



An Analysis of the Impact of Russia Ukraine Conflict on China-Europe Railway Express

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Abstract. In the context of the continued Russian Ukrainian conflict and the superposition of world epidemics, the global development environment has become more complex and changeable, which has had a certain impact on the security and reliability of China's international logistics supply chain. This paper tracks and analyzes the operation of China-Europe Railway Express (CR Express) after the conflict between Russia and Ukraine, explores the outstanding problems existing in the operation of CR express South Access by investigating typical enterprises. Finally, this paper puts forward relevant policy recommendations to promote the normalized and high-density operation of the southbound route of CR express as follows: developing new international transport routes, accelerating the formation of key infrastructure connectivity, developing integrated transport and public trains and other transport organization methods, promoting investment facilitation, strengthen international cooperation mechanisms and other aspects, so as to provide reference for improving the stability and risk resistance of China's international transport route.

Keywords: China-Europe Railway Express · the southbound channel of CR express · Russia Ukraine conflict · International logistics supply chain

1 Introduction

China-Europe Railway Express (CR Express) refers to the container international railway intermodal trains that run-in accordance with fixed train numbers, routes and other conditions and travel between China and Europe and countries along the “the Belt and Road”. CR Express is an important part of China's international logistics supply chain and plays an important role in promoting trade between China and Europe. On February 24, 2022, the Russian Ukrainian conflict officially broke out. At the beginning of the conflict, the number of the CR express decreased, and the impact on the development was more complex due to the world epidemic. Influenced by the global economy, the geopolitical pattern has undergone significant changes. The uncertainty brought about by the conflict has made the trans Caspian Sea and Black Sea multimodal transport routes a new choice for all countries, which can partially replace the Russian Trans-Siberian Railway Corridor. The southward route of the CR Express ushers in a historical

opportunity for development. However, the infrastructure level of the southbound channel and the shipping capacity restrictions of the Caspian Sea and the Black Sea still restrict the release of the potential of the southbound channel, and the development of the southbound channel still faces many problems. The conflict between Russia and Ukraine not only brings more uncertainty to the world economy, but also affects Russia Europe economic and trade cooperation seriously. Therefore, it is necessary to analyze the development of the southbound corridor of the CR Express, the opportunities and challenges faced by the development of the southbound corridor of the CR Express under the change of the world pattern, and put forward relevant countermeasures and suggestions, to provide reference for improving the risk resistance ability of China's international transport corridors, enhancing the development resilience and endogenous power [1, 2] (Figs. 1 and 2).

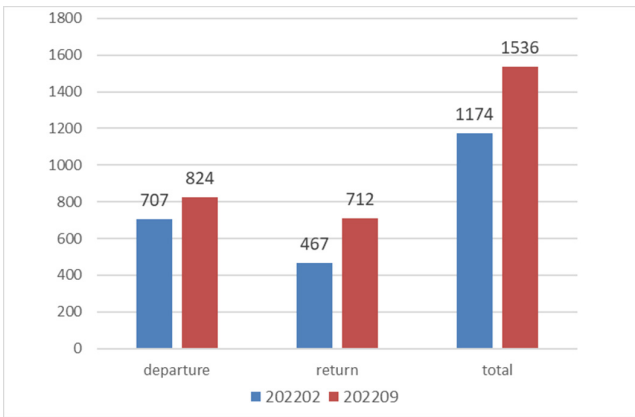


Fig. 1. The number of The CR Express in February and September 2022 (owner-draw)

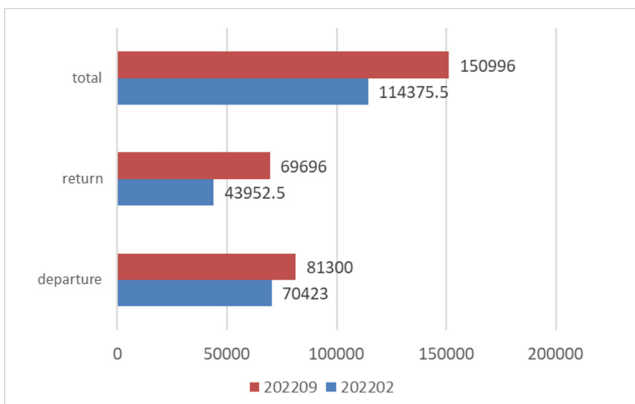


Fig. 2. The Comparison of the number of containers transported by the CR Express in February and September 2022 (owner-draw)

