

International cargo transportation through the Suez Canal and alternative routes (by the example of China-EU)★

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Abstract. The Suez Canal occupies a prominent place in world trade. However, the six-day blockage of the Suez Canal by a megaship "Ever Given", chartered by the Taiwanese company "Evergreen Marine", triggered a wave of discussions about alternative Asia-Europe transport routes. This accident revealed the dangers of the freight flows concentration on this route for the world trade and supply chains. So, search for alternatives for diversifying transport routes becomes an objective necessity in case of arising unpredictable situations. The paper aims to assess the prospects for diversification of China-EU transport routes, consider competitiveness of existing ones and the advantages and disadvantages of alternatives.

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1. Introduction

Maritime cargo transportation has been used for thousands of years but still plays the pivotal role in global trade and is crucial to bilateral trade between Europe and Asia: about 80% of global trade by volume is carried by sea [1]. As for the trade corridors between the European Union (EU) and the People's Republic of China, the share of maritime transportation is 90% [2]. Moreover, more than 60% of Chinese goods are shipped to the EU through the Suez Canal [3].

The Suez Canal occupies a prominent place not only in China-EU trade, but also in the world trade. Approximately 12% of world trade volume pass through the Suez Canal [4], making this waterway an essential point of the passage. Its history in international shipping routes goes back over 150 years, when the Canal was open on equal terms to the ships of all nations in peacetime and wartime route. The Constantinople Convention proclaimed it in 1888 [5]. Therefore, among the reasons that account for the success of the Suez Canal, we mentioned its geographical location, the high-level infrastructure and reliability, the historically developed habit of shippers to use this Canal and existing supply chains.

However, the container ship "Ever Given", chartered by the Taiwanese company "Evergreen Marine", which ran aground and blocked the Suez Canal on March 23, 2021, triggered a wave of discussions about alternative Asia-European transport routes. The Suez Canal was closed to traffic for six days, each day of blockage disrupted more than \$9 billion worth of goods (about \$400 million per hour) [6]. The modernization of the

Suez Canal, carried out in 2014–2015, significantly expanded the carrying capacity of this point of passage, created an opportunity to pass simultaneously in two directions. Nevertheless, the modernization has not completely reduced the risks of a blockage.

2. Results and discussion

2.1 Role of the Suez Canal in trade between China and the EU

Increasing pressure on this waterway is also caused by the growth of China-EU bilateral trade. In 2020, China was the third largest partner for EU exports of goods (10.5 %) and the largest partner for EU imports of goods (22.4 %) (Fig. 1, 2). The EU was the second largest trade partner of China (Fig. 3).

Furthermore, during the COVID-19 pandemic the number of vessels passing through the Suez Canal had been steadily increasing. Although there was a slight decline in 2019, cargo traffic continued to grow in 2020, and statistical data for the first half of 2021 indicates that those figures had risen to 9763 ships (in the first half of 2020 9,546 ships passed through this waterway) (Fig. 4). Thus, although there was an overall decline in maritime cargo volumes during the COVID-19 pandemic, the Suez Canal stayed a sought-after transport route. In this regard, any obstacles to movement along this trade route significantly affect the bilateral trade and can lead to the shortage of certain types of goods in the EU countries.

It is also important to note that the COVID-19 pandemic highlighted the need to diversify transport routes and develop them in unpredictable situations.

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Another cargo crisis was caused by a COVID-19 outbreak in Guangdong province in May 2021, which led to the partial closure of the Yantian terminal in Shenzhen and new disruptions in the supply chains.

