

ERIA Discussion Paper Series**The Eurasian Land Bridge
The Role of Service Providers in Linking the Regional
Value Chains in East Asia and the European Union***

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Abstract: Rail links between China and Europe are typically analysed in the context of China's Belt and Road Initiative, focusing on China's economic rise and the implications for international relations. This paper argues that establishment of the China–Europe Land Bridge predated the Belt and Road Initiative and has been market-driven, as service-providers identified and responded to demand for efficient freight services along pre-existing railway lines. Governments' role was trade facilitating, i.e. reducing delays and costs at border crossing points, rather than investing in hard infrastructure. Service-providers responded by linking European and Asian value chains (e.g. in automobiles and electronic goods) and reducing costs for traders shipping between China and Europe. The Eurasian Land Bridge provides a case study of 'servicification' as a component of increased trade in the 21st century.

Keywords: Servicification; Belt and Road Initiative; Trade costs

JEL Classification: L92; O18; F14

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The following item appeared in the *China Daily* on 26 December 2017:

Over 6,200 train trips made between China, Europe in 6 years

Freight trains made a total of 6,235 trips on 57 routes since the China–Europe freight train services began in 2011. The cross-border rail network has bridged 35 Chinese cities with 34 European cities in 12 countries over the past six years. In 2017, more than 3,270 journeys have been made between cities in the two continents, according to the transport coordinating committee of China–Europe trains Tuesday. The number of such train trips is expected to reach 4,000 in 2018, according to Zhao Jun, head of the freight department of China Railway Corporation. ‘We will focus on raising the efficiency and profits and lowering the empty-loading ratio next year,’ Zhao said.

<http://www.chinadaily.com.cn/a/201712/26/WS5a41fcf5a31008cf16da38a5.html>

The newspaper report raises the questions of why is the Land Bridge so important to China and to Eurasia, and why is 2011 a key date? I argue that rail connections linking China and Europe were created in response to demands from participants in global value chains (GVCs). A common finding in the literature on GVCs is that most GVCs are regional, and that three main regional value chains are in North America, Europe, and East Asia (Johnson and Noguera, 2012; Baldwin and Lopez–Gonzalez, 2013). The Eurasian Land Bridge is a step towards linking the last two of these.

A striking feature of the creation of the Land Bridge since 2011 is that it has involved little investment in physical capital because the track was already in existence before the 21st century. The crucial role was played by service-providers. Initially, the national rail companies had to cooperate in providing the international rail service. Then, freight forwarders and courier firms contributed by providing additional services that made the rail route attractive to a larger number of potential users. The dynamic scale effects created a virtuous circle of reduced costs and increased choice generating additional customers and making further service-innovations profitable.

Section 1 reviews Eurasian rail lines before 2010, none of which provided a significant China–European Union (EU) service. Since China's ‘open door’ reforms of 1978–1979, transport of exports from eastern China has been by sea and, to a much lesser extent, by air. Section 2 identifies China’s Western Development Program and the needs of GVCs as key catalysts behind the 2011 date. This date is before China announced in September 2013 the One Belt, One Road, since rebadged as the Belt and Road Initiative (BRI) and formally launched in May 2017, but the BRI is clearly connected to the Land

Bridge and these links will be analysed in Section 3. Section 4 analyses more rigorously the role of service providers and of governments in reducing trade costs; an effective land link from China to the EU and the Middle East requires lower trade costs, and both hard and soft infrastructure matter. Section 5 draws conclusions and policy implications.

1. China–Europe Rail Links before 2010

Overland trade between China and Europe dates back more than two millennia. The Silk Roads carried more than silk and could be highly profitable. At different times, oases along the routes – Merv, Bukhara, and Samarkand – were amongst the largest cities in the world. The overland trade was subject to disruption as raiders from the north attacked the camel caravans and raided the cities, but the nomads settled and eventually guaranteed the traders' security. The *pax mongolica* under Chinggis Khan's successors saw active trade and long-distance communications (a prototype Pony Express mail service) across the world's most extensive land-based empire.

The definitive destruction of the overland trade followed the discovery by Portuguese navigators of sea routes from Europe to Asia round the Cape of Good Hope around 1500. For the next 500 years, sea was the dominant mode of transport between Europe and East Asia. Falling maritime transport costs continuously reinforced this dominant role. By 2015 the largest ships could carry over 20,000 twenty-foot-equivalent (TEU) containers through the Suez Canal.

