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China's Belt and Road rail freight transport corridors – the economic geography of underdevelopment

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Abstract

Traffic volumes between China, Europe and Central Asia through China's 'CR Express' intercontinental rail freight system remain intransparent. We sought new methods of data collection to better understand the significance of this novel trans-Eurasian transport mode. Cumulative causation economic theory can explain how positive industrial development can occur in both linear transport corridors and industrial cluster development in node cities. However on current economic metrics, it is difficult to accept the China narrative of structurally transformative economic development resulting from the intercontinental rail system policy. This paper expresses doubt as to the underlying institutional factors behind the intercontinental rail system being developed by China and its surrounding Eurasian transport policy. We detail the economic theory underpinning the development of the 'CR Express' policy through examination of China central level transport policy sources and their horizontal integration with other central-level spatial planning policies, and we examine the deployment of China's model of intercontinental rail development in the 'Middle Corridor' between the Kazakhstan border and Eastern European ports. Both theory and practice point to supply-side development of greater containerised transport capacity resulting in complementarity-driven economic growth clusters. However, without adequate demand, industrial investment in Eurasian clusters, or transparent statistics with which to gauge either the rail freight logistics development or the economic development spill-over effects, we expect to find the initial practical economic results in the Eurasian economies underwhelming. We argue that China's Eurasian transport policies are not multifaceted enough to result in future growth.

Zusammenfassung

Das Verkehrsaufkommen zwischen China, Europa und Zentralasien über Chinas interkontinentales Schienengüterverkehrssystem „CR Express" bleibt undurchsichtig. Wir haben neue Methoden der Datensammlung erörtert, um die tatsächliche Bedeutung dieses neuen transeurasischen Verkehrsmittels zu ergründen. Die ökonomische Theorie der kumulativen Verursachung kann erklären, wie eine positive industrielle Entwicklung sowohl in linearen Verkehrskorridoren als auch bei der Entwicklung industrieller Cluster in Städten, die Verkehrsknotenpunkte darstellen, stattfinden kann. Angesichts der aktuellen Wirtschaftsindikatoren ist es jedoch schwierig, Chinas Narrativ von einer strukturell transformativen wirtschaftlichen Entwicklung zu akzeptieren, die sich aus der Politik des interkontinentalen Schienengüterverkehrssystem ergebe. Dieser Beitrag äußert Zweifel an den institutionellen Faktoren, die mit dem von China entwickelten, interkontinentalen Schienengüterver-

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kehrssystem und seiner generellen eurasischen geoökonomischen Politik einhergehen. Wir erläutern die Wirtschaftstheorie, die die Basis für die Entwicklung der „CR Express"-Richtliniendokumenten bildete, indem wir die Quellen der Verkehrspolitik auf zentraler Ebene der öffentlichen Verwaltung Chinas und deren horizontale Integration mit anderen Raumplanungsprogrammen auf der zentralen Ebene untersuchen. Wir untersuchen ebenfalls die Umsetzung des China-Modells der interkontinentalen Schienengüterverkehrsentwicklung im „Mittlere Korridor" zwischen der Kasachstan Grenze und der osteuropäischen Häfen. Sowohl Theorie als auch Praxis deuten auf die Möglichkeit einer angebotsseitigen Entwicklung größerer Schienengüterverkehrskapazitäten hin, die zu Komplementarität getriebenen Wirtschaftswachstumsclustern führen könnte. Ohne ausreichende Nachfrage, industrielle Investitionen in eurasische Cluster oder transparente Statistiken, anhand derer entweder die Entwicklung der Schienengüterverkehrslogistik oder die Auswirkungen der wirtschaftlichen Entwicklung beurteilt werden können, erwarten wir jedoch, dass die praktischen wirtschaftlichen Ergebnisse in den eurasischen Volkswirtschaften nicht überzeugend transformativ sein werden. Wir behaupten, dass Chinas eurasische Verkehrspolitik nicht vielfältig genug ist, um zukünftiges Wachstum zu erzielen.

Keywords geoeconomics, geoindustrial policy, cumulative causation, transport policy, Belt and Road

1. Introduction

The *China Rail Express* (*CR Express*) system is the logistics management institution through which intercontinental rail freight between China and Europe as well as China and Central Asia is organised. It is a central policy-planned model which is part prescriptive command economy, part co-option of existing and continuing subnational rail freight lines and policies, part subsidy organisation mechanism, and part national champion State-owned Enterprise. The development of the *Belt and Road* rail corridors under *CR Express* is institutionally independent and potentially transformative in a Kaldorian cumulative causation economic analysis. We explore the use of Kaldorian cumulative causation in developing Eurasian transport infrastructure and transport economic potential arguing that *CR Express* is fundamentally supply-side driven by China's Eurasian rail development policy, yet dependent on European demand-side drivers. Given that the detail of the freight volumes between China, Europe, and Central Asia remain intransparent, it is difficult to either accept the hype of the intercontinental rail system or to wholly dismiss the system as a China central government attempt at geoeconomics.

There has been little critical engagement with the use of transport infrastructure in Eurasia along the *Iron Silk Road*. Much *Belt and Road* analysis discusses infrastructure investment, ignoring that most infrastructure investment and development in Central Asia was done by the countries themselves or that the European Union (EU) had a more important role than China (*Bucsky* and *Kenderdine* 2021). Most importantly, almost all *Belt and Road* research has ignored that China's investment in the Eurasian region has been driven by industrial capacity transfers, not by new infrastructure investment (*Kenderdine* and *Ling* 2018; *Kenderdine* and *Lan* 2019; *Kenderdine* 2018a). Where China has institutionally developed the use of existing infrastructure under *CR Express*, data is difficult to obtain and few studies have tried (*Bucsky 2019*; *Bucsky* and *Kenderdine* 2020a). There needs to be a greater research emphasis on transnational capital in Central Asia from geoeconomic, geoindustrial, political geography and economic geography perspectives, although there is an emerging scholarship on *CR Express* and China's *Belt and Road* rail policies (*Pepermans* 2019; *Tambellini* 2018; *Pomfret* 2019). However there remain few theoretical papers on the *CR Express* system from political economy, political anthropology or political geography perspectives. Many serious studies still Orientalise the Central Asian field with lived-experience autoethnographies being published as if they were genuine research (*Grant* 2020; *Joniak-Lüthi* 2020).

Missing from most analyses of all aspects of China's *Belt and Road* are qualitative datapoints sourced from the China public administration. China's transition economy retains many elements of the communist planned economy. This means that the central government coordinates huge regional agglomeration industrial complementarities into a national system of industrial development. This is highly coordinated horizontally across ministries, sub-ministerial agencies and other Party-State organs, as well as vertically down the provincial, prefectural and county

level public administration structure. This makes analysis of China's geoeconomic policy in external geographies highly visible through analysis of public policy documents. Where this public administration of geoeconomic policy fails though is in policy communication horizontally with external host economies. For example, in Central Asia, where a China provincial geoeconomic policy mechanism between provincial and prefectural levels of government might be well-orchestrated and integrated into larger spatial plans, horizontal coordination with national or subnational governments in Kazakhstan, Uzbekistan or Kyrgyzstan are underdeveloped and lack functionality. China's export of this domestic industrial policy system to its external geographies through a geoindustrial policy public administration architecture has thus failed to develop into a cogent international economic institutional system. This political failure to develop institutional infrastructure is a bigger failure than the shaky economic foundations of the intercontinental containerised rail freight system on the *Belt and Road*.

The paper is organised into an examination of the theoretical basis for regional industrial development strategies using a stylised model of Kaldorian cumulative causation. We then establish a China public administration policy discourse path-dependency analysis of the ongoing development of the *CR Express* rail freight system and wider Eurasian transport policy integration under China's national and subnational industrial and transport policy. The following section comprises statistical analysis of traffic by mode of transport along the *Middle Corridor*, known interchangeably as the *Trans Caspian International Trade Route (TITR)*, which is the most institutionally developed international rail freight corridor within the *Belt and Road* macropolicy due to the large number of states involved. The final section adds some textual analysis of academic literature related to the Eurasian rail project and related policies, arguing that incoherent policy narrative transmission from China to local Eurasian economies adds to the intercontinental rail plan's political obfuscation and the intransparency of other *Belt and Road* projects. We conclude with scepticism about any actual cumulative causation effects under current political and economic institutional structures, however accept that under better institutional settings that economic integration and cumulative causation industrial development could occur in regional economies along the *Belt and Road* corridors.