2 The Overall Operation of the CR Express

2.1 The CR Express has Become an Important Carrier and Link of the “The Belt and Road”

With the deepening of the “the Belt and Road” cooperation, China has signed more than 200 cooperation documents with 147 countries and 32 international organizations to build the “the Belt and Road” jointly. Since in 2011, the CR Express has been expanding its market scale, diversifying its routes, and increasing its connectivity, which has become an important support for smooth Eurasian economic belt and serving the “the Belt and Road” cooperation. Since the beginning of this year, the number and operation quality of the CR Express have been improved steadily. In the first three quarters of 2022, a total of 12100 trains were operated and 1.179 million TEUs were transported, with a year-on-year growth of 7.2% and 7.8%. Among them, 6459 trains were dispatched and 630,000 TEUs were transported, with a year-on-year growth of 3.6% and 1.8% respectively; 5699 trains returned, carrying 549,000 TEUs, up 1.8% and 15.7% year on year respectively. The main cargo categories of the CR Express involve more than 50000 kinds of 53 categories, including complete vehicles, mechanical equipment, and electronic products, with a total value of nearly 300 billion US dollars. It has made a positive contribution to stabilizing the supply chain of the global industrial chain, helping the international community fight against epidemics, and promoting the global economic recovery (Fig. 3).

2.2 The North Passage is the Main Route for the CR Express

The CR Express has preliminarily formed two channels: the north channel and the south channel. Among them, the northern route is Kazakhstan -Russia Belarus -Poland -Germany, and the southern route is Kazakhstan -Trans Caspian Sea -Azerbaijan- Georgia -Trans Black Sea or via Turkey -Europe. The branch line of the north passage is: Russia-Belarus-Lithuania-Kaliningrad, Russia-Finland-sea rail combined transport. According

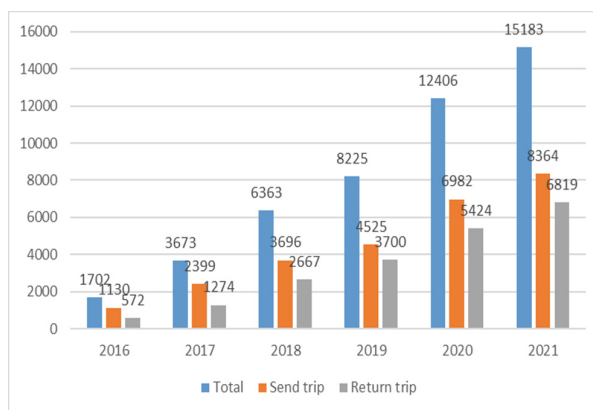


Fig. 3. The Operation of the CR Express in recent years (owner-draw)

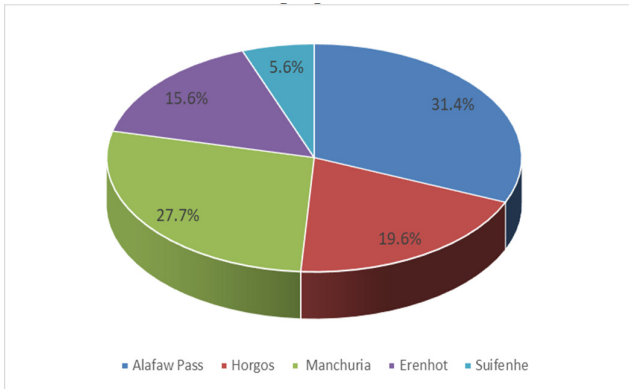


Fig. 4. The Proportion of The CR Express containers in five railway ports (owner-draw)

to the operation data, the number of trains passing through the north passage accounts for about 98%, the branch line of the north passage accounts for about 1%, and the south passage accounts for less than 1%.

2.3 Russia is the Main Destination Country of the CR Express

Russia ranks first among the transit and destination countries of the CR Express. In 2021, China run 7818 China Europe trains with Russia and Belarus, a year-on-year increase of 25%, accounting for 51%, of which Russia will run 6929 trains and transit 8243 trains; 7365 China Europe trains were operated with EU countries, up 20% year on year, accounting for 49% [3].

