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

GRADUATION THESIS

on

Transformation of Sino-Russian border trade in the contemporary conditions

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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 Wei Jiajia, group 23ЭЭBaM1, full-time mode of study

1 The topic of the graduation thesis: "Transformation of Sino-Russian border trade in the contemporary conditions"

was approved by the university order

dated « _____ » _____ 20 _____ no. _____

2 The deadline for the Master's degree student to complete the graduation thesis is 11.06.2025.

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 stages in the development of Sino-Russian trade relations, analysis of Sino-Russian trade volume and structure, historical development of China-Russia border trade, major border trade regions and functional distribution, major challenges in current border trade, mechanisms of Sino-Russian border trade cooperation, future trends in the transformation and upgrading of Sino-Russian border trade.

5 The list of visuals contains tables and figures.

6 The date of setting the assignment is 7.09.2023.

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The assignment was accepted by Master's degree student _____ / Wei Jiajia /
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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	1.09.2023 – 31.10.2023	
2	Framing the scientific concept of research	1.11.2023 – 18.12.2023	
3	Collection of scientific literature for the thesis	19.12.2023 – 15.01.2024	
4	Substantiating the relevance, concept, and novelty of the research	16.01.2024 – 19.02.2024	
5	Framing of a detailed plan and layout of the research	20.02.2024 – 12.03.2024	
6	Studying new literature sources within the topic of the thesis	13.03.2024 – 26.03.2024	
7	Conducting theoretical research within the first chapter of the thesis	27.03.2024 – 30.04.2024	
8	Preparing the first chapter of the thesis	1.05.2024 – 30.06.2024	
Second year of study			
9	Conducting analytical research within the second chapter of the thesis	1.09.2024 – 22.10.2024	
10	Preparing the second chapter of the thesis	23.10.2024 – 24.12.2024	
11	Conducting analytical research within the third chapter of the thesis	25.12.2024 – 25.02.2025	
12	Preparing the third chapter of the thesis	26.02.2025 – 21.04.2025	
13	Preparing the introduction and conclusion	22.04.2025 – 12.05.2025	
14	Completing the graduation thesis	13.05.2025 – 26.05.2025	
15	Handing in the thesis for compliance control and antiplagiat	27.05.2025 – 9.06.2025	
16	Getting acquainted with the feedback and review	10.06.2025	
17	Presenting the written thesis	11.06.2025	

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Summary

The graduation thesis comprises 82 pages, 3 chapters, 15 figures, 5 tables, 62 sources.

CHINA, RUSSIA, BORDER TRADE, TRADE STRUCTURE, TRANSFORMATION

The object of this research is international bilateral economic relations.

The subject of this thesis is current state, problems and prospects of China and Russia border trade relation.

The research purpose is to study the historical evolution, current structure of bilateral border trade and prospects of Russian-Chinese border trade.

The methodological framework of the paper is formed by system approach, analysis and synthesis, statistical and comparative methods. To display identified economic dependencies graphical method was applied.

The results of research include: stages in the development of Sino-Russian trade relations were studied, analysis of Sino-Russian trade volume and structure was conducted, historical development of China-Russia border trade was introduced, major border trade regions and functional distribution were studied, major challenges in current border trade were examined, mechanisms of Sino-Russian border trade cooperation, future trends in the transformation and upgrading of Sino-Russian border trade were determined.

The novelty of the paper is that the research reveals emerging trends and challenges in Russia-China economic relations, specifically within the transforming landscape of border trade.

The theoretical and practical significance of work involves that the thesis provides foundational insights for future research on the evolving nature of bilateral trade and economic partnership in border regions. The findings are directly relevant for academic courses such as «World Economy», «International Economic Relations», and «Regional Economic Integration».

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Introduction

In recent years, the evolving global political and economic landscape has led to a profound restructuring of international relations and economic flows. As two major geopolitical and economic powers on the Eurasian continent, China and Russia have witnessed increasingly close economic and trade ties. Bilateral cooperation has gradually moved beyond a traditional resource-dependent model toward a more diversified, institutionalized, and strategically coordinated framework. Within this transformation, China–Russia border trade has emerged as a vital channel and strategic hub, playing a key role in advancing regional economic development, optimizing energy allocation, strengthening cross-border infrastructure connectivity, and building transnational industrial chains.

Against the backdrop of China’s ongoing Belt and Road Initiative (BRI) and Russia’s Pivot to the East strategy, both countries have demonstrated growing synergy in their geoeconomic positioning across East Asia and Eurasia. Particularly subsequent Western sanctions on Russia, the eastward orientation of Russia’s national development has accelerated. In parallel, China has advanced its Opening-Up to the North policy, enhancing trade and investment cooperation with Russia’s Far East. This dual momentum has created new opportunities and institutional foundations for the development of border regions. Chinese provinces bordering Russia – such as Heilongjiang, Inner Mongolia, and Jilin – have increasingly become platforms for transnational cooperation. Key border cities such as Manzhouli, Heihe, Suifenhe, and Hunchun have evolved into strategic nodes and pilot zones for institutional innovation in border trade.

The transformation of China-Russia border trade is not only reflected in the optimization of trade structure and growth in scale, but more profoundly in the strategic roles it assumes – ranging from geopolitical coordination and national economic security to regional balanced development. The underlying institutional arrangements, policy alignments, and cross-regional cooperation mechanisms constitute the foundation for deepening bilateral economic ties and promoting high-quality development of border regions.

Against this backdrop, the present study centers on the transformation of China-Russia border trade in the context of the modern economic system. The research seeks to elucidate the logic of transformation, driving forces, and institutional changes underpinning border trade, and to explore the shift from quantity-based growth to quality-driven development. Ultimately, it aims to offer theoretical insights and practical guidance for national border development strategies and bilateral economic cooperation policies.

The object of this research is international bilateral economic relations.

The subject of this thesis is current state, problems and prospects of China and Russia border trade relation.

The research purpose is to study the historical evolution, current structure of bilateral border trade and prospects of Russian-Chinese border trade.

To achieve these goals, this study proposes the following research tasks:

- to review the historical trajectory and structural evolution of China-Russia trade relations;
- to analyze the spatial distribution, core node cities, and cooperation mechanisms of border trade;
- to assess the key challenges facing border trade, including geopolitical constraints, institutional frictions and infrastructure deficiencies;
- to explore future trends, such as digital trade, green corridors, cross-border financial cooperation, and institutional alignment;
- to propose recommendations for enhancing regional connectivity, economic resilience, and bilateral cooperation efficiency.

The novelty of the paper is that the research reveals emerging trends and challenges in Russia-China economic relations, specifically within the transforming landscape of border trade.

The theoretical and practical significance of work involves that the thesis provides foundational insights for future research on the evolving nature of bilateral trade and economic partnership in border regions. The findings are directly relevant for academic

courses such as «World Economy», «International Economic Relations», and «Regional Economic Integration».

This thesis extensively gathers a diverse range of literature, including articles, newspapers, online journals, and statistical databases, focusing on the issue of Russian oil exports to China. It provides a comprehensive summary of the research findings from these sources. Building on this solid foundation, we further select literature closely related to the theme of this paper to ensure a deep and thorough understanding of the research topic.

Chapter 1 The development and evolution of Sino-Russian trade

1.1 Stages in the development of Sino-Russian trade relations

The stages in the development of Sino-Russian trade relations during the planned economy and bilateral complementarity model during the cold war are shown in figure 1.1.

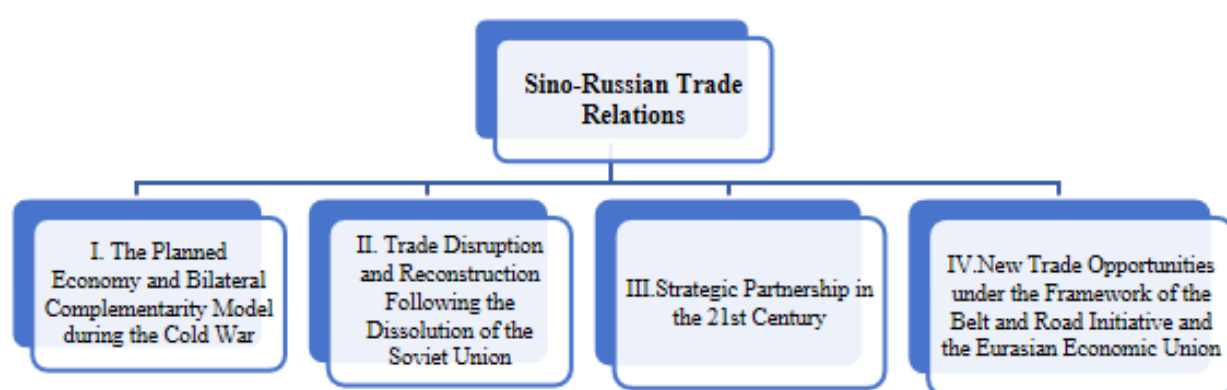


Figure 1.1 – Historical development of Sino-Russian trade

During the Cold War, China and the Soviet Union, as central powers within the socialist bloc, both operated under highly centralized, command-oriented planned economic systems. This system emphasized comprehensive state control and unified allocation of economic resources, laying the institutional foundation for bilateral cooperation. In the 1950s, following the founding of the People's Republic of China and the signing of the Sino-Soviet Treaty of Friendship, Alliance and Mutual Assistance, Sino-Soviet relations entered a strategic honeymoon period marked by unprecedented alignment. Within this context, the Soviet Union provided China with extensive political, economic, and technological assistance, launching a large-scale cooperation program.

Among the most notable initiatives was the Soviet Union's support for 156 key industrial projects in China, covering critical sectors such as energy, metallurgy, machinery manufacturing, chemical engineering, transportation, and defense industries. These projects played a decisive role in initiating China's industrialization. During this stage, Sino-Soviet economic and trade cooperation was characterized by a model of planned coordination + resource complementarity: the Soviet Union exported heavy industrial technology and equipment to China, while China supplied a certain volume of agricultural products and light industrial goods in return. The cooperation was conducted under intergovernmental agreements and aligned with the five-year plans of both countries, emphasizing mutual benefit. However, in essence, it reflected a one-sided dependency and a politically driven aid system [51].

Sino-Soviet trade during this period was not merely economic in function; it was deeply subordinated to ideological and strategic considerations. Economic cooperation was infused with strong political overtones, with a relatively simplistic trade structure, minimal role for market mechanisms, and economic exchanges driven primarily by state will. This model lacked flexibility and long-term sustainability. However, by the early 1960s, profound disagreements emerged between the two countries regarding the direction, strategy, and leadership of the international communist movement. As a result, Sino-Soviet relations deteriorated rapidly. In 1960, the Soviet Union unilaterally withdrew its experts from China, leading to the large-scale termination of aid projects and a sharp decline in bilateral trade. The 1969 armed conflict on Zhenbao Island further eroded political trust, pushing economic relations to the brink of a freeze. This rupture lasted for nearly two decades, leaving a lasting impact on bilateral ties.

It was not until the late 1980s, driven by shifts in the international landscape and domestic reform imperatives, that China and the Soviet Union began to reassess their relationship. In 1989, Soviet leader Mikhail Gorbachev's visit to China marked a significant breakthrough toward the normalization of bilateral relations. Subsequently, the two countries resumed vice-premier-level economic and trade negotiations and began exploring renewed cooperation in multiple areas. These efforts laid the institutional groundwork for the eventual full-scale reconstruction of Sino-Russian relations and the formalization of their economic cooperation.

Trade disruption and reconstruction following the dissolution of the Soviet Union.

After the dissolution of the Soviet Union in 1991, the Russian Federation underwent a profound and turbulent transformation across its political, economic, and social structures. The abrupt shift from a planned economy to a market-based system plunged Russia into severe economic turmoil and a period of institutional vacuum. State governance capacity declined significantly, and the market regulatory framework remained underdeveloped. In contrast, China was in the midst of deepening its reform and opening-up process, gradually establishing a market-oriented economic system and experiencing rapid growth in its export-driven economy. Against this backdrop, the stark differences in institutional structures and development trajectories between the two countries presented numerous difficulties and challenges in the initial stage of bilateral trade [51].

Due to institutional disintegration and a lack of regulatory oversight, Sino-Russian trade in the early 1990s was marked by a high degree of informality. Phenomena such as barter trade, smuggling, and arbitrage were widespread. Border regions became hotbeds of

grey-market activity, where trade was dominated by individual merchants operating outside a unified legal framework and without adequate administrative supervision. The resulting trade environment was fragmented and inefficient, with high transaction costs. This not only undermined the stability and sustainability of bilateral economic relations but also hindered the development of bulk commodity trade and long-term investment cooperation.

Despite the weak foundations of early cooperation, both the Chinese and Russian governments recognized the strategic importance of deepening bilateral economic ties. China sought to expand access to energy, natural resources, and development opportunities in its northern border regions through cooperation with Russia, while Russia urgently needed stable external economic partnerships to mitigate its domestic economic crisis. With this shared understanding, both sides began, in the mid-to-late 1990s, to actively promote the institutionalization of bilateral economic and trade relations [37].

In 1996, China and Russia formally established a strategic partnership of coordination, marking a new phase in bilateral relations. Building on this, the two countries signed a series of agreements and cooperation frameworks aimed at promoting trade facilitation. These included commitments in areas such as tariff reduction, modernization of border ports, simplification of customs clearance procedures, investment protection, and transportation infrastructure development. Key initiatives – such as the upgrading of border highways and railway ports, as well as the establishment of border economic cooperation zones – significantly improved connectivity and policy coordination in Sino-Russian border trade.

The defining feature of this period was the gradual transition of bilateral trade from ad hoc and fragmented exchanges to institutionalized and normalized cooperation. Government-led top-level planning and mechanism-building emerged as critical drivers of stable and sustained progress. These institutional arrangements not only improved the overall trade environment but also laid a solid legal and policy foundation for the comprehensive upgrading of Sino-Russian relations in the 21st century, signaling a shift from grassroots-level border exchanges to strategic alignment at the national level.

Strategic partnership in the 21st century.

Since the beginning of the 21st century, the evolving international landscape and the deepening of the strategic partnership between China and Russia have led to continuously strengthening political mutual trust, laying a solid political foundation for bilateral economic and trade cooperation. Against this backdrop, Sino-Russian economic and trade relations have gradually developed into a pattern characterized by government-led coordination, energy-driven cooperation, and mutual benefit.

The signing of the Treaty of Good-Neighborliness and Friendly Cooperation between China and Russia in 2001 marked a milestone in the development of bilateral relations, ushering the two countries into a new stage of comprehensive strategic coordination. This treaty not only reinforced mutual trust in the political and security spheres but also provided legal and policy support for the institutionalization of economic and trade cooperation, promoting high-level collaboration across multiple sectors [25].

Since 2010 in particular, cooperation in the energy sector has rapidly become both the ballast and engine of Sino-Russian economic relations. With the completion and operation of major infrastructure projects – such as the Sino-Russian crude oil pipeline

(Eastern Route) and the Power of Siberia natural gas pipeline – bilateral trade in large-scale energy commodities like oil and natural gas has expanded steadily. This energy cooperation has significantly boosted the overall trade volume and deepened the interdependence between China and Russia within industrial and supply chains, injecting strong momentum into the stable development of bilateral ties.

Meanwhile, financial cooperation between China and Russia has become increasingly close, with continued improvements in bilateral trade settlement mechanisms. The proportion of local currency settlements has grown steadily, and the use of the renminbi and the ruble in bilateral trade has become increasingly widespread, reducing reliance on third-party currencies such as the U.S. dollar. Since 2022, in response to harsh financial sanctions imposed by Western countries due to geopolitical conflicts, both sides have actively advanced the process of de-dollarization and accelerated the development of alternative cross-border payment systems. These efforts include the promotion of local currency payment platforms and direct clearing mechanisms between domestic banks. Such initiatives have enhanced the resilience of bilateral financial cooperation and strengthened the stability and autonomy of the Sino-Russian economic and trade system amid external shocks [62].

Overall, Sino-Russian economic relations in the new era exhibit a comprehensive trend toward structural diversification, institutional consolidation, and growing regional connectivity. Beyond the energy sector, cooperation in emerging fields such as agriculture, cross-border e-commerce, manufacturing, and high technology continues to expand. This indicates a gradual transformation of Sino-Russian trade from a traditional,

resource-centered model to one that is more balanced, complementary, and characterized by higher added value.

New trade opportunities under the framework of the belt and road initiative and the Eurasian Economic Union.

Since 2015, China's Belt and Road Initiative (BRI) and Russia's Eurasian Economic Union (EAEU) have progressively engaged in multi-level and multi-sector strategic alignment, marking a shift in Sino-Russian economic cooperation from a traditionally energy-dominated model toward a new stage of regional integration characterized by greater systematization and structural diversification. This alignment reflects the shared strategic aspiration of both nations to enhance regional coordination and international competitiveness, as well as a proactive approach toward establishing institutionalized economic partnerships in the context of a transforming geopolitical landscape.

Driven by the cooperation mechanisms of the BRI and EAEU, the two countries have continuously expanded collaboration in several critical areas, including infrastructure connectivity, construction of transportation corridors, industrial supply chain coordination, agricultural modernization, and the digital economy. Significant progress has been made in cross-border railway and highway infrastructure, as well as in facilitating customs clearance at border ports. Major cross-border projects such as the Heihe Highway Bridge and the Tongjiang Railway Bridge have been completed and put into operation, effectively improving the efficiency of goods movement and promoting industrial clustering and urbanization in border regions [59].