Several rail links were constructed in the 20th century, but none was a significant carrier of China–Europe freight. The most important was the Trans-Siberian railway built by Russia between 1891 and 1905, primarily for military purposes to link the Russian Far East with the major cities of western Russia. Connections were built through Mongolia to Beijing and through Northeast China to the Pacific coast, but they primarily carried bilateral trade and were subject to disruption by political events, such as the 1960 Sino–Soviet split. The Russia–Korea extension of the Trans-Siberian railway carries cargo between Russia and North Korea but has never been part of a significant Europe–Korea link.

In 1990, the penultimate year of the Soviet Union, a new railway was completed between Kazakhstan and Xinjiang. After 1991, this line mainly served bilateral trade between Kazakhstan and China – Kazakh coal and iron being traded for Chinese manufactured goods. The EU supported a rail link from Central Asia through the Caucasus to Europe that bypassed Russia by crossing the Caspian Sea between Turkmenistan and Azerbaijan. This Transport Corridor Europe–Caucasus–Asia (TRACECA) route was feasible but little used, in part because the changes from rail to sea to rail again and, in many versions, to sea again to cross the Black Sea made the route a poor competitor to the maritime route, and also because transit arrangements through Turkmenistan and Uzbekistan were difficult. Finally, United Nations transport committees drew up maps showing a Trans-Asian Mainline from China through Central Asia and Iran, to Turkey and Europe; the track was in place, but the mainline was a planners' dream rather than a functioning long-distance route.

In sum, before 2011, the rail track was in place linking China and Europe (Map 1), but there were no scheduled freight services because rail was not competitive with sea freight. Occasional block trains were run along the Trans-Siberian on an ad hoc basis for German car companies seeking to ship components to their joint-venture assembly factories in northeast China: VW/Audi in Changchun and BMW in Shenyang.¹ Similar block trains carried Korean car components from the port of Lianyungang to the UzDaewoo joint-venture factory near Andijan in Uzbekistan; following Daewoo's financial problems in the 1998 Asian Crisis and takeover of its car division by General Motors, the factory is now GM Uzbekistan but the main supplying country is still the Republic of Korea. Such journeys to and from China showed that long-distance international rail services to serve GVCs were feasible. However, they were commissioned by firms as bespoke services for their own use on an ad hoc basis and were not availed by other potential users.

¹ Block trains consist of flat trucks, each carrying a container. In 2010 Volkswagen exported 600,000 German-made gearboxes and engines to China, where it had two joint-venture operations, in Changchun and in Shanghai. The German car companies in China were at the start of an expansion that would see their car production in China grow from 1.8 million units in 2010 to 4.6 million units in 2016.

2. China–Europe Rail Links since 2011

The catalyst behind new rail services was the ‘Go West’ policy launched just before China’s entry into the World Trade Organization in 2001.² The policy provided incentives for firms to produce in China’s inland provinces that had fallen behind the booming coastal provinces. The policy’s impact was initially minor. In 2010, a bonded train link between the Shenzhen terminals in Yantian and Chongqing was opened. This encouraged Foxconn, Hewlett–Packard, and others to build large assembly facilities in Chongqing. The bonded train’s function of bringing imported components from Southeast Asia and elsewhere to the factory gate in Chongqing without border-crossing problems highlights the GVC nature of the large assembly plant which were at the final stage of the Apple laptop or HP printer supply chains.

The original plan of many of the new investors appears to have been to export the products by boat along the Yangtze River to Shanghai.³ However, increased shipping along the Yangtze quickly led to congestion, especially at the Three Gorges five locks system, and the electronics firms that had responded to China’s Go West policy by investing in assembly operations in Chongqing sought a better export route than the congested Yangtze River. Meanwhile, in 2011 VW opened a new joint-venture assembly plant in Chengdu, just 300 kilometres west of Chongqing by rail.

The railway companies of Germany, Poland, Belarus, Russia, Kazakhstan, and China came up with an answer in the form of a Chongqing–Duisburg block train. Some policy coordination amongst the six countries’ governments was necessary to ensure smooth passage across national borders, but since the trains did not stop *en route* this could be a simple transit agreement to respect seals on bonded containers.⁴ There does not appear to

² Officially called the Western Development Program, it covered the municipality of Chongqing; the provinces of Gansu, Guizhou, Qinghai, Shaanxi, Sichuan, and Yunnan; and the autonomous regions of Guangxi, Inner Mongolia, Ningxia, Tibet, and Xinjiang.

³ Alternatives to the Yangtze River route were restricted and expensive. If an export cargo went by road, it had to travel to the port in a sealed truck, and bonded and unbonded cargo could not be mixed. If it was sent by air from western China, the airport of departure had to be Chengdu.

