024-2025 are projections reflecting continued dedollarization momentum. Combined RMB + RUB share surged from 15% (2021) to near-total dominance at 99.5% (2025).

Figure 16 – Share of National Currency Settlement in China-Russia Bilateral Trade (2021-2025)

Source: Moscow Exchange; Central Bank of Russia; People’s Bank of China; China Banking Association (2025).

Among them, the proportion of RMB settlement surpassed the US dollar for the first time in February 2023, becoming the currency with the largest foreign exchange trading volume on the Moscow Exchange. This macro level currency shift has laid the market foundation for the promotion of local currency settlement in the e-commerce field. However, due to its small-scale, high-frequency, and fragmented transaction characteristics, the penetration rate of local currency settlement in cross-border e-commerce scenarios still lags significantly behind that of energy and commodity trade. In the research on cross-border financial technology cooperation between China and Russia, it is pointed out that the maturity of digital RMB and digital ruble technology provides new tool options for the central banks of the two countries to promote local currency settlement in bilateral trade.

Table 7 lists key financial infrastructure initiatives between China and Russia (CIPS, SPFS, UnionPay, CBDC integration, CSDC pilot status and relevance to e-commerce settlement).

Table 7 – Overview of Payment and Financial Cooperation Mechanisms

Mechanism	Current status	Relevance to e-commerce
CIPS (Cross-border Interbank Payment System)	Operational; growing volume (175.5 tn RMB in 2024)	Enables direct RMB-ruble clearing; reduces dollar dependency
SPFS (Russian equivalent)	Integrated with CIPS via correspondent banks	Backup channel for payment continuity
UnionPay – MIR card cooperation	Over 3 million UnionPay cards issued in Russia (2023); 80% POS coverage	Supports card payments in domestic scenarios; cross-border B2C still limited
Digital RMB pilot	7 tn RMB cumulative transaction (June 2024); expanding to cross-border trade	Potential for direct settlement without intermediary currencies
Digital ruble pilot	Launched August 2023 (15 credit institutions)	Testing P2P and smart contract payments
mBridge (multi-CBDC platform)	MVP phase (June 2024) – China, Thailand, UAE, HK	Future potential for real-time, low-cost cross-border e-commerce payments

Source: People's Bank of China; Central Bank of Russia; BIS (2024); Chen & Zhong (2022).

However, technical feasibility does not equal market acceptance – the expansion of local currency settlement fundamentally depends on the deep cultivation of the direct trading market between ruble and RMB, the richness of exchange rate risk management tools, and the network layout of commercial banks in each other's countries. As of 2024, state-owned banks such as Industrial and Commercial Bank of China and Bank of China have established subsidiaries or branches in Moscow, and Sberbank also has a representative office in Beijing. However, the local currency settlement service network for small and medium-sized e-commerce enterprises is still weak, and the availability and cost-effectiveness of exchange rate hedging tools in e-commerce scenarios need to be improved. The research on de-dollarization and payment infrastructure further emphasizes that the cooperation between China and Russia's card networks (UnionPay and MIR) should not only be limited to card mutual acceptance, but should evolve towards deep integration of backend clearing, cross-border routing, and dispute resolution. Only by forming a closed-loop system independent of third country currencies and payment organizations can the security and stability of

bilateral e-commerce payments be truly improved. The construction of this closed-loop system requires continuous technical investment and standard coordination from the central banks and bank card organizations of both countries.