At the same time, border areas have emerged as the frontlines of Sino-Russian trade transformation and upgrading. Guided by national strategies and supported by local

policies, border provinces such as Heilongjiang and Inner Mongolia are increasingly developing into key hubs for regional cooperation. Relying on a complete value chain system – encompassing resource extraction, port logistics, and advanced processing – these regions are undergoing a qualitative shift from mere resource exporters to participants in high-value segments of the industrial chain. For example, port cities like Heihe and Manzhouli have rapidly developed sectors such as agricultural product processing, advanced wood processing, and cross-border e-commerce warehousing and distribution, becoming vital pillars of local economies.

According to the 2023 Statistical Bulletin on Sino-Russian Economic and Trade Cooperation released by China's Ministry of Commerce, bilateral trade between China and Russia reached a record high of USD 240.1 billion in 2023, representing a year-on-year increase of 26.3 % compared to 2022. Chinese exports to Russia grew by 46.9 %, while imports rose by 12.7 %. In addition to traditional energy products, emerging sectors such as agricultural goods, auto parts, electromechanical equipment, metal products, and items traded through cross-border e-commerce platforms showed robust performance, becoming new engines of growth in bilateral trade.

Digital economy cooperation has also become a promising frontier for expanding bilateral engagement. The two countries have launched pilot projects in data infrastructure development, smart logistics systems, e-commerce platform integration, and electronic payment systems, facilitating a transformation of trade models from traditional goods exchange to platform-based, digital, and intelligent modes. Notable examples include the cooperation between Cainiao Logistics (a subsidiary of Alibaba) and Russian Post, as well as Russian goods being distributed via Chinese e-commerce platforms [40].

In conclusion, Sino-Russian trade cooperation is undergoing a transformation from point-to-point commodity exchange to network-based regional synergy and institutional integration. As the alignment between the BRI and the EAEU continues to deepen, bilateral economic relations are moving from geographical adjacency toward a more profound institutional and industrial fusion. This trajectory positions Sino-Russian cooperation to play a more proactive and stabilizing role in the restructuring of global supply chains in the years to come.

1.2 Analysis of Sino-Russian trade volume and structure

I Trends in bilateral trade volume and key milestones.

In recent years, the total volume of bilateral trade between China and Russia has continued to grow rapidly, reflecting the deepening cooperation across multiple sectors and increasingly close economic ties between the two countries. Since the joint proposal by the heads of state in 2018 to raise bilateral trade to USD 200 billion, both sides have expanded collaboration in key areas such as energy, manufacturing, agriculture, and high-tech industries, thereby strengthening the breadth and depth of their economic relationship.

According to data from the General Administration of Customs of China bilateral trade between China and Russia reached USD 240.11 billion in 2023, representing a year-on-year increase of 26.7 %, and surpassing the USD 240 billion mark for the first time. Of this total, China's exports to Russia amounted to USD 110.972 billion, up 46.9 % year-on-year, while imports from Russia totaled USD 129.139 billion, an increase of 12.7 %. Preliminary data indicate that this figure further rose to USD 244.82 billion in 2024, setting a new historical record and demonstrating the vitality and potential of Sino-Russian economic cooperation.

Figure 1.2 illustrates the trends in total bilateral trade volume and the structure of imports and exports between China and Russia from 2018 to 2024 (unit: USD 100 million).

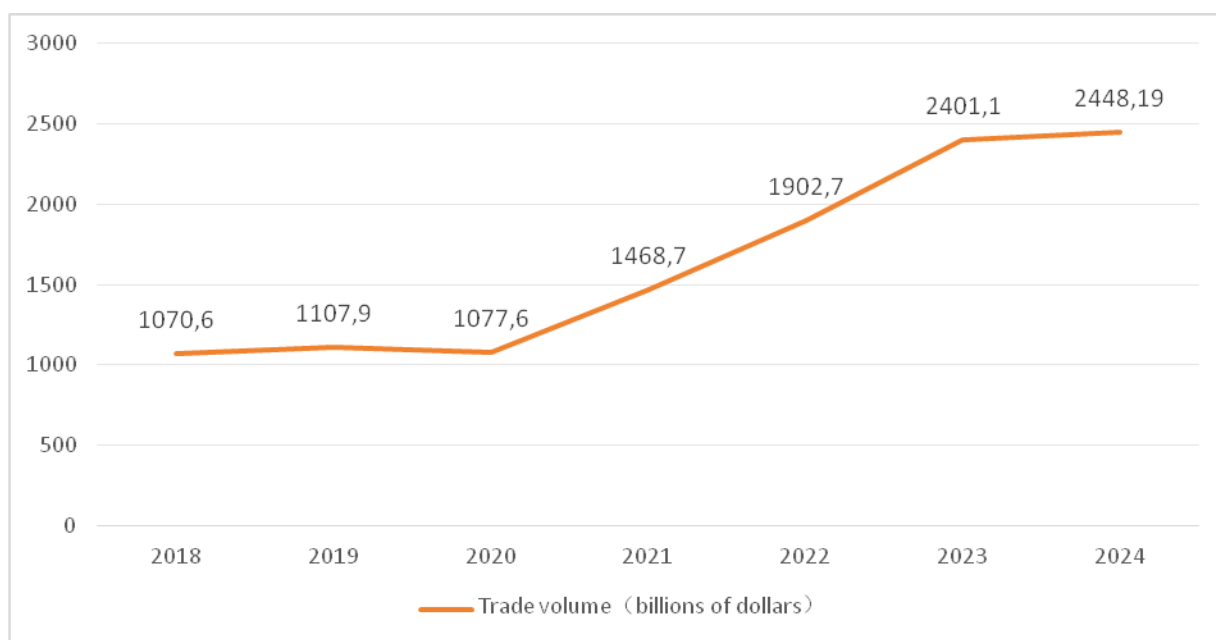


Figure 1.2 – The total trade volume between China and Russia [34]

The steady growth in bilateral trade volume is the result of a combination of political, economic, and geopolitical factors, reflected in several key milestones.

In 2020, during the global disruption of trade systems caused by the COVID-19 pandemic, Sino-Russian trade demonstrated strong resilience and adaptability. Both sides maintained high-frequency exchanges in medical supplies, food, and energy, providing stability to their bilateral relationship.

In 2022, following the outbreak of the Russia-Ukraine conflict and the imposition of severe economic sanctions on Russia by Western countries, Russia's access to its traditional export markets was significantly restricted. In response, Russia accelerated its «Turn to the East strategy», designating China as one of its primary economic partners and intensifying cooperation in energy, infrastructure, and agriculture.

In 2023, China and Russia signed a series of medium- and long-term cooperation agreements in the energy sector, including the expansion of the Sino-Russian East-Route Natural Gas Pipeline, a new crude oil supply framework agreement, and a memorandum of cooperation in nuclear energy. These agreements further solidified the central role of energy trade and became a key driver of the sharp increase in trade volume.

The rapid development of the digital economy and cross-border e-commerce has also injected new momentum into bilateral trade. Platforms such as AliExpress and JD

International have rapidly expanded their presence in the Russian consumer market, enabling Chinese products to reach a broader range of small and remote cities across Russia. This has significantly boosted exports in light industry, consumer electronics, and small household appliances [3].

The improvement and promotion of local currency settlement mechanisms have greatly enhanced trade facilitation between the two countries. As shown in the figure below, the average annual exchange rate between China and Russia from 2019 to 2024 fluctuates around 0.08. In 2023, more than 60 % of Sino-Russian trade was settled in RMB or rubles, reducing transaction risks associated with U.S. dollar exchange rate fluctuations and increasing the autonomy and stability of bilateral financial cooperation (figure 1.3).

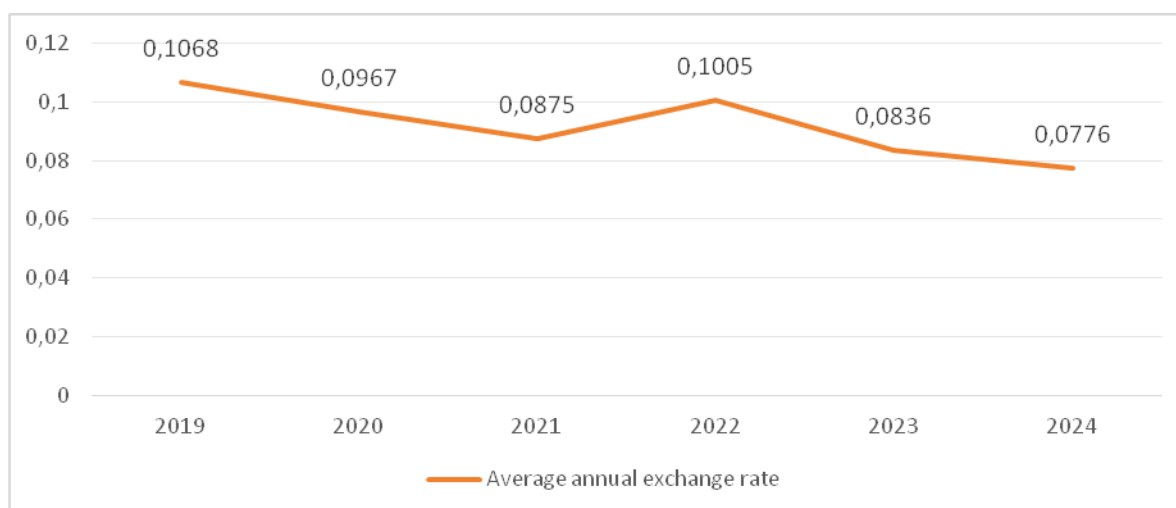


Figure 1.3 – 2019–2024The average annual exchange rate between China and Russia [59]

In summary, the sustained expansion of Sino-Russian bilateral trade not only reflects the deepening of traditional sectoral cooperation but also highlights the continuous growth of emerging sectors. Looking ahead, with further improvements in cross-border infrastructure connectivity, the accelerated alignment of the Belt and Road Initiative with the Eurasian Economic Union, and strengthened collaboration in emerging industries such as technology, green development, and the digital economy, Sino-Russian economic and trade relations are poised to enter a new phase of high-quality, multidimensional development.

II Evolution of China's export structure to Russia.

Over the past decade, the structure of China's exports to Russia has undergone a notable transformation – from low value-added goods to high value-added products, and from traditional light industrial items to high-tech commodities. This shift not only reflects the industrial upgrading of China's manufacturing sector but also indicates the growing demand within the Russian market for advanced technological products and high-quality manufacturing.

In the early stages of this transition, China's exports to Russia were primarily concentrated in traditional categories such as textiles, plastic products, daily consumer goods, and low- to mid-end electromechanical equipment. These goods, characterized by their price competitiveness, met the basic consumption needs of Russia's broad lower- and middle-income population.

However, with the implementation of the Made in China 2025 strategy, Chinese enterprises have significantly enhanced their competitiveness in areas such as intelligent manufacturing, precision machinery, and information technology. At the same time, Western technological blockades and sanctions have increased Russia's demand for high-tech alternatives from China. As a result, the bilateral trade structure has shown clear trends toward greater sophistication and diversification.

As shown in the table 1.1, the share of automotive and machinery-related products in China's export structure to Russia increased from 45 % in 2018 to 58 % in 2024 – an upward trend of 0.13 – while the proportion of textiles and similar products declined. Other categories include electronic goods such as smartphones, computers, smartwatches, and home appliances.

Table 1.1 – The change in the proportion of China's exports to Russia [34]

Merchandise categories	2018	2024	Variation trend	Typical commodity
Mechanical and electrical products	45 %	58 %	0.13	Cars, machinery
Textile	25 %	12 %	-0.13	Clothing
Metalware	8 %	9 %	0.01	Rolled steel
Chemical product	10 %	7 %	-0.03	Plastics
Else	12 %	14 %	0.02	Electronic products

New energy products are beginning to occupy a key position in bilateral trade. Solar photovoltaic modules, energy storage systems, EV charging stations, and electric vehicles have rapidly entered the Russian market, aligning with Russia’s energy transition and diversification of its electricity sector. For instance, Chinese exports of solar modules to Russia grew by over 40 % year-on-year in 2023, with some projects already achieving localized installation and operation services – marking a substantive stage in green industry cooperation (figure 1.4).

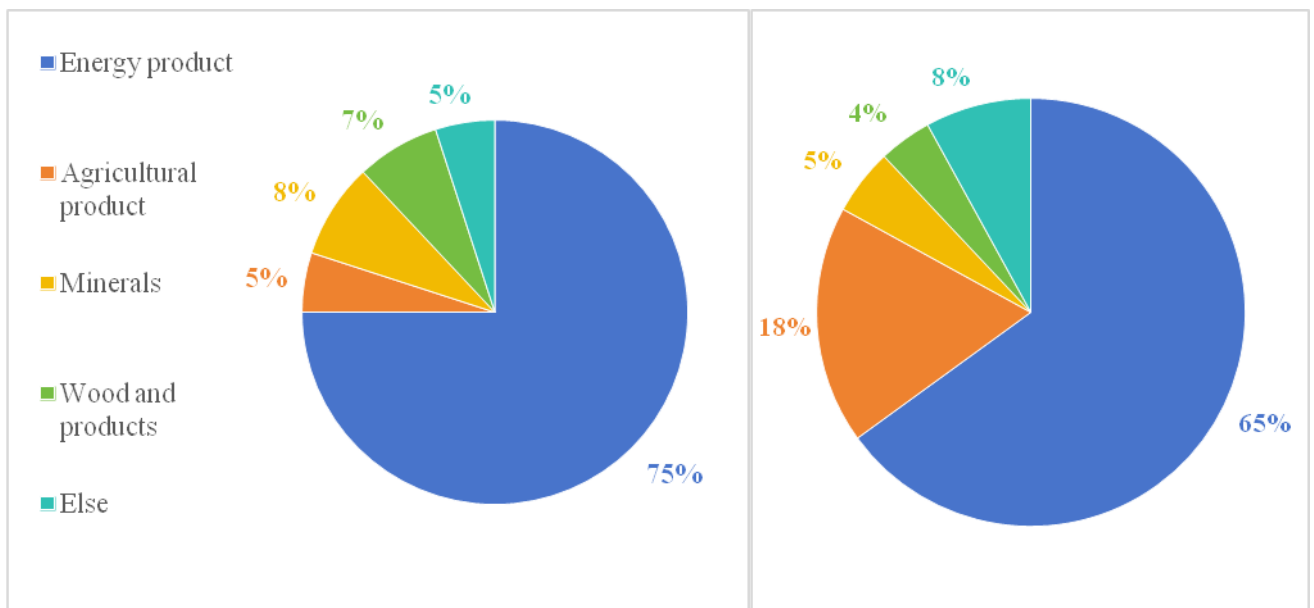


Figure 1.4 – 2018–2024 changes in the structure of China's export trade to Russia

From the comparison of the structure of China's exports to Russia in 2018 and 2024 in the above figure 1.4, it can be seen more intuitively that the proportion of mechanical and electrical products based on automobiles and heavy machinery is increasing, exports of heavy machinery, automobiles, and related components have continued to grow rapidly. Particularly in areas such as infrastructure construction, mining equipment, rail transportation, and agricultural machinery, Chinese-manufactured products have gradually replaced some traditional European and American brands. For example, Chinese domestic automobile brands and new energy vehicles (NEVs) have significantly expanded their market share in Russia. Several automakers – such as Chery, Great Wall Motors, and BYD

– have established sales networks and even local assembly plants in Russia, marking a shift from complete vehicle exports to localized operations.

Second, telecommunications and information technology products have emerged as new growth drivers. As China and Russia deepen strategic cooperation in the digital economy, demand in Russia has been rising for high value-added products such as 5G equipment, data center components, smart devices, and network infrastructure. Chinese enterprises like Huawei and ZTE have made significant breakthroughs in equipment exports and are also actively participating in the development of Russia's network infrastructure, thereby supporting the country's digital transformation.

The rapid development of cross-border e-commerce platforms has become a major engine for boosting exports of consumer goods. E-commerce channels such as AliExpress Russia and Ozon have significantly reduced distribution costs and expanded market coverage. This has led to a sharp increase in sales of small household appliances, smart wearable devices, beauty and personal care products, and home goods – creating a new model of online consumption-driven trade growth [52].

In addition, the accelerated adoption of RMB settlement mechanisms has provided Chinese exporters with a more stable exchange rate environment and greater financial support. This has helped reduce transaction costs and mitigate risks related to exchange rate fluctuations, thereby increasing exporters' willingness and confidence to expand trade with Russia.

According to data from the General Administration of Customs of China and the Federal Customs Service of Russia, in 2023, China's exports to Russia were mainly concentrated in electromechanical equipment, complete automobiles and auto parts, consumer electronics, and basic chemical raw materials – together accounting for over 70 % of total exports. This clearly demonstrates that the bilateral trade structure is evolving toward greater optimization, sophistication, and diversification.

This structural transformation not only enhances the overall brand image and technological influence of Chinese products in the Russian market but also lays a solid foundation for the long-term sustainable development of China-Russia economic and trade relations.

Russia's energy export dependence in trade with China.

In recent years, the structure of Russia's exports to China has exhibited a high degree of concentration and strong dependence on natural resources, with energy products consistently occupying a dominant position. According to data from the General Administration of Customs of China and Russian sources, over 70 % of Russia's total exports to China in 2023 consisted of primary energy and mineral resources – such as crude oil, natural gas, coal, and metal ores – reflecting a continued increase in the proportion of resource-based trade. In particular, natural gas exports surged significantly due to the Power of Siberia pipeline, while crude oil exports also reached a record high, further cementing China's position as Russia's most important energy export market (table 1.2).

