

CONNECTING EURASIAN SUPPLY CHAINS

**THE IMPACT OF COVID-19 AND THE RUSSIA-UKRAINE WAR
ON THE EU-CHINA RAIL LANDBRIDGE**

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Motivation – key points

International supply chains are dependent on ease of crossing borders and efficient connectivity in terms of price, speed, and reliability.

- GVCs have been primarily RVCs, centered on East Asia, Europe, and North America.*
 - The RVCs were only linked at the final step of sending finished products to markets in high-income countries, typically by ocean shipping.
 - The Eurasian rail Landbridge established the first major overland link between RVCs, and traffic grew rapidly from 2011 to 2021.
- Efficient supply chain management relies on just-in-time delivery and minimization of inventories whether at production points or in transit.
 - rail is faster than sea transport and has more reliable arrival times, as well as being more environmentally friendly, while maritime freight rates are lower.
 - nonstop rail services between China and Europe were established in the 2010s to meet demand from EU car companies sending components to factories in China and from electronics firms sending computers and printers from China to their EU marketing centers.
 - as services and routes expanded, the number of customers increased.
- Development of the Landbridge was market-driven.
 - However, it relied on governments to agree on transit rules and on the (state-owned) rail companies to collaborate over schedules and rates. With success, a danger is that a key transit country might use its monopoly power to increase prices → a tragedy. Of the anticommons
 - the main Landbridge routes pass north of the Caspian Sea and transit Russia. China and, to a lesser extent, the EU sought to develop alternative routes to deter hold-up actions along the northern route, although routes across or south of the Caspian Sea had significant disadvantages.
 - the search for alternative routes became pressing in 2022 after Russia's invasion of Ukraine

* Robert Johnson and Guillermo Noguera (2017). A Portrait of Trade in Value-added over Four Decades, *Review of Economics and Statistics* 99(5), 896–911.

Outline

1. The expansion of trade along the rail Landbridge that linked regional value chains in East Asia and in Europe.
2. The Landbridge flourished despite shocks such as deteriorating EU-Russia relations after 2014, shifting EU-China political relations after 2017, and the COVID-19 epidemic in 2020-21.
3. However, the potential for disruption was dramatically and unexpectedly revealed in 2022 when Russia's invasion of Ukraine was followed by sanctions that made Russian Railways an unacceptable partner to many Landbridge customers. The last part analyzes the impact of the shock and the search for alternative routes after the sanctions.

Establishing the Landbridge

Regular train services were established in 2011 between Chongqing and Duisburg and between Chengdu and Łódź.

- Travel times were reduced as competing termini and freight forwarders and other intermediaries increased efficiency, and as the change of gauge process was simplified at the China-Kazakhstan and Belarus-Poland borders.
- The Chongqing-Duisburg service became daily in 2016. By 2017, train journeys from Chongqing to Duisburg, which could take longer than ships before 2011, had been cut to around fifteen days, while the same route by river and sea took between 35 and 50 days depending on congestion along the Yangtze, weather, piracy, and queues to enter the Suez Canal.
 - Meanwhile, air freight rates increased, and ships moved more slowly to reduce pollution
- By 2017 over thirty cities in China were offering nonstop freight services to Europe. In Europe the main termini were in Duisburg and Łódź, but cities far from these hubs, such as Madrid or Budapest, initiated direct regular services. To avoid bottlenecks, e.g. at the Belarus-Poland border where a change of gauge was necessary, services ran to Baltic ports for transit by sea to Scandinavia

China Railway Express Service Route Map, May 2017.



Volume of Traffic on China-EU-China Container Trains

Year	Number of twenty-foot equivalent containers (TEUs)	Number of Trains to and from China
2011		17
2012		42
2013		80
2014		308
2015	46,000	815
2016	100,500	1,702
2017	175,800	3,673
2018	280,500	6,376
2019	333,000	8,225
2020	547,000	12,406
2021	692,500	15,000

Sources: **column 1** UTLC website at www.utlc.com; **column 2** Chinese official data cited in *The 2021 Silk Road numbers are there: what do they tell us?*
Posted at <https://www.railfreight.com/specials/2022/01/14/the-2021-silk-road-numbers-are-here-what-do-they-tell-us/> 14 January 2022.