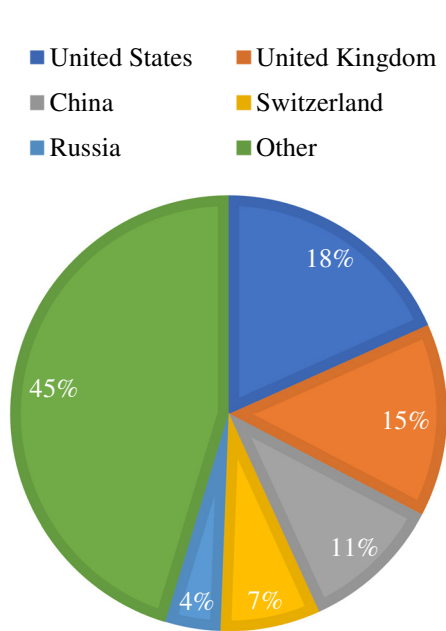


Fig. 1. China among the EU's main partners for trade in goods, 2020 (exports). Source: EUROSTAT. Statistics Explained. [Electronic source]. URL: https://ec.europa.eu/eurostat/statistics-explained/index.php?title=China-EU_-_international_trade_in_goods_statistics&oldid=520429.

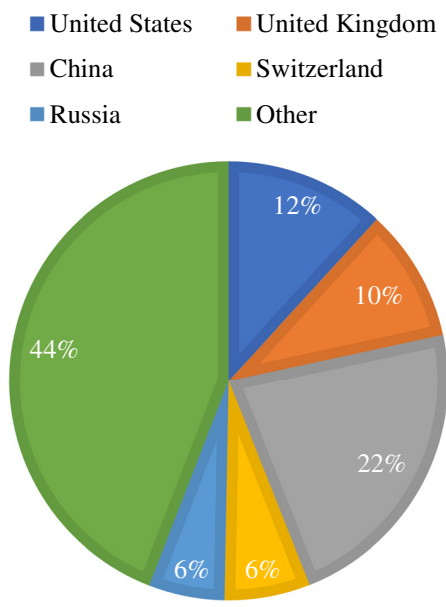


Fig. 2. China among the EU's main partners for trade in goods, 2020 (imports). Source: EUROSTAT. Statistics Explained. [Electronic source]. URL: https://ec.europa.eu/eurostat/statistics-explained/index.php?title=China-EU_-_international_trade_in_goods_statistics&oldid=520429.

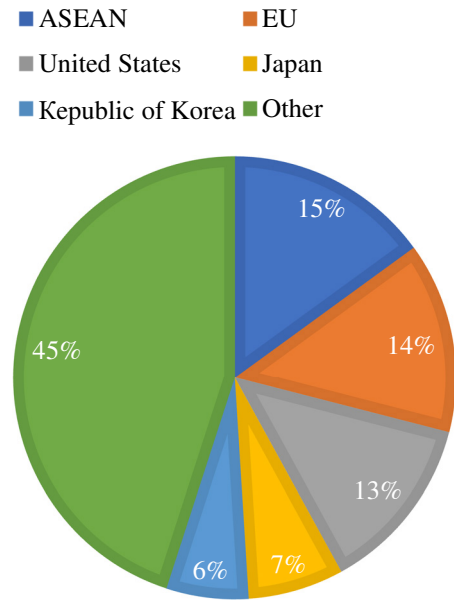


Fig 3. EU among the China's main partners for trade in goods, 2020. Source: RCEP | 结构性不平衡问题及展望 [Electronic source]. URL: http://m.thepaper.cn/wifiKey_detail.jsp?contid=10563132&from=wifiKey#. Translated by the author.

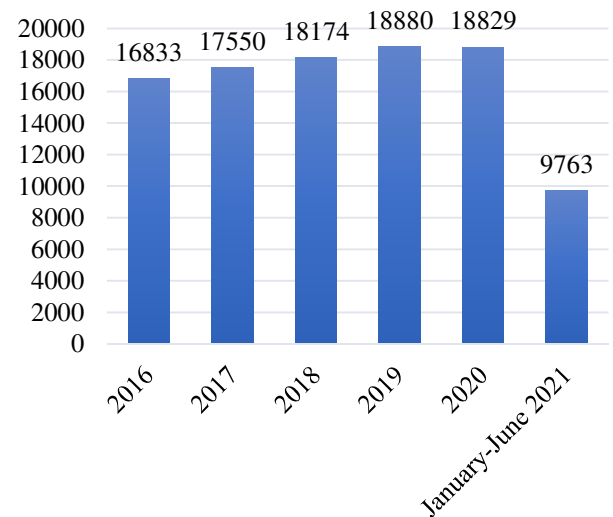


Fig. 4. No. of ships (vessel) passed through the Suez Canal. Source: Suez Canal Authority, Statista, Reuters. Compiled by the author.