2. Policy management of Kaldorian expectations

Theoretical economic contributions to understanding state and regional industrial restructuring have come from many sources since the beginning of nation-state industrialisation (*List* 1856; *Gerschenkron* 1962). *Friedrich List's* national system of political economy is generally regarded as the key contributor to remodelling the European industrialisation experience in new geographies (*Johnson* 1982; *Chang* 2002). *Thorsten Veblen* (1915) also began to identify institutions within national and imperial systems of industrial economic development as the key unit of analysis. There is some continuity between *List* and *Veblen* in attempting to untangle the institutions of economic development of European states, especially considering the role of railways. But it was *Gunnar Myrdal* (1954, 1957) and *Nicholas Kaldor* (1970; 1975) who began to conceptualise economic growth, economic decline and economic history in terms of the institutions of cumulative and cyclical causation. Contemporary development economic practice has largely forgotten this theoretical contribution to institutional and geographic growth models and regional economic development, aside from a few contemporaries (*Fujita* 2007, *Toner* 1999).

Kaldorian and Myrdalian circular and cumulative causation theories segue broadly with post-Keynesian economic growth theories and institutional economic analyses of structural economics (*Palley* 2002). There remain conflicting typologies within economic theory on growth, growth models, endogeneity, exogeneity and the impacts of supply, demand, external technology inputs and external capital inputs. *Argyrous* (1996) considers endogenous growth models within industrial economies, arguing the universality of path-dependent industrialisation as economic development. Cumulative causation theory explains the path-dependent industrial growth models of Japan and the northeast Asian industrialised economies, and *Skott* and *Auerbach* (1995) attribute the application of non-equilibrium growth models with positive government intervention in the economic development of industrial states. 21st Century economic development theory must also consider leap-frog strategies of technological development being integrated into the known-path industrial development experience, but this can also be theorised into post-Keynesian endogenous models of growth without recourse to exogenous actors (*Araujo* 2013). Myrdalian cumulative causation considers the structural economic ex-

perience of industrialisation in terms of uneven geographic development (*Myrdal* 1954, 1957), however the Kaldorian model is more easily intersected with classical positivist economics. The Kaldorian contribution on uneven development based on economic geography explains in positivist terms multivariate causation of different economic agents' outcomes within nations, within bordered economies such as the EU, and uneven development within cross-border geoeconomic zones like China's *Belt and Road*.

Applying cumulative causation to China's *CR Express* and *Middle Corridor* rail freight system means considering a multivariate causality model of economic development and endogenous growth. For a practical demonstration of how *CR Express* and *Middle Corridor* could result in localised endogenous growth in Central Asian economies, we employ a modified form of *O'Hara's* (2008) model of combined Myrdalian and Kaldorian cumulative causation. *O'Hara's* model combines three aspects of *Myrdal* (1954, 1957) and *Kaldor* (1970, 1975): circular causation or interrelated variables; cumulative causation, or variables with positive or negative feedback loops; and institutional path-dependence, a way of bringing in both time and space to the analysis of historical change. *O'Hara's* model also considers the possibilities of both accumulation and decumulation. The phenomenon which we are primarily concerned with in our stylised model of the *Middle Corridor* case study is of a period of initial accumulation from an exogenous policy intervention but which then becomes a cumulative cause of decumulation once the exogenous stimulus is removed and no endogenous growth takes place.

In *O'Hara's* stylised four-segment cumulative causation cultural and socioeconomic axes are effectively Finance Capital, Social Capital, Asocial Capital, and Human Capital, represented as Y, N, A, H, and where four segments of human activity occur at YH, YN, NA, HA (cf. *Fig. 1*). The change represented in Y/N1-Y/N0 in panels 1 and 2 would be a positive change which stimulates economic growth (endogenous accumulation), for example a new factory or a new transport line being built. The change represented Y/N1-Y/N0 is an initial positive change (endogenous accumulation) followed by a negative change (endogenous decumulation), for example a new factory being built but then closing down or a government subsidy being introduced but then removed. We incorporate political science theory to define and label the points of change as 'critical junctures' in the tradition of historical institutionalism (*Skocpol* and *Pierson* 2002; *Steinmo* 2008; *Thelen* 2002); for example, a policy intervention from Beijing in a Central Asian state is a critical juncture. However, through both the stylised model and the wider study, we still consider the institution as the basic unit of analysis in the economic sense of *North* (1989).

To expand the model to demonstrate simultaneous multi-variate causality in panel 4, we simply imagine simultaneous critical junctures occurring within *O'Hara's* four-segment cultural and socioeconomic model, creating their own cumulative causative functions, both idiosyncratic and interacting with and affecting processes in the other four segments. In the fifth model, we substitute stylised variables for our real-world case study of the *CR Express* policy and its institutional impact on the development of the *Middle Corridor*, the Trans-Caspian International Trade Route.

Cumulative causation theory yields a holistic yet fuzzy definition of how structural changes in multivariate economic systems work. *Myrdal* (1954, 1957) and *Kaldor* (1970,1975) were concerned with explaining the processes of the multivariate causes of growth and contraction which equilibrium economics does a poor job of explaining in terms of agglomeration versus dispersion; accumulation versus decumulation, and virtuous cycles versus vicious cycles. Cumulative causation's multivariate causality epistemology is a major economic theory for exploring processes of economic development outside the orthodox Keynesian framework, helping to explain endogenous growth, capital agglomeration, uneven regional economic development, and the combinatory role of industrial complementarity clusters as poles of regional economic development. It explains the geographic institutionalism of regional variations both within and across bordered economies, and shows how decumulation can occur not only as a result of supply-demand mismatch but by such things as technology supersedence, industrial overcapacity, or superfluous infrastructure builds. Cumulative causation gives primacy to the structural and institutional nature of the economic system within which the agents of endogenous or exogenous growth act.

Cumulative causation can explain how new markets, institutions, trade routes, and industrial infrastructure develop within uneven geographic economic systems. For the purposes of this paper, applying cu-