⁴ An HP logistics manager claims that establishment of the Eurasian customs union between Belarus, Kazakhstan, and Russia in June 2011 was a crucial step, because previously there had been mandatory customs searches of 10% of containers at the Russian border, but within the customs union there were no longer border checks at borders between member countries (Shepard, 2016b).

have been any formal agreement amongst the rail companies, who collected transit fees and organised the change of gauge at the China–Kazakhstan and Belarus–Poland borders, while the end-companies Deutsche Bundesbahn and China Railway Corporation provided overall quotes to clients and organised loading and unloading at the termini.⁵ In sum, the Chongqing–Duisburg block train was a commercial response by service providers to demands from two of the leading GVC sectors – cars and electronics.

The response was successful because, although rail was more expensive than sea per container, it took less than half the time (16 days between Chongqing and Duisburg, compared to a minimum 36 days and typically over 40 days by sea from Shanghai to Rotterdam) and promised reliable delivery times, both of which are important considerations for GVC participants (Sourdin and Pomfret, 2012). The immediate success of the Chongqing–Duisburg train led to a classic tournament, as service providers offered alternative routes. Between 2011 and 2015, at least nine different routes had been tried (Table 1). Some of these routes used the Trans-Siberian railway, e.g. Harbin–Hamburg or Suzhou–Warsaw, but most used the route across Kazakhstan, as in Map 2.

Table 1: Railway Routes from China to the European Union, to end of 2015

Route	Start	Length	Duration
		Kilometres	Days
Chongqing–Duisburg (DE)	July 2011	11,179	16
Wuhan–Mělník (CZ)	October 2012	10,863	16
Suzhou–Warsaw (PL)	November 2012	11,200	18
Chengdu–Łódź (PL)	April 2013	9,826	10.5
Zhengzhou–Hamburg (DE)	July 2013	10,124	19–20
Yiwu–Madrid (ES)	November 2014	13,052	21
Hefei–Kazakhstan; Hefei–Hamburg (DE)	June 2014	c11,000	15
Changsha–Duisburg/Moscow/Tashkent	October 2014	11,808	18
Harbin–Hamburg (DE)	June 2015	9,820	15

Source: Li, Bolton, and Westphal (2016: 8).

The trial-and-error process was a market discovery exercise to find routes on which customers were willing to pay for rail service between China and Europe. Some trials will

⁵ In April 2017, the railway companies of Belarus, China, Germany, Kazakhstan, Mongolia, Poland, and Russia signed an agreement on deepening cooperation or the seamless passage of container trains between China and Europe. This appears to have been the first formal agreement on the matter.

prove unsuccessful, but the established routes like Chongqing–Duisburg have been very profitable for the carriers. The financial returns to the rail companies are commercially sensitive. However, Kazakhstan's rail company is reported to have earned over a billion dollars in transit fees in 2015.⁶ At a conference presentation in June 2016, a senior Bundesbahn official described Chongqing–Duisburg as the German company's most profitable route.⁷

The trial process continued after 2015 and regular services were established on the most successful routes. In April 2016, the first China–France train went from Wuhan to Lyon in 15 days (Map 3). In January 2016, a Yiwu–Tehran train reached Iran in 14 days. In January 2017, the first China–UK train went from Yiwu to London. By the end of 2017, the Land Bridge had connected 35 Chinese cities and 34 European cities by rail. Some connections were one-off trials, while other routes flourished. The Duisburg–Chongqing–Duisburg service ran on a three-times-a-week schedule in 2016 and became a daily service in 2018. Yiwu–Madrid has been a popular route, now offering a regular once-weekly service, and services to Łódź have also flourished.⁸

The catalyst for the Land Bridge rail services was car and electronics firms seeking to reduce their trade costs, between German component suppliers and VW, Audi, and BMW assembly plants in China; and between Apple, HP, and Acer assemblers in China and consumers of their electronics products in the EU. Production along these GVCs relies on minimising the need for inventories by securing just-in-time delivery of components to the next-stage producer and prompt delivery of the final product to distribution centres and final retailers. Trade costs are evaluated in terms of money, time, and certainty. At current transport costs, auto components and laptops fit into an intermediate category of goods for which airfreight is too expensive but firms are prepared to pay for the time-saving that rail transport offers over maritime transport.

⁶ Central Asia Regional Cooperation Corridor Performance Measurement and Monitoring, *Annual Report 2015* (Asian Development Bank, Manila), page 43.

⁷ OSCE Business Conference ‘Connectivity for Commerce and Investment’, held at the German Foreign Ministry, Berlin, 18–19 May 2016.

⁸ Shepard (2016a) quotes a DHL agent on the importance of scheduled services: ‘When there was no volume the train operator would say, ‘Okay, let’s wait one, two, three days until we have a full train.’ The real change happened in 2013 with the Chengdu–Lodz train that opened. It was like a breakthrough. They published their departure time and had a direct line.’