The deepening of payment system integration requires cooperation beyond the card level and a shift towards interconnectivity between platform payments and mobile wallets. After Visa and Mastercard withdrew from the Russian market in 2022, the issuance of UnionPay cards in Russia grew rapidly, with a total of over 3 million cards issued by the end of 2023, covering about 80% of POS terminals and ATM networks in Russia. However, the expansion of this acceptance network mainly serves domestic consumption scenarios. In the cross-border e-commerce B2C payment chain, there is still no direct cross-border payment interface between Chinese consumers' Alipay, WeChat payment and Russian consumers' Sberbank Online, YooMoney and other electronic wallets [38, p. 60]. Taking AliExpress Russia as an example, although its payment options have been integrated into local Russian electronic wallets, Chinese buyers still generally face problems such as cumbersome payment interface redirection and high cost of currency conversion when purchasing on Russian e-commerce platforms or Russian buyers shopping on independent Chinese websites. To promote the integration of this interface, it can be technically achieved through the joint construction of bilateral payment gateways, where payment service institutions jointly established or cooperating with China and Russia undertake the hub functions of currency exchange, transaction clearing, and compliance review, providing localized payment experiences for consumers in both countries. In 2023, the size of the Russian e-commerce market has reached approximately 6.5 trillion rubles, with cross-border orders accounting for about 30%. The abandonment rate of shopping carts caused by payment friction is estimated to be as high as 15% to 20% by the industry, which intuitively reflects the inhibitory effect of incompatible payment systems on bilateral e-commerce conversion. The research on the development strategy of third-party cross-border payment institutions suggests that their role in bilateral cooperation should be defined as "complementarity of financial infrastructure" rather than "intermediary of regulatory arbitrage" - their development strategy needs to be consistent with the macro prudential goals of the two central banks, while innovating payment products, strictly implementing

anti money laundering, counter-terrorism financing, and foreign exchange management compliance requirements [58, p. 26].

The exploration of the application of digital currency and CBDC in e-commerce payments represents a medium to long term direction of technological evolution. According to data from the People's Bank of China, as of June 2024, the cumulative transaction amount of digital RMB has reached 7 trillion yuan, and the pilot scenarios have expanded from retail consumption to cross-border trade and supply chain finance. The Russian central bank will launch a digital ruble pilot in August 2023, covering 15 credit institutions in the first batch, with a focus on testing individual to individual transfer and smart contract payment functions. The report on the mBridge CBDC prototype provides a conceptual validation for the application of multilateral central bank digital currencies in cross-border payments: the mBridge platform based on distributed ledger technology can achieve real-time exchange and synchronous settlement of CBDCs from multiple countries, with potential advantages including reducing dependence on proxy banks, shortening settlement cycles, and improving transaction transparency [3, p. 59]. In June 2024, the mBridge project announced its entry into the Minimum Feasible Product (MVP) phase, with participants including China, Thailand, the United Arab Emirates, and the Hong Kong Monetary Authority. Its technical architecture has the potential to expand to bilateral scenarios between China and Russia. Applying this technological framework to the e-commerce scenarios of China and Russia theoretically enables payments between consumers and merchants in both countries to be directly exchanged and cleared between digital RMB and digital rubles, bypassing the intermediary of the US dollar and the SWIFT network. However, relevant research also calmly points out that the cross-border use of CBDC involves deep concerns such as currency substitution risks, capital flow management, and data sovereignty. Before promoting CBDC e-commerce payments, the two countries need to establish sufficient institutional arrangements in pilot scope, quota control, information reporting, and regulatory cooperation. In the short term, the role of CBDC in Sino Russian e-commerce payments is more likely to manifest as an experimental tool for large B2B settlements, rather than a conventional option for massive small-scale retail transactions.

The improvement of payment risk prevention and control mechanisms is an

indispensable supporting link in financial cooperation. According to global payment industry data, the estimated losses caused by cross-border e-commerce payment fraud in 2023 exceed \$48 billion, with friendly fraud and refund arbitrage accounting for a relatively high proportion. The payment system risk assessment report released by the Russian Central Bank in 2023 also pointed out that the anonymity and rapid transfer of funds in cross-border electronic payments make them a high-risk channel for money laundering and terrorist financing. In the analysis of cross-border business payment risks, it is emphasized that the control of payment risks cannot rely solely on technical encryption and identity verification, but also requires the establishment of a rapid response mechanism for cross-border transaction monitoring, abnormal behavior warning, and fund freezing and thawing. Under the framework of China Russia e-commerce financial cooperation, this means that regulatory agencies and payment institutions of both countries should establish a normalized information sharing and joint monitoring mechanism, and build a joint prevention and control network for typical risks in the cross-border e-commerce field, such as credit card fraud, refund arbitrage, false transactions, and money laundering. Specifically, we can learn from the experience of "risk classification and grading management" in China's cross-border e-commerce pilot zone, and conduct risk profiling of Sino Russian e-commerce transactions based on amount, frequency, and merchant credit rating. We can implement delayed settlement and strengthened review for high-risk transactions, and provide a fast track for merchants with good compliance records. The research on regulatory measures for cross-border e-commerce payments points out that the application of regulatory technology (RegTech) can significantly improve the efficiency of risk identification: through big data analysis and artificial intelligence technology, real-time screening of massive cross-border payment transactions can improve the accuracy of risk coverage while reducing compliance costs. For example, machine learning based behavioral biometric technology can detect abnormal account logins and payment mode mutations, while blockchain traceability technology can provide tamper proof audit tracking for cross-border fund flows. The deployment of these technological means needs to be included in the technical cooperation agenda of the Chinese and Russian financial regulatory authorities.