3 The Analysis of the Impact of the Russian Ukrainian Conflict on the Operation of the CR Express

3.1 The Final or Transit Ukrainian Train is Out of Service

The conflict between Russia and Ukraine has led to the suspension of China's trains arriving or transiting Ukraine. However, due to the small overall scale, there were be only 260 trains arriving or transiting Ukraine at the end of 2021, accounting for 1.7%, with relatively limited impact. At present, the main channel of the CR Express is still running normally, and the main entry and exit ports of the CR Express are operating normally, such as Alafaw Pass, Horgos, Erenhot, Manchuria and Suifenhe. As of September, the number of The CR Express operated by the five major ports has increased rapidly, except Erenhot, which was seriously affected by the epidemic; According to the volume of containers completed, Alafaw Pass accounts for the largest proportion and Suifenhe accounts for the smallest proportion (Figs. 4 and 5).

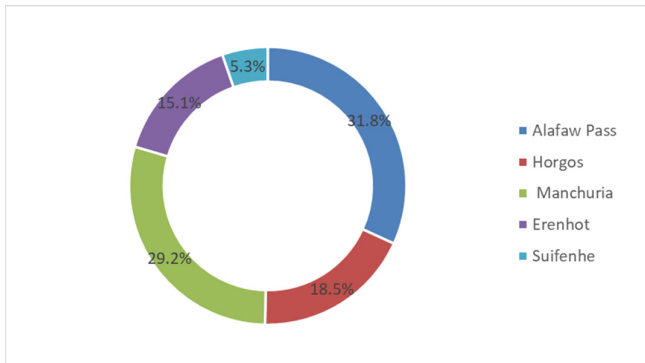


Fig. 5. The Proportion of the CR Express trains in five railway ports (owner-draw)

3.2 The Business Volume of the CR Express Fluctuates

At the beginning of the conflict between Russia and Ukraine, due to some customers' worries about cargo damage, European and American economic sanctions against Russia, geopolitics and other factors, HP, Dell and other major customers of The CR Express cancelled booking space and switched to air or sea transportation. Domestic exporters, especially the "cash on delivery" company, stopped shipping to Russia, Ukraine and other European and Central Asian countries. It is understood that at the beginning of the Russian Ukrainian conflict, the scale of the CR Express of Xi'an Company decreased by about 20%, and that of Chengdu Company decreased by about 40%. According to the statistics of China Railway Group, 41.6 trains will be operated every day in 2021, including 22.9 trains on the daily average of departure and 18.7 trains on the daily average of return; In September this year, 43.1 trains were opened on average daily, including 27.8 trains on the daily average for the trip and 15.3 trains on the daily average for the return trip; In the first three quarters, the average daily opening volume in January and February of this year was higher than that of last year. From March to July of this year, it gradually showed a growth trend, but still lower than the pre conflict level. In the early days of the outbreak, in order to retain customer resources, platform companies planned to reduce freight rates by 5%–40%. The operation of China Europe Express once saw a "price war". At present, the number of trains opened in September this year was 1536, up 30.8% from 1174 in February this year [4] (Fig. 6).

3.3 The Timeliness of Train Transportation Can Be Guaranteed

According to the survey, in recent years, the scale of The CR Express has been greatly improved. In some sections, especially the Brest Malashevich railway port on the border between Poland and Belarus, due to insufficient reloading capacity, it is always congested. In serious cases, it takes more than 30 days for some trains to leave Germany at their own ports. After the conflict, due to the decline of business volume, the congestion of The CR Express has been alleviated to a certain extent, and the delay time of trains has been reduced from 5 days to about 2 days, but the timeliness of The CR Express can still be guaranteed.