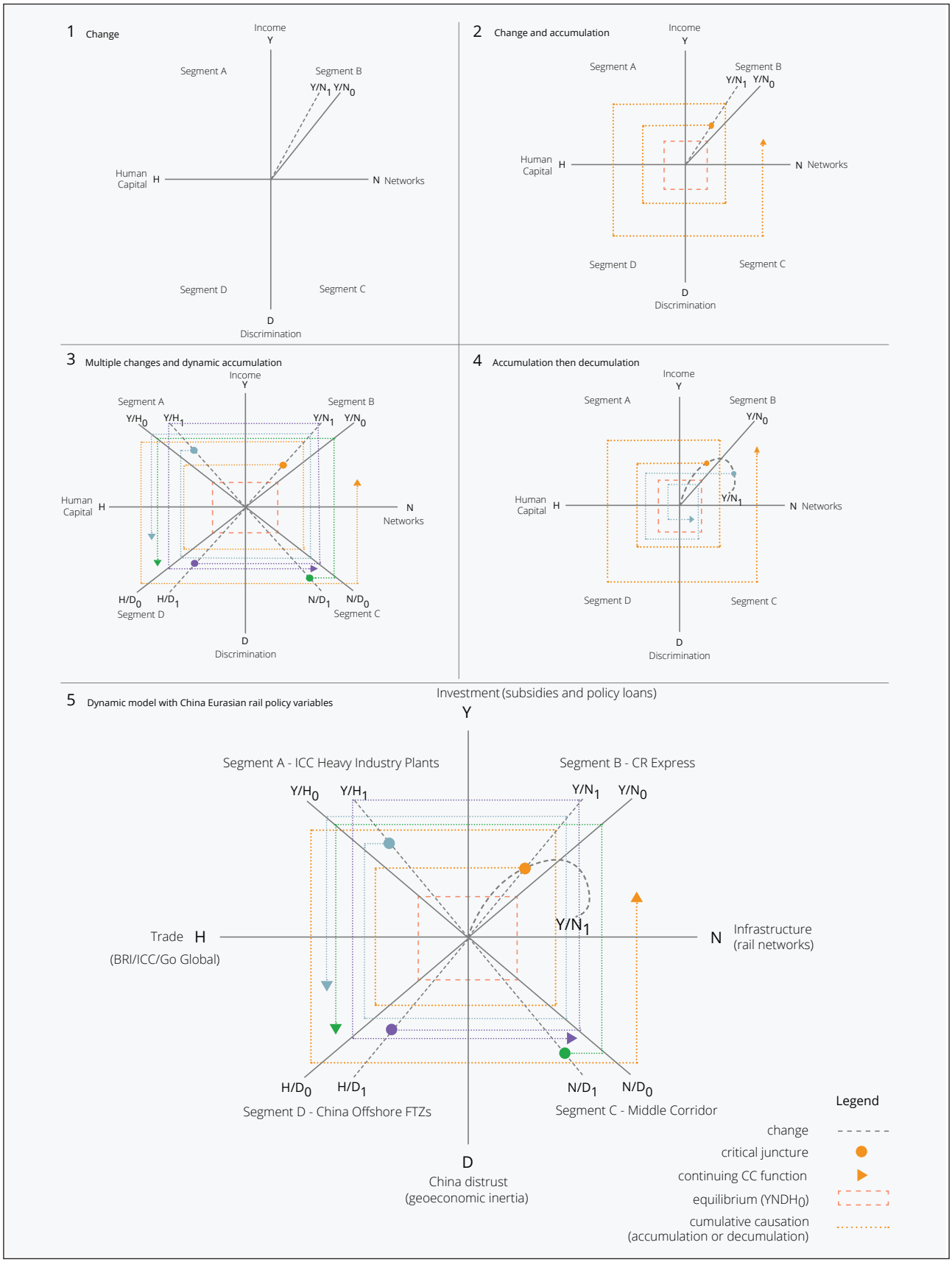

Fig. 1 Kaldor stylised cumulative causation processes with historical institutional junctures and Eurasian rail policy variables. Source: adapted from O'Hara (2008), and expanded by the authors

mulative causation theory to China's policy interventions in Eurasia allows an analysis of economic systems, physical networks, and policy instruments as institutions. We consider the policies of China's central government as institutions, that *Belt and Road*, *CR Express*, and *Middle Corridor* exist discretely within a spatially defined institutional environment. That the railway network itself is a physical geography institution, that cross-border intergovernmental mechanisms and subnational policy instruments are political institutions. As such we analyse China's *CR Express* rail freight policy as an institution operating within the human geography of competing institutions within the constraints of physical industrial geography. Employing cumulative causation theory for this study, we consider the China-Europe international railway as both a passive physical geography institution facilitating international trade between states and as an active human geography institution directly formed, maintained and guided by China government policy, local Central Asian political economy actors, and the economic geography factors of regional underdevelopment.

3. Development of China's Eurasian transport policy

China has a series of spatial plans for taking its command economy institutions into the global economy (*Kenderdine* 2017). The two most important of these for the *Belt and Road* containerised freight policy are *Maritime Power* and *Transport Power* (*PRC Ministry of Transport* 2017). The *Maritime Power* policy came into public first from State Council's 2003 "National Maritime Economic Development Program". While *Transport Power* was only more recently codified into central policy in 2019 after initial transport policy, priority was shifted to international logistics in 2016 (*PRC Ministry of Transport* 2016). This has allowed for both the *Maritime Power* and *Transport Power* policies to be developed and to maintain institutional integrity independent of the central policy apparatus so that they may change, alter course or be abandoned while embedded within the constituent macro policies of *Maritime Silk Road* and *New Silk Road Economic Belt* and the hyperpolicy of *Belt and Road*. From the initial *Maritime Power* concept, China in 2019 flowered a system of 'power' policies, including China as a *Transport Power*, *Manufacturing Power*, *Internet Power*, *Biotechnology Power*, and *Basic Research Power*. *Maritime Power* and *Transport Power* form 'thread' macro policies which weave into both *Going Global* and *International Capacity Cooperation*, two macro policies of the *Belt and Road* (*Bucsky* and *Kenderdine* 2020a). This Matryoshka nesting of central level policies allows for temporal waxing and waning of policy strength given the longer time horizons of communist political power structures, for example 1999's *Going Global* evolved in to 2015's *International Capacity Cooperation* and then retreated back in to *Going Global* again in 2020 (*Kenderdine* 2020).

In 2017, the Ministry of Commerce, the most important foreign-policy institution for the *Belt and Road* project, released a policy statement calling for China to become a *Transport Power* (*Zhang* and *Ye* 2017). In 2018, Ministry of Transport Party Secretary *Yang Chuantang* and Deputy Party Secretary *Li Xiaopeng* co-authored the policy prescription "Strive to Open a New Journey to Build a Strong Transport Country", published in the Party theory journal *Qiushi* and replicated at People's Daily and Ministry of Transport (*Yang* and *Li* 2018). The transport policy plan was to move China from being an 'important transport country' (交通大国) to a *Transport Power* (交通强国). The plan echoes other sectoral industrial policies in calling to transform from high-speed growth to high-quality growth as China attempts to orchestrate a state-driven response to naturally decelerating industrial economic growth rates, environmental protection measures and consumer quality controls. By September 2019, the policy has been codified into a central party policy document titled "Outline for Construction of a National Transport Power" (*Communist Party of China Central Committee* 2019).

The *National Transport Power Plan* is an important document underpinning the continued development of the intercontinental rail freight system. From our close reading of the document we provide here some policy highlights. The plan provides that from 2021 to 2050 *Transport Power* construction should be completed in two stages from 2021 to 2035 and from 2035 to 2050 – this is conventional and in line with other central government policy directives to achieve China's *Twin Centenary Goals*. The plan is that by 2035 the basic domestic and internationally integrated transport network should be completed and that China will have caught up to other big industrialised transport powers such as the United States, EU and Japan (*CCP Central Committee* 2019). The plan centres around a double 1-2-3 system – one for people and one for logistics. For people, 1-hour commute within metro-

politan clusters, 2-hour commute within greater conurbations and 3-hour commutes to cities across the country; for logistics, 1-day domestic delivery, 2-day delivery in near-abroad countries and 3-day delivery to global economy cities. The plan also specifies that by 2025 both passenger and cargo intermodal national systems should be operational and that domestic transport and special equipment manufacture should have improved to best safety quality, both are highly ambitious given China's position in 2021. The less clear plan between 2035 and 2050 is for China to become a global leader in transport and logistics, to become internationally competitive in technological equipment and technological innovation and for the *Transport Power* development to dovetail with other 'power' doctrines (*CCP Central Committee* 2019).

For intercontinental rail freight, the most important clause in the *National Transport Power Plan* is section 8 titled "Opening Global-Oriented Cooperation, Mutual Benefit and Win-Win". The three subclauses focus on developing interconnected and global transport networks along the six economic corridors of the *Silk Road Economic Belt*, including physical network development of railways, waterways and pipelines (*PRC National Development and Reform Commission* 2019a). The primary focus is on intercontinental railway freight but the policy also targets aviation logistics hubs and conventional maritime shipping. The plan also sees greater integration between transport infrastructure and industrial infrastructure outside China, with a specific target to integrate transport logistics with China's growing network of overseas free trade zones and free trade ports. Subclause three indicates intention to integrate global best practice by both bringing in international expertise into China's transport system and also by allowing China to start setting global governance standards in transport.

Wider integration between the *Transport Power* doctrine and the intercontinental containerised rail freight system is also taking shape with central level policy guidance to supplement the initial ideological and ministerial-level policy developments. In 2016, the National Development and Reform Commission (NDRC) released a *CR Express* development policy to bring together the disparate Eurasian rail services offered by local governments, rebrand them into a single product, and help to coordinate the national intercontinental rail system (*Kenderdine* 2018b). However, many of these intercontinental rail projects are uneconomical, do not result in clear cumulative causation economic potential and are better analysed as state power geoeconomic policies rather than as conventional economic development (*Bucsky* and *Kenderdine* 2020a).

