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**Ekonomiczne skutki funkcjonowania
infrastruktury kolejowej
Nowego Jedwabnego Szlaku dla Polski**

Economic effects of the railway infrastructure
of the New Silk Road for Poland

Rozprawa doktorska

Doctoral thesis

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Summary

The dissertation aimed to determine the economic effects of the railway infrastructure of the New Silk Road (hereinafter NSR) in connection with the Polish-Chinese trade in goods. The study covered the years 2016–2022. First, the literature on economic development factors, the theory of economic activity location, and the theory of regional development were reviewed. On this basis, the importance of transport for economic development was confirmed and transport accessibility has been identified as an important category for research on the effects of transport infrastructure. The analysis of selected strategic government documents, that set the main directions of development of the state made it possible to demonstrate the importance of Eurasian transport corridors for the economic development of Poland.

Describing the NSR project, the reasons for China's interest in overland transport routes between Asia and Europe were explained, recognized as the main pursuit of its own development by changing the global economic system using trade based on created transport corridors. It was emphasized that the mutual importance of Poland and NSR results mainly from the favorable geographical location of the former.

Then, changes in the mutual transport accessibility of Poland and China as a result of the NJS railway infrastructure were examined. The focus was on the comparison with sea transport. The assessment of the average of the sums of all delivery and return (first mile – last mile) distances in kilometers, in the relation capitals of provinces in China–voivodship cities in Poland in rail and sea transport, using a selected pair of transport nodes, allowed to confirm the advantage of rail transportation over maritime in terms of increasing accessibility to China space. Most of the railway terminals achieved results similar to or better than the best seaport. The predominance of rail transport was noted in particular for regions of China which are located far from seaports. The time/price ratio confirmed the competitiveness of rail versus sea transport. With approximately two times shorter transport time, rail transport was twice as expensive as sea transport. A study using a gravity model showed that connections using rail transport have, on average, higher impact than those using sea transport. When assessing the stability of connections within NSR, it was noted that even in the face of such significant crises as the COVID-19 pandemic or the conflict between Russia and Ukraine, it maintained its operational capacity. In view of the above, NSR can be described as an important and positive factor shaping the mutual transport accessibility of Poland and China.

The primary purpose of transport infrastructure is to handle freight flows, so when assessing the effects of its operation, first of all, one should refer to changes in volumes and the structure of those flows. Based on the data published by the Eurasian Railway Union, it was confirmed that in terms of the volume of handled loads, Poland was one of the main countries using NSR. The analysis of data from selected tax and customs offices showed that the operation of these streams brings benefits to the state budget. It has been noticed that in terms of value and volume, disparities between rail and sea transport are decreasing. In addition, rail transport has a more favorable impact on the trade balance with China than sea transport. Using the gravity model of foreign trade, the significance of the NSR variable for trade between Poland and China was confirmed, especially in the import relation. It has been noted that the higher price and speed in rail transport are associated with a higher average value of goods carried by NSR than by sea. It can therefore be concluded that the railway connections within NSR have a significant impact on the volume and structure of trade between Poland and China. In addition, the development of infrastructure and railway connections within NSR and related logistics services had a significant impact on the reorganization of transport chains between Poland and China.

Finally, by presenting recommendations for further development of NSR, the need for further infrastructural investments and organizational improvements was emphasized. Attention was drawn to the need to build an integrated transport system, the aim of which should be to achieve synergy between the various modes of transport. Preserving geopolitical stability and maintaining the model of mutual profits for the parties involved in further development was considered a prerequisite for the functioning of the NSR.

Key words: New Silk Road, rail transport, transport accessibility, gravity model, international trade.