3. One Belt, One Road – the Belt and Road Initiative (BRI)

In September 2013, President Xi Jinping visited four Central Asian countries before attending the Shanghai Cooperation Organization summit in Bishkek. On his trip, President Xi met all five Central Asian presidents, announced the One Belt One Road and pledged over \$50 billion in Chinese funding for energy and infrastructure projects. The Asian Infrastructure Investment Bank (AIIB), mooted at the same time, formalised in 2014–2015 and officially opened in 2016, stood ready to provide funding. The One Belt One Road was rebadged as the Belt and Road Initiative (BRI) and officially launched at the Belt and Road Forum for International Cooperation on 14–15 May 2017 in Beijing, attended by 29 foreign heads of state and government and by representatives from more than 130 countries and 70 international organisations. At China's 19th National Congress in October 2017, the BRI was incorporated into the Chinese constitution institutionalising its position as a foremost foreign policy goal of President Xi.

The high profile given by China to the BRI and Asian Infrastructure Investment Bank have helped to publicise the option of overland rail service across Eurasia. However, much was already happening along the Land Bridge, and had been market-driven. Does the BRI matter, or is it just giving a new name to a pre-existing phenomenon?

The BRI holds promise for extending the Eurasian Land Bridge to include both the current China–Belarus mainline to Baltic ports and western Europe and a China–Istanbul mainline with spurs to the Middle East and North Africa. Indeed, Chinese maps highlight a route to Europe south of the Caspian Sea through Iran and Turkey (Map 4), and investment plans include track connecting Kashgar to Andijan that will make a south of the Caspian route even shorter. The BRI, as it is currently known, also envisages improved rail connectivity with Southeast Asia and with Pakistan. The most important aspect of BRI plans is that by creating alternative routes and wider connections the network becomes more useful and less vulnerable to hold-up by a transit country. Although the current routes appear to function well on existing track, the additional routes may need more investment, e.g. the missing Kashgar–Osh–Andijan segment or at change-of-gauge points, for which China or the Asian Infrastructure Investment Bank (AIIB) promise to be a source of funds.

Multiple routes are important because they enhance the range of transport options and they reduce hold-up possibilities, which are always a danger along a single route passing through several countries. Countries *en route* may be able to benefit from lower trade costs to promote economic diversification – as long as they lower trade costs under their control (trade facilitation).

All the routes are being improved and are trying to show their superiority, and there is an incentive for individual transit countries to enhance their attractiveness so that preferred routes pass through their territory, yielding transit fees and the opportunity to use improved rail services for trade. Travel time on the TransCaspian Aktau–Baku route has been reduced by construction of two new rail sections west of Zhezkazgan in Kazakhstan, which cut the distance to Aktau substantially. However, at a cost of \$5,000 per container from Dostyk to Batumi, the route is not competitive with Chongqing–Duisburg for China–EU trade.⁹ Meanwhile, DHL and DB–Schenker, a division of the German rail company Deutsche Bundesbahn that focuses on logistics, talk of reducing China–EU travel times to 10 days and are exploring new routes via Iran (Shepard, 2016a).¹⁰ Costs are being reduced by running longer trains; since August 2017 XL trains have operated with over eighty containers, in contrast to the previous maximum of 57 conventional railcars.

Thus, it seems likely that an all-land route will dominate over a TransCaspian route, but whether the preferred option runs north or south of the Caspian Sea is still to be determined. The two options have important differences; the former includes Russia as a transit country, while the latter transits Iran and Turkey to Europe and is easily linked to the Arab world. If the intention is to cut transport times by constructing a high-speed rail line, the cost is likely to make the two routes mutually exclusive as main lines between China and Europe and a key issue for the two largest Central Asian countries is whether the route passes through the capital of Kazakhstan, Astana, or the capital of Uzbekistan,

⁹ A 40-foot container from Chongqing to Duisburg cost around \$7,000 in 2011. By 2014, this had fallen to \$4,000 (Shepard, 2016b).

¹⁰ Times have been shaved, first by avoiding customs checks for the sealed cargoes, and second by speeding up the changeover time at change of gauge points. At the Khorgos Gateway between China and Kazakhstan, two trains are lined up side by side and the containers are transferred from one to the other in 47 minutes (Shepard, 2016a). By 2017 the Chongqing–Duisburg journey took 12 days (Esteban and Li, 2017: 12).

Tashkent.¹¹ Both governments have already shown their eagerness to be on this technological frontier by establishing domestic high-speed passenger services between their two biggest cities (Almaty–Astana and Tashkent–Samarkand). A two-day rail service between China and the EU would be a major step towards Eurasian integration.