China's domestic logistics, rail freight development, industrial decapacity, and industrial transfer policies are all also interrelated and centrally coordinated. Most of China's industrial economy was subject to the Supply-side Reform to restructure the economy away from industrial overcapacity, financial overleveraging, and reliance on investment-driven real estate (*Naughton* 2016). This policy-driven structural reform of China's domestic economy occurred from 2015 until 2020 when the dual circulation model was introduced (*Blanchette* and *Polk* 2020) and had reasonable success in industrial decapacity. However, against this trend, in rail freight development, transport in general and intercontinental rail freight in particular, China has been directly subsidising expansion of infrastructure, services and institutions, effectively creating a stimulus bubble within the rail transport sector, while much of the rest of the economy slowed and restructured under China's tighter austerity-like policy measures. Expansion of the railway equipment manufacturing sector in particular is an advanced manufacturing policy goal that supports both domestic industrial development as well as facilitates outward FDI into manufacturing hubs in *Belt and Road* economies (*Pepermans* 2019). This demonstrates a synergy between national level industrial policies, with transport equipment manufacturing being a centrepiece of both Made in China 2025 as well as International Capacity Cooperation.

To guide this stimulus and policy development of the transport sector bubble, a series of central level regional spatial plans run alongside the 2019 *Transport Power* policy which coordinate the development of conventional rail, high-speed rail, air and water networks in a pattern of arterial and local cluster networks (cf. *Fig. 2*). The joint NDRC and Ministry of Transport 2018 "Layout and Construction Plan of National Logistics Hubs" intersects with transport and industrial policy and provides for the development of 30 national logistics hubs by 2020, to serve as the base for 150 hubs by 2025 (*PRC National Development and Reform Commission* 2019b). The hub-channel-network system is designed to support both the *Sky Silk Road* and the *New Eurasian Landbridge*. China's national logistics development is further guided by "Opinions of the National Development and Reform Commission

and Others on Promoting Development of High-quality Logistics and Promoting the Formation of a Strong Domestic Market" (*PRC National Development and Reform Commission* 2019b,c) which includes an addendum of ten main tasks for logistics development. A key component of the national logistics plan is to improve multimodal infrastructure and to integrate national spatial planning with the macroregional hubs of the Yangtze River Economic Belt, Yangtze River Delta, Pearl River Delta (redubbed 'Greater Bay Area') and the *Jingjinji* cluster of Beijing, Tianjin and Hebei. Lower-level subnational logistics spatial planning naturally intersects with both central policy and these macroregional hubs, such as the "Changsha Modern Logistics Industry Development Plan 2011-2020" and the "Implementation Plan of Henan Province's Modern Logistics Operation System Layout and Construction" and Guizhou's "Guiyang City's Implementation Opinions on Promoting the Improvement and Development of the Logistics Industry" (*Changsha Government Portal* 2014; *Henan Provincial Development and Reform Commission and Henan Provincial Department of Transportation* 2020; *Guiyang Government Portal* 2020). These lower political geographic implementation plans interpret and apply central-level policy to local structural conditions. Interrelated plans include the "National Mid- to Long Term Science and Technology Development Plan (2021-35)" which replaces the 2006-2020 plan and which is relevant to transport equipment manufacturing, new materials and a range of other relevant technologies.

Subnational multimodal development integration with the *National Logistics Hub Plan* occurs through technically lower-tier but still massive spatial planning policies such as the "New Western Land-Sea Corridor Master Plan" *(Western Corridor Plan)* (*Liu* 2019). This *Western Corridor Plan* is a clear indication of how lower subnational industrial clusters are spatially

Fig. 2 Chongqing logistics and multimodal transport integration under "New Western Land-Sea Corridor Master Plan" (西部陆海新通道总体规划). Source: PRC National Development and Reform Commission (2019a)

planned to link up and contribute to both domestic and intercontinental rail plans yet are themselves examples of multi-regional spatial planning (cf. *Fig. 3)*. The *Western Corridor Plan* aims to strengthen the international economic corridor between Singapore and Chongqing while integrating the domestic Southwest China industrial hub with *Maritime Silk Road* ports in Guangxi's Beibu Gulf, and multimodal connections eastwards to the Yangtze River Economic Belt and westwards to the Silk Road Economic Belt via the *CR Express* system (*PRC National Development and Reform Commission* 2019a). Chongqing is the natural industrial geography epicentre of the *CR Express* intercontinental rail system, and is also the major air freight hub for Southwestern China and the closest major China airport to Europe. China's intermodal and cross-country industrial policy is to connect the upriver section of the Yangtze River Economic Belt with four coastal ports, the Beibu Gulf Deepwater Port, Guangxi Beibu Gulf International Gateway Port, Hainan Yangpu Port and Guangdong 's Zhanjiang Port (*PRC National Development and Reform Commission* 2019a). These ports face the Indian Ocean as part of the *Maritime Silk Road* and are designed to serve as an alternate connection to the Chongqing mega-city cluster, alongside the ocean connections to Shanghai downstream and the emerging Eurasian intercontinental rail system (*PRC National Development and Reform Commission* 2019a). Thus interlinkages between Chongqing become maritime south to Singapore, domestic multimodal transport east via the Yangtze River Economic Belt to the Yangtze River Delta Economic Zone, and intercontinental rail northwest to both the *Central Corridor* to Russia and the *Middle Corridor* through Central Asia to Turkey (*PRC National Development and Reform Commission* 2019). The *Western Corridor Plan* provides that by 2025 Chongqing logistics should be connected with Beibu Gulf Port in Guangxi and Yangpu Port in Hainan and that this rail-sea inter-model container transport corridor should reach a volume of 100,000 TEU (*PRC National Development and Reform Commission* 2019a).

The problem though is that for all China's central guided spatial plans, traffic volumes between China and Europe via the Kazakhstan-Russia *Central Corridor* are not showing the levels of growth needed for the system to become economically viable without China subsidies (*Bucsky* 2020). Policy development