Finding Alternative Routes

The Chinese government has been active in promoting alternatives to the main lines, which run north of the Caspian Sea.

- in part to serve new destinations,
- also to avoid the possibility of hold-up by a key transit country.

Immediately after the easing of UN sanctions on Iran in January 2016, President Xi visited Tehran; China-Iran train services were established in the same month. So far, no trains from China have gone beyond Tehran.



The Middle Corridor

More attention has been paid to the Middle Corridor that runs through Kazakhstan, crosses the Caspian Sea to Baku, and then goes through Georgia either to link with the Turkish railway system or to cross the Black Sea by ship*

- This route had been proposed by the EU in the 1990s to link Central Asia and the Caucasus to Europe, but with little success.
- Since then, the hard infrastructure has been improved by completion of the Zhezkazgan-Beyneu railroad in 2014, reducing the length of the east-west rail journey across Kazakhstan, and of the Baku-Tblisi-Kars (BTK) railroad, operational in November 2017 as an overland link from Azerbaijan to Turkey.
 - The first China-Turkey train from Xian in November 2019 used the BTK and crossed under the Bosphorus by the Marmaray Tunnel before continuing to Prague

However, the rail-sea-rail mode change remains an unattractive feature and a Black Sea crossing from Georgia to Romania or onward rail from Istanbul to Europe still had problems.

* Dina Azhgaliyeva, and Yelena Kalyuzhnova eds. (2021): *Unlocking Transport Connectivity in the Trans-Caspian Corridor* (Asian Development Bank Institute: Tokyo).

External Shock in 2020-21: COVID-19

International trade was negatively impacted by the COVID-19 epidemic, but the impact on different modes of transport varied.

In Russia, Central Asia and the Caucasus, **air** freight essentially stopped and transport by **road** was disrupted by requirements for drivers to be tested for COVID at border crossing points and other regulations.

Sea freight was disrupted by quarantine and other restrictions that stranded ships in the wrong place.

- Journey time for cargo ready at the East Asian port of departure to delivery at the European port of arrival increased from less than 60 days in 2019 to over 100 days by the end of 2021 -- Price data presents a similar picture
 - Unreliability of maritime delivery times was highlighted by closure of the Suez Canal for a week in March 2021 after the *Ever Given* container ship became wedged.
 - The *Ever Given*, one of the world's largest container ships with a capacity of over 20,000 TEUs, was impounded as Egypt and the ship's owners negotiated compensation terms and exited the Canal 106 days after entering.

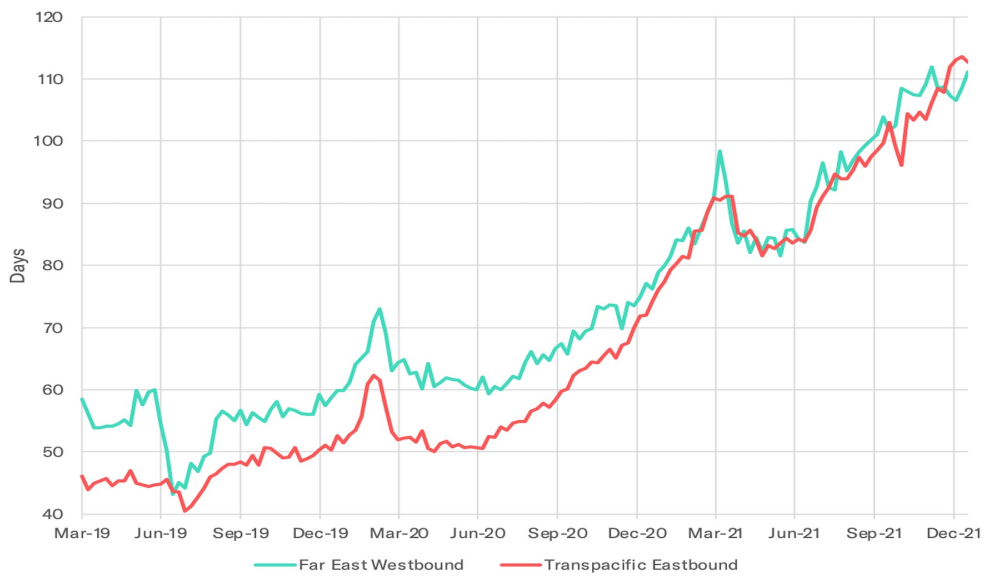
. Even as lockdowns were eased and factories started up again, containers and ships were out of location as managers dealt with crew safety issues and dockside biosecurity.