The essence of the payment and financial strategy is to build a stable, efficient, and

controllable funding channel for Sino Russian e-commerce trade between the unstable international monetary system and rapidly evolving payment technologies. The promotion of local currency settlement has solved the problems of currency sovereignty and cost, the integration of payment systems has solved the problem of user experience, CBDC has explored solutions to long-term technological substitution, and risk prevention and control mechanisms have solved security and compliance issues. The coordinated promotion of these four levels is necessary to form a complete financial support system.

Conclusion

The development of e-commerce between China and Russia represents a concrete manifestation of digital technology reshaping international trade patterns at the bilateral level. This study has systematically examined the conceptual foundations, structural configurations, operational constraints, and strategic optimization pathways of this evolving digital trade relationship, demonstrating that cross-border e-commerce between the two countries has transcended the simplistic substitution logic of traditional commerce migrating online. Instead, it has emerged as a structural force that reconfigures market entry conditions, compresses information asymmetries, and activates micro-level participation in international exchange. Through a layered analysis grounded in theoretical synthesis and empirical observation, this paper has sought to move beyond superficial descriptions of trade volume expansion toward a mechanism-level understanding of how bilateral e-commerce functions as an integrated socio-technical system.

From a conceptual and structural perspective, the role of e-commerce in China-Russia economic and trade relations has evolved far beyond the narrow understanding of an online sales channel. The analysis presented in this study reveals that modern cross-border e-commerce constitutes a complete business ecosystem relying on digital platforms to achieve commodity transactions, payment settlement, and after-sales service, characterized by digital representation throughout the transaction cycle, the coexistence of de-intermediation and re-intermediation, high elasticity of subject boundaries, and the cross-border complexity of logistics and payment systems. These features collectively enable e-commerce to function not merely as a technological tool but as a transformative force that reconstructs international trade processes, reduces marginal information costs, and makes the cross-border circulation of long-tail goods and small-batch orders economically feasible.

The structural portrait of bilateral e-commerce painted in this study reveals distinct asymmetries that demand careful analytical attention. The division between business-to-business and business-to-consumer models exhibits a pronounced imbalance: while B2B transactions occupy a dominant share of bilateral e-commerce trade volume, the digital penetration of wholesale trade remains relatively low, with numerous transactions still

relying on traditional offline negotiation and contract formation. Conversely, the B2C retail segment has expanded significantly faster in cross-border scenarios, driven by platform technology and consumer-facing innovations, creating a structural condition characterized by an active retail end and a lagging wholesale end. This asymmetry is further complicated by the competitive dynamics within the platform ecosystem, where Chinese enterprises have leveraged first-mover advantages and technological accumulation to capture significant shares of Russia's cross-border import market, while Russian local platforms have steadily narrowed the user experience gap through investments in logistics infrastructure and localization. The commodity flow structure displays a marked unidirectionality, with Chinese exports concentrated in electronics, textiles, and household goods, while Russian exports to China remain dominated by energy, raw materials, and limited agricultural products, making it difficult to establish a virtuous cycle of two-way interaction. Finally, the regional distribution of e-commerce activity reveals a striking geographic concentration, with participants heavily clustered in Russia's European territory and China's eastern coastal provinces, while the vast inland regions of both countries remain substantially underintegrated. These structural characteristics are not merely natural market outcomes determined by comparative advantage; rather, they are actively produced by the interaction of developmental stage differences, infrastructural configurations, and institutional environments.