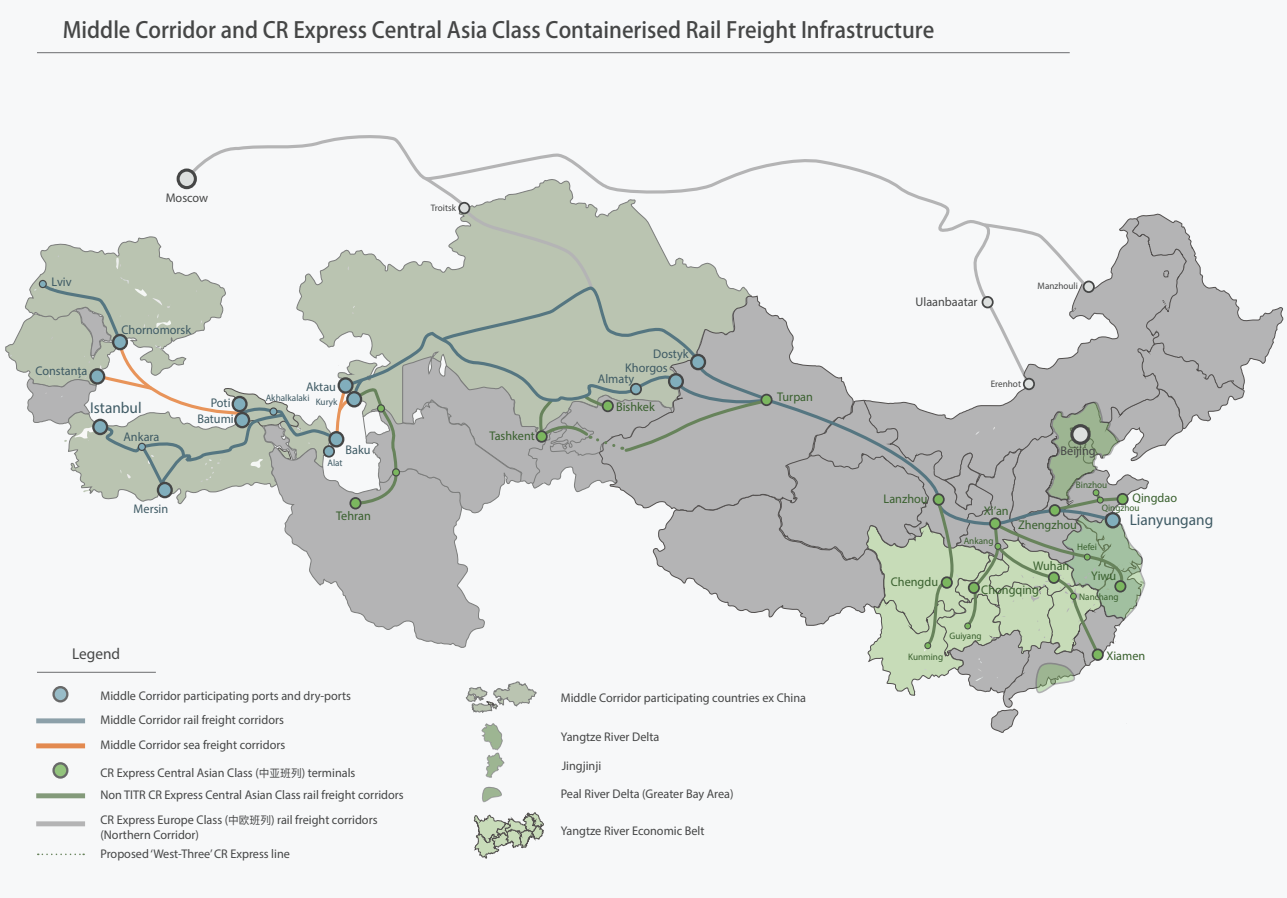

Fig. 3 Middle Corridor and CR Express Central Asia Class containerised rail freight infrastructure. Source: authors

at the central level can result in a positive cumulative causation feedback loop, but it can also have no affect or have a deleterious effect. The Eurasia Rail Alliance (UTLC) of the railways of Kazakhstan, Russia and Belarus shows traffic growth of only 4% in 2019 with 333,000 TEU transported, far off the 1 million TEU per year envisaged by China policymakers for 2020 (*Vinokurov* et al. 2018). Meaning that the development of the system using China subsidies and then allowing natural economies of scale to develop is not occurring, or at least not occurring sufficiently quickly. In the following section we examine statistical evidence of Eurasian containerised rail freight throughput and consider the prospects of the TITR *Middle Corridor* through Central Asia and the Caucasus to the EU via Turkey.

4. Measuring traffic by mode of transport along the *Middle Corridor*

The *Iron Silk Road* and the *New Eurasian Landbridge* policies both predate the *Belt and Road* macropolicy. These demonstrate the practice of policy-legitimation by the Centre in China, co-opting extant policies into a broader policy coalition (*Bucsky* and *Kenderdine* 2020a). *The New Asia-Europe Landbridge* through the Alashankou border crossing was floated in China academic circles as early as 1997, with the infrastructure in place in the 1990s for a Lianyungang to Rotterdam corridor (*Xu* 1997). The *Middle Corridor* policy itself as a Central Asia to Lianyungang transport corridor is simply an appropriation of a policy designed by the Asian Development Bank and the Central Asia Regional Economic Cooperation organisation which had a designated Caspian Sea to Lianyungang rail corridor as early as 2008 (*Asian Development Bank* 2008). We take this *Middle Corridor* transport route as a proxy institution for the entire *Belt and Road* freight, trade and industrial integration system, as it is the most international and most developed of any intercontinental transport integration development program. We examine some problems with rail freight statistical data in the national economies of the *Middle Corridor* countries and compare the throughput data with infrastructural limitations on future growth. Despite investment-driven structural development from both sides of the *Middle Corridor*, we remain sceptical of any large-scale intercontinental rail freight system development, with infrastructural bottlenecks in Turkey a particular concern.

External rail freight from Central Asia began in 1906 with the Trans-Aral line, and later expanded by the Turkestan-Siberia line in 1929 which connected the Russian Turkestan region to both industrial Russia and to Europe, and with China via the Trans-Siberian line. While Russian rail infrastructure construction continued, the Sino-Soviet split meant that the Xinjiang railway was halted at Urumqi in 1962 and never connected to the Soviet Union. Even in the 21st century, traffic flows and freight volumes between China, Europe and the Central Asian countries has remained low. The first connection was opened in 1992 after the extension of the North Xinjiang Railway connecting Urumqi to the Alashankou/Druzhba border crossing, with the second Jinghe-Yining-Khorgas line operational from 2012[1], this line is electrified to Ili, close to the Kazakhstan border. The new Khorgos dryport was developed as a hub for this line, but most freight traffic still crosses the more Europe-direct line at Alashankou. However, the major development in this 21st century rail freight dynamic was not infrastructural but logistic, the introduction of container block trains with significantly lower transit times. The first trial container train between China and Europe was the Chongqing–Duisburg line in 2009, which became a regular service from the following year for Foxconn (*Besharati* et al.2017).

Container block trains and economic, trade and geopolitical effects have been analysed in detail (*Blanchard* and *Flint* 2017; *Li* et al. 2018; *Vinokurov* et al. 2018). Data on traffic volumes though is scarce. While freight volumes have increased and are significant, deeper analysis of available data sources does not support the claims of rapid growth cited in China state media reports. The Coordination Committee for the development of the Trans-Caspian International Transport Route (TITR) publishes transport volume data on its website (*Middle Corridor* 2020), which we can compare with China-Europe rail volumes through the main *Central Corridor* through Kazakhstan, Russia and Belarus (*Table 1*). This shows that the *Central Corridor* attracts higher traffic volumes by scale, however both the Russian *Central Corridor* and the Turkey *Middle Corridor* have seen rapid growth rates. Traffic volumes published by TITR are not easy to interpret though. The published aggregate data does not differentiate between intercontinental and international freight carriage, meaning it is difficult to know whether the transport volumes measured are only China-Europe throughput volumes, or simply all international or even national transport along the

Table 1 China-Europe rail freight volumes via the Russian Central Corridor. Source: Rail Freight (2020)

Year	Total TEU ('000)	Westbound (%)	Total tons ('000)	Average ton/TEU			Average travel time in days
				Total	Westbound	Eastbound	
2016	100.5	-	-	-	-	-	-
2017	175.1	64%	775	4.4	4.7	4	9.7
2018	288.8	58%	2,264	7.8	10.5	4.2	13.8
2019	302.6	63%	1,420	4.7	4.9	4.2	13.3

route. To better understand these transport volumes, other national and international data sources need to be utilised and analysed.

Of the countries with institutions participating in the *Middle Corridor* only Turkey is not a member of the Organization for Cooperation of Railways (OSJD). However, all other states with institutions in TITR are OSJD member states, so we can also observe traffic on Turkish border stations in the OSJD annual statistics data (*OSJD* 2018). This means that the OSJD annual statistics effectively cover the entire TITR transport and logistics zone. Data on all border stations though is not differentiated into containerised freight and bulk freight, giving only data for all aggregate traffic. Containers are only a small fraction of total traffic. To demonstrate this, we can compare bulk tonnage with TEUs but recalculating volumes in tons with a ratio 12 tons/TEU net load (*Bucsky* 2018). It can be observed in *Table 2* that total traffic volumes are much higher on the border stations between China and Kazakhstan than with other countries and that most of that traffic is destined for the *Central Corridor* to the EU, not to the *Middle Corridor* (cf. *Fig. 4*). From Georgia to Turkey there was no traffic registered in 2018 despite the opening of the Baku-Tbilisi-Kars railway line.