2.2 Alternative transport routes

In the paper, we examined the following alternative transport routes: land (road and rail), air transport routes and Northern Sea Route (NSR).

Cargoes transported in Euro-Asian traffic by various types of inland transport include low-volume, high-value containerized cargoes. In addition, in recent years, China's export structure has been changing: the export of high-tech products is growing (Fig. 5). In 2020, the most exported manufactured goods were machinery and vehicles (52 %) [7]. Transportation by sea is too long for these categories of goods; high humidity is a negative factor affecting this type of cargo. Considering the significant price volatility for sea and air transportation during the COVID-19 pandemic, land transportation has become increasingly interesting for shippers.

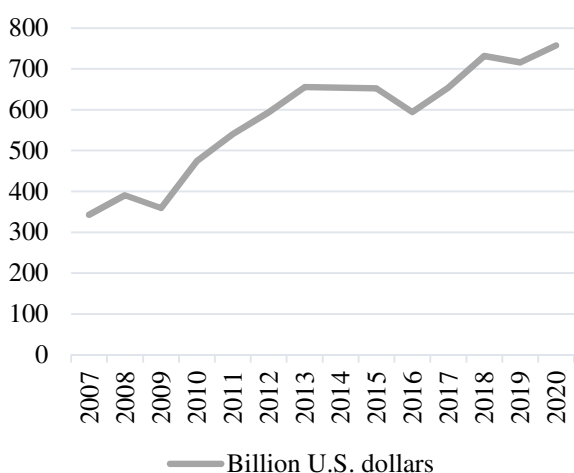


Fig. 5. High-technology exports (current US\$). Source: The World Bank [Electronic source]. URL: <https://data.worldbank.org/indicator/TX.VAL.TECH.CD?locations=CN>.

However, it has been noticed that the road shipping has gained popularity (Fig. 6). It is caused not only by the permits system for international road freight transport in China [8], but also by the pandemic measures (strict checks, replacement of drivers, etc.), which significantly slowed down the delivery of goods and increased its total cost. Nevertheless, in the future, road freight will also contribute to the diversification of the cargo delivery routes: according to the data for 2018, more than 50 border-crossing points have been opened in China for the international freight traffic to and from China by road; their number is growing [9]. In addition, there had already been concluded several agreements on international road transport^b.

^b In 2017 bilateral agreements on international road transport were signed with Kazakhstan, Kyrgyzstan, the Russian Federation, Tajikistan and Turkey; in 2018 there was a trilateral agreement between China, Mongolia and the Russian Federation "Intergovernmental agreement on international road transport on Asian Highway Networks", a quadripartite agreement between

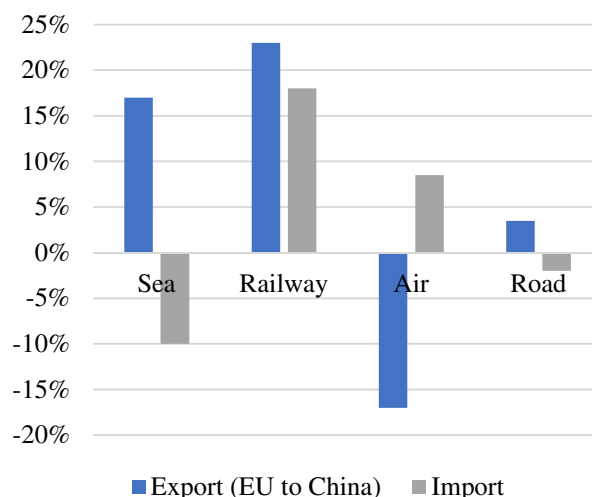


Fig. 6. Growth rate of China-EU trade volume (Tons) per transport mode (Jan-Apr 2020). Source: UIRR. [Electronic source]. URL:

<http://www.uirr.com/en/news/mediacentre/1586-china-europe-rail-freight-growth-long-lasting-trend-or-flash-in-the-pan.html>.