Table 1.2 – Changes in the composition of China's imports of Russian products [36]

Merchandise categories	2018	2024	Variation trend	Typical commodity
Energy product	75 %	65 %	-10 %	Crude oil, natural gas
Agricultural product	5 %	18 %	13 %	Wheat, soybeans
Minerals	8 %	5 %	-3 %	Copper, nickel
Wood and products	7 %	4 %	-3 %	Log
Else	5 %	8 %	3 %	Aquatic products

As can be seen from the above table, in 2018 compared with 2024, China's imports of goods to Russia showed a decrease of -10 % in energy products such as crude oil and natural gas, a 13 % increase in wheat and soybeans, and a 3 % decrease in other minerals and timber.

Shown in figure 1.5, it can be seen from the above comparison chart of the changes in the structure of China's imports of Russian products in 2018 and 2024.

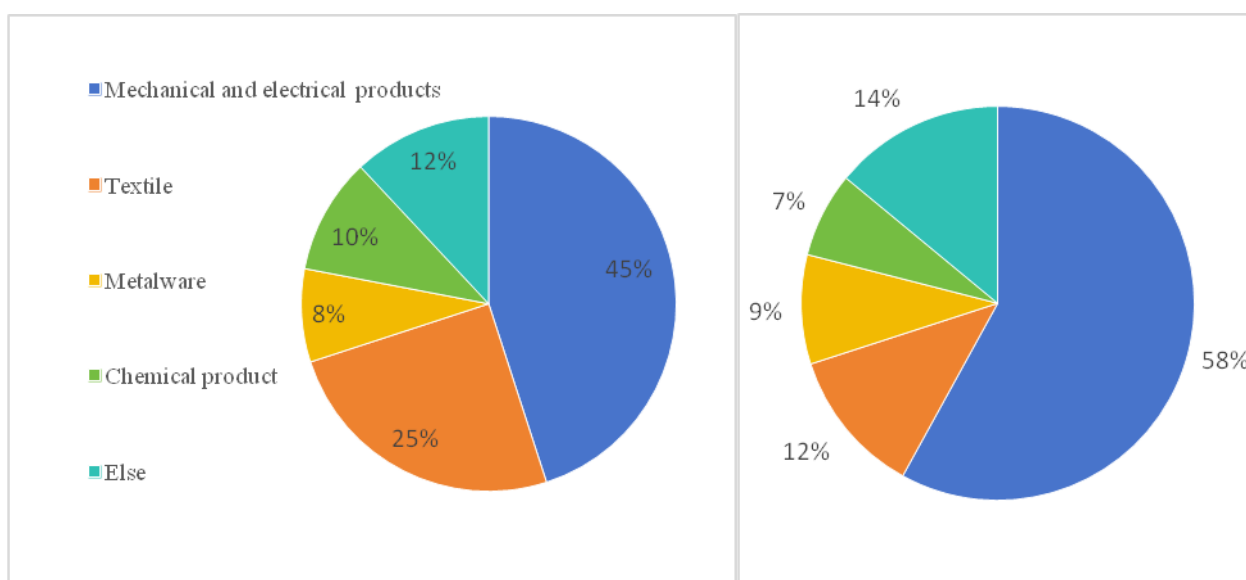


Figure 1.5 – Comparison chart of changes in the structure of Chinese imports of Russian products in 2018 and 2024

The export structure remains highly concentrated, with an energy-dominated pattern persisting over the long term. Despite recent efforts by the Russian government to diversify its export structure, Russia's exports to China remain heavily reliant on energy and bulk raw materials, while the shares of industrial manufactured goods, high-tech products, and agricultural processed products remain relatively low. This trade pattern, characterized by high volume but low added value, demonstrates strong short-term stability and foreign exchange earning capacity but faces challenges regarding long-term sustainability amid the global energy transition and ongoing carbon peak and carbon neutrality goals.

Frequent signing of medium- and long-term energy agreements deepens cooperation mechanisms. In recent years, China and Russia have continuously signed structural, long-term cooperation agreements in the energy sector, such as the long-term gas supply contract for the Power of Siberia pipeline and the expansion plan for the oil pipeline from Russia's Far East to China's northeastern provinces. These long-term contracts have enhanced the institutionalization of bilateral energy cooperation, effectively increasing the predictability of Russia's export revenues while further strengthening China's energy

supply security. This institutional arrangement is becoming a strategic pillar in Sino-Russian trade relations [19].

Energy price volatility significantly impacts export revenues. Due to the export structure's heavy concentration in the energy sector, fluctuations in international energy prices directly affect Russia's export earnings. In 2022, global energy prices surged sharply due to the Russia-Ukraine conflict, significantly boosting the value of Russia's energy exports to China. However, in 2023, despite an increase in export volume, stabilized international oil and gas prices resulted in no corresponding growth in export value, reflecting the instability and vulnerability of a trade model highly dependent on energy prices in the global market.

China's role in Russia's energy diplomacy continues to rise. As tensions between Russia and Europe persist and the European market contracts substantially, Russia's pivot to the East strategy increasingly relies on the Chinese market as the core support for its energy exports. By 2023, China had firmly established itself as Russia's largest export destination for crude oil, natural gas, and coal, with its share continuously increasing. China is not only the most strategically significant consumer market for Russian energy products but is also progressively involved in upstream investments, pipeline construction, and joint development projects, deepening the full-chain bilateral energy cooperation [46].

Green transition and emerging energy cooperation will reshape the future of Sino-Russian energy relations. While traditional energy remains the current cooperation's ballast, China and Russia have begun exploring new cooperation models in renewable energy, hydrogen, nuclear power, and carbon reduction mechanisms. For example, joint photovoltaic and wind power projects are being discussed in the Russian Far East, and Chinese companies are gradually participating in the application of green energy technologies and standards development in Russia. Moving forward, energy cooperation will evolve from resource-based exports toward energy technology collaboration and integration into green value chains [42].

In summary, although Russia's export structure to China remains energy-dominant in the short term, the critical issue for the medium to long term is how to promote export diversification and achieve a transformation from resource export to industrial

collaboration and value co-creation. For China, while ensuring energy security, it is also necessary to participate in and guide the structural optimization and upgrading of Russia's export system through financial support, capacity cooperation, and technology transfer, thereby expanding the strategic depth of bilateral cooperation amid a changing global landscape.

Trade balance and dependency: an analysis of asymmetry in cooperation.

Despite the continued growth in the total volume of Sino-Russian trade and the increasingly close economic and trade ties in recent years, significant asymmetries and structural imbalances remain in terms of export composition and mutual dependency. These disparities pose constraints on the long-term, balanced development of bilateral trade.

China's export structure to Russia is characterized by a high degree of diversification. Chinese exports span a broad range of sectors including electromechanical equipment, automobiles and parts, consumer electronics, new energy products, high-end manufacturing, and light industrial goods. These exports are generally high in added value and technological content. This diversified structure – marked by advantages in technology + branding + services – reflects China's proactive position in the global value chain and endows it with greater bargaining power and structural dominance in bilateral trade.

The trade structure between China and Russia has long been highly complementary, especially reflected in the two-way flow between resource elements and industrial products. Bilateral import and export data for 2024 shows that this complementary relationship is not only stable but also further deepened, reflecting the potential for differentiated division of labor and cooperation between China and Russia in the global industrial chain. According to official data from the General Administration of Customs of China and the United Nations Commodity Trade Database (UN Comtrade), China's exports to Russia in 2024 will be dominated by mechanical and electrical products, textiles and garments, and chemical products, which are characterized by high added value and intensive manufacturing capacity. Russia's exports to China are concentrated in primary

resource-based commodities such as energy (crude oil, natural gas), metal minerals, and agricultural products (grains, oil, seeds) (table 1.3).

Table 1.3 – The proportion of import and export trade commodities between China and Russia in 2024 [34]

Merchandise categories	The proportion of China's exports to Russia	The proportion of Russian exports to China
Energy product	2 %	58 %
Metallurgical products	4 %	15 %
Agricultural products	5 %	10 %
Mechanical and electrical products	45 %	3 %
Chemical products	12 %	6 %
Textile and garment	15 %	1 %
High and New Technology	10 %	2 %

Judging from the proportion of the export structure in the above table, in 2024, China's exports to Russia will account for about 45 % of mechanical and electrical equipment, followed by textile and light industrial products (about 15 %) and chemical products (about 12 %). In contrast, Russia exports about 58 % of energy products (including oil, gas, coal), metallurgical products and agricultural products about 10 % to China.

As can be seen from the figure 1.6., the complementarity of the commodity structure of bilateral trade between China and Russia in 2024 is reflected in the docking relationship between high manufacturing capacity and resource supply, and shows the potential for long-term cooperation at multiple levels such as electromechanical, energy, light industry, agricultural products, industrial raw materials, and industrial manufactured products. With the advancement of the local currency settlement mechanism, the rise of digital trade and the improvement of port capacity, the complementarity of commodity structure will be further transformed into deeper industrial chain synergy and investment linkage, which

will become the key fulcrum for the sustainable development of Sino-Russian economic cooperation.

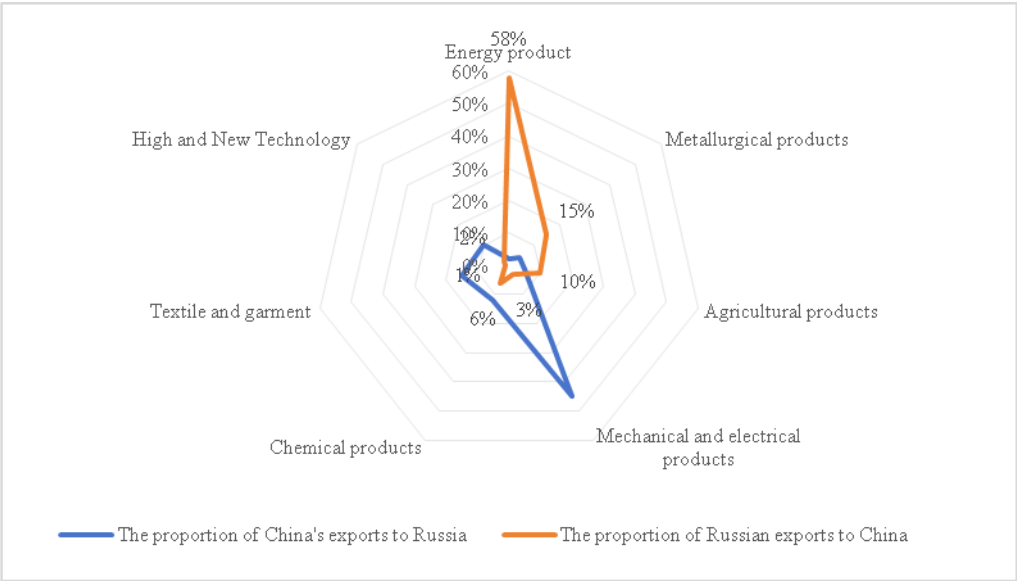


Figure 1.6 – 2024 Sino-Russian import and export trade commodity complementarity [32]

As an important part of international and regional cooperation in the new era, Sino-Russian trade not only faces significant development advantages and cooperation opportunities, but also has structural constraints and external challenges. In order to systematically sort out its strategic situation, the SWOT analysis model can be used to comprehensively evaluate the current Sino-Russian trade development as shown in the figure above. Sino-Russian trade cooperation not only has strong endogenous momentum and policy support, but also needs to continue to make efforts in improving mechanisms, risk prevention and control, and structural optimization. In the future, while consolidating the foundation of traditional trade, we should actively expand the space for new types of cooperation, and promote the upgrading and development of bilateral trade in the direction of high quality, full chain, mutual benefit and win-win results (figure 1.7).

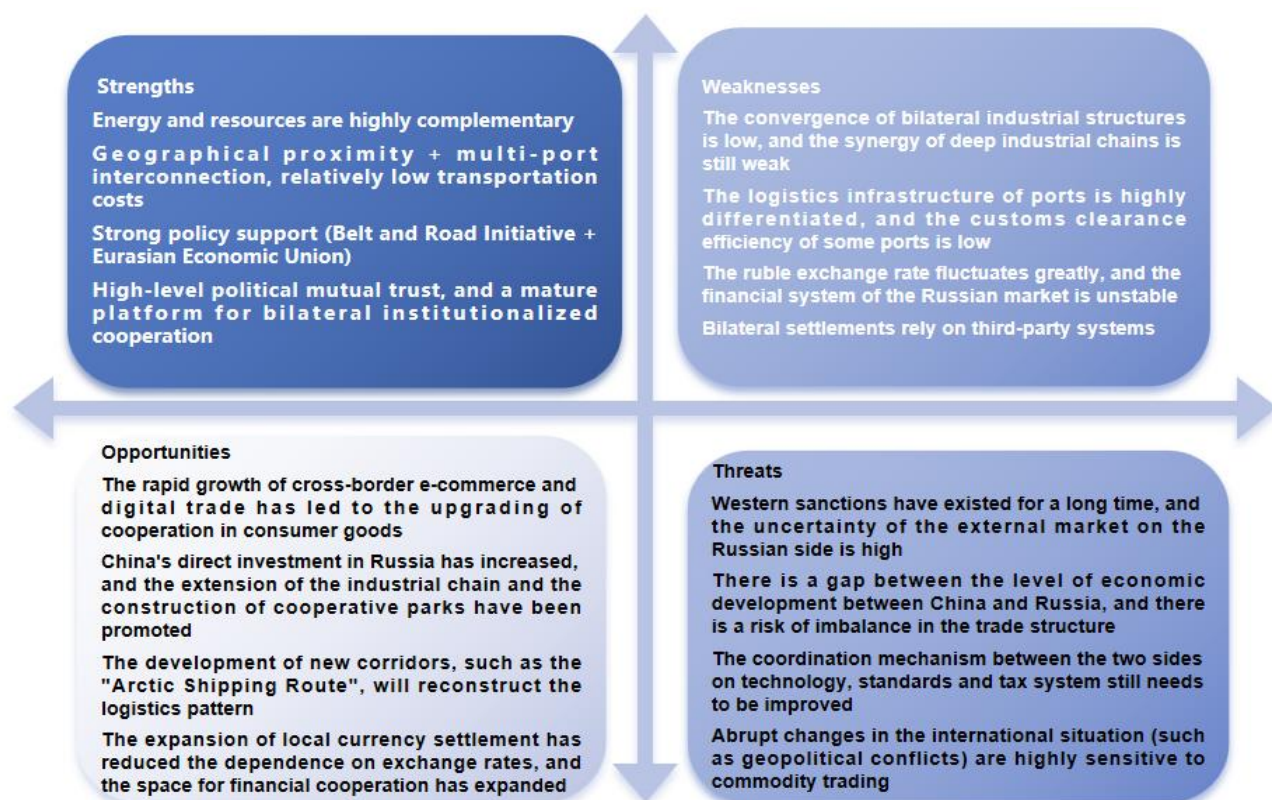


Figure 1.7 – SWOT strategic analysis of Sino-Russian trade

In contrast, Russia's exports to China are highly concentrated in primary goods, particularly energy and raw materials. In 2023, crude oil, natural gas, coal, and metal ores accounted for more than 70 % of Russia's total exports to China. Industrial finished goods, processed agricultural products, and high-tech exports represented only a minimal share, with generally low added value. While this resource-based export model ensures foreign exchange revenues in the short term, it has weak resilience to global market fluctuations and commodity price cycles, undermining the stability and sustainability of trade relations.

In terms of trade dependency, Russia's reliance on China is significantly higher than China's reliance on Russia. In 2023, China remained Russia's largest trading partner, accounting for nearly one-third of Russia's total foreign trade. This dependency is particularly pronounced in energy exports. In the same period, however, Russia ranked only as China's eighth-largest trading partner, making up less than 3 % of China's total trade volume and playing a relatively limited role in China's global economic and trade landscape. This gap reveals a tendency toward unilateral dependence within the trade structure [29].

Such structural asymmetries constrain the reciprocity and strategic resilience of Sino-Russian economic cooperation to some extent. They also contribute to imbalances in policy coordination, risk transmission, and industrial chain interactions, potentially creating instability in areas such as trade friction and regulatory alignment in the future.

1.3 Development trends in Sino-Russian services trade

As the Sino-Russian comprehensive strategic partnership of coordination continues to deepen, bilateral cooperation in people-to-people and cultural exchanges has grown increasingly robust. Trade in services related to tourism, education, and culture has gradually emerged as a key growth driver in the broader landscape of Sino-Russian economic relations. These areas not only foster greater mutual understanding and goodwill among the peoples of both nations, but also play a crucial role in optimizing and diversifying the structure of bilateral services trade.

In the tourism sector, the implementation of a visa-free group travel program between China and Russia since 2014 has significantly increased the frequency of cross-border visits. According to the Russian Federal Agency for Tourism (Rostourism), in 2019, the number of Chinese tourists visiting Russia reached 2.2 million, accounting for 29.7 % of all foreign visitors to Russia that year-nearly one-third solidifying China's position as Russia's largest inbound tourism source country. This figure highlights the strong demand and immense potential of the Chinese tourist market in Russia. Although cross-border tourism was nearly halted by the outbreak of COVID-19 in 2020, the sector has shown strong signs of recovery with the easing of the pandemic and gradual resumption of international flights. By 2023, the number of Chinese tourists visiting Russia had rebounded to over 1 million, recovering more than 45 % of the 2019 level [34].