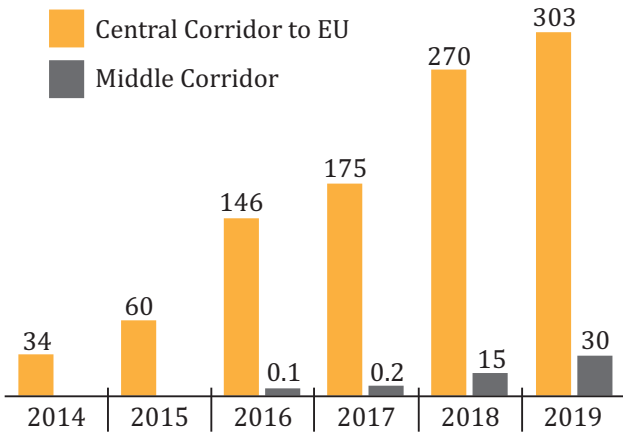

Fig. 4 Traffic volume of containers ('000 TEUs) on major China-Europe rail corridors. Source: Eurasian Rail Alliance Index (2020) and Morozov (2019)

Ferry connections on the Caspian Sea were already frequent before the development of the TITR transport integration policy. There are two to three weekly sails between Baku and Aktau, and four to five weekly between Baku and Turkmenbashi. There is however no timetable. The routes take 30 and 17 hours respectively, and the cost per TEU – without handling costs – is USD 500 and 600 (*Azerbaijan Caspian Shipping Company* 2021). No data is publicly available on traffic volumes between Kazakhstan and Azerbaijan from either state entities or the port operator companies.

Border crossing	From	To	'000 tons	'000 TEU
Khorgas	China	Kazakhstan	2,331	194.3
Alashankou (Dostyk)	China	Kazakhstan	3,147	262.3
Khorgos (Altynkol)	Kazakhstan	China	298	24.8
Dostyk	Kazakhstan	China	8,011	667.6
Poti port	Georgia	all	1,079	89.9
Batumi port	Georgia	all	969.1	80.8
Boyuk-Kasik (export)	Georgia	Azerbaijan	1,452	121
Böyük Kəsik (export)	Azerbaijan	Georgia	3,739	311.6
Baku Port	Azerbaijan	all	3.2	0.3
Varna ferry	Bulgaria	all	22.2	1.8
Svilengrad	Bulgaria	Turkey	640.8	53.4

Table 2 Rail traffic volumes on border station along the Middle Corridor 2018. Source: OSJD (2019)

However, from financial reports we can see no signs of traffic growth since either the *Belt and Road* or the *Middle Corridor* policy initiatives began. By contrast, state shipper Azerbaijan Caspian Shipping Company saw a decline in freight values from 180 million AZN (ca. USD 102 million) in 2017 to 171 million AZN (ca. USD 99 million) in 2018 according to its financial statement. If we estimate cargo volumes and divide by the approximate cost per TEU (USD 600), it shows 170 to 165,000 TEU. However, the vast majority of cargo was bulk carriage, not containerised.

More data is available on Georgia. There were 36,000 TEU containers transported by rail in 2016, 41,000 in 2017 and 57,000 in 2018. For 2019, 75,000 TEUs were projected *(Georgian Railways* 2019). Georgia has both great capacity and actual volume of maritime container transport service, through the Poti and Batumi ports. Three quarters of Georgian trade is transacted with only six major partners: the EU (28%), Turkey (14%), Russia (11%), China (9%), Azerbaijan (7%) and Ukraine (5%). Of which over half of Georgia's trade, that with the EU, China and Turkey, has the potential to shift at least some portion from maritime to rail transport.

Turkey would play a crucial role in any development of the overland *Middle Corridor* route, and the current TITR rail route faces major bottlenecks in the country. Container rail transport has grown rapidly in Turkey in the past decade, between 2011 and 2018 it saw 67% growth (*Table 3*). This growth rate however is almost identical to the 66% growth rate of containerised maritime transport volume. The reason for this is most probably that the growing number of containers handled in ports resulted in a higher domestic hinterland transport by rail volume.

Containerised rail transport in Turkey measured in TEU is reported by Eurostat, however no details are available there for destination or origin. The International Union for Road-Rail Combined Transport (UIRR) also publishes a country matrix of intermodal rail transport within Europe, we present the data for Turkey in *Table 4*. This is however not a comprehensive dataset, as it is data provided voluntarily by member corporations. Eurostat reported 17.3 million TEU for container transport in the EU in 2018, UIRR around half that at 8.6 million TEU (*UIRR* 2019). According to UIRR data, containerised transport in Turkey was only 7.3% of all rail intermodal transport (*Table 3*). From this we could then assume that EU-Turkey containerised transport by rail could make up to around 15% of the total intermodal transport volume. Again though, the potential for greater intermodal containerised rail transport is bottleneck-limited as essentially all rail freight passes through a single railway line to Istanbul.

Rail transport in Turkey generally is very domestic-oriented: cross border traffic in 2018 was only 7.2% of total measured by tons, and 4.5% measured by ton-kilometres (*Table 3*). This underpins the fact that EU-Turkey transport is concentrated on a relatively short section of the Turkish rail network. The *Middle Corridor* should serve not only international transport but intercontinental transport. But in the case of Turkey, the required transit transport is almost non-existent. The 2018 transit volume was just 21,000 tons, meaning 21 container trains with 82 TEU loaded at an average of twelve tons per TEU. Eurostat data shows that there was zero containerised transit transport in Turkey between 2016 and 2018. This all means that 'international' rail freight data, while already low, could

Table 3 National and international railway goods transport in Turkey. Source: TCDD (2019)

thousand tons	**2014**	**2015**	**2016**	**2017**	**2018**
Domestic	27,068	23,914	22,850	26,616	26,664
Export	675	801	781	849	919
Import	976	1,151	1,042	956	1,131
Transit	28	12	7	9	21
Cross-border share	5.8%	7.6%	7.4%	6.4%	7.2%
million ton-kilometers	**2014**	**2015**	**2016**	**2017**	**2018**
Domestic	11,497	10,032	11,208	12,338	12,193
Export	294	230	243	225	304
Import	163	197	202	184	254
Transit	4	15	8	11	22
Cross-border share	3.9%	4.2%	3.9%	3.3%	4.5%

Table 4 Container transport in Turkey by mode of transport in thousand TEU. Source: UIRR (2019)

	2011	2012	2013	2014	2015	2016	2017	2018
By rail (incl. swap bodies, TEU)	502	571	690	745	594	660	727	840
By sea, TEU	6,524	5,320	5,823	6,310	8,146	8,762	9,075	10,844
Ratio sea-rail	13	9	8	8	14	13	12	13
By rail (incl. swap bodies, TEU)	7,601	8,264	9,909	10,859	9,642	10,530	11,784	13,755
By sea, TEU	70,381	73,950	79,216	83,724	87,026	94,929	97,858	114,231

completely obfuscate the almost negligible amount of transit transport across Turkey which would be needed for a viable intercontinental rail freight system.

The Eurostat database has information on Turkey's international rail transport measured by unloading (Turkish export) and loading (Turkish import) country only for 2018. The data shows that Turkey's rail exports are heavily concentrated on Europe: 80% of all cargo was sent to and received from EU countries, of which two thirds was with Bulgaria, Hungary and Austria[2]. In comparison, Iran's non-EU international rail transport is considerable at 16% of total traffic. All other countries had a share of just 4% or less. There was no rail transport between China and Azerbaijan in 2018, as except from Kazakhstan and Turkmenistan no shipment was sent to the Central Asian countries. Total international rail transport volume was the equivalent of 2,074 container trains or 173 thousand TEU – but it has to emphasised, that this a theoretical calculation: only an almost certainly smaller part of total transport was containerised. The data suggests that from the Turkey rail network's planned development of rail transport to and from Europe, that Europe remains far more attractive than any eastward trade with Asia for Turkey.

Official statistics do not show any rail traffic growth impact due to the opening of the Baku-Tbilisi-Kars line in October 2017. However, Turkish media has reported that in the first two years the line attracted 275 thousand tons of rail freight transport, so an average of 137.5 thousand tons per year (*Daily Sabah* 2019). This also means that transport on this route is still lower than on the single line to Iran, the capacity of which is severely limited by the Van Lake ferry[3]. The mid-term goal of 3 million tons per year, and the long-term goal 6.5 million tons per year seems optimistic considering the non-electrified single-track alignment and the bottlenecks of the connecting infrastructure. The double-tracked electrified connection from Istanbul to Europe with much better connecting infrastructure had an operational capacity of 0.6 million tons from Turkey to the EU in 2018, meaning two-way trade of 1.2 million tons. For Turkey's eastward trade flow to be four times that of the EU given the infrastructure bottlenecks is almost unreal.