A striking feature of the story so far is the absence of major investment. The Land Bridge runs on 20th century rail-track. Its emergence after 2011 reflected a conjuncture of demand, service-provider response, and governments willing to facilitate transit trade. There has been some infrastructure investment, notably in facilities where change of gauge is necessary between China and Kazakhstan and between Belarus and Poland. This has contributed to shaving the time, e.g. Chongqing–Duisburg took 16 days in 2011 and 12 days in 2017, but most of the time-saving is associated with better logistics and prioritising the profitable service. However, future prospects will be enhanced by investment in new or upgraded track, better rolling stock and other facilities, and this is where the BRI backed by the AIIB's financial clout, could make a difference.

Completion in December 2014 of the Uzen–Gorgon railway from Kazakhstan through Turkmenistan to Iran added a further dimension to the regional rail network. The Caspian coastal line may be valuable as an outlet for Kazakhstan's grain exports to the Middle East and North Africa, and as a route for Indian trade with Central Asia through Iran's Indian Ocean port of Chabahar and the Iranian rail system. However, the most dramatic innovation occurred in January 2016, when the first direct train from China to Tehran used this route, benefitting from the newly completed east–west link in the Kazakh rail system and avoiding transiting Uzbekistan (and sending a message to Uzbekistan about the potential cost of its cumbersome transit regulations). The drama lay in the speed with which China reacted to the easing of United Nations sanctions on Iran from 1 January 2016; a week later President Xi Jinping visited Tehran, and before the end of the month the Chinese train was on its way.

China has been involved in construction of other important links in the Central Asian rail network. The second China–Kazakhstan rail line opened in 2013, linking Urumqi more directly to Almaty and Tashkent. In June 2016, President Xi and Uzbekistan's

¹¹ Chinese proposals for a high-speed rail service are not implausible given the speed with which China has constructed its domestic high-speed rail network. For freight trains, the current criterion for 'high-speed' is an average of 200 kilometres per hour.

President Karimov opened the Angren–Pap railway facilitating transport between the Fergana Valley and Tashkent.¹² A proposed rail link from Kashgar through Osh in the Kyrgyz Republic to the Fergana Valley would link up to this line and continuous existing lines to Iran and through Bosphorus Tunnel to Istanbul. An underlying pattern of these investments is that they all strengthen the south of the Caspian route to Europe, while the Kyrgyz line offers China the option of bypassing Kazakhstan, which is currently the gateway for any routes from western or southern China.

The BRI vision is broader than one or two rail lines to Europe. The China–Pakistan Economic Corridor involves upgrading the Karakoram Highway and in future building a rail line south from Kashgar to Pakistan, which will improve connectivity between China and Pakistan and offer Russian and Central Asian traders an option for trading with Pakistan without transiting Afghanistan. More important in the GVC context is China's simultaneous investment in improved infrastructure through western neighbours and to the south. New and improved rail links within ASEAN, and a through line from Yunnan Province through Lao PDR to Thailand and on to Malaysia and Singapore, will link GVC participants in southeast Asia to participants anywhere in China and through the Eurasian Land Bridge to European GVC participants or end-markets.

The important point behind this catalog of transport routes is that, even if only a fraction of them become effectively operational, China is on the cusp of having greatly improved connectivity to the west, and south. The more lines that are open, the more difficult it will be for any transit country to exploit its hold-up power.

4. The Role of Service-providers and of Governments

Although initial services catered to specific firms, a major reason behind the wider success of the Chongqing–Duisburg and other post-2011 routes was the early and increasing involvement of freight forwarders and courier companies. They arranged

¹² The old line followed a flatter but more circuitous route through northern Tajikistan. The new line, built by China Railway Tunnel Group, includes a 19-kilometre tunnel as well as 25 bridges and six viaducts to traverse the mountainous terrain.

multimodal connections and began consolidating part-container loads. Electronic goods and car components continue to be major freight on the Chongqing–Duisburg–Chongqing route. However, with a regular service, freight forwarders can offer less-than-full-load shipping, assembling container loads for clients willing to pay to ship and wanting a fixed delivery date. Reports of the first trains from France and from the United Kingdom to China inevitably invoked cargos of champagne or whisky, but the containers were full of ‘miscellaneous goods’.¹³

Virtuous circles were set in motion. As China–EU rail services became more varied and more regular, freight forwarders and courier companies began offering additional services such as refrigerated containers or organising clearance for goods that may fall foul of EU–Russia mutual sanctions. It is through such service provision that hubs such as Duisburg, Łódź, and Yiwu have become popular termini. Over 300 freight forwarders and other facilitators have offices at the Duisburg hub, which provides access to rail, river, road, and air transport and is within short distance of tens of millions of people in Germany, France, Belgium, Luxembourg, and the Netherlands. Poland is a centre for e-commerce fulfilment, and Łódź has become an eastern Europe hub. Yiwu in Zhejiang Province, famous as the world’s largest market for small goods, has become a rail hub for the Yangtze Delta; Esteban and Li (2017) noted that, although the first Yiwu–Madrid train departed in 2014, Yiwu business leaders had begun exploring Land Bridge options in January 2013, before President Xi’s One Belt One Road announcement.