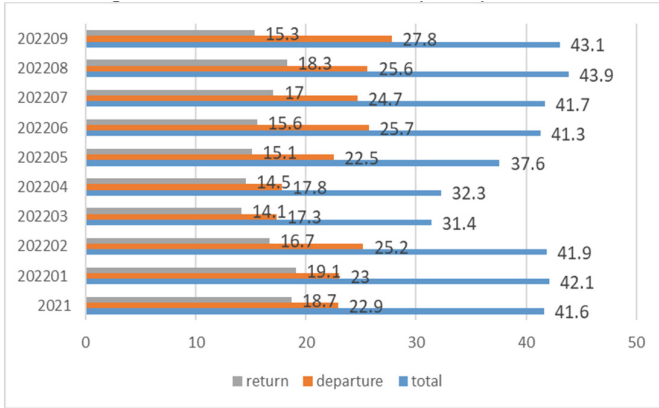


Fig. 6. The Comparison of daily average The CR Express operation in the first nine months of 2022 and 2021 (owner-draw)

3.4 The Enterprise Actively Expands the Southbound Channel of the CR Express

In order to stabilize customers and plan for alternative channels in advance, some enterprises actively explore new routes, and the China Europe Express Trans Caspian Transport Corridor has attracted attention. The China EU trans Caspian transport corridor mainly passes through Alafaw Pass, Khorgos and other railway ports, connecting Kazakhstan or the planned China Kyrgyzstan Uzbekistan railway, to Turkmenistan, Caspian Sea ferry, Azerbaijan, Georgia wide gauge railway, and through Turkey railway or Black Sea ferry to Europe and countries along the Black Sea and Mediterranean. Due to the long transportation time and high freight costs, only a small number of companies such as Xi'an are operating. In 2021, there were be only 111 China Europe trans Caspian trains, accounting for less than 1%.

4 The Problems in the Channel of the CR Express

Since the outbreak of the Russian Ukrainian conflict, in order to effectively mitigate the impact of war conflicts and economic sanctions on China EU trade, some train companies have actively developed new southern routes from the Caspian Sea and the Black Sea to Europe for major railways and agencies outside China. New difficulties and challenges have emerged in the process of organizing and transporting the southern routes.

4.1 The Basic Conditions of Southward Overseas Hubs are Insufficient, and the Transport Capacity Needs to be Further Improved

Overall, there are bottlenecks in the key nodes of the existing channels. The infrastructure construction of the southbound overseas hub is relatively backward, the operation guarantee capacity is not fully utilized, and the transport capacity of the “two seas” port channel needs to be improved, which has the potential for investment and construction. Countries along the CR Express, especially the CIS countries and Central and Eastern

European countries, also have bottlenecks in infrastructure such as railway lines and stations, low service efficiency and other problems, which have some extent affect the operational efficiency and stability of the channel. The sudden increase of shipping volume has led to the congestion of many containers in the four ports of the Caspian Sea and the Black Sea (Aktau Port, Baku Port, Poti Port and Kon Stanca Port respectively), which has led to the uncontrollable time for the transshipment of trains at the ports. However, the number of container ships in the two seas is very limited. For example, only four container ships from Aktau to Baku Port are in round-trip transportation, with a capacity of about 700-800TEU, and the average time for the train to wait for boarding at the port is 15 days.

4.2 The Security of Overseas Port Investment Income is Insufficient, and the Chinese Enterprises Invest More Cautiously

Some countries have begun to invest in the region. When the Chinese enterprises are distributing their sites around the world, they generally prefer container terminals with a guaranteed rate of return on investment for the sake of income, and are less willing to invest in dry bulk terminals with high investment and high potential risks. Chinese enterprises investing in container terminals can guarantee investment income through their own transport capacity and the deployment of routes by allied enterprises. Because the export transport right of bulk cargo is mainly in the hands of large foreign exporters, without long-term cooperation between domestic cargo owners and international port and shipping enterprises, international port and shipping enterprises are difficult to control investment risks, and China's marine logistics supply chain for key materials is not strong at foreign ports.

4.3 The Connection Between International Railway Trains and Other Transport Modes is Insufficient, and the Efficiency of Sea Rail Combined Transport is not High

The realization of this channel depends more on the rail sea intermodal transport. Due to the decentralized operation of various transport modes and enterprises in the international logistics business market, large-scale production has not been formed, and the comprehensive service function of domestic and foreign intermodal transport outlets has not been fully played. In this channel, there is no authoritative professional association or operator to integrate multiple logistics resources to promote the common development of transportation system. Although Turkey and other countries have railways, they are seriously old. For example, the available transport capacity of the Southbound Channel of Chongqing China Europe Train is only 2%–3% of the main channel, and the Baku Tbilisi Kars line between Azerbaijan, Georgia and Turkey has been congested. The exit through Kashgar is mainly through highway ports. The railway exit has not been opened yet, so it needs to be transported by road and rail. The goods on the “cross two seas” line of the South Passage need to undergo one rail intermodal transport rail change, two train ferry marshalling and two rail sea intermodal transport reloading, with long operation time and high operation cost. The overseas freight of the line from the Caspian Sea to

Poti and Turkey increased by \$500–600 compared with the first quarter, and the whole journey lasted about 45 days [5].