We can also analyse current trade flows by mode of transport from Azerbaijan, Georgia and Turkey with China and Central Asian and other *Middle Corridor* countries based on the United Nations International Trade Statistics Database (Comtrade database). However, data is not available on China itself. In this sense there is a higher potential to divert freight traffic from maritime to rail in the case of all three countries analysed, as rail currently plays an almost negligible role in all three cases. Trade amongst Azerbaijan-Georgia and Turkey is also currently mostly by road, which has a clear potential for at least partial diversion to rail with competitive transport costs and delivery schedules (*Table 5*). In particular, the Turkey-China trade volumes are high enough to expect sufficient growth in rail freight traffic volumes, but between Azerbaijan and Georgia to and from both Turkey and China, the trade volumes are very modest. Unfortunately, Comtrade data does not include volumes, only values, therefore this can only be used as an indication and no estimates for the number of containers or traffic volumes can be compiled.

From examining the current and historical containerised rail freight volumes along the *Middle Corridor* economies, we see a series of infrastructural and institutional blockages to future development. However, even this negative analysis is based on incomplete data. We recommend the development of more holistic databasing and statistical collection of Central Asian, *Middle Corridor*, Eurasian and Eastern European rail freight systems in order to better understand changes in both structure and flow of the developing intercontinental rail trade. China´s maritime trade, export and import markets, and connectivity potential are highly attractive to the Central Asia, Caucasus, Turkey and Eastern European economies. The economic geography across the *Middle Corridor* rail zone does hold po-

Table 5 International railway goods transport from Turkey to the unloading country. Source: authors' calculation from United Nations International Trade Statistics Database (2020)

Azerbaijan 2018	China	Turkey	Georgia	Kazakhstan	Uzbekistan	Turkmenistan	Kyrgyzstan	Tajikistan	World
Road	51.5%	48.3%	26.7%	7.0%	89.0%	0.2%	66.8%	4.4%	21.1%
Sea	31.9%	5.4%	0.2%	1.4%	2.8%	0.1%	6.2%	0.0%	10.3%
Air	7.6%	0.8%	21.4%	70.7%	3.7%	15.7%	22.9%	37.1%	8.9%
Railway	3.1%	0.2%	0.0%	20.9%	4.5%	84.1%	4.1%	58.5%	1.3%
Pipelines	5.8%	44.1%	45.5%	0.0%	0.0%	0.0%	0.0%	0.0%	56.9%
Other	0.2%	1.1%	6.2%	0.0%	0.0%	0.0%	0.0%	0.0%	1.5%
Share of total trade	4.2%	11.0%	1.9%	0.7%	0.1%	0.4%	0.0%	0.0%	100.0%

Georgia 2018	China	Turkey	Georgia	Kazakhstan	Uzbekistan	Turkmenistan	Kyrgyzstan	Tajikistan	World
Road	6.8%	90.4%	54.7%	37.2%	82.3%	22.2%	53.8%	49.9%	44.0%
Sea	85.1%	7.8%	0.0%	0.9%	0.3%	1.0%	28.1%	19.9%	36.3%
Air	8.1%	0.8%	0.3%	5.1%	9.8%	0.2%	7.1%	13.1%	8.8%
Railway	0.0%	0.0%	14.3%	56.7%	7.5%	76.5%	10.9%	17.2%	7.9%
Pipelines	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Other	0.0%	1.0%	30.7%	0.0%	0.1%	0.0%	0.0%	0.0%	3.0%
Share of total trade	8.3%	13.7%	8.8%	1.2%	0.7%	1.7%	0.2%	0.1%	100.0%

Turkey 2017	China	Turkey	Georgia	Kazakhstan	Uzbekistan	Turkmenistan	Kyrgyzstan	Tajikistan	World
Road	9.0%	91.3%	85.9%	24.6%	91.4%	86.6%	66.6%	70.6%	24.7%
Sea	71.3%	6.7%	6.0%	67.2%	6.6%	7.5%	1.1%	26.4%	55.0%
Air	19.1%	1.0%	7.0%	7.8%	1.8%	4.9%	32.1%	2.9%	13.1%
Railway	0.1%	0.0%	0.0%	0.3%	0.3%	1.0%	0.2%	0.0%	0.5%
Pipelines	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Other	0.6%	1.0%	1.1%	0.0%	0.0%	0.0%	0.1%	0.0%	6.7%
Share of total trade	6.7%	0.4%	0.4%	0.6%	0.4%	0.4%	0.1%	0.1%	100.0%

tential for the agglomeration and economies of scale efficiencies for cumulative causation accumulation to occur. A China-led and China-funded subsidisation of rail would be needed for long-term development of the *Middle Corridor*, and the major obstacle remains the serious infrastructure bottlenecks in Turkey. However, on examination of the current data, the development of large-scale rail freight between Western China and Turkey seems unrealistic given current economic conditions.

5. China's regional policy transmission counterfactual

Despite rail freight data limitations, reading the policy intentions of states' future development plans is possible from policy documents even with the absence of data. And there is much space for understanding the China-Eurasia intercontinental rail, industrial and financial system development from theoretical and methodological perspectives. However, much extant analysis of the *Iron Silk Road* avoids data, policy and theory, instead relying on tired geopolitical tropes, open speculation and lived-experience travelogues. The proliferation of subjunctive analyses masks the real counterfactual of lack of institutionalised policy transmission from China to host economies. Transport industry website reports, China and Central Asia state media, private media, and academic research are all struggling to analyse the development of the *CR Express* intercontinental rail system. This is because the systems, industries and policies involved are deliberately opaque, and the policy transmission

mechanisms between China and host economies are closed, and in some cases classified state secrets. Many media outlets have remained dubious of the *Iron Silk Road* rail freight system and its chances for economic transformative effects (*Ruehl* 2019; *Sim* and *Aminjonov* 2020). While there have been credible and well-argued positive media analysis of *CR Express* policy and its implications for Europe (*van Leijen* 2020), most analysts have taken a cautious narrative and consistently argued against the hype (*Ruehl* 2019; *Shepard* 2020).

Academic research from China institutions on *CR Express* is focusing on network development, node selection and development and cross-border institutional integration. China researchers on *CR Express* and domestic transport policy integration have focused on developing and consolidating logistics node networks (*Zhang* et al.2020; *Murayev* 2020), international and domestic rail transport integration (*Jiang* et al. 2018) or optimising spatial layout (*Zhao* et al. 2020) or institutional integration (*Wei* and *Lee* 2021). However, there is little work done on rail system integration from either the local Eurasian policy research community or the European multilateral system. This leaves researchers and analysts prone to reactive policy-discourse taking, the Eurasian states to a reactive policy-dependency while the China-side develops more sophisticated theory and policy to improve rail connectivity. The location of some proposed rail lines, to Iran, Azerbaijan, Turkmenistan and even remote possibilities of connecting the network to Afghanistan and Tajikistan demonstrate that for the China-state, this network development is strategic, not economic.

However, from the perspective of local Eurasian economies traversed by *CR Express*, there is neither an economic nor a political rationale, and generation of research and policy analysis within the region is hampered by lack of policy data. China's central policy planning model can leave local Central Asian, Eurasian and Caucasus economies dependent on their political relationship with Beijing and with the vagaries of policy and regulatory application from China (*Kenderdine* 2018c). This was evidenced in late 2020 with rail freight backups on the Kazakhstan border at Alashankou and Khorgos (*Kenderdine* and *Bucsky* 2021b). Not only the use of existing rail freight networks by *CR Express* but also the construction of new lines spivved by Beijing policy loosely coopts local elites into the projects with virtually no public oversight, particularly on the peripheral connections such as in Kyrgyzstan, Uzbekistan and Turkmenistan (*Pannier* 2020; *Bucsky* and *Kenderdine* 2020b). This broader policy-dependency applies equally to other network industries, such as pipelines and electricity meaning research and analysis of China's investment and use of fixed capital in the region is avoiding extant policy and institutional evidence. While macroregional overview approaches are useful (*Mardell* 2020), there is little research on China in Central Asia from a source-based policy analysis perspective, exceptions such as *Yau* (2020) demonstrate a lack of wider engagement with policy and operational realities of the *Belt and Road*, industrial investment in Central Asia or China network industries' development and use.