Multimodal hubs offering a greater range of specialised service-providers are convenient places of origin or destinations for many customers. The added services appeal to GVCs, such as agribusiness, where goods may be perishable and require refrigeration, or to non-GVC traffic with part-container loads. The original drivers (car and electronics GVCs) remain important as they wish to transform what have largely been regional value chains in Asia or in Europe into Eurasian value chains. They also benefit from increased scale because services become more frequent and competing routes have incentives to become more efficient in reducing transit times and increasing the range of services

¹³ Shepard (2016a) gave the example of a Chinese ATM manufacturer who needed to send one replacement machine to Europe; sea was too slow and air too expensive, but rail was just right.

Future success of the rail Land Bridge will also depend on the ability of service-providers to continue offering attractive rail services relative to maritime or air routes. The edge that rail has over maritime transport could be reduced if the polar route becomes a serious option.¹⁴ Air freight has potential to reduce costs with new aircraft and better route management. Both of these options have been included in Chinese BRI plans.¹⁵

Governments have played an important role in reducing trade costs. All countries along a Land Bridge route must agree to simple transit procedures. Time cost and predictability of border crossings are crucial. Perhaps the most important investments so far have been at changes of gauge, which historically are associated with significant delays.¹⁶ The container transfers at the change-of-gauge border are simple procedures: the incoming train and the outgoing train are lined up side by side, and a crane moves the containers from one to the other. At Khorgos, on the Kazakhstan–China border, the transfer can be done in 47 minutes (Shepard, 2016a). Public investment has also been important in creating alternative routes, and in future could provide a high-speed option. Such investments may create issues about financing.¹⁷

An extended network will serve other traffic than bonded China–EU trains. In general, reduced transport costs have net benefits, but as with most economic changes there are potential losers as well as gainers. Reduced trade costs make exporters more competitive in foreign markets but subject import-competing firm to greater competition

¹⁴ In the summer of 2017, Russian ships used the Northern Sea route without an ice-breaker for the first time and COSCO Shipping Specialized Carriers started using the Northern Sea route, taking about 20 days less from China to Rotterdam than the Suez Canal route. In January 2018, China's State Council published a white paper officially linking the BRI to China's Arctic Policy and shipping routes, and heralding opportunities to build a 'Polar Silk Road' together with Arctic coastal states, in particular Russia (Klimenko, 2018; Liu, 2018).

¹⁵ In a June 2017 meeting in Beijing with Luxembourg Prime Minister Xavier Bettel, President Xi pushed for a 'Silk Road of the Air', starting with intensification of the air cargo shipments between Zhengzhou and Luxembourg that Cargolux Airlines had been operating since 2014 (Qi Xin, 2018).

¹⁶ The Land Bridge trains do not travel across continents; only the containers do. The container transfers are necessary because the track gauges of former Soviet countries are different from those in China and Western Europe, so one train physically cannot travel the entire route. The container transfers described in the next sentence are only suited to standard containers; refrigerated containers, for example, require different procedures.

¹⁷ Hurley et al. (2018) raised the spectre that funding BRI projects may cause debt distress in some countries. This is a concern in the Kyrgyz Republic where versions of China's proposed Kashgar–Andijan link are estimated to cost around \$6 billion, i.e. roughly the size of the country's gross domestic product, and even a soft loan to finance construction could cause problems if transit revenues are meagre. Hurley et al. include Lao PDR and Cambodia amongst Southeast Asian countries facing potential debt distress due to BRI participation.

in the home market. Individuals have increased choices of where to live and work, but locations bypassed by the efficient network can fall behind.

If the process is displacing regional value chains in East Asia and Europe by Eurasian value chains, then successful GVC participants in Southeast Asia may find new opportunities in the larger Eurasian GVCs while at the same time coming up against competitors in eastern Europe. The outcome of such competition becomes less predictable as human tasks are replaced by automation, and simple comparison of wage and other costs becomes less important than ability to interface with robots or firm-specific competencies.