Many shippers turned to the **rail** option, and the rail Landbridge flourished in 2020 and 2021

Maritime Shipping Times, 2020-21

Fig. 1 OTI Remains Near Record High

Cargo Ready Date to Destination Port Departure, through 1/23/22



Sources: Flexport Research

External Shock in 2022: The Russia-Ukraine War

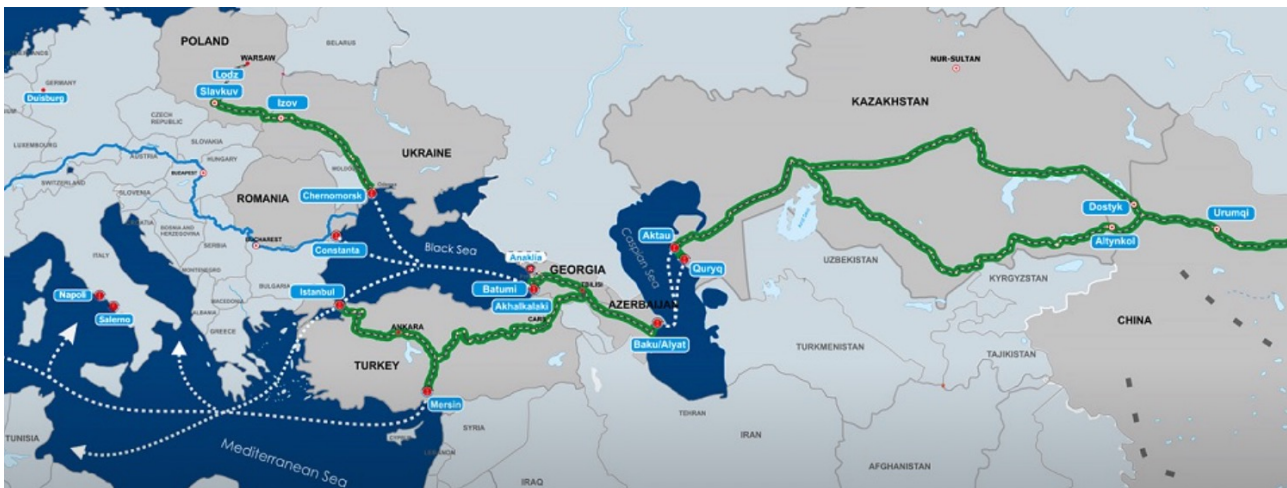
- financial and export sanctions imposed by the USA and the EU on Russia on Friday 25 February meant that European companies could face issues with money transactions when doing business in Russia and that trains could not stop in Russian territory.
- a few days later, both the EU and USA included Russian Railways in their sanctions lists. Customers began abandoning the northern corridor, concerned about the legal implications of working with a sanctioned company and also about potential problems such as insurance coverage being invalidated by "Act of War" clauses.

Note: The actual situation is difficult to assess. The ULTC website continued to report substantial traffic (almost the same in 2022 as 2021).

Middle Corridor Routes, March 2022

In late February 2022, a train went from China to Istanbul then by sea to Trieste.

In March 2022, Middle Corridor routes in common use ran from Baku **either** to a Georgian port and Constanta **or** to Kars and then to Istanbul or Mersin.



Alternatives to transiting Russia were sought immediately

Scaling up faces capacity constraints associated with the Caspian Sea crossing as well as congestion at Constanta port and on parts of the Turkish rail network.

- The two Azerbaijani boats operating at the start of 2022 had a combined capacity of 250 containers per week, i.e. freight from five or six trains. A third ship with capacity of 350 TEUs was operating in April 2022. With a transit time of 3-4 days per roundtrip, the three vessels could provide five departures per week and a maximum capacity of 3,000 TEUs, which is equivalent to 30-40 trains. With the addition of three new ships in September, this capacity would double to 60-80 trains per week – a substantial increase, but still less than half of the ULTC traffic in 2021
- In March 2022, Constanta faced congestion because freight previously intended to pass through Odessa to Ukraine or to Moldova shifted to Constanta.