This lack of Eurasian regional research on *CR Express* not only means there is a significant knowledge gap but also makes future studies difficult because there will be so few secondary sources built from primary qualitative or quantitative data which could have formed the foundation for future study. Many academics are caught in the middle without enough data to make informed analysis (*Tjia* 2020). This leaves policy-makers in both China, *Belt and Road* economies and third-party economies with incomplete research and analysis tools. In the *Middle Corridor* case study, we argue that the host economy governments themselves are often flying blind with little indication of the institutional arrangements that would be necessary to integrate local rail freight systems with China. There is clear political will and economic incentive for the *Middle Corridor* economies to unify their internal markets and to connect with China in the East and Europe in the West (*Kenderdine* and *Bucsky* 2021a). Yet poor policy transmission from China hinders this development. China's advanced spatial planning models and policy transmission domestically occurs within a clear public administration hierarchy. While China's national level policy making apparatus often takes the credit for policy successes, much practical policy is tested at the Provincial and Prefectural levels of government. It is these political economic institutions which are not connecting to their peers in the Eurasian state governments, and lack of analysis here leads to either light reports based on conjecture (*Sukhrob* 2020), or the Tang-dynasty mythmaking and *neo-Tianxia* foreign policy (*Hückel* 2012) of China State media triumphalism.

This matters not only for China, Central Asia and Eurasia but for the EU too. The institutional practices

of China in the Eurasian region and the policies adopted in Europe towards Eurasian rail integration will directly impact the economic lives of European citizens through projects such as the Budapest-Belgrade rail upgrade or increasing sales of rolling stock. The *CR Express* Eurasian rail policy as a trade facilitation, regional economic development, and macroregional economic integration policy is not radical. The problem is that so many elements of *CR Express* remain opaque, undisclosed or overtly classified. China running an intercontinental rail freight system in secrecy cannot result in optimal trading arrangements with the EU or with the *Middle Corridor* economies. A freight policy need not be secret and yet it appears that China is waiting to develop a new form of regional multilateralism before developing the institutions of rail freight logistics development. There are serious dangers in building bilateral and multilateral political and geoeconomic analysis and policy proposals after the economic development has already occurred. If the *CR Express* intercontinental rail system was truly booming and its transformative structural effects were resulting in spill-over industrial cluster node development along the rail line geography, then China could be leading economic development in Central Asia, and the China rail model could become an attractive development economics template (*Guo* and *Fidan* 2018). This is not happening.

This economic development spill-over hypothesis remains difficult to test without data. And where China Party-State discourses surrounding *Belt and Road* and *CR Express* can be controlled and tailored for both domestic policy consumption and pushed into Eurasian host economies, there can be no obfuscation of data when trading with the EU. For the *CR Express* intercontinental rail system to be successfully deployed, there must be two-way transparency in both freight usage and policy dissemination. Without EU involvement, a China-Central Asia rail freight network is plausible, but would be both politically and economically dependent on Beijing. This lack of policy transparency in *CR Express* development makes it difficult to avoid a dichotomy of narratives, as the dialectic of external institutional analysis pushes towards either a pro Party-State development economics propaganda narrative or anti-China geoeconomic threat narrative. We see more a 'China blunder' narrative where internal aspects of Party-State policy deployment hinder geoeconomic policy intentions. The formation of the narrative from Beijing itself creates this institutional impasse and leaves most subnational China and national Central Asian governments, as well as an array of financial institutions, logistics enterprises or research institutions without sufficient quantitative or qualitative data to make either informed political or economic decisions or research findings. This counterfactual of China's policy transmission, dissemination and deployment is ultimately the weakest institutional force in any potentially economically transformative effects which *CR Express* possesses.

6. Conclusion: *Iron Silk Road* fails to deliver on potential

State intervention in national economies, spatial planning, or strategic state geoeconomic policy, is not limited to the Communist planned-economy experiment. From industrialising Germany to the modern European Commission to the Japan or Korea industrialisation experience, there are many examples of successful state intervention in economic activity, resulting in endogenous growth. This is particularly true of investment in network industries such as railways, electricity and telecommunications which have clear cumulative causative spill-over effects on other aspects of economic activity. Cumulative causation is the fundamental economic development theory which should explain any success of China's *Belt and Road Initiative*, *Silk Road Economic Belt*, or the *CR Express* intercontinental rail policy. However, in practice, China's attempt at a holistic command economy approach to economic integration in Eurasia is failing to develop regions of endogenous accumulation. For *Belt and Road*, *Middle Corridor* or *CR Express* to succeed, the initial public policy economic intervention must result in local economies of endogenous growth taking hold. While the system relies on material transfers from Beijing, the intercontinental rail freight network cannot be considered an economic good, but only a policy-driven geoeconomic ideal.

We have demonstrated a primary-sourced historical institutional record of China's domestic and international transport policy which shows the development and future trajectory of China's Eurasian transport policy based on institutional path-dependencies. We analysed core national and subnational China policy documents to construct a narrative of China's whole-of-government public administration response to

developing the intercontinental transport, trade and industrial system. And we have offered a heterodox theoretical economic explanation for how China's policy intervention in the transport networks of Eurasia could succeed. But our case study on the *Middle Corridor* demonstrates the lack of data availability, the difficulty in producing data, and the known infrastructural bottlenecks within the intercontinental rail system. Coupled with the counterfactual unknown of central China policy calculus, we demonstrate empirical evidence that China's intercontinental rail project is not on sound economic policy footing.

CR Express policy sources demonstrate that China can neither project its institutional competence to cover its external economic operations nor inspire institutional development in host economies to integrate with China's domestic political economy model. Coupled with the lack of freight data, this leaves serious questions as to the institutional form that any Eurasian regional multilateral trade, transport or logistics system would take. We express doubt as to the underlying factors behind the intercontinental rail system being developed by China and its surrounding Eurasian policy and we have argued for an institutionalist approach to future analysis of trade, transport, governance, and political development in Eurasia surrounding containerised rail freight development. On what evidence we could derive on carriage volumes and capacity of the *Middle Corridor* case study, we find the evidence unconvincing that a cumulative causation event could occur in Eurasia as a result of the *CR Express* rail system development.

We contend that the multilateral institutional vacuum created by applying China's domestic planned economy approach in external host economies is a critical impediment to the successful deployment of the *CR Express* containerised rail freight policy in Eurasia. Without adequate institutional representation at the trade and industry levels, China's domestic industrial institutions are ill-prepared for economic governance of *Belt and Road* institutional trade architecture. Neither is there sufficient political will nor economic capacity of the Central Asia, Caucasus, Turkey or East European economies to create the *Belt and Road* trade bloc under which to adequately interoperate with Beijing's transport and industrial docking framework. The result of this is institutional bottlenecks, where policy transmission from Beijing is theoretically and institutionally possible in China, but not institutionally viable across the spectrum of the Eurasian *Belt and Road* economies.

The *CR Express* intercontinental rail freight institution that was policy-prescripted to vanguard China's Eurasian trade and industry agenda is not rapidly moving to accumulation and agglomeration not due to theoretical economic failings, but to practical political shortcomings. The greatest weakness of the *CR Express* rail system across Eurasia in general and the *Middle Corridor* in particular is China running bilateral geoeconomic policies as if they were domestic economic bureaucracies. *CR Express*, *Middle Corridor*, and *Belt and Road* are all institutional manifestations of China's economic policy planning process being applied to economies external to China. The command economy model proved an inefficient yet sufficiently effective tool for China's own economic development. Applying this policy planning model to external economies though is a risk that should only be borne by China itself, and not foisted onto the peoples of the developing economies of Eurasia.

Notes

[1] *Khorgas* is the international romanisation for the China side of the border established by the 1881 Treaty of St. Petersburg, which is *Huo'erguosi* County (霍爾果斯) in contemporary China. *Khorgos* is the romanisation of the Russian Хоргос (Kazakh is cyrillicised as Қорғас).

[2] Export volume matches TCDD reported volumes in its annual report.

[3] Both directions (to and from Turkey) can be estimated at around 0.5 million tons.

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