

Challenges Associated with the BRI: A Review of Recent Economics Literature

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Abstract

Economic trade theory suggests that the Belt Road Initiative (BRI) can lead to more trade and increases in welfare. However, this can also lead to various challenges. In this paper, we use recent literature in economics to identify three such challenges. The first is that there is increasing evidence of malinvestment in previous Chinese infrastructure investments, rising corporate debt and corruption. If the BRI worsens this phenomena, the consequent financial and economic crisis in China is likely to have serious contagion effects with global ramifications. Second, trade brings about winners and losers within a country and unless there is adequate redistribution of the gains within an economy it can lead to increased inequality, poverty and structural unemployment. Finally, there are negative consequences to the environment that trade expansion may bring about unless effective legal, political and economic institutions are in place addressing the issue.

Key Words: Belt Road Initiative, BRI, Challenges, Trade, Silk Road, China

1. Introduction

The ancient silk route was a web of paths that linked China and Europe together starting across the deserts of Western China and spanning through mountain ranges in present day Kazakhstan and Kirgizstan through Central Asia to the Caspian Sea and beyond. The route was used for transporting spices, gems and silk beginning around 120 B.C. when Xi'an in West-Central China was the capital. It flourished through the dark ages and early medieval period in Europe but as maritime navigation expanded in the 1300s and 1400s, and as China's political centre shifted east to Beijing, it gradually fell into disuse around six centuries ago. But the economic geography is changing again as labour costs soar in the east of China in recent decades and manufacturers are trying to reduce costs by moving production to the west and the interior of the country. Forging new forms of international economic corporation especially with new partners to its West is seen to be particularly important as economic growth rates in China are stagnating after decades of rapid export-lead growth and the competitive edge it had in terms of low labour costs is eroding. One of the responses to this is to revive the ancient silk route as a part of the larger Belt Road Initiative (BRI) as announced by Chinese President, Xi Jinping's at his landmark address at Nazarbayev University in Astana, Kazakhstan on 7 September 2013 (Fallon, 2015).

At its core, reviving the overland silk route involves (re)establishing transport links between China and Europe via Central Asia that can reduce production and transportation costs and thereby encourage more trade in goods and services, *inter alia*. Similarly, re-invigorating the maritime transport link is also at its a core large infrastructure development project that is expected to create a significant expansion in trade, investment and connectivity. It is envisaged that the BRI can involve as many as 60 countries, roughly 32 per

cent of global GDP, 39 per cent of global merchandise trade and 63 per cent of the world's population (Y. P. Huang, 2016). The project is set against the current background of shifting geopolitical leadership favouring China with implications to changes in the distribution of power and responsibility patterns across nation states and is therefore more than simply infrastructure development¹. It would also facilitate China's stronger geopolitical position in terms of improving energy security, for instance, by being able diversify away from oil choke points such as the Straits of Malacca (Zhang, 2011). The BRI is also anticipated to benefit other countries connected by the network mainly through facilitating the improved flow of goods and services that can lead to higher overall welfare as suggested by mainstream economic trade theory. Apart from this the initiative seeks to improve connectivity through cultural exchange, policy coordination and financial integration. The initiative is ambitious but an official list of BRI projects have not been released to date so credible estimations of Chinese investments cannot be computed. However the expected total Chinese investment is around US\$4 trillion over the course of the initiative (The Economist 2016)². This is indicative of the order of magnitude of this massive initiative.

An ambitious venture of this nature that encourages rapid integration is not without challenges. This paper aims to tease out key trade-related challenges of the BRI as can be

¹ This has been noted in many academic discussions including Y. H. Huang, Salike and Zhong (2017) and a seminar delivered by Prof. Danny Quah (National University of Singapore) titled 'Implications of China's Belt & Road Initiative', Oxford Centre for Islamic Studies, University of Oxford, 5 February 2018

² It is also expected that parallel financing will be made by other parties as well, such as the European Union.

identified from the recent Sino-centric *economics* literature that may often not be easily available to readers outside economics journals. The methodology adopted is to conduct a careful review of the economics literature, particularly journal articles in reputed peer-reviewed journals on the BRI following the Chinese President's address in 2013 and related economics literature to pick out several key themes that are emerging. Interestingly, none of the top ranking economics journals that receive a 4 or 3 ranking on the Association of Business Schools' (ABS) ranking list for economics journals (such as the American Economic Review, Journal of Political Economy, Quarterly Journal of Economics, Journal of Economic Perspectives, Journal of International Economics) have published even a single article that looks directly at the BRI or its potential impact from 2014 to 2018, June. This may possibly be because the BRI is still largely an 'initiative' with no clear officially released plans, structures, list of projects or robust data, conducive to econometric analysis. However, the leading economics journal on issues relating to China, *China Economic Review* (CER) has some articles relating to the concept of BRI and potential challenges emerging in 2016 (particularly issue 40) and a special issue that looks at China's integration with the rest of the world published in 2018 (issue 47). We conduct a bibliometric analysis of the key words tagged in the articles in the CER from 2014-2018 June and compare them with key topics in the CER from its inception in 1989 to 2010 to see how issues important to China since the announcement of the BRI are different (if at all) to issues discussed since the open door policy of the 1980s. We then use the BRI-related articles in the 2016 and 2018 issues to tease out the specific concerns relating to the four 'top' areas, as relevant to China. This analysis is complemented by looking into the wider literature on international trade that looks at issues that are relevant to countries connected with the BRI.