4.4 The Information Corridor Sharing Mechanism has been Initially Established, But There are Some Problems Such as the Low Level of Informatization of Customs Clearance Along the Line and the Disunity of Standards

In recent years, the cooperation of e-ports has been gradually promoted, and the national information sharing mechanism has taken shape. However, the low level of informatization and standardization of customs clearance along the line still restricts the healthy development of the CR Express. There are still many customs clearance documents and on-board data with a low degree of informatization, and the information exchange is still in the paper transfer stage. At the same time, due to the great differences between the railway and port customs and commodity inspection departments in the countries along the line in terms of standards and specifications, operating procedures, and customs clearance requirements, there are many customs clearance links and long periods, which affect the efficiency of customs clearance operations. The international conventions, laws and policies, technical standards, and other aspects that the countries along the CR Express comply with in railway transportation are not uniform. The “Two Seas Crossing” line spans eight countries in the whole process, three more than the existing trunk lines of the Chongqing China Europe Railway, and most of them are small and medium-sized countries. The continuous operation risk and security guarantee cost of the channel are high [6].

5 Related Policy Recommendations

5.1 The Government Should Increase Policy Support, Promote the Normal and High-Density Operation of Southbound Channels, and Actively Cultivate and Expand the Service Market of Southbound Channels

The government should strive to increase the diversification and stability of the international logistics supply chain and reduce excessive dependence on individual routes in individual countries. Actively open the important alternative and alternative routes, reduce the destructive power and impact on the supply chain due to emergencies or political instability, and reduce the economic damage caused by supply chain disruption. First, the government should adopt supportive policies to accelerate cross sea rail intermodal transport, improve the normal and high-density operation of cross sea transport corridors, and better play the role of a new artery of international transport. Second, from the perspective of risk management, the government should continue to expand the southward channel, timely promote the planning and development of routes through Uzbekistan, Turkmenistan, and Iran, establish standby channels to reach Europe through Iran, and build a “life channel” and a “destiny bond” during special periods of cooperation to fight against epidemics, political changes, and so on. Third, further extend the front end of the supply chain, use the China Laos Railway and the Trans Asian Railway Network, gradually promote the new channel of “East Asia, South Asia China Caspian

Sea Black Sea Europe”, stimulate the market development potential of Southeast Asia, and better stabilize the international logistics supply chain of countries along the line [7].

5.2 It Should Seize the Development Opportunities and Accelerate the Connectivity of Key Infrastructure

It is recommended to encourage domestic enterprises to strengthen the construction of logistics bases, distribution centers, overseas warehouses, etc. in important node cities abroad and cities with close production capacity cooperation with China through acquisition, joint venture, cooperation, and other ways. First, we should coordinate the construction of overseas destinations, transshipment sites and other nodes of The CR Express, optimize and integrate overseas resources, and explore new transshipment ports into Europe while encouraging the concentration in Hamburg, Duisburg, Rhodes, Moscow, and other hub cities, to unblock the bottleneck of overseas transshipment nodes. We should timely strengthen the establishment of logistics bases in Central Asia and Eastern Europe, build overseas warehouses in southern and northern Europe, and support the improvement of overseas port service capacity. The second is to improve the business diversification level of China Europe land logistics channel. Strengthen the layout connection with overseas port fulcrums and aviation hubs, and vigorously develop multi-modal transport. Third, in the process of construction, we will make full use of loans and grants from financial organizations such as the Silk Road Fund and the Asian Infrastructure Investment Bank to actively attract social capital to follow up, invest in infrastructure such as railways, stations and ports along the routes, and explore and promote cooperation with foreign countries and regions in the construction and operation of railway routes, stations and yards.