The invasion has shifted the focus towards developing a sustainable alternative Landbridge.

- 31 March 2022, Georgia, Azerbaijan, Turkey and Kazakhstan signed a statement on development of the Trans-Caspian International Transport Corridor, aimed at strengthening cooperation and increasing transit potential by integrating the Trans-Caspian transport corridor into the international transport system.
- The EU moves more slowly than China or the Middle Corridor countries, but it too has increased focus on the Middle Corridor.

In the longer term, currently difficult routes south of the Caspian Sea could be feasible.

- A route through Uzbekistan and Turkmenistan to Iran could connect to the Turkish rail network or to Iran's ocean ports. US sanctions on Iran may be an obstacle for some potential customers.
- An Uzbekistan-Afghanistan-Iran route would face security issues transiting Afghanistan.

At the 1+5 meeting between the presidents of China and the five Central Asian countries in January 2022, Uzbekistan and the Kyrgyz Republic pressed China to move forward on a railway linking Kashi, the furthest west point in China's rail network, to Uzbekistan, and hence providing an alternative east-west route to the Caspian (avoiding both Russia and Kazakhstan). An agreement was signed at the SCO summit in September.

<https://iit.adelaide.edu.au/news/list/2022/09/26/chinas-western-neighbours-and-the-future-of-eurasian-overland-trade> (posted 28 September 2022)

Avoiding Kazakhstan

A rail link from Kashi, the most westerly point on the Chinese rail system to Uzbekistan has been under discussion for over a year – and more realistically since the change of President in Uzbekistan in 2016.

Two sticking points:

- Who should pay?
- What route to follow?

At the SCO summit in September 2022 the three countries agreed on the route and structure of financing.

This would offer

- a shorter route between China and Iran
- A southern alternative should there ever be problems with transiting Kazakhstan



Conclusions

The rapid evolution of the rail Landbridge highlighted the importance of appropriate connectivity for international supply chains.

- The Landbridge remained robust to potential threats of disruption in 2014 and 2020,
 - rail especially attractive to supply chains looking for fast transport with predictable delivery times
- but the Russia-Ukraine war in 2022 highlighted the dangers of relying on a system with a key chokepoint (Russia)
- rapid response to the war-driven disruption reflected the strong demand for these services.
 - how feasible are alternative routes? The Middle Corridor and services to Iran are already in use, although traffic is far less than that carried on the main Landbridge routes prior to the Russia-Ukraine war.
 - attractiveness will ↑ if countries involved can reduce delays by agreeing on customs procedures and prioritizing the through trains, setting reasonable but not excessive freight rates, & invest to improve choke points such as change of gauge.
- long-term prospects for China-Europe rail connections are positive.
 - the fundamental case for paying extra for fast transport with predictable delivery times remains
 - additionally, electric trains along well-maintained track are more environmentally friendly than ships or planes.
 - for a 12,000kg load from Chengdu to inland Western Europe,
 - air freighting produces c.54 tonnes of carbon dioxide,
 - shipping by maritime + rail routes produces 3.3 tonnes of carbon dioxide, ,
 - rail-freighting across the Landbridge produces 2.8 tonnes of carbon dioxide.

Contact

Thank you for your attention!

The pre-COVID arguments in this presentation are at

- The Eurasian Landbridge and China's Belt and Road Initiative: Demand, Supply of Services, and Public Policy, *The World Economy* 42(6), June 2019, 1642-53.
- The Eurasian Land Bridge: Linking Regional Value Chains along the New Silk Road, *Cambridge Journal of Regions, Economy and Society* 12(1), March 2019, 45-56.
- The Eurasian Landbridge: Implications of linking East Asia and Europe by rail, *Research in Globalization* 3, December 2021. <https://doi.org/10.1016/j.resglo.2021.100046>

And summarized in blogs (posted May 2018):

1. <https://voxeu.org/article/eurasian-landbridge-linking-regional-value-chains>
2. <https://voxeu.org/article/eurasian-landbridge-and-chinas-belt-and-road-initiative>

Any comments, questions, suggestions, please e-mail.

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