The education sector also constitutes a key area of cooperation within Sino-Russian services trade, with notable expansion in both depth and breadth in recent years. According to 2023 statistics from Russia's Ministry of Education and Science, China is one of Russia's largest sources of Asian international students, with approximately 30,000 Chinese students enrolled in Russian higher education institutions. These students span a

wide range of disciplines including linguistics, engineering, medicine, and biological sciences. Meanwhile, the number of Russian students studying in China has also shown steady growth. According to data from China's Ministry of Education, the total number of Russian students in China reached nearly 11,000 by the end of 2023. Over 100 inter-university cooperation agreements have been established between Chinese and Russian institutions, including joint training programs, «2+2» dual-degree arrangements, partnerships between Confucius Institutes and Pushkin Centers, as well as faculty exchanges and collaborative research projects. These mechanisms have laid a solid foundation for the market-oriented development of educational services between the two countries.

In the field of cultural services, both sides have actively promoted high-level and institutionalized cultural exchange initiatives. Since the launch of the Sino-Russian National Year program in 2006, a series of large-scale people-to-people exchange projects have been implemented, including the Sino-Russian Year of Culture, Sino-Russian Year of Media Exchange, and Sino-Russian Year of Regional Cooperation and Exchange. For example, during the Year of Culture, hundreds of concerts, theatrical performances, and art exhibitions were held, not only in major cities but also in border regions and smaller localities, significantly enriching the cultural lives of the public and enhancing grassroots mutual understanding. At the same time, with the advancement of digital technology, the format of cultural exchange has increasingly shifted to online platforms, enabling the cross-border dissemination of cultural products and services. Examples include digital museums, virtual exhibitions, and audiovisual content licensing, all of which have opened up new commercial pathways for cultural services trade between China and Russia.

Overall, Sino-Russian services trade is gradually transitioning from being a supplement to goods trade toward a more comprehensive model of humanistic cooperation. As institutional and market-based exchanges in tourism, education, and culture continue to deepen, services trade between China and Russia is expected to unlock greater potential in the years ahead, becoming a vital and increasingly dynamic component of bilateral economic relations.

With the accelerating development of the global digital economy, digital services and cross-border e-commerce have increasingly become emerging engines of growth in Sino-Russian services trade cooperation. Especially in the aftermath of the COVID-19 pandemic, where traditional trade channels were constrained, digital tools played a crucial role in maintaining and expanding bilateral economic ties, driving a strategic shift in Sino-Russian services trade from a factor-driven to a technology-driven model.

In the area of cross-border e-commerce, Chinese digital platforms have continued to strengthen their penetration into the Russian market. Since 2019, Alibaba Group's AliExpress has expanded its footprint in Russia, forming the joint venture AliExpress Russia through strategic partnerships with Russian Post, leading telecom operator MegaFon, Sberbank, and Mail.ru Group (now VK Group). This joint venture has enabled localized supply chain integration and adaptation to Russian service standards. These efforts have significantly reduced cross-border logistics times, improved the user shopping experience, and enhanced customer retention and market stickiness for the platform.

According to a series of reports published by Russian e-commerce research institute Data Insight, Russia's cross-border e-commerce transaction volume has shown a consistent upward trend since 2019.

In 2019, Russia's cross-border e-commerce transaction volume reached USD 6.5 billion, with Chinese products accounting for 76 % of the total. In 2020, driven by the surge in online consumption during the pandemic, transaction volume rose to USD 7.2 billion, with Chinese goods comprising 77 %. In 2021, transaction volume slightly declined to USD 6.9 billion due to global logistics disruptions, but Chinese products still maintained a 74 % market share.

In 2022, against the backdrop of the Russia-Ukraine conflict and Western sanctions, many Western platforms exited the Russian market. Chinese platforms seized this opportunity, pushing transaction volume back up to USD 7.5 billion, with Chinese goods accounting for 79 %. In 2023, transaction volume reached USD 7.0 billion, with Chinese products maintaining a share above 75 %. In 2024 (forecast), according to Data Insight and the Russian E-Commerce Association, the total cross-border e-commerce transaction volume is expected to reach USD 8.0 billion, with Chinese goods maintaining a market

share in the range of 76 % to 78 % as shown in table 1.4.

Table 1.4 – 2019–2024 cross-border e-commerce transaction volume in Russia [25]

Year	Cross-border e-commerce transaction value(billion dollars)	Proportion of Chinese goods
2019	65	76 %
2020	72	77 %
2021	69	74 %
2022	75	79 %
2023	70	75 %
2024	80	77 %

In addition, Chinese mobile payment tools such as Alipay and WeChat Pay have also begun expanding into the Russian market. In 2023, Alipay established partnerships with several Russian payment terminal service providers, including Qiwi and Sberbank Pay, enabling QR code payment functionality in key commercial districts, airports, and tourist hotspots. This development not only enhanced the payment experience for Chinese tourists and Russian consumers but also encouraged Russian merchants to adopt and integrate Chinese digital payment standards. As a result, it contributed to the diversification and localization of Russia's payment ecosystem (figure 1.8).

Wildberries. Since 2019, Wildberries has seen a continuous increase in market share, reaching 47 % in 2023, solidifying its position as the market leader in Russian e-commerce. Its success is attributed to a broad product selection, robust logistics network, and deep understanding of local consumer preferences.

Ozon. Ozon's market share rose significantly from 5 % in 2019 to 34.4 % in 2023, demonstrating strong growth momentum. Through product diversification, enhanced logistical capabilities, and increased investment in marketing, Ozon has succeeded in attracting a large consumer base.

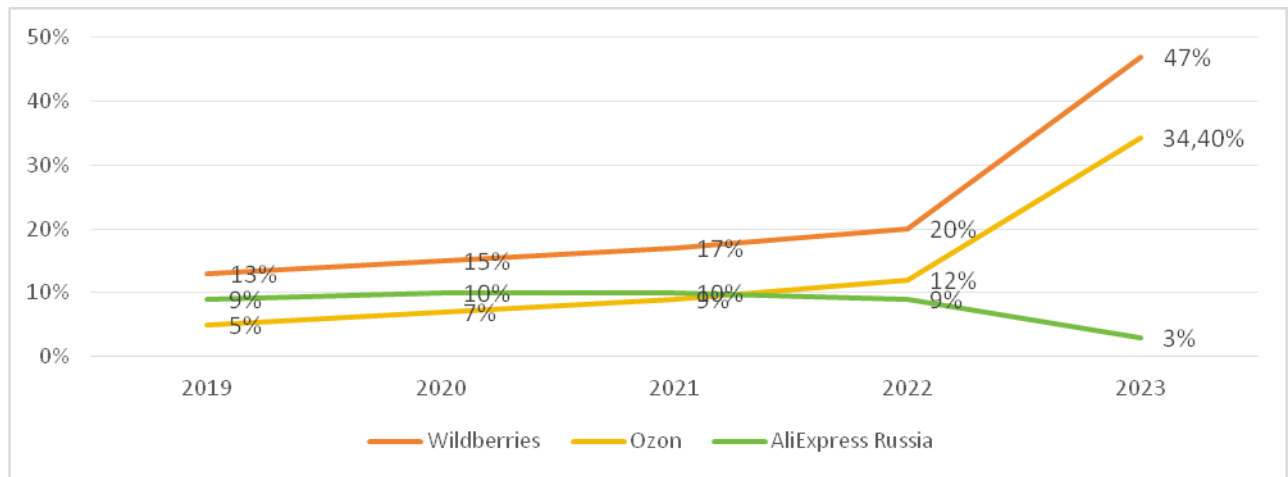


Figure 1.8 – Changes in the share of Wildberries, Ozon, AliExpress Russia in the Russian market [11]

AliExpress Russia. While AliExpress Russia maintained around a 10 % market share during 2020 and 2021, its share declined to 3 % in 2023. This drop may be linked to rising demand for localized services and intensified domestic competition.

The data above illustrates the significant transformation in the Russian e-commerce landscape between 2019 and 2024. Wildberries and Ozon have leveraged their localization advantages and continual innovation to consolidate and expand their market positions. In contrast, while AliExpress Russia held a notable share during the early stages, it has lost ground in the face of strong competition from domestic players [1].

Beyond consumer-oriented digital trade, Sino-Russian cooperation has also begun to expand into high value-added digital services. In recent years, areas such as software outsourcing, artificial intelligence (AI), cloud computing, and data centers have emerged as promising fields for collaboration. For instance, Huawei has established several R&D labs in Russia focusing on AI algorithms, 5G communications, and big data processing. Russian tech firms such as Yandex and Kaspersky Lab have also participated in AI algorithm testing and pilot projects related to cybersecurity cooperation [61].

At the intergovernmental level, both sides have actively promoted digital infrastructure interconnectivity and regulatory alignment. Under the framework of the Digital Silk Road, China and Russia have held multiple consultations on issues such as cross-border data flows, cybersecurity compliance standards, and localized operational

regulations. In 2023, they jointly signed the China-Russia Joint Statement on Digital Economy Cooperation, outlining future collaboration in the following areas:

- establishing cross-border data transmission nodes and fiber-optic cable networks;
- promoting the creation of a regional digital certification system;
- strengthening cybersecurity and joint action against cybercrime;
- encouraging the integration of digital technologies into industries such as manufacturing, logistics, and education.

In summary, from 2019 to 2024, China-Russia cooperation in digital services and cross-border e-commerce has gradually taken shape around a new development paradigm characterized by platform leadership, policy support, and technological collaboration. As both sides continue to improve the institutional frameworks governing law, finance, data, and technology, digital trade is expected to play an increasingly vital role in their bilateral economic relationship, serving as a key driver for structural transformation and high-quality development.

With the deepening of China-Russia bilateral relations, financial cooperation has emerged as a strategic cornerstone of the two countries' service trade. This is especially true in the context of intensifying Western financial sanctions against Russia, which have further highlighted the importance of bilateral financial integration. Confronted with the dominance of the U.S. dollar in the global financial system and the risks posed by its use as a tool of financial containment by Western powers, Russia has accelerated its de-dollarization strategy and actively sought to establish bilateral settlement mechanisms using the Chinese yuan (RMB) and the Russian ruble in place of the dollar.

According to data released by the Central Bank of Russia in 2023, the share of bilateral trade between China and Russia settled in local currencies (RMB and ruble) has surpassed 60 %, compared to less than 10 % in 2014 – demonstrating a remarkable growth trajectory. Specifically, the use of the yuan in bilateral trade settlements rose from 17 % in 2021 to over 34 % in 2023, making it the second most-used currency in Russia's foreign trade, second only to the ruble.

This trend not only reflects the accelerated internationalization of the yuan in the Russian market, but also highlights the growing outward influence and connectivity of

China's financial system.

Showing in the figure 1.9, it is evident from the data that the annual exchange rate between China and Russia has experienced consistent fluctuations. To support the stable operation of the local currency settlement mechanism, several major Chinese banks – including the Bank of China, Industrial and Commercial Bank of China (ICBC), and China Construction Bank – have established branches and representative offices in key Russian cities such as Moscow and St. Petersburg. These institutions offer a comprehensive range of financial services, including RMB settlement, trade financing, cross-border remittance, and risk hedging instruments. Their localized operations have significantly improved the efficiency and convenience of financial transactions between Chinese and Russian enterprises, while reducing dependence on the U.S. dollar as an intermediary currency and mitigating risks related to exchange rate volatility and international sanctions.

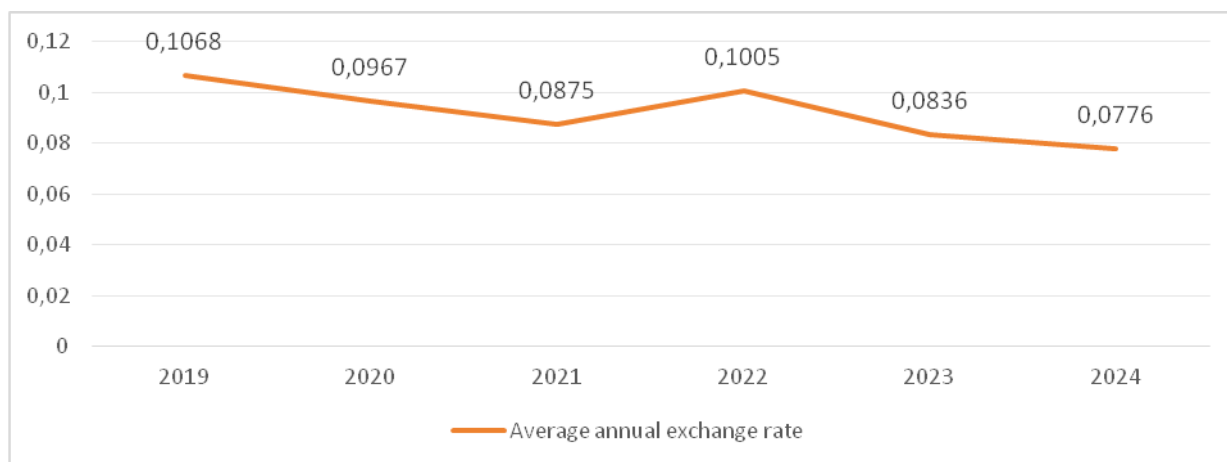


Figure 1.9 – Annual exchange rate changes between China and Russia [4]

At the same time, the People's Bank of China and the Central Bank of Russia have steadily advanced the interoperability of cross-border financial infrastructures. Notably, technical integration and settlement recognition between China's Cross-Border Interbank Payment System (CIPS) and Russia's System for Transfer of Financial Messages (SPFS) are progressing, forming an alternative transaction network that bypasses the SWIFT

system. This infrastructure connectivity not only enhances the security and stability of cross-border capital flows but also provides institutional support for broader local currency financial cooperation between the two countries.

The use of the renminbi in Russia is gradually expanding beyond trade settlement into areas such as investment, foreign exchange reserves, and everyday consumer transactions. For instance, some Russian enterprises have begun issuing yuan-denominated bonds (Panda bonds), and certain banks now offer RMB savings accounts to retail customers. Furthermore, in border regions and major cities, Chinese mobile payment platforms such as Alipay and WeChat Pay are increasingly accepted, facilitating RMB penetration into Russia's real economy and consumer markets [59].

Overall, China-Russia financial cooperation is evolving from a singular focus on settlement tools toward a more comprehensive financial ecosystem. The growing prominence of the renminbi and ruble in bilateral trade underpins the two nations' efforts to establish a regional financial architecture that operates independently of Western-dominated systems. This development not only enhances the resilience of their economic ties but also serves as a vital safeguard for maintaining sovereign financial security and deepening strategic coordination.

Chapter 2 Cross-border trade and border economic interaction

2.1 Historical development of China-Russia border trade

The origins of China-Russia border trade can be traced back to the mid-17th century. It emerged as a regional form of cross-border exchange that gradually developed due to the countries' extensive land boundary and geographical contiguity. During this early stage, trade activities were primarily conducted in the form of mutual markets (互市), characterized by relatively loose, informal, and non-institutionalized exchanges between local populations. The main areas of activity were concentrated along the Heilongjiang (Amur) River basin, the Outer Khingan Mountains, and the Siberian border regions. These early trade networks were shaped by natural geographical boundaries and built upon ethnic interactions, forming a rudimentary framework for cross-border commerce. World map of the Sino-Russian border is shown in figure 2.1.



Figure 2.1 – World map of the Sino-Russian border

The goods traded during this period exhibited strong regional characteristics and mutual complementarity. China primarily exported traditional handicrafts and daily necessities such as tea, silk, ceramics, medicinal herbs, and handmade products. In contrast, Russia's main exports included furs, grains, metal goods, utensils, and timber. Barter remained the dominant mode of exchange, lacking unified standards and regulatory oversight. Nevertheless, these informal trade activities played a significant role in fostering socioeconomic development and ethnic interaction in the frontier regions.

As China-Russia relations gradually evolved and border affairs became more complex, both sides sought to institutionalize border management and trade through formal diplomatic agreements. The Treaty of Nerchinsk (1689) – the first official border treaty between China and Russia – marked a turning point in bilateral relations by formally delimiting the boundary and initiating the legal and institutional framework for future cooperation. This treaty set a precedent for resolving territorial and trade disputes through diplomatic means and provided an initial legal foundation for the development of border trade [32].

Further institutional advancement was achieved with the Treaty of Kyakhta (1727), which established an official mutual market system centered on the Kyakhta-Khüree (modern-day Ulaanbaatar, Mongolia) interior China axis. Widely recognized as a milestone in the institutionalization of China-Russia border trade during the Qing Dynasty, the treaty clearly defined designated trade ports and open regions, while also setting regulations for cross-border movement, types of goods exchanged, trading norms, customs duties, and trade order. This marked a historic transition from spontaneous mutual markets to a system of government-regulated trade.

These institutional arrangements not only standardized the flow of goods and promoted regional stability and economic development, but also strengthened bilateral economic interaction and political trust at the national level. They laid the groundwork for long-term cooperation in border trade. Despite experiencing multiple historical fluctuations, the combination of mutual market tradition and institutionalized pathways has remained a fundamental logic in the evolution of China-Russia border trade.

Following the launch of China's reform and opening-up policy in 1978, border trade quickly became a crucial component of the country's strategy for opening up to the outside world and a frontline for international economic cooperation. In response to the regional economic imbalances caused by long-term isolation, the central government designated border areas as window zones and pioneers of openness, aiming to stimulate economic vitality in frontier regions through border trade and to rebuild economic and trade relations with neighboring countries, particularly the Soviet Union and its successor states.

Throughout the 1980s, the Chinese government introduced a series of policy documents – including the Interim Measures for Border Trade Administration, the Pilot Scheme for Small-Scale Border Trade, and the Administrative Measures for Border Economic Cooperation Zones – marking a gradual shift from experimental policies to institutionalized management of border trade. These regulations established frameworks for the qualification of border trade enterprises, trade licensing, settlement and taxation management, and import-export commodity catalogs. This initial institutionalization integrated border trade into the national unified foreign trade system, effectively regulating trade order and providing clear policy guidance for local governments' border trade practices. As can be seen from the timeline of the figure 2.2, the Sino-Russian border trade has been carried out from the dissolution of the Soviet Union in 1991, the existing China–Soviet border trade system entered a period of adjustment.