During the pandemic, the main "competitor" of the Suez Canal for transporting goods from China to the EU was rail transport. Shippers are striving to switch to this mode of transport, since it is faster than maritime cargo transportation and cheaper than airfreight. Rail freight transporters have a number of advantages: accuracy of transportation plan, targeting and reduced transit times. The range of goods transported by rail from China to Europe consists mainly of electronic goods, while components for automobiles, automobiles, pharmaceuticals, chemical products and food (including frozen) are increasingly coming from Europe to China [10].

As for the China-EU rail service, the Trans-Siberian Railway ("Transsib") is of particular importance. It is the longest railway in the world. The Trans-Siberian Railway provides access to the railway network of North Korea, China and Mongolia, through Russian ports and border crossings with the former republics of the Union of Soviet Socialist Republics - to the European countries. After the eastern branch of the Baikal-Amur Mainline (BAM) reconstruction by the end of 2024, the throughput of the mainline and the volume of transit traffic will also increase. However, today the East Asia and Pacific region still has longer delivery times. In this regard, the initiative "One Belt, One Road" is especially relevant, which can reduce the delivery time for the participating countries on average by 3.2–4% (along some economic corridors – by 8.5–12%) [11].

Air cargo is a vital link between Europe and China due to shorter delivery times. At the same time, high air cargo rates and the limited size of the aircraft are the reasons that most discourages people choose this type of transportation to move their goods. Air cargo typically underperforms other modes of transport during downturns, but the reverse occurs during upturns.

Kazakhstan, China, Kyrgyzstan and Pakistan on transit cargo transportation through Central Asia.

Therefore, shippers use air cargo to transit high added-value products or perishable goods. Global demand for air cargo fell by 10.6% in 2020, the fastest decline since 1990 [12], which was caused by restrictions on international flights and schedule reductions, aircraft grounding in the passenger market [13]. However, air cargo industry recovers: data for global air cargo markets for June shows a 9.9% improvement on pre-COVID-19 performance (June 2019) and first half-year air cargo growth to 8%. Supply chain conditions remain favorable with resilient demand for goods and more affordable air cargo compared to container shipping [14].

Russia also offers another alternative to the Suez Canal transport route - the Northern Sea Route (NSR). More active use of the NSR may be associated with the joint implementation of the Polar Silk Road initiative. In addition to reducing the time for transportation and solving the problem of diversifying routes, the NSR development could relate to the China's strategy of gaining wider access to the Arctic region. However, unpredictable weather conditions, technological difficulties, and environmental consequences of shipping in the region are becoming significant obstacles to using the NSR as an alternative to the route through the Suez Canal. In addition, despite Russia's unequivocal position on the issue, foreign partners have repeatedly raised the issue of assigning the NSR international transport route status, which reveals the need for a final settlement of the legal aspects [15].

3. Conclusion

To conclude, today the Suez Canal plays a key role in goods trade between China and the EU and has significant advantages over alternative transport routes. Moreover, the maximum capacity of the Suez Canal has not reached: up to 106 ships per day can pass through it, now the average number is about 51 [16]. In this regard, in the medium-term the other transport routes are subsidiary. However, the search for the alternatives of the diversifying transport routes becomes an objective necessity in case of arising obstacles to in the movement along the Suez Canal or unpredictable situations. As an alternative to the Suez Canal routes for the delivery of goods from China to the EU, in terms of increasing exports of high-tech products from China, shippers could use the NSR and railway routes developing with the support of Russia and Chinese partners (Russian Railways, One Belt, One Road, etc.).

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