5. Conclusions

In sum, as the GVC phenomenon has flourished, the value chains are becoming longer and more complex. Following from sub-regional zones such as Sijori or the Pearl River Delta in the 1980s and 1990s to ‘Factory Asia’ in the 2000s (Pomfret, 2011), the next step is to link the regional value chains of East Asia and Europe. This requires low trade costs (in time, money, and uncertainty) across Eurasia. Service providers have led the way in delivering reduced trade costs.

A rail link between China and Europe offers faster speed and greater reliability than ocean shipping, and it is much cheaper than airfreight. Thus, rail offers a niche that is useful for GVCs like the carmakers, which have components too bulky for air transport but want faster and more reliable delivery than intercontinental maritime transport can provide. As an added benefit, per ton of freight, rail is much more environmentally friendly than road or air.

Since 2011 the number of trips along the Land Bridge has mushroomed – 6,235 by December 2017, and over half of those in 2017. To keep perspective, traffic on the rail Land Bridge is still small compared to China–EU maritime trade. In 2016, 42,000 containers passed through Kazakhstan, a big increase over the 2,000 in 2011 (Shephard, 2016a), but the load of four current-generation container freighters that can pass through

the Suez Canal. Nevertheless, the rail Land Bridge appears to be firmly established, with potential for further service improvement and implications for GVCs across Eurasia.

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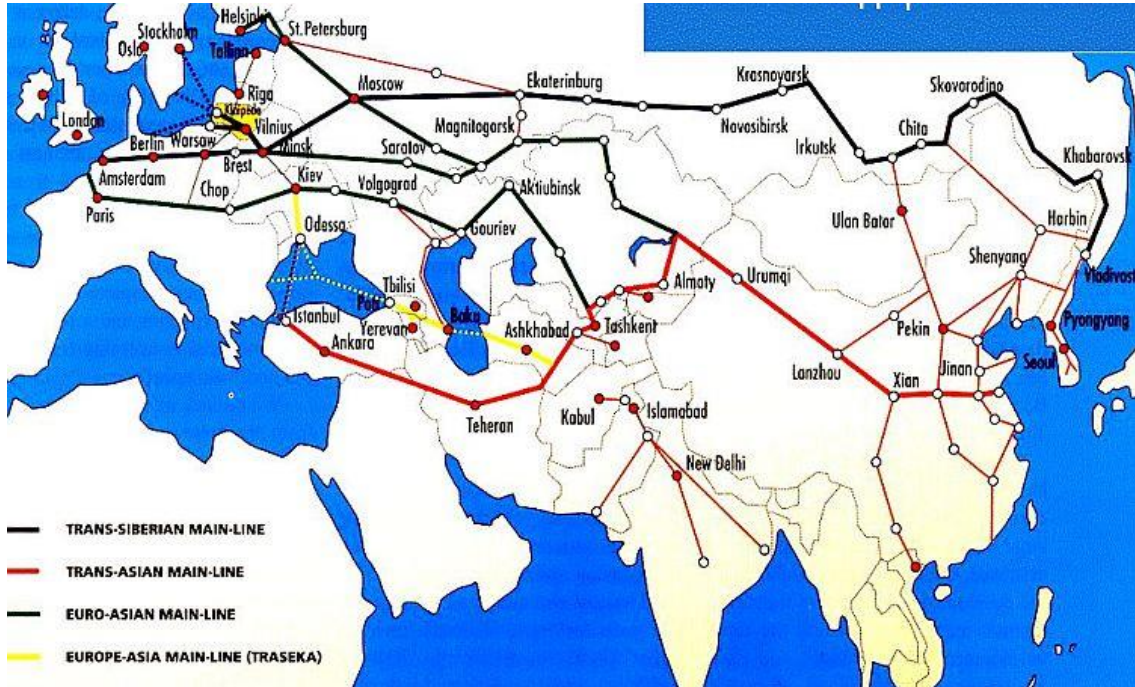
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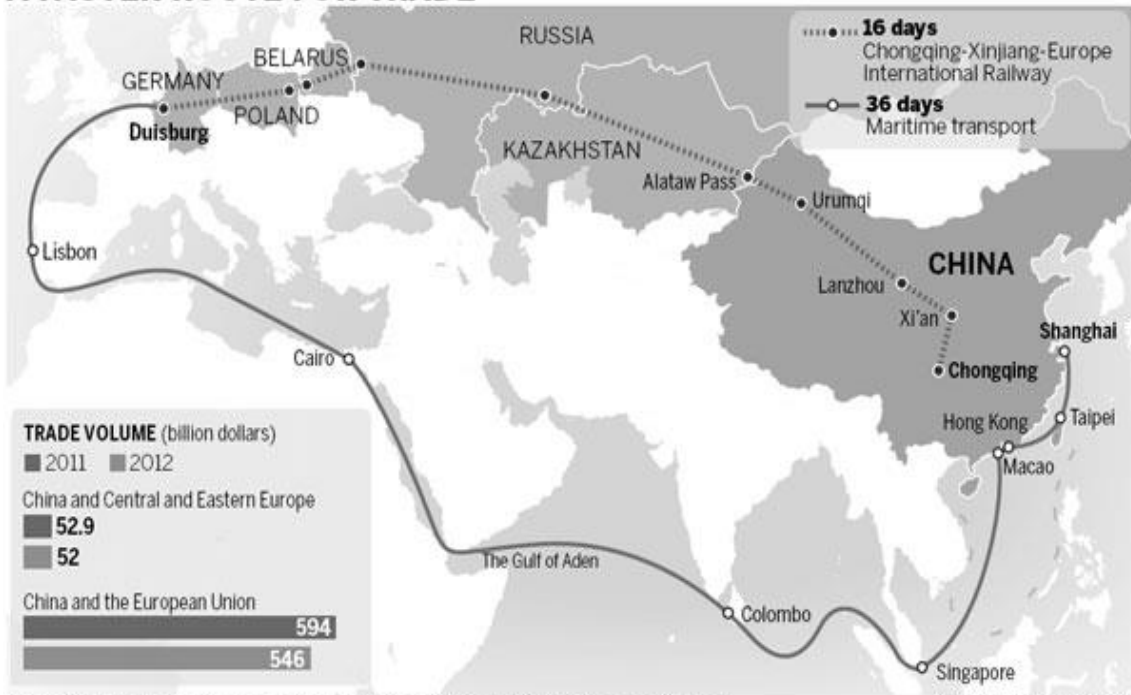
Maps