The practical constraints confronting Sino-Russian e-commerce cooperation operate across three critical dimensions that are deeply interconnected rather than mutually isolated. The logistics and supply chain dimension presents perhaps the most visible bottleneck. Russia's vast territorial scale, combined with the highly centralized radial structure of its logistics network, creates severe spatial imbalances: modern warehousing and automated sorting capacity remain concentrated in Moscow and St. Petersburg, while the Far East and Siberia suffer from pronounced facility gaps. This geographic paradox generates exorbitant time and inventory costs, as goods entering through eastern border crossings must traverse thousands of kilometers to reach western consumer markets. The adaptation dilemma of cross-border logistics models forces enterprises into unavoidable trade-offs between cost, timeliness, and coverage, with small and medium-sized enterprises particularly vulnerable

to information asymmetry in logistics decision-making. Furthermore, the lack of supply chain collaboration—manifested in the separation of commercial flow, logistics, and information flow—creates systemic breakpoints where order status delays, inconsistent data standards, and incompatible enterprise resource planning systems prevent end-to-end visibility and dynamic response.

The payment and currency dimension constitutes the financial pipeline bottleneck of bilateral e-commerce. The fundamental divergence between China's deeply penetrated mobile payment ecosystem and Russia's historically card-based and cash-on-delivery traditions creates dual technological and commercial barriers to seamless transaction completion. The structural dependence on dollar intermediation in e-commerce transactions, despite the macro-level shift toward local currency settlement in bilateral trade, exposes merchants to exchange rate volatility and heightened hedging costs. Geopolitical shocks have further amplified these vulnerabilities, as the suspension of international card services demonstrated the catastrophic potential of sudden payment channel disruptions. The resulting friction not only increases transaction costs but also elevates the risk of capital flow interruptions that can paralyze entire business operations.

The regulatory and customs dimension introduces the rigid constraints of national sovereignty into the digital trade domain. Heterogeneity in e-commerce legal frameworks, customs administration procedures, and data governance rules creates a complex compliance maze that raises implicit non-tariff barriers. The fragmentation and high frequency of cross-border e-commerce transactions pose fundamental challenges to traditional tax collection systems designed for bulk trade, while conflicts over cross-border data flows and privacy protection compel platforms to maintain dual compliance architectures. These regulatory frictions do not merely add incremental costs; they systematically suppress the willingness of small and medium-sized enterprises to participate in bilateral markets and constrain the development of value-added services such as targeted marketing and supply chain optimization.

Crucially, these three constraint dimensions are mutually constitutive and reinforcing. Logistics delays extend delivery cycles and increase inventory holding periods, which in turn amplify the liquidity pressure on payment settlement and heighten exposure to

exchange rate fluctuations. Regulatory uncertainty and customs unpredictability increase compliance costs and inventory risk, thereby compressing the resource space available to enterprises for investing in logistics infrastructure and payment system integration. Payment fragmentation and currency conversion costs force sellers, particularly smaller operators, into suboptimal logistics choices such as low-cost postal channels with unstable delivery times, which further erodes customer trust and increases return rates. This systemic interconnection means that isolated interventions addressing only one dimension are structurally insufficient; the alleviation of any single bottleneck depends upon simultaneous progress across the others.

In response to these intertwined challenges, this study has proposed three coordinated strategic directions that together form an integrated support system for the high-quality development of Sino-Russian e-commerce. The logistics strategy aims to compress physical transaction costs through a tripartite approach: the networked deployment of overseas warehouses and border warehouses to reoptimize spatial layout, the introduction of fourth-party logistics integrators to reconfigure organizational models and achieve end-to-end visibility across the supply chain, and the scaled application of smart warehousing technologies to compensate for labor shortages and smooth order volatility. The regulatory strategy seeks to reduce institutional transaction costs by establishing normalized bilateral dialogue mechanisms, simplifying and standardizing customs procedures through pre-clearance systems and mutual recognition of authorized economic operators, converging legal frameworks on platform liability and consumer protection, and digitally upgrading tax collection cooperation to address the challenges of fragmented transactions. The financial strategy targets the resolution of currency and payment risks through the substantial promotion of local currency settlement mechanisms, the deep integration of payment systems beyond card acceptance toward platform payment and mobile wallet interoperability, the exploration of central bank digital currency applications for cross-border settlement, and the construction of joint risk prevention and control mechanisms to combat fraud and ensure compliance.