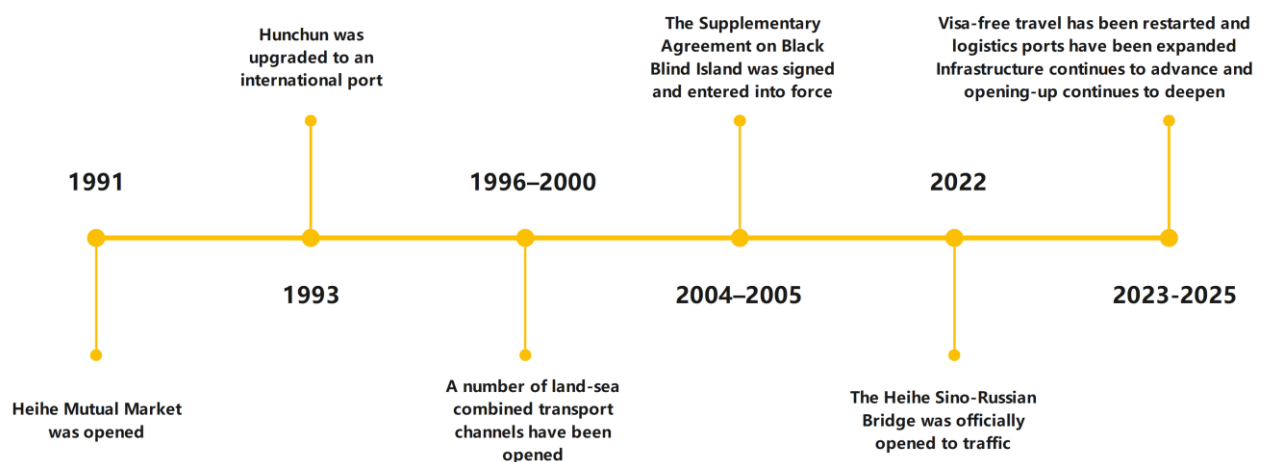


Figure 2.2 – The historical timeline of Sino-Russian border trade [7]

Due to the severe political and economic uncertainties faced by Russia and other CIS countries during their economic transition, China-Russia border trade experienced short-term fluctuations and a downturn in the early 1990s. However, leveraging geographical proximity, industrial complementarities, and historical ties, border trade rapidly recovered and entered a new phase of expansion. Particularly under China's Opening-up to the North strategy, local governments in border provinces such as Heilongjiang, Inner Mongolia, and Xinjiang actively responded by implementing pragmatic measures to promote trade with Russia. These measures included accelerating infrastructure development in border port cities (such as railways, highways, warehousing, and customs channels), establishing border trade markets, cross-border cooperation zones, and processing parks, as well as enacting tax incentives, financial support, and talent attraction policies – forming a virtuous interaction mechanism dominated by local authorities, supported by enterprises, and reinforced by policy [49].

Simultaneously, the forms of border trade continuously evolved. The early-stage barter and small-scale exchanges gradually expanded into general trade, processing trade, and service trade. Cooperation between China and Russia extended from agricultural and light industrial products to sectors including mechanical and electrical equipment, construction materials, information and communication services, tourism, education, and cross-border e-commerce. The trade structure became increasingly diversified and specialized, which not only enhanced the added value of border trade but also optimized and restructured regional industrial and supply chains, thereby elevating the strategic importance of border trade in regional development.

Since the reform and opening-up era, China-Russia border trade has undergone a process from policy-driven initiatives to institutional embedding, from physical exchanges to multifaceted integration, and from single border ports to regional coordination. It has become an indispensable component of China-Russia economic and trade cooperation and provides a solid foundation for the economic and social development of China's border areas and the construction of a community with a shared future in the neighborhood.

Entering the early 21st century, in order to fully leverage the locational advantages, resource endowments, and geopolitical strategic value of China's border regions within the

broader framework of opening-up, the central government successively approved the establishment of Border Economic Cooperation Zones (BECZs) and special functional areas such as the Sino-Russian Mutual Market Trade Zones. These zones integrate multiple functions including policy support, industrial clustering, port linkage, and service facilitation, while also undertaking experimental tasks to explore new mechanisms of openness and promote regional coordinated development. Over time, they have gradually become important platforms for the high-quality development of Sino-Russian border trade.

Represented by port cities such as Manzhouli, Heihe, Suifenhe, Tongjiang, and Hunchun, the Border Economic Cooperation Zones have formed a multilateral cross-border cooperation system centered on trade with Russia and radiating to the Russian Far East and Northeast Asian markets. These zones promote the development of industrial clusters in bonded logistics, processing and manufacturing, cross-border e-commerce, and tourism and culture, gradually upgrading from a traditional corridor economy to a platform economy. For example, the Manzhouli BECZ has grown into one of China's largest land ports, not only continuously improving freight customs clearance capacity but also nurturing border trade industrial chains focused on electromechanical products, wood processing, and building materials exports [12].

Especially under the strategic backdrop of the Belt and Road Initiative and deep integration with the Eurasian Economic Union, Border Economic Cooperation Zones have been granted higher-level policy support and strategic positioning. Taking Heilongjiang Province as an example, the province closely aligns with the main line of Sino-Russian economic and trade cooperation, prioritizing the construction of the Sino-Russian Eastern Natural Gas Pipeline project (also known as Power of Siberia), which has opened an important channel for cross-border energy resource flow. This not only strengthens the energy trust foundation between the two countries but also drives the linked development of related industries such as equipment manufacturing, logistics, and pipeline construction.

Meanwhile, Heilongjiang, Jilin, and other provinces actively leverage the China-Europe Railway Express (such as the Suiman and Harbin-Europe routes) to develop multimodal logistics systems, achieving efficient coordination among rail, road, water, and

air transport. This transformation not only enhances infrastructure interconnectivity but also effectively reduces cross-border logistics costs, improving the timeliness and stability of Sino-Russian border trade.

Furthermore, the BECZs play a demonstrative role in optimizing the business environment and innovating institutional mechanisms. Many cooperation zones have introduced initiatives such as one-stop customs clearance, joint border inspection mechanisms, and cross-border RMB settlement platforms, significantly enhancing the facilitation of port trade. For instance, Suifenhe has established a Sino-Russian cross-border e-commerce comprehensive pilot zone to enable small and medium enterprises to participate in international markets at low cost [41].

In summary, the border economic cooperation zones and mutual market trade zones serve as both policy and industrial high grounds for Sino-Russian border trade. They have gradually constructed a four-in-one regional cooperation system encompassing ports–parks–industries–corridors. These zones not only carry the function of deepening Sino-Russian economic cooperation but also provide solid support for China’s multi-tiered opening-up framework and the coordinated development of border areas, demonstrating strong regional economic driving effects and exemplary value in international cooperation.

2.2 Major border trade regions and functional distribution

Heilongjiang.

Heilongjiang Province is situated at China’s northeastern frontier and is the most extensive and closely connected Chinese province bordering Russia’s Far East. It possesses China’s longest land border with Russia – approximately 2,981 kilometers – with numerous border crossings. As the forefront of China’s openness to the north and a pivotal base for Sino-Russian trade cooperation, Heilongjiang plays a strategically vital role.

Heilongjiang is adjacent to key regions in the Russian Far East – such as Trans-Baikal, Khabarovsk, and Blagoveshchensk – serving as a crucial node in the Sino-Russian economic corridor. Leveraging its short transit routes, fast transport, and

strong complementarity, the province has developed an integrated port corridor network encompassing road, river, and rail links, significantly enhancing the accessibility and efficiency of trade with Russia.

As of 2024, Heilongjiang hosts 25 national first-class ports, including 13 that operate year-round with Russia. These are mainly located in border cities like Suifenhe, Heihe, Tongjiang, and Raohe. These crossings are not only key supports for China's Belt and Road Initiative and the China–Mongolia–Russia Economic Corridor strategy but are also important platforms for cross-border logistics, bonded industrial parks, and local trading among border residents. Core border hubs such as Manzhouli, Suifenhe, and Heihe are part of China's pilot program for border-port logistics hub cities, playing a leading role in integrating logistics channels between the East Asia Land Bridge and the Russian Far East [27].

Since the early 1980s, cities like Suifenhe, Heihe, and Tongjiang have gradually opened local border markets and trade with Russia. Suifenhe has earned the title China's No. 1 port to Russia. Since the reform and opening-up, Heilongjiang has evolved into a major gateway for trade with Russia, guiding and witnessing the transformation from barter and local market exchanges to market-based, large-scale, and industrialized cross-border trade. In recent years, amid a more stable geopolitical environment and strengthened policy support, Heilongjiang's trade with Russia has expanded rapidly, becoming the province's economic ballast stone and growth pole.

In 2023, Heilongjiang's trade with Russia reached US 29.9 billion ($\approx$ CNY 203.3 billion), up 41.6 % year-on-year, accounting for 72.4 % of the province's total foreign trade – maintaining the top position nationally in Sino-Russian trade. On the export side, the commodity mix has continued to optimize, covering agricultural products, electromechanical equipment, and high-tech goods. Imports are dominated by energy and resource goods – such as crude oil, natural gas, timber, and minerals – reflecting strong complementarity between the two regions.

The Chinese government places great importance on Heilongjiang's strategic role in cooperation with Russia. In recent years, it has successively issued a series of directional

and guiding policy documents to provide institutional safeguards and policy support for the province's cross-border trade upgrade.

Mid- to Long-Term Plan for Sino-Russian Economic and Trade Cooperation (2012–2020): Established Heilongjiang's pioneering role in enhancing China-Russia connectivity, trade facilitation, and industrial cooperation. Overall Plan for the Construction of Heilongjiang Pilot Free Trade Zone (2019), launched the China (Heilongjiang) Pilot Free Trade Zone—China's first FTZ specifically geared toward cooperation with Russia – covering Harbin, Heihe, and Suifenhe. It focuses on developing cross-border logistics, financial services, and technological collaboration.

Policy Measures for High-Quality Development in Border Areas (2022). Supports border cities in building cross-border industrial chains and advancing emerging fields such as border-trade finance, local resident trade, and international transport. 14th Five-Year Plan for High-Quality Development of Foreign Trade (2021). Explicitly calls for deepening bilateral trade and multilateral cooperation with Russia and supporting border provinces such as Heilongjiang in expanding Sino-Russian trade [54].

In addition, Heilongjiang has actively piloted complementary measures such as cross-border financial innovation and upgraded port-area functions. Since 2022, Suifenhe and Heihe have piloted direct cross-border RMB-Ruble settlement, simplifying trade in local currencies. Beginning in 2023, a pilot program for border-port logistics hub cities was launched, focusing on cold-chain warehousing, consolidated transport, and intelligent customs supervision – enhancing port efficiency and international connectivity .

These innovative policy measures have not only strengthened Heilongjiang's institutional competitiveness in border trade but also helped sustain its healthy and continuous growth in the new era of Sino-Russian economic and trade cooperation [30].

The figure 2.3 clearly shows that Heilongjiang's trade volume with Russia has fluctuated significantly: it remained high during 2018–2019, declined in 2020 due to the pandemic and global oil price volatility, and then climbed to a record high in 2023. The province's trade composition remains heavily dependent on resource imports and border trade exports, with limited progress in upgrading content and insufficient high-value-added exports.

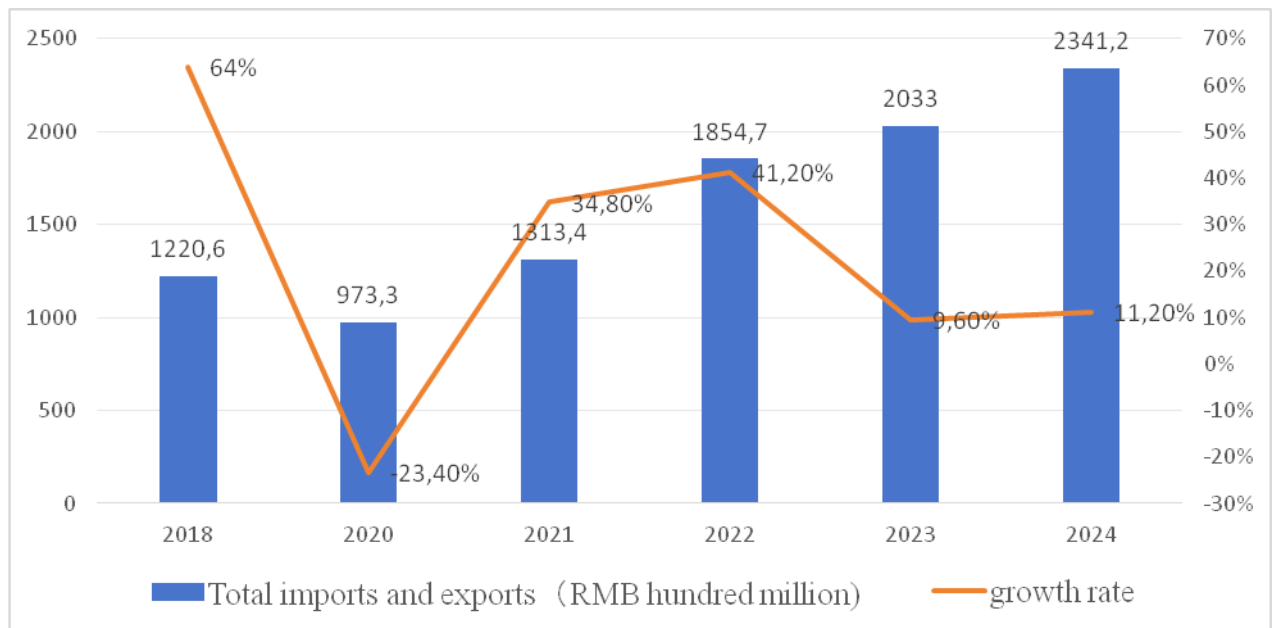


Figure 2.3 – From 2018 to 2024: Heilongjiang province-Russia trade volume statistics [16]

However, modern trade forms – such as service trade and e-commerce – are gradually emerging, and the official target is to increase the service trade component to USD 3 billion. Policy and infrastructure support – such as the Sino-Russian cross-border bridges at Tongjiang (rail) and Heihe (road), as well as crude oil and natural gas pipelines – have significantly enhanced trade efficiency and scaled expansion.

Inner Mongolia.

Inner Mongolia Autonomous Region is located in northern China and has one of the country's longest land borders. It borders Russia's Far East to the east and Mongolia to the north, positioning it as an indispensable region within China's overall opening-up to the north strategy. As a core province of the China-Mongolia-Russia Economic Corridor, Inner Mongolia not only serves as a major gateway into the Eurasian continent but also a key frontier for Sino-Russian economic and trade cooperation.

Inner Mongolia has four first-class land ports open to Russia: Manzhouli, Heishantou, Erguna, and Arxan – which makes the region a central hub in China-Russia trade. Among them, Manzhouli Port is currently China's largest land port, serving as a critical route to Russia and Central and Eastern European countries, and is praised as the bridgehead from East Asia to the European continent.

In addition, Inner Mongolia contains several land ports open to Mongolia – such as Erenhot and Ganqimaodu. Through these ports, the region has developed an integrated cross-border transportation network linking Northeast, North, and Northwest China with Russia, Mongolia, and inland Europe.

These ports support a transport system combining rail, road, and multimodal logistics, making goods transport crossing the border more efficient and seamless. For example, more than 80 China-Europe freight train routes depart through Manzhouli annually, with over 5,000 trains running per year – saving at least 15 days compared to maritime shipping. In recent years, the central government has placed great emphasis on Inner Mongolia’s strategic positioning in China–Russia cooperation and introduced several policy measures to support the construction of open platforms and the development of the border economic belt (figure 2.4).



Figure 2.4 – China-Europe train route map

The Plan for Building Inner Mongolia into an Important Bridgehead for Opening to the North explicitly proposes a dual-hub framework centered on Manzhouli and Erenhot, establishing a dual gateway strategy. The Implementation Opinions on Promoting Foreign Trade and Port Development issued by the autonomous region focus on modernizing

infrastructure, simplifying customs clearance, and advancing upgrades in cross-border industries – bolstering border trade momentum [45].

The Development Outline of the China-Mongolia-Russia Economic Corridor designates Inner Mongolia as the coordinating hub for constructing cross-border industrial chains between China and Russia. Thanks to these policy initiatives, Inner Mongolia has been approved to establish multiple national-level open platforms, including:

Manzhouli Comprehensive Bonded Zone – integrating bonded processing, exhibition, warehousing, and cross-border e-commerce. National Cross-Border E-Commerce Pilot Zones (Hohhot, Manzhouli, Erenhot) launching new models such as bonded online shopping + direct import.

Erenhot National Economic Development Zone – developing cross-border industrial clusters in building materials, automotive parts, and grain and oil processing for markets in Russia and Mongolia. The combination of strategic policies and open platforms has made Inner Mongolia one of the most dynamic regions for Sino-Russian economic cooperation under the Belt and Road Initiative and the China-Mongolia-Russia Economic Corridor. With continuous improvements in the business environment and infrastructure connectivity, Inner Mongolia's capacity for distribution and transfer of goods to Russia has grown markedly, forming a hub platform with extensive reach. From the above figure 2.5, the import and export trade between Inner Mongolia and Russia is increasing, and under the framework of opening up to the north, Inner Mongolia has continued to make breakthroughs in trade with Russia, and has been increasingly transforming from extensive resources to platform support, digital trade and value-added chain. In the future, more resources will be invested in border trade zones, cross-border e-commerce, second-hand car exports and industrial deep processing, which is expected to become a new engine for Sino-Russian economic and trade cooperation. However, it is still necessary to pay attention to the problems of global political risks and insufficient coordination of the platform system to ensure sustainable, controllable and effective development.