5.3 It Should Develop Integrated Transportation Actively, Public Train and Other Advanced Organization Methods

First, normalize the integration and transportation organization of overseas wide gauge sections. We will promote the normal integration and transportation of domestic port stations, increase the number of train marshaling vehicles arriving at the broad gauge section, and reduce the entire logistics cost. The second is to organize and run public trains. Overseas public trains from Europe to China will be operated by relying on the return freight source hub, and the freight sources in the same direction will be organized to share the train resources. Third, accelerate the layout and planning of overseas container return points. The government should encourage shipping companies and container leasing companies that can deploy and use containers globally. At key overseas nodes of international intermodal trains, it should set up more railway container return points that can store and manage standard containers and special containers to meet the demand for diversified container use and return [8].

5.4 It Should Give Play to the Role of an Important Comprehensive Transportation Hub, and Change “Road Economy” into “Channel Economy”

It should strengthen economic and trade cooperation and the free flow of resources, build a community with a shared future for mankind by taking economic development as the basis and resource exchange as the link, and strengthen the resilience of supply chain development. First, it should enhance the agglomeration effect and hub function of port hubs in the logistics chain. Rely on local characteristic resources and industries to establish resource-based development zones, characteristic industrial zones, economic and trade cooperation demonstration zones, etc. Guide inland production enterprises and trade enterprises such as electronic products, machinery and equipment, and daily necessities to collect and distribute goods, trade, and store at port logistics hubs. Relying on the port logistics hub, realize the connectivity of facilities, smooth trade, and financing, give full play to the “channel economy”, and effectively improve the contribution of goods circulation to the regional economy. Second, it should strengthen international economic and trade cooperation. Under the circumstances of sustained global epidemic, globalization and multilateral trade, facing heavy pressure and general frustration of national economies, it should seek opportunities in the midst of danger, take this as an opportunity to strengthen the space and opportunities for common development with countries in Europe, Central Asia and Southeast Asia through demand interaction, efficient allocation, complementary advantages and free flow of various resource elements, and strengthen cooperation in energy, transportation, telecommunications, cross-border e-commerce and other fields, look for new economic growth points, reduce intra-regional trade and investment barriers, and promote trade facilitation [9].

5.5 It Should Promote Investment Facilitation Through Institutional Cooperation Such as Rules and Standards, and Strengthen Communication and Coordination of International Cooperation Mechanisms

First, it should follow international practices and the principle of debt sustainability, improve the diversified investment and financing system, and give full play to the important role of the capital market in diversified financing. While developing the cooperation model led by the government and driven by large projects, we should also develop various economic cooperation projects with enterprises as the main body and market as the guide. We should work together to improve the business environment and investment environment through the stable and transparent rules and procedures in the designated trade and investment fields, and provide legal protection for the economic growth and transformation of all countries. Second, it should fully rely on the international cooperation organization to strengthen the connectivity of policies, standards, and rules. We should continue to promote the docking of strategies, plans and mechanisms between different countries, implement all-round facilitation measures such as customs clearance, inspection and quarantine, logistics transportation, standard certification, payment and settlement, and gradually form an effective mechanism for regional economic cooperation. Third, the government should accelerate the improvement of a multi-level coordination mechanism to promote win-win cooperation. Give full play to the railway coordination mechanism of the seven countries of China Europe regular

trains, the working mechanism of the China Europe regular train transport joint working group and expert working group, and the China Europe regular train transport coordination committee, promote the establishment of normalized and practical management policies, operation rules, service standards, etc., and coordinate and handle the relations between the cities that run the trains, between platform enterprises, between different transport modes, and with national railway groups, We should guide all parties to define their own positions, strengthen communication and cooperation, and form a joint force for development.

6 Conclusions

At the beginning of the conflict between Russia and Ukraine, the number of the CR Express showed a downward trend. As the conflict between Russia and Ukraine continues to ferment, the southbound route will become an important choice to avoid the risk of war. In order to ensure the stable operation of the CR Express, the following measures are recommended: First, the southbound channel of the CR express should be comprehensively developed by signing an intergovernmental agreement; Second, various ways and means should be used to complement the “soft and hard” infrastructure construction weaknesses along the CR Express route; Third, enterprises should be encouraged to open up new routes for the CR Express actively; Fourth, the risk prevention plans should be formulated actively [10].

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