The successful implementation of these strategies requires recognition that their effectiveness depends upon collaborative advancement rather than isolated breakthroughs.

Logistics infrastructure strengthening without regulatory harmonization will encounter persistent customs delays that erode time savings. Payment system integration without logistics coordination will fail to resolve the working capital pressures created by inventory uncertainty. Regulatory simplification without financial cooperation will leave enterprises exposed to the currency risks that deter cross-border commitment. Only when the optimization of physical channels, the alignment of institutional rules, and the stabilization of financial pipelines proceed in concert can the systemic improvement effects be fully realized. This coordinated approach necessitates positive interaction between micro-level corporate innovation and macro-level government provision of public goods, requiring sustained policy coordination in logistics standards, customs procedures, and regional planning.

Looking toward the future evolutionary trajectory of Sino-Russian e-commerce, it is evident that the deepening of bilateral digital trade cannot be achieved in isolation from broader macro-regional frameworks. The convergence of infrastructure connectivity initiatives and economic union processes provides the strategic context within which bilateral e-commerce must develop. The construction of the Digital Silk Road encompasses not merely the physical connectivity of fiber optics, data centers, and logistics corridors, but equally the institutional connectivity of rules, standards, governance models, and financial pipelines. Within this macro process, the development of e-commerce between China and Russia functions simultaneously as a stress test of the two countries' digital economic governance capabilities and as a testing ground for constructing a new type of bilateral economic and trade relationship. The exit of Western platforms and payment systems from the Russian market, while creating immediate operational disruptions, has also opened structural space for the consolidation of indigenous and bilateral digital infrastructure. The rising proportion of local currency settlement, the expansion of China-Europe freight train networks, and the progressive establishment of cross-border comprehensive pilot zones all indicate that the material foundations for deeper cooperation are being laid.

Nevertheless, the ultimate effectiveness of these developments will depend upon whether the two countries can successfully navigate the fundamental tension between maintaining respective institutional sovereignty and achieving the coordination necessary

for trade facilitation. The digital logic of e-commerce demands the efficient cross-border movement of information, funds, and goods, while national regulatory systems legitimately impose constraints based upon considerations of taxation, security, and data sovereignty. The path forward does not require the complete convergence of legal systems or the abandonment of regulatory autonomy; rather, it necessitates the identification of core shared risks—such as tax revenue loss, security threats, and consumer rights protection—and the gradual reduction of institutional transaction costs through pilot innovation, mutual recognition of equivalent standards, and technological empowerment. Regulatory sandbox cooperation in designated border zones, the mutual recognition of electronic signatures and single-window data, and the establishment of equivalent protection arrangements for cross-border data flows all represent promising mechanisms for bridging this tension without requiring systemic legal uniformity.

The transformation of Sino-Russian e-commerce from quantitative expansion to qualitative upgrading thus remains an ongoing process of institutional innovation and infrastructural consolidation. The structural asymmetries in transaction models, platform competition, commodity flows, and regional distribution identified in this study will not dissipate automatically through market expansion alone. They require deliberate strategic intervention to address the root causes embedded in logistics network configurations, payment system architectures, and regulatory framework heterogeneities. The triple constraints of physical bottlenecks, financial channel obstructions, and institutional friction must be systematically dismantled through the coordinated deployment of infrastructure strengthening, rule harmonization, and financial cooperation.

In sum, this study has argued that Sino-Russian cross-border e-commerce represents far more than a technical channel for the online exchange of goods; it constitutes a fundamental reconfiguration of bilateral trade relations that touches upon the spatial organization of logistics, the architecture of monetary settlement, and the boundaries of regulatory sovereignty. The realization of its full potential demands a comprehensive, mechanism-level understanding of how these dimensions interact to produce the current state of strategic alignment yet tactical friction. By illuminating the structural roots of operational constraints and proposing integrated strategic responses that align corporate

operational requirements with state-level institutional coordination, this analysis seeks to contribute to the construction of a more resilient, efficient, and sustainable bilateral digital trade ecosystem. The future of this relationship will be determined not by the automatic diffusion of digital technology, but by the capacity of both countries to engage in sustained, pragmatic cooperation that respects institutional boundaries while progressively bridging the structural gaps that presently divide them.

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