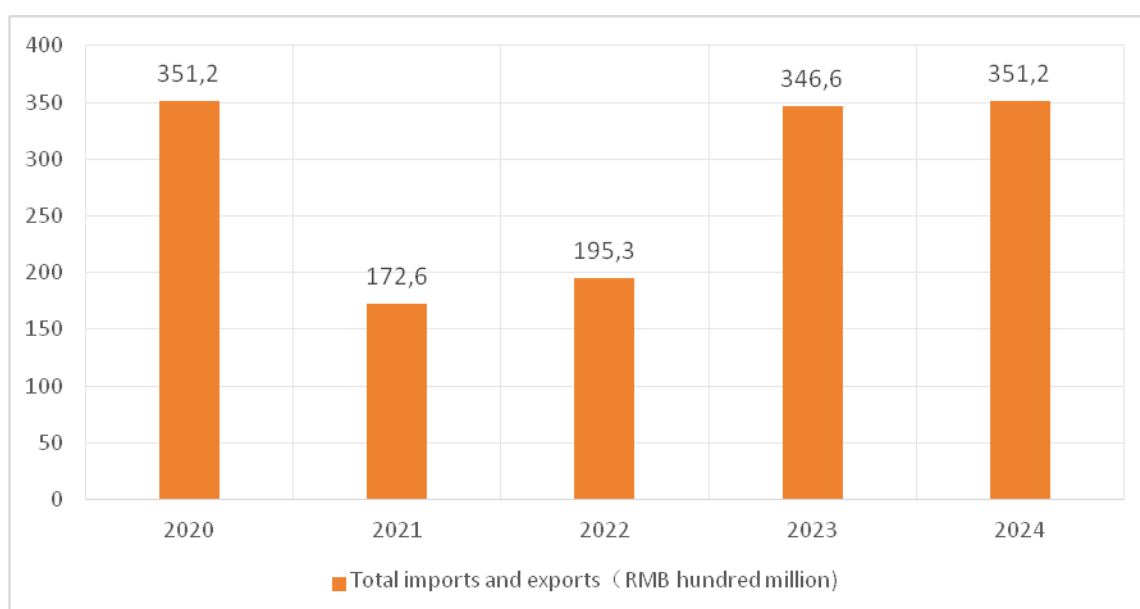


Figure 2.5 – Changes in the total import and export trade of Inner Mongolia to Russia from 2020 to 2024 [54]

Manzhouli Port, in 2023, handled over 30 million metric tons of import and export cargo, valued at more than CNY 91.1 billion, marking a 68.5 % year-on-year increase – the highest volume among China-Russia border ports. Annual cargo volume across Sino-Russian ports in Inner Mongolia (including Manzhouli and Heishantou) exceeded 15 million tons, accounting for nearly one-quarter of the region’s total port traffic. The region’s annual total freight volume surpassed 107.8 million tons, leveraging border ports and China-Europe freight trains to form a stable overland logistics corridor [11].

Moreover, thanks to reforms such as digital ports + smart logistics + green customs clearance, clearance efficiency and cargo flow have significantly improved. A case in point: Manzhouli and Russia’s Zabaikalsk port have implemented an integrated connection – inspection – clearance – feedback system, enabling real-time release and 24/7 clearance of goods.

Currently, Inner Mongolia is accelerating the integrated upgrade of port economy – logistics hub – industrial transformation, building a full-industry-chain model encompassing export processing, border trade, and cross-border e-commerce. The border economic zone is transitioning from traditional primary resource processing and small-scale trade toward high-value manufacturing + digital trade + green energy [10].

Looking ahead, as the scale of China-Russia trade continues to expand, Inner Mongolia is expected to further leverage its role as a port and transportation corridor, strengthen cross-border industrial cooperation, and improve its regional infrastructure layout. It is poised to become a core province in China's northward opening strategy and an important hub and gateway connecting China with the Eurasian continent.

Jilin Province.

Jilin Province is located in the heart of Northeast China and borders Russia's Primorsky Krai to the east. It is the only Chinese province that possesses both land and maritime access to the Sea of Japan, granting it a pivotal role in the country's broader opening to the north strategy. In recent years, Jilin has actively advanced the development of access routes and hub infrastructure for trade with Russia, gradually establishing a distinctive border trade system.

Hunchun City is the frontier of Jilin's trade with Russia, featuring a national first-class land port – Hunchun Port – which connects directly to Russia's Khasansky District. As a key node on the China-Russia border, Hunchun also serves as a gateway to North Korea, South Korea, and Japan, acting as a strategic outpost linking China with Northeast Asia. The Tumen-Hunchun railway, which connects to the Russian border town of Makhalino, has been in operation since 1996 and continues to expand its freight capacity, handling over 5 million metric tons annually. Additionally, the Changchun-Jilin-Hunchun-Zarubino Port international transport corridor provides a direct logistical link between inland cities and ports on the Sea of Japan, integrating rail, road, and maritime transport for highly efficient multimodal operations.

Over the past decade, Jilin's trade with Russia has grown steadily, particularly since 2017 when bilateral economic cooperation began accelerating. This growth trend has continued (table 2.1).

Total import-export volume with Russia reached 17.33 billion yuan, a 93.1 % increase year-on-year. Exports rose by 123 % to 6.56 billion yuan, while imports grew 43 % to 10.77 billion yuan. Trade volume rose another 71.5 %, with exports surging 210.7 %. Russia became Jilin's second-largest trading partner.

Table 2.1 – Growth of total imports and exports of Jilin Province to Russia [23]

Year	Imports and exports to Russia (100 million yuan)	Year-on-year growth
2020	57.8	+0.1 %
2022	173.3	+65 %
2023	> 203 (September data known)	+71.5 % (for the whole year)

First three quarters of 2024: trade with Russia totaled 20.473 billion yuan, up 0.8 % year-on-year; exports accounted for 14.228 billion yuan, a 7.5 % increase. Jilin’s export structure has become increasingly diversified, transitioning from primary products to high-value-added goods: Mechanical and electrical products: 38.59 billion yuan in 2023, up 79.6 %. Complete vehicles and auto parts: 19.17 billion yuan, up 170.1 %. High-tech products: 9.42 billion yuan, up 122.1 % [8].

Traditional competitive exports such as food, agricultural products, traditional Chinese medicine, and household appliances also remain significant, contributing to a diversified export system. Hunchun Port now operates 24-hour customs clearance and was the only uninterrupted China-Russia freight port during the COVID-19 pandemic. With process optimization and digital supervision, clearance efficiency continues to improve, ensuring smoother and more stable cargo flows [21].

Hunchun Border Market Trade Zone benefits from a border residents’ duty-free policy, achieving 5 billion yuan in import targets in 2023 and positioning Hunchun as a model city for pilot border trade.

Market Procurement Trade Pilot: The Hunchun Northeast Asia International Commodity City has been designated as a market procurement export platform, opening new export channels for small commodities. Cross-Border E-Commerce Industrial Park: The Hunchun park has taken shape, recording 5.08 billion yuan in cross-border e-commerce transactions in 2023, a 44.3 % year-on-year increase.

In recent years, Jilin has vigorously developed new cross-border e-commerce models, leveraging customs codes 1210 and 9610 to diversify exports. Cross-border e-commerce imports and exports in Hunchun soared from 43 million yuan in 2018 to 5.08 billion yuan in 2023, making it a national leader among land ports. Major export products

include white goods and 3C digital products, which are distributed to cities like Moscow and Vladivostok.

Chang-Manzhouli-Europe and Chang-Hunchun-Europe freight trains have been launched consecutively, achieving seamless connectivity with Russia's central and western regions as well as the European hinterland. In 2023, the Chang-Manzhouli-Europe train dispatched 8,424 TEUs, with goods valued at CNY 3.15 billion – a 12.5 % year-on-year increase. Hunchun Port has synergized operations with the train assembly center, creating new strengths in combined land–sea transportation and significantly enhancing cargo consolidation and distribution capacity.

Leveraging its unique geographical advantages and progressively deepening opening-up policies toward Russia, Jilin Province is steadily growing into a strategic stronghold in China-Russia border trade. Going forward, it should further advance port reforms, foster new business formats, and expand international cooperation mechanisms to comprehensively elevate its influence and driving force in the nation's economic and trade relations with Russia.

Xinjiang.

Xinjiang is located on China's northwestern frontier and serves as a significant gateway and overland transport hub to Central Asia, Russia, and even Europe. Its unique geographic position – bordering Kazakhstan and Mongolia and indirectly connected to Russia through these countries – positions it as a core node in the Silk Road Economic Belt under the Belt and Road Initiative. Although Xinjiang does not share a direct border with Russia, it plays a vital role as a transit hub in Sino-Russian border trade via Kazakhstan and adjacent nations. With key ports such as Khorgos, Alashankou, and Tacheng, Xinjiang has gradually built an efficient Central Asia-Xinjiang-Russia' logistics corridor, becoming a crucial link in the China-Mongolia-Russia-Europe overland logistics route. Xinjiang currently hosts 17 national first-class ports, many of which function as logistical hubs for the re-export of Central Asian goods to Russia (figure 2.6).



Figure 2.6 – China-Mongolia-Russia Economic Corridor [9]

Xinjiang is one of the most active regions in China for multimodal transportation development. In 2022, the region’s rail-based import and export value to countries along the Belt and Road reached CNY 289.89 billion, a year-on-year increase of 15.4 %, while highway transport reached CNY 217.52 billion, marking a 145. 3% surge – making it one of the fastest-growing segments of cross-border trade. Over the past decade, as the Belt and Road Initiative has advanced and China-Russia relations have deepened, Xinjiang has become a core hub for transit trade to Russia, with its indirect trade volume steadily increasing. As a result, it has become a key support point for Sino–Russian economic and trade exchanges in Northwest China.

In 2018 Xinjiang’s border trade totalled USD 12 billion, accounting for 60.1 % of its total foreign trade volume, becoming a pillar of the region’s trade structure. In 2023 while Xinjiang’s specific bilateral trade statistics with Russia were not separately published, substantial increases in rail and highway cargo throughput indicate that Xinjiang’s corridors are playing an increasingly central role in transit trade. In Q1 2024 Xinjiang’s total foreign trade value reached CNY 93.63 billion, a 42.7 % year-on-year increase; among this, trade with Belt and Road countries (including Russia) grew by 41.7 %.

With high-standard port construction and improved customs clearance efficiency, Xinjiang has continuously enhanced its logistics and transit trade functions with Russia, laying a solid foundation for high-quality cross-border trade.

Tacheng Port: In Q1 2024, total import-export value increased by 70 %, and coal imports surpassed one million tonnes. Average customs clearance time was reduced from 15–20 minutes to just 6–8 minutes. Measures such as normal weekend clearance and integrated inspection systems have effectively supported Russia's peak logistics demands.

Khorgos Port: In 2023, total cargo throughput reached 40 million tones – the highest in Xinjiang for eight consecutive years. As a major node for China-Europe freight trains, it handles significant re-export of goods to Russia and has built a comprehensive international logistics network covering Central Asian nations and Russia.

Xinjiang's trade composition with Russia has diversified: the share of traditional resource-based commodities has decreased, while industrial products, consumer goods, and digital services have increased – creating a more varied trade profile. 2018: Xinjiang's exports were dominated by food, textiles, and machinery; imports mainly comprised energy products, medical devices, and steel raw materials. Some goods were indirectly routed to Russia via Central Asian countries, forming a stable indirect trade conduit.

New trade models: The region has actively promoted cross-border e-commerce, local border trade, overseas warehouses, and more. Pilot digital e-commerce platforms have been launched in Khorgos and Alashankou to facilitate product transit to Russia; detailed statistics on these initiatives are still emerging. Multimodal transport systems linking rail, road, and ports have been continuously optimized – boosting China-Russia cargo flow efficiency. In 2023, the number of China-Europe freight trains from Xinjiang rose by over 20 %, with multiple routes operating on a regular schedule and maintaining stable connections to Chinese and Russian supply sources [15].

Chapter 3 Challenges and prospects for Sino-Russian border trade cooperation

3.1 Major challenges in current border trade

Despite the steady growth of Sino-Russian border trade in recent years – now serving as a vital pillar of bilateral economic cooperation – numerous structural and institutional obstacles remain at the practical level. These issues not only hinder further improvement in trade facilitation but also constrain the long-term vitality and innovation capacity of border economies. From the perspectives of policy alignment, infrastructure integration, financial support mechanisms, and the broader international environment, several core challenges in Sino-Russian border trade still need urgent resolution.

Divergences in trade policy and tariff barriers.

Although China and Russia have established a high-level diplomatic framework as Comprehensive Strategic Partnership of Coordination for a New Era, and maintain close dialogue under multilateral mechanisms such as the Shanghai Cooperation Organization (SCO) and BRICS, significant gaps remain in bilateral trade policy coordination and institutional harmonization.

First, discrepancies in trade regulations and technical standards constitute a major source of non-tariff barriers. China implements a relatively unified and transparent system covering customs procedures, quarantine inspection, product certification, and electronic port management. In contrast, Russia retains many unique and often complex regulatory frameworks. For instance, in sectors such as agricultural products, pharmaceuticals, and mechanical equipment, Russia enforces high-threshold certification systems and origin tracing mechanisms. As a result, Chinese products face long approval cycles and elevated compliance costs when entering the Russian market – deterring participation, especially from small and medium-sized enterprises [62].

Second, the absence of mutually preferential tariff arrangements remains a critical bottleneck. While both countries are members of the World Trade Organization (WTO) and grant each other Most-Favored-Nation (MFN) status, they have yet to establish a free trade agreement (FTA) or other preferential trade mechanisms covering major commodity

categories. As of 2024, with few exceptions involving pilot programs, most Chinese exports to Russia remain subject to tariffs ranging from 5 % to 15 %, with some high value-added goods facing even higher duties. This increases market entry costs for Chinese exporters and weakens their price competitiveness in the Russian market [29].

Taking agricultural products as an example, data from the Federal Customs Service of Russia in 2023 indicates that over 80 % of Chinese exports of vegetables, dairy, and grain-based goods remain subject to import duties, with an average rate of around 12 %. This not only depresses sales but also hinders the development of upstream and downstream sectors such as cold-chain logistics and agri-food processing. Institutional coordination on trade facilitation remains underdeveloped. Bilateral mechanisms for customs data sharing, border inspection cooperation, and harmonized port operation standards are lacking. As a result, key border crossings often experience clearance delays, document duplication, and inconsistent data during peak trading periods, all of which negatively impact overall trade efficiency.

To unlock the full potential of Sino-Russian border trade, meaningful breakthroughs in policy coordination are urgently needed. On one hand, both sides should accelerate negotiations on a bilateral free trade zone or preferential trade agreements. On the other hand, technical dialogues among customs, inspection, and standard-setting authorities should be intensified to promote mutual recognition and policy convergence – thereby reducing institutional transaction costs and enhancing trade liberalization and facilitation across the border.

Low customs clearance efficiency and lagging transport infrastructure.

The customs clearance process at Sino-Russian border ports has long been characterized by procedural complexity and low efficiency, becoming a key bottleneck hindering the smooth operation of cross-border trade. Although both governments have, in recent years, attached great importance to port modernization – promoting initiatives such as smart ports, single-window systems, and electronic management platforms – practical outcomes remain constrained by multiple factors.

For instance, the Manzhouli port has introduced an electronic declaration system, and the Heihe port has implemented a vehicle-cargo joint inspection mechanism, both of

which represent efforts to improve clearance efficiency. However, full coordination between the two countries is still lacking in crucial areas such as port supervision models, customs information systems, language and coding standards, and data-sharing interfaces. This lack of harmonization has led to inefficiencies in information flow and approval procedures. In many cases, documents must be resubmitted across multiple systems, and manual translation or human intervention is still required – significantly reducing clearance efficiency and slowing the turnover of goods [5].

In addition, uneven development of cross-border transport infrastructure further exacerbates logistical bottlenecks. During China's 14th Five-Year Plan period, significant investment has been made in cross-border infrastructure, resulting in the completion of major projects such as the Heihe Highway Bridge, the Tongjiang Railway Bridge, and the Sino-Russian East-Route Natural Gas Pipeline. These have substantially improved port connectivity and cross-border transport potential. However, on the Russian side, progress in constructing supporting transportation facilities near border areas has been relatively slow. Key components such as border access roads, freight transit hubs, and dispatch management systems remain underdeveloped. This has caused disconnection points along the Sino-Russian logistics chain [37].

A typical example is the Zabaikalsk border crossing, where limited road capacity and outdated scheduling systems frequently result in long queues of trucks, large-scale vehicle congestion, and cargo accumulation. These delays not only slow down material flows but also raise logistics costs for enterprise – ultimately diminishing the overall efficiency and attractiveness of border trade.

Therefore, to facilitate the transformation and upgrading of Sino-Russian border trade, it is imperative that both countries deepen cooperation in port management coordination, institutional standard alignment, and synchronized infrastructure development. By strengthening institutional connectivity, enhancing digitalization, and promoting coordinated development of cross-border transportation networks, the key bottlenecks constraining border trade can be effectively addressed, thereby improving the overall efficiency and long-term sustainability of bilateral commerce.