Map 1: The Eurasian Rail Network in 2010

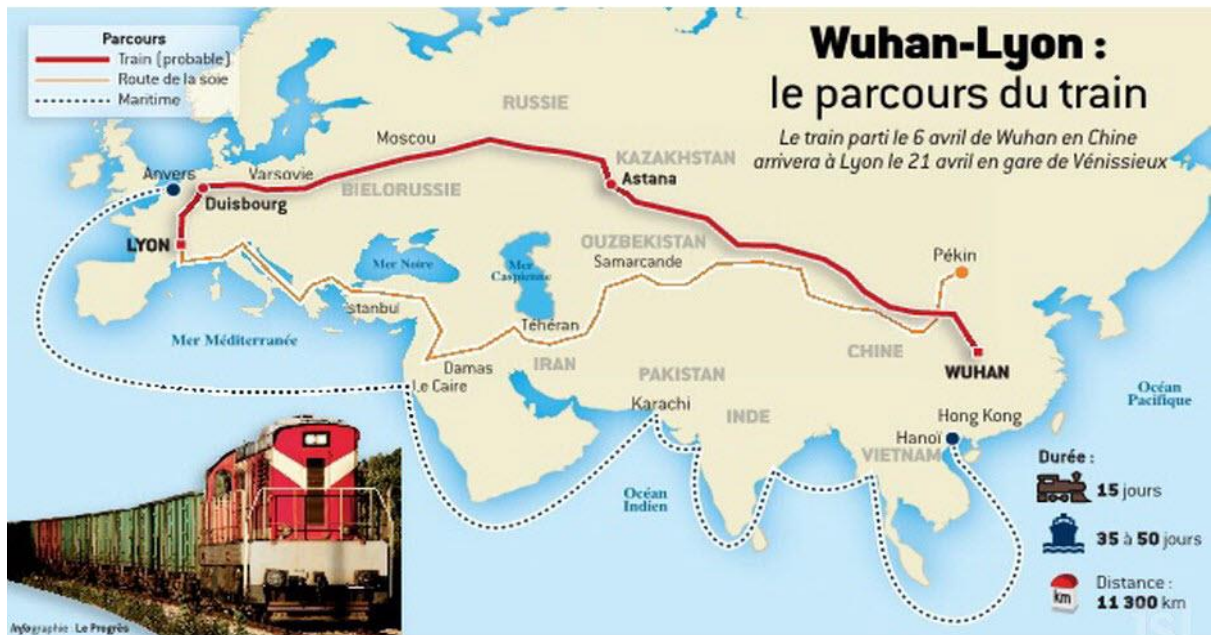


Map 2: The Chongqing–Duisburg Connection in 2011–2012

A FASTER ROUTE FOR TRADE



Map 3: Wuhan–Lyon, April 2016



Map 4: China's Belt and Road Initiative – The New Silk Road Railway



Source: Xinhua News Agency, May 2014.

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