Inefficient cross-border financial settlement and bottlenecks in RMB-based transactions.

Under the current U.S. dollar-dominated international financial system, local currency settlement mechanisms in Sino-Russian trade remain in their early stages, characterized by both experimentation and initial progress. Driven by geopolitical dynamics, international sanctions, and both countries' pursuit of de-dollarization, China and Russia have accelerated efforts to develop bilateral local currency settlement frameworks in recent years, with some initial achievements. According to data from the Bank of Russia, by 2023, the proportion of bilateral trade settled in local currencies had risen significantly to 65 %, with the use of the Chinese yuan in Russian trade and financial transactions growing rapidly – making it one of the fastest-expanding settlement currencies in Russia's foreign transactions [3]. However, at the operational level, businesses still face multiple obstacles and systemic bottlenecks, and a stable, efficient, and scalable mechanism has yet to be established.

First, the cross-border RMB clearing infrastructure has not achieved full coverage. Several Russian commercial banks have yet to fully integrate into the Cross-Border Interbank Payment System (CIPS) led by the People's Bank of China, resulting in uncertainty surrounding the clearing pathways for RMB transactions within Russia. When key channels are restricted or designated intermediary banks lack processing capacity, payment delays, transaction failures, or unexpected fees can arise – significantly compromising the timeliness and reliability of trade-related fund flows [48].

Second, exchange rate volatility remains a central concern for enterprises. A highly stable and liquid direct exchange mechanism between the RMB and the ruble has yet to be established. In the absence of mature financial derivatives for effective hedging, many small and medium-sized enterprises (SMEs) face substantial exchange rate risks when opting for local currency settlements. As a result, some firms remain cautious and continue to prefer U.S. dollars or euros for cross-border transactions in order to mitigate financial uncertainty.

Moreover, since the outbreak of the Russia-Ukraine conflict, Western sanctions targeting Russia's financial system have further complicated the practical implementation

of local currency settlements. Some Russian firms listed on sanctions registers are unable to use the SWIFT system or are refused services by Western banks. Consequently, financial channels between these firms and their Chinese counterparts have been disrupted. Even when Chinese financial institutions are willing to cooperate, they often face high compliance costs and political risks. This not only weakens the efficiency of fund circulation in bilateral trade but also restricts the wider adoption and promotion of local currency settlement mechanisms [61].

In summary, to promote the high-quality development of RMB-based settlement in Sino-Russian trade, enhanced cooperation is needed in institutional alignment, payment system connectivity, exchange rate risk management, and SME financial support. The two countries could expand the interoperability between CIPS and Russia's Financial Messaging System (SPFS) to improve cross-border payment and clearing efficiency. Meanwhile, a robust local-currency financial derivatives market should be established to provide enterprises with effective exchange rate hedging tools, thereby enhancing their confidence and capability to conduct local currency settlements. Additionally, a comprehensive policy support framework for local currency settlement should be developed to offer a stable, secure, and flexible financial infrastructure for bilateral trade.

Geopolitical risks and the impact of international sanctions.

In recent years, the global geopolitical landscape has experienced persistent turbulence – most notably the escalation of the Russia-Ukraine conflict and the resulting wave of severe economic and financial sanctions imposed by Western countries against Russia. These developments have profoundly reshaped the external environment in which Sino-Russian border trade operates. In response, the Russian government has accelerated the implementation of its Look East strategy, aiming to mitigate the pressures of economic decoupling by strengthening economic and trade ties with China and other Asian countries. While this strategic pivot has objectively created new growth opportunities for bilateral trade, it has also introduced more complex international risks and challenges. In particular, Chinese enterprises are increasingly exposed to rising compliance pressures when engaging in trade with Russia [28].

Sectors involving high-tech products, dual-use equipment, and communication components are especially vulnerable. Owing to multiple rounds of Western export controls and secondary sanctions, Chinese companies exporting items with potential military or strategic applications to Russia face the risk of being blacklisted. Firms implicated in such activities may be banned from accessing Western markets, disconnected from global banking systems, and subjected to reputational damage or disruptions in global supply chains. These developments significantly increase legal and operational uncertainties in conducting trade with Russia. As such, Chinese exporters in sensitive fields must enhance internal compliance screening, establish risk alert mechanisms, and ensure their products and technologies are not used to circumvent international sanctions.

More broadly, Western sanctions have severely impacted Russia's domestic industrial chains, leaving many manufacturing and supply sectors in partial suspension and increasing Russia's dependency on external trade. In the short term, this has enabled Chinese goods – particularly low- and mid-end manufactured and consumer products – to rapidly fill the vacuum in the Russian market and gain market share. However, this substitution-driven growth has also heightened Russia's sensitivity to external reliance. In strategic sectors such as agricultural machinery, chemical materials, and electrical equipment, the Russian government has reinitiated its import substitution policy, aiming to increase domestic production capacity. This has involved measures such as raising technical certification thresholds, imposing higher tariffs, and tightening local procurement requirements – all of which have raised market entry barriers for foreign enterprises, including those from China, and added uncertainty to their export operations.

In addition, the withdrawal of Western capital and advanced technology has led to an increasingly asymmetric interdependence in the Sino-Russian trade relationship. China has become a critical partner and technology provider to Russia in sectors such as telecommunications, transportation, energy, and infrastructure. However, this growing dependence on Chinese technology and financing has introduced imbalances into the bilateral cooperation structure. In the absence of high-level technological complementarity and industrial synergy, such asymmetry may constrain the long-term sustainability and

innovation potential of Sino-Russian economic cooperation. It could even impact the depth of strategic trust between the two countries [28].

In conclusion, while the evolving geopolitical landscape has opened unprecedented opportunities for Sino-Russian border trade, it has also created a more volatile and structurally complex environment. To achieve high-quality and sustainable cooperation, both sides must strengthen policy coordination, establish robust compliance mechanisms and risk control frameworks, and promote deeper technological cooperation to avoid falling into a cycle of dependency and imbalance. Such efforts are essential to enhance the resilience and strategic stability of the China-Russia economic partnership.

3.2 Mechanisms of Sino-Russian border trade cooperation and policy innovation

Against the backdrop of profound adjustments in the global trade landscape, China and Russia – comprehensive strategic partners – have seen their bilateral economic and trade cooperation deepen and diversify. In particular, as the synergy between China's Belt and Road Initiative (BRI) and the Eurasian Economic Union (EAEU) strategy continues to advance, Sino-Russian border trade has evolved beyond the traditional model of simple goods exchange toward a new stage characterized by institutionalization, regionalization, and platform-based collaborative development. This transformation is reflected not only in the sustained expansion of trade volume but also in the continuous improvement of institutional design, cooperation mechanisms, and trade facilitation platforms. Focusing on the optimization of the border trade system and policy innovation, the two countries have actively explored a multi-dimensional framework encompassing free trade zone development, local cooperation mechanisms, industrial coordination, and the construction of digital information platforms. These efforts are gradually forming a modern border trade cooperation system supported by a threefold foundation of institutional guarantees, policy guidance, and mechanism-based coordination.

I Institutional exploration through free trade zones and cross-border pilot areas.

To elevate Sino-Russian border trade to higher levels of quality and openness, China has in recent years advanced the development of pilot free trade zones (FTZs) and cross-border economic cooperation zones, leveraging institutional innovation as a key driver of external liberalization. A prime example is the establishment of the Heilongjiang Pilot Free Trade Zone in 2019, whose subzones in Heihe and Suifenhe are designated as pioneering areas for cooperation with Russia. These zones are tasked with serving China's national strategy toward Russia and leading the transformation and upgrading of border trade. Institutional innovation in these FTZs focuses on investment facilitation, trade liberalization, financial openness, cross-border logistics, and tax incentives. An integrated policy support framework has begun to take shape, encompassing measures such as streamlined customs clearance, pilot programs for RMB cross-border settlement, and optimized supervision of processing trade. These reforms have not only elevated China's port openness but also provided more efficient, secure, and replicable institutional templates for Sino-Russian border trade [41].

Meanwhile, Russia has actively promoted its own institutional reforms in the Far East through the creation of Priority Development Areas (TORs) and the Vladivostok Free Port regime. Particularly in the Primorsky Krai region, the Russian government has introduced a set of preferential policies, including simplified visa procedures for foreign investors, corporate income and VAT exemptions, and infrastructure subsidies. These measures aim to attract foreign enterprises – especially from China. According to the Russian Ministry for the Development of the Russian Far East and Arctic (2023), over 30 Chinese enterprises have already established operations in the region, spanning logistics, modern agriculture, food processing, and light manufacturing. This indicates a growing complementarity and interactivity in institutional development between the two countries, marking a shift from commodity exchange to industrial integration.

Although China and Russia have not yet signed a formal bilateral free trade agreement, preliminary cooperation in FTZ alignment has begun. The signing of the Agreement on Economic and Trade Cooperation between China and the Eurasian Economic Union in 2019 marked a substantive step toward regional integration involving Russia. The agreement covers areas such as trade facilitation, coordination of technical

trade barriers, intellectual property rights protection, and e-commerce cooperation. While the agreement does not yet constitute a high-level FTA, it lays the institutional foundation for more advanced Sino-Russian cooperation by promoting rule alignment and pilot mechanisms. The experiences gained here offer a strong basis for future bilateral FTA negotiations and regulatory convergence [14].

In summary, the institutional exploration of free trade zones and cross-border cooperation zones reflects the strategic alignment of China and Russia's respective approaches to external openness. It also highlights a clear trend of upgrading border trade cooperation from policy-driven to institution-driven development. Looking ahead, deeper policy coordination, enhanced mutual recognition of FTZ rules, and broader replication of institutional innovations are expected to lead Sino-Russian border trade into a more standardized, efficient, and sustainable new stage.

II Local cooperation mechanisms and the Sino-Russian years of regional cooperation and exchange framework.

Local governments in China and Russia play a dual role as both bridge builders and catalysts in border economic and trade cooperation. They serve as the key force in translating central-level policies into regional practices. Particularly in border areas, local authorities act as first responders to policy implementation and actively explore institutional innovation and project cooperation on the ground, functioning as intermediaries that link national strategies with grassroots needs.

From 2018 to 2019, China and Russia jointly hosted the Years of Regional Cooperation and Exchange, marking a shift from sporadic local interactions to a more institutionalized framework for subnational collaboration. During this period, the two sides established an intergovernmental platform based on provincial and oblast-level dialogues, held a series of high-level regional economic forums, and signed a number of pragmatic cooperation memoranda covering infrastructure development, energy exploration, logistics coordination, agricultural science and technology, and people-to-people exchanges. These initiatives significantly enhanced the interconnectivity and resource allocation efficiency between border cities [60].

For instance, Heilongjiang Province established regular communication and coordination mechanisms with Russia's Amur Oblast and Primorsky Krai, resulting in multiple cooperation agreements in areas such as joint infrastructure development, cross-border logistics hub operations, and cultural and educational exchanges – providing sustained momentum for shared regional development.

Local cooperation has also yielded concrete outcomes in project implementation. A representative example is the jointly developed Sino-Russian Heilongjiang Road Bridge connecting Heihe and Blagoveshchensk. Since its official opening to traffic in 2022, the bridge has removed a key land transportation bottleneck along the border. It has not only significantly improved customs clearance efficiency and freight capacity at the border crossing but also stimulated the development of related industries such as building materials, transportation, warehousing and logistics, and financial services. The bridge stands as a model of successful conversion of local-level cooperation into tangible economic benefits. It also reflects the high degree of coordination and mutual trust between Chinese and Russian local governments in areas such as project advancement, financing support, and operational mechanism design [18].

To further enhance cooperation efficiency and policy coordination, local governments on both sides have established several cross-border coordination mechanisms, such as the Sino-Russian Border Governors' Forum and the Local Economic and Trade Cooperation Liaison Group. These institutionalized platforms provide efficient channels for communication, policy consultation, and rapid problem resolution, significantly shortening the policy implementation chain and improving the responsiveness and effectiveness of border trade cooperation. Within these platforms, border cities are able to share information, align policies, and engage in joint problem-solving, effectively avoiding bureaucratic silos and administrative fragmentation. This approach has helped transform border trade policies from mere documentation into practical and impactful action.

The active participation of local governments has shifted Sino-Russian border trade from being solely nationally led to a model of multi-level coordination, forming a new pattern of cooperation driven by central strategies and grounded in local implementation. Moving forward, as local cooperation mechanisms between China and Russia continue to

mature and improve, border trade cooperation is expected to unlock greater potential in broader areas and at deeper levels – facilitating a transition from mere hard connectivity to more integrated forms of soft convergence in Sino-Russian relations.

III Investment and financing platforms and industrial synergy in border cities.

The development of investment and financing platforms plays a crucial role in enhancing the industrial capacity of border cities and improving the sustainability of Sino-Russian border trade. As the comprehensive strategic partnership between China and Russia continues to deepen and cross-border economic cooperation becomes increasingly close, bilateral collaboration in infrastructure, industrial support, and financial services has steadily expanded. This has led to the emergence of a diversified investment and financing system driven by policy guidance, fund support, and market-based operations.

In recent years, several Chinese policy-oriented financial institutions – such as the China Development Bank and the Export-Import Bank of China – have joined forces with local governments to establish special funds and financial instruments. These aim to address funding bottlenecks in border regions by providing medium- and long-term stable financing for major projects. For instance, in the Heihe Area of the Heilongjiang Pilot Free Trade Zone, the local government launched the Sino-Russian Local Cooperation Industrial Investment Fund, which focuses on supporting industries with local comparative advantages, including agricultural product processing, cold-chain logistics, cross-border warehousing, and modern services. The fund helps enhance park infrastructure and extend industrial chains, injecting new momentum into Sino-Russian border trade. In addition, provinces such as Heilongjiang and Inner Mongolia have established port development guidance funds, leveraging fiscal support, market mechanisms, and private capital participation to stimulate larger-scale infrastructure investment [49].

In terms of industrial synergy in port cities, both sides are gradually building integrated cross-border service systems that combine trade + processing + logistics + finance, driving a shift in border areas from traditional corridor economies to platform- and cluster-based economies. Take Manzhouli as an example: leveraging its status as a national-level cross-border e-commerce pilot zone, the city has developed smart warehousing systems, established e-commerce service platforms, export processing parks,

and multimodal transport hubs – opening up a cross-border trade channel for buying globally and selling globally. On the Russian side, Zabaikalsk is actively encouraging its resource-based enterprises to engage in deep processing and joint operations with Chinese companies. By exploring value-added cooperation in fields such as energy, timber, and non-ferrous metals, the region aims to reduce its reliance on raw material exports and promote deeper integration of bilateral industrial chains.

Furthermore, to support small and medium-sized enterprises (SMEs) in participating in border trade and to alleviate their financing difficulties, China and Russia are also innovating financial products and service models. For example, the Russian Industrial Bank has partnered with major Chinese financial institutions – including Bank of China and Industrial and Commercial Bank of China – to launch special loan products for cross-border SMEs. These products aim to meet funding needs in areas such as trade settlement, equipment procurement, and raw material supply. They are characterized by simplified approval procedures and flexible settlement currencies, while risk-sharing mechanisms have increased banks' willingness to lend. Meanwhile, some border cities have begun to experiment with establishing cross-border financing guarantee platforms to provide credit support for SMEs and lower financing thresholds [6].

Overall, the construction of investment and financing platforms in Sino-Russian border regions is evolving from a project-driven model to a more systematic support framework, providing both institutional and financial guarantees for border trade cooperation. In the future, with the ongoing introduction of digital finance, green finance, and RMB settlement mechanisms, the two countries are expected to further expand financing channels, optimize capital structures, and enhance the resilience and international competitiveness of border-area industrial chains.

The efficient and sustainable operation of border trade relies heavily on robust institutional coordination and effective information exchange mechanisms. Against the backdrop of deepening Sino-Russian relations and the ongoing structural upgrading of bilateral trade, the two countries have accelerated the construction of cross-border digital infrastructure, aiming to establish a highly coordinated system spanning trade, logistics, finance, and taxation. This process has not only enhanced customs clearance efficiency

and regulatory capabilities but also laid a solid foundation for the high-quality development of border trade.

In recent years, under the framework of the Digital Silk Road initiative and regional digital economy cooperation, China and Russia have actively developed smart ports and a cross-border trade big data platform. This platform integrates data resources from customs, market regulation authorities, tax administrations, and foreign exchange regulators in both countries, enabling real-time data exchange for imports and exports, full-process traceability of goods, and transparent, standardized tax management. For example, through the interconnection between China's Single Window system and its Russian counterparts, the two sides have achieved real-time sharing of information related to customs declarations, transport scheduling, and logistics monitoring. These advances have significantly reduced customs clearance times and operating costs for enterprises [60].

At the institutional coordination level, China and Russia have established regular mechanisms such as the Sino-Russian Investment Cooperation Committee and the Sino-Russian Digital Cooperation Working Group. These platforms facilitate ongoing collaboration on critical issues, including data standardization, regulatory alignment, and mutual recognition of credit systems. In the realm of e-commerce regulation, the customs authorities of both countries have signed a data exchange agreement on cross-border e-commerce, promoting the creation of a standardized and compliant transaction environment. This initiative has effectively curbed illegal activities such as smuggling, false declarations, and price manipulation, thereby enhancing the security and transparency of cross-border transactions. Such cooperative efforts not only reinforce regulatory trust between the two sides but also pave the way for the potential establishment of a bilateral free trade area and deeper economic integration.

At the local level, border cities are actively implementing national strategies by accelerating the digital transformation of government services and trade management. Cities such as Heihe and Suifenhe in Heilongjiang Province have launched platforms like the Sino-Russian Trade Information Service Platform and the Border Trade Data Coordination System. These platforms offer integrated services, including bilingual market information, major logistics routes, cross-border exchange rates, and legal and policy

briefings. They play a crucial role in helping enterprises access real-time information, assess market risks, and optimize trade routes – services particularly welcomed by small and medium-sized enterprises (SMEs). Some cities have even integrated functions such as credit ratings, tax records, and foreign exchange registration into these platforms, thereby fostering a more secure and business-friendly environment for border trade. Looking ahead, with the continued application of technologies such as blockchain, artificial intelligence, and big data in cross-border trade management, China and Russia are expected to achieve deeper levels of coordination in information sharing, risk control, and intelligent regulation. This technological advancement will provide strong support for the transition of border trade from quantitative expansion to qualitative improvement.

3.3 Future trends in the transformation and upgrading of Sino-Russian border trade

With the continuous deepening of the comprehensive strategic partnership between China and Russia, as well as the ongoing evolution of the global geopolitical and economic landscape, Sino-Russian border trade is entering a critical stage of transformation and development. The traditional border trade model, primarily based on resource exchange and low-end product circulation, is shifting towards a new paradigm driven by technological innovation and deeply embedded within global value chains. This evolution – from factor-driven to technology-driven and from quantitative growth to quality improvement – not only aligns with the intrinsic needs of the economic structural upgrading of both countries but also responds to the global trends of trade digitalization and intelligent transformation.

In the context of increasingly complex and uncertain international political and economic environments, the upgrading of Sino-Russian border trade is not only a necessary means to enhance the resilience and vitality of bilateral economic and trade relations but also a strategic option for jointly coping with external pressures and strengthening regional cooperation stability. Looking forward, the development of

Sino-Russian border trade will present several key trends, among which the accelerated construction of digital border trade will become a core direction.

Digital border trade: construction of smart ports and intelligent customs clearance systems.

Digital transformation is becoming the core driving force for the high-quality development of Sino-Russian border trade. With the continuous maturation of new-generation information technologies such as artificial intelligence, big data, blockchain, the Internet of Things, and cloud computing, their integrated application in cross-border trade is reshaping traditional customs clearance, logistics, and regulatory models. Both China and Russia recognize that building an intelligent, transparent, and efficient digital border trade system is an important pathway to enhance trade efficiency and security and strengthen the strategic support capacity of border cities.

Currently, smart customs clearance systems have been deployed at several key ports, achieving full-process electronic operations and information sharing in import-export declarations, customs inspections, tax payments, and logistics scheduling through the construction of unified data interfaces. For example, at the Heihe port, the Digital Integrated Customs Clearance Platform fully launched in 2023 integrates functions such as enterprise credit certification, logistics tracking, electronic tax payment, pre-clearance review, and electronic document archiving. This has significantly improved clearance efficiency and transparency, realizing an intelligent operational mechanism characterized by more data running, faster goods clearance [5].

Meanwhile, under the framework of the Sino-Russian Digital Economy Cooperation Initiative, both sides are advancing higher-level information interconnectivity and data standard alignment, achieving phased results in areas including cross-border e-commerce payment and settlement, intelligent customs clearance system integration, blockchain logistics document verification, and joint cybersecurity response mechanisms. These innovative measures not only optimize the business environment but also enhance the technological content and risk control capabilities of border trade supervision.

Looking ahead, leveraging the synergy between China's Digital Silk Road under the Belt and Road Initiative and Russia's National Digitalization Plan, China and Russia are

expected to pioneer the establishment of a regional digital trade demonstration zone along their border areas. This demonstration zone will transcend the traditional goods flow model, integrating a triad mechanism of data + services + industry to upgrade border ports from single trade corridors to multifunctional industrial hubs. Centered on smart ports and supplemented by digital finance, digital logistics, and digital supply chain management services, the border region will become a strategic node leading regional innovation, serving multilateral trade, and connecting the Eurasian continent.

Furthermore, to support the construction of the digital border trade system, local governments and relevant institutions can further increase investments in digital infrastructure such as cross-border data centers, border 5G networks, and border trade cloud platforms. Through policy guidance and institutional innovation, they can provide stable expectations and efficient guarantees for enterprises participating in cross-border digital trade. By comprehensive efforts spanning institutions, technology, talent, and platforms, Sino-Russian border trade will achieve a strategic leap from a traditional peripheral area to the forefront of the digital economy.

Green border trade: promoting low-carbon logistics and ecological industry synergy.

The concept of green and sustainable development is increasingly integrated into the policies and practices of Sino-Russian border trade, becoming an indispensable direction for advancing high-quality border trade development. Against the backdrop of the dual carbon goals (carbon peaking and carbon neutrality), China is accelerating the construction of a green supply chain system, promoting the transformation of traditional border trade towards resource-saving and environmentally friendly models. Russia is also continuously enhancing policy coordination and industrial cooperation with China in energy transition and ecological governance.

At the port infrastructure level, China actively promotes green customs clearance systems, intelligent energy-saving warehousing facilities, and low-carbon multimodal transport modes in multiple border cities. For instance, in Manzhouli and Suifenhe, the proportion of rail freight has been increasing year by year, effectively replacing high-energy-consumption and high-pollution road transport. Railway transport not only boasts higher unit energy efficiency but also reduces environmental burdens caused by

vehicle congestion and road surface wear. According to data from the Ministry of Transport in 2023, through optimizing capacity structures and improving railway customs clearance efficiency, the carbon emission intensity of these border ports has significantly decreased, setting exemplary standards for green port construction.

Sino-Russian cooperation in the field of clean energy has also made substantial progress. As a landmark project of Sino-Russian energy interconnection, the Sino-Russian East-Route Natural Gas Pipeline achieved full-line connectivity in 2023, with an annual gas supply capacity of 38 billion cubic meters. This pipeline not only meets the demand for clean energy in Northeast China but also provides a stable export channel for Russian natural gas resources, offering solid support for both countries' energy structure optimization and carbon emission control [44].

Moreover, Chinese enterprises are actively expanding green investment layouts within Russia, including photovoltaic module manufacturing plants, waste resource recovery centers, and biomass energy pilot projects, gradually forming an integrated investment + construction + operation and maintenance green cooperation model. These projects not only promote the development of local clean energy industries but also enhance complementary cooperation between China and Russia in renewable energy and environmental protection technologies, injecting green momentum into industrial transformation in the border regions.

Looking ahead, the development of green border trade will no longer be limited to cross-border circulation of eco-friendly products or cooperation on single energy projects, but will expand to deeper integration across broader fields. On one hand, both sides are expected to strengthen joint research and development and technology transfer in environmental governance technologies such as carbon capture and storage, wastewater treatment, and solid waste recycling, jointly building green industrial chains and ecological technology corridors. On the other hand, innovation and application of green financial instruments will become important drivers in the next phase of cooperation, including green bonds, sustainable development loans, and carbon emission trading pilots, providing diversified support for green project financing [23].

With the gradual alignment of carbon market institutional designs and carbon footprint accounting systems between China and Russia, the exploration of cross-border carbon emission trading mechanisms is expected to pilot in border areas. This will not only offer practical experience for Sino-Russian enterprises participating in global green trade rules but also help construct a Sino-Russian green ecological system centered on green supply chains + green finance + green governance, promoting sustainable prosperity of regional trade under the guidance of ecological civilization principles.

Deep integration of border industrial parks and cross-border industrial chains.

The enhancement of industrial agglomeration capacity in border regions has become one of the key pathways driving the transformation and upgrading of Sino-Russian border trade from traditional commodity exchanges to high value-added and high-technology forms. Under the new development paradigm, China and Russia are jointly promoting the transition of border trade regions from corridor economies to node economies by building cross-border industrial platforms, optimizing industrial spatial layouts, and strengthening collaborative support mechanisms.

In recent years, China has accelerated the construction of regional industrial platforms such as the Sino-Russian Border Economic Cooperation Zones, Sino-Russian Mutual Trade Industrial Parks, and Cross-Border E-Commerce Industrial Clusters in places like Manzhouli, Suifenhe, Dongning, and Heihe. These efforts focus on establishing a full-chain port–park–market linkage, creating a closed-loop industrial chain system covering trade customs clearance, primary processing, warehousing logistics, and end-market sales. For example, the Manzhouli Sino-Russian Mutual Trade Zone leverages the convenience of port customs clearance and the geographic advantage of large bilateral trade volume, focusing on labor-intensive and technology-integrated industries such as deep wood processing, graded packaging of agricultural products, and machinery assembly and maintenance. By capitalizing on the export traffic through the port, it implements a regional development strategy of trade expansion driven by value-added processing. Meanwhile, the park has introduced cross-border labor cooperation mechanisms that effectively address labor cost and skill matching issues, providing stable workforce support for local manufacturing [22].

On the Russian side, cities such as Post-Baikal, Blagoveshchensk, and the Primorsky Krai are actively advancing industrial system restructuring and the construction of industrial agglomeration platforms. Some local governments, leveraging the Far East Development Strategy and Priority Development Zones policies, encourage Chinese enterprises to invest in industrial supporting facilities in Russia, such as grain deep processing plants, primary wood processing areas, and cross-border logistics warehousing bases. These initiatives have improved local infrastructure shortcomings and played a positive role in promoting industrial chain extension and upstream-downstream coordinated development. For instance, in the Post-Baikal industrial zone, Sino-Russian joint ventures in mechanical parts processing lines and wood panel production lines have become crucial nodes shifting the port from a resource-export model to value-added processing.

The construction of cross-border industrial parks not only optimizes regional industrial structure but also realizes the functional leap from goods circulation to industrial chain integration. In this process, the functions carried by the parks have evolved from mere cargo transit stations to comprehensive industrial support platforms integrating manufacturing processing, technological innovation, technology transfer, logistics finance, and talent training. For example, the Suifenhe cross-border park introduced cloud warehousing and intelligent sorting systems connected to cross-border e-commerce order processing platforms, achieving data-driven efficient operations; the Heihe area piloted RMB cross-border settlement and tax customs clearance one-stop services, further enhancing investment facilitation for enterprises.

Moreover, industrial agglomeration exerts significant regional driving effects. On one hand, it promotes the evolution of border cities from dependent ports to functional hubs, providing new tax revenue and employment opportunities for local governments, thus enhancing the economic resilience of port cities. On the other hand, it accelerates the coordinated development of upstream and downstream industrial chains, such as transportation, warehousing and packaging, technical services, and cross-border finance, forming an industrial ecosystem with agglomeration spillover effects [48].

Looking ahead, China and Russia should further deepen cooperation in industrial policies, tax coordination, and business environment optimization to support the construction of new platforms such as Sino-Russian Joint Industrial Parks and Sino-Russian Industrial Technology Cooperation Bases. They should guide industrial clusters towards high-end manufacturing, green energy, and digital technologies. By building deeply integrated cross-border industrial, supply, and value chains, sustained momentum will be injected into the transformation and upgrading of Sino-Russian border trade, creating internationally competitive border economic growth poles.

Diversified cooperation pathways: from energy dependence to technological synergy.

Historically, Sino-Russian trade structure has been heavily dependent on energy, raw materials, and primary processing products, with concentrated trade categories and low added value constituting core bottlenecks limiting the upgrade of bilateral economic and trade relations. However, as Russia continues to advance its import substitution strategy in response to Western sanctions, and China accelerates the implementation of Made in China 2025 and high-quality development strategies, the cooperation space between the two countries in high technology, intelligent manufacturing, and industrial innovation is expanding, injecting new technological momentum and strategic support into the transformation and upgrading of border trade.

Currently, China and Russia have preliminarily established docking mechanisms and achieved cooperation results in several technology-intensive industries, marking a gradual shift from traditional energy and resource-based trade paths to an integrated, full-industry-chain collaboration model driven by technological innovation. For instance, in 2024, China and Russia jointly launched the Artificial Intelligence Voice Recognition System Development Project, undertaken by Chinese tech companies and Russian language engineering laboratories. The project aims to develop an intelligent multilingual voice interaction platform suitable for cross-border scenarios, enhancing cross-border communication efficiency and providing technical support for smart customs clearance, intelligent customer service, and bilingual government platforms. In the same year, Huawei and Russia's Skolkovo Innovation Center formally reached a strategic cooperation

agreement to carry out multi-level pilot projects and R&D cooperation in 5G communication, data center construction, and intelligent manufacturing solutions, further consolidating the practical foundation of bilateral technological synergy [58].

Beyond AI and communication technologies, Sino-Russian cooperation is also forming complementary and mutually beneficial patterns in key fields such as high-end equipment manufacturing, aerospace, new materials, and medical health. China possesses advantages in large-scale manufacturing, system integration, and engineering implementation, while Russia has deep expertise in basic scientific research, aerospace engineering, and core algorithm development. This creates a application-driven – R&D-supported cooperative logic. Future collaboration can be expanded in areas such as satellite remote sensing systems, unmanned aerial vehicle (UAV) platforms, and Sino-Russian joint medical research institutions, focusing on joint R&D, technology transfer, and mutual recognition of standards.

With the acceleration of financial digitalization and green transformation, China and Russia are also showing strong complementarity in emerging interdisciplinary fields such as fintech, green manufacturing, energy storage, and carbon asset management. In the digital payment system domain, the two sides are exploring bilateral settlement platform integration, pilot testing digital RMB payments in Russia, and optimizing Russia's mirror payment system to enhance the security and convenience of cross-border transactions. Regarding green manufacturing and environmental protection equipment, Sino-Russian joint ventures have established waste recycling centers and new energy storage demonstration stations in the Russian Far East, becoming key pilot projects of the new generation of green border trade [16].

Looking ahead, Sino-Russian border trade is gradually shifting from the traditional logic of commodity exchange to a diversified and composite cooperation pattern characterized by strategic resource exchange + institutional platform complementarity + high-tech mutual trust cooperation. This shift not only helps alleviate external uncertainties caused by global industrial chain restructuring but also provides strong support for building a stable and sustainable regional supply chain system. Through deepening institutional coordination and innovation-driven development, Sino-Russian

border trade is expected to achieve a strategic transformation from quantitative expansion to qualitative leap, constructing a community of economic and trade destiny featuring high technology, strong support systems, and deep integration.

Conclusion

Against the backdrop of ongoing global political and economic realignment and the accelerating trend of regional economic integration, Sino-Russian border trade is undergoing a profound structural transformation. As two major strategic powers on the Eurasian continent, China and Russia have long maintained a stable and close bilateral economic relationship. In recent years, with the steady alignment of China's Belt and Road Initiative and Russia's Look East policy, border trade has gradually evolved from a traditional, resource-driven model to a diversified, institutionalized, high value-added, and innovation-led paradigm, reflecting stronger strategic synergy and developmental momentum.

This study examines the transformation of Sino-Russian border trade from three dimensions, providing a comprehensive analysis of its process, challenges, and future prospects within the modern economic framework.

Firstly, from a macro-historical and structural perspective, the study traces the evolution of the Sino-Russian trade relationship. It shows that the bilateral trade pattern has shifted from a primary complementary model dominated by energy and raw materials to a multi-level cooperation model supported by services, manufacturing, and the digital economy. Alongside the continuous increase in trade volume, the growing share of service trade and emerging industries clearly signals a structural transformation in the nature of border trade.

Secondly, at the regional and cross-border level, the research analyzes the interactive dynamics between Chinese border provinces – such as Heilongjiang, Jilin, and Inner Mongolia – and Russia's Far East. It finds that cities like Suifenhe, Manzhouli, Heihe, and Hunchun are evolving from simple commodity transit points into multifunctional cooperation platforms. These platforms integrate policy experimentation, institutional innovation, industrial clustering, and logistical connectivity. This transition enhances the strategic importance of border regions in bilateral cooperation and injects new vitality into local economic development.

Thirdly, the study identifies key challenges that hinder the deepening of border trade. These include a still-narrow trade structure, underdeveloped high-end industrial collaboration, low customs efficiency, inadequate cross-border infrastructure, insufficient legal and institutional alignment, and policy implementation gaps. These issues limit the full potential of border trade and present significant obstacles to building a resilient and effective regional cooperation framework.

To address these constraints and promote high-quality development, the study proposes several policy recommendations: optimize the trade structure by fostering higher-value-added industries, extending the industrial and value chains, and transitioning from corridor economies to platform economies; enhance infrastructure connectivity by modernizing land ports and logistics systems, improving service capacity and efficiency; strengthen institutional and policy coordination, establishing stable and efficient cooperation frameworks between local governments and cross-border economic zones; promote talent development, technological innovation, and financial support to accelerate the digitalization of trade and logistics, and to cultivate emerging sectors such as cross-border e-commerce and green trade; improve legal harmonization and risk prevention mechanisms to ensure secure, regulated, and sustainable trade activities.

Looking ahead, Sino-Russian border trade is poised to enter a new stage of development, driven by deepening bilateral ties and the optimization of regional cooperation networks. Both countries can leverage platforms such as free trade zones, the Eurasian Economic Union, and the Digital Silk Road to expand the scope and depth of cooperation. Border regions are expected to evolve into comprehensive hubs for manufacturing, logistics, finance, technology, and services, not only boosting bilateral economic integration but also injecting momentum into the construction of a pan-Eurasian economic corridor.

In conclusion, the transformation of Sino-Russian border trade is not only an internal necessity for bilateral economic development but also a strategic response to global uncertainty, regional resilience, and shared prosperity. Moving forward, only through continued openness, institutional innovation, and coordinated development can the transition from quantitative expansion to qualitative upgrading be truly realized,

paving the way for a new model of regional cooperation characterized by mutual trust, mutual benefit, mutual connectivity, and mutual integration.

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