The rest of this paper is organised as follows. Section 2 looks at what economic trade theory suggests about how infrastructure expansion facilitates higher trade volumes. Section 3 then teases out challenges that may be encountered in such trade expansion through a bibliometric analysis of recent literature in CER. The remaining sections 4-6, take up, in turn, each of the identified challenges associated with the BRI for China and connected economies. Section 7 concludes, drawing key implications the preceding discussion entails for research and innovations in tourism and hospitality.

2. Can infrastructure expansion facilitate higher trade volumes?

Since 2009 China has been the world's largest exporter and Asian economies in particular are becoming increasingly China-centric as seen in Table 1 that shows that China's top trading partners are other Asian economies. And for Asian economies, exports to China comprise an increasingly high percentage of their total exports, as seen in Table 2.

[Table 1: see appendix]

[Table 2: see appendix]

How can large upfront expenditure on developing ports, roads and infrastructure projects (with some of it already constructed such as rail links connecting China to Europe and harbours in Sri Lanka along the maritime route) facilitate *more* trade, according to economic trade theory? Intra-industry trade models posit that the gains may come through the positive spill-over effects that can be created through large scale projects that can

reduce costs and generate internal and external economies of scale that in turn drive higher trade. Internal economies of scale refer to the a fall in average production costs over a large range of output sometimes achieved through adopting large scale capital equipment, production processes (such as an assembly line) or typically incurring some large upfront expenditure. External economies of scale occur as firms become more productive as the number of firms in an industry in a particular geographical location increases. Such productivity increases happen through knowledge spill-overs, the creation of deeper labour markets for specialised skills and input suppliers. Indeed it has been argued that policy interventions in China in the past such as pro-liberal trade reforms and institutional reforms encouraging foreign direct investment (FDI) and the acquiring of advanced technology and capabilities has led to structural change that increased the importance of intra-industry trade in recent years (Huang et al., 2017). This improved institutional capacity together with further infrastructural expansion may well facilitate further intra-industry trade in particular and allow China to export more capital and skills-intensive goods.

The BRI can also be of particular benefit to connected neighbouring countries as trade increases dramatically with geographical proximity (Eaton & Kortum, 2002; Krugman, 1993). Using the gravity model of international trade that predicts bilateral trade flows based on economic size and geographic distance between countries in the ancient silk route, (Cinar, Johnson, & Geusz, 2016) argue that most Silk Road countries are currently underperforming in their trade with China. Although reasons for this current under-performance are not discussed, their analysis suggests that a revived silk road can indeed lend to bridging some of this potential for trade. This is especially the case for landlocked

countries in Central Asia for whom infrastructure development can be particularly important for lower transport costs (Limao & Venables, 2001).

But what are the challenges associated with such infrastructure-expansion-led trade, in the context of issues that are currently most discussed in the Chinese economic literature? To tease these out we turn to a bibliometric analysis of recent Sino-centric economic literature.

3. A bibliometric analysis to identify topics central to the Chinese economy since 2013.

We identify main topics of interest in the economics literature on China since the announcement of the BRI in 2013 by conducting a bibliometric analysis of articles published in the main economics journal that looks at issues relating to China, *China Economic Review*. Bibliometrics is a powerful tool to organize and analyze large amounts of academic publications in a quantitative manner that can be used to identify patterns and evolution of research topics, citation trends and impact, inter alia (Uysal, 2010; Y. X. Du & Teixeira, 2012). A simple count of publications in a particular area, for instance, can identify centres of influence and research related to a specific field (Moed, 2002). This is what we do in this paper.

We first take all 363 research articles published in *China Economic Review* between January 2014 and June 2018 and create a frequency table based on keywords identified by the authors of the articles, classified according to the Journal of Economic Literature (JEL) coding system. The JEL classification system was developed for use in the *Journal of Economic Literature (JEL)*, and is a standard method of classifying scholarly literature in the

field of economics. The system is used to classify articles, dissertations, books, book reviews, and working papers in EconLit, a key database of literature in economics, and in many other applications. There are 18 separate topics within the classification system, coded A, B, C, D up to R then Y and Z. Classification A covers General Economics and Teaching, B covers History of Economic Thought, Methodology and Heterodox Economics, C covers Mathematical and Quantitative Methods and so on. Each category is further subdivided. For example, C is subdivided into 9 further categories labelled C1-C9. Category C1 is further divided into 8 sub-categories C10-C19. Some of these categories specify key words describing the areas covered³. The table we create to record frequencies has 15 categories corresponding to the most common topics (codes C to L and N to R) with an extra 'other' category that includes topics under codes A, B, M, Y and Z⁴.

In the sample of papers we use, the average key words describing it was 2.6 key with a standard deviation 1.587. These key words are matched against the JEL classification categories in the table we created and a simple count of frequency of occurrence is collected. We then compare the results with those of a similar study, (Y. X. Du & Teixeira, 2012), that looked at the evolution of research topics in *China Economic Review* from its

³ A full list is available at <https://www.aeaweb.org/jel/guide/jel.php>

⁴ The topics covering the 15 relatively common key words can be found in Figure 1. The 'other' category includes A: General Economics and Teaching, B: History of Economic Thought, Methodology and Heterodox Approach, M: Business Administration and Business Economics, Marketing; Accounting; Personnel Economics, Y: Miscellaneous Categories (e.g., book reviews, no author discussions, Dissertations) and Z: Other Special Topics (e.g., cultural economics, sports economics, tourism economics)

inception in 1989 to 2010 to see how (if at all) the discourse changed particularly in recent times⁵. Figure 1 presents the results of this analysis. It shows that the area of Economic Development, Technological Change and Growth (JEL code O) continues to dominate the academic discussion on China in the past 4 years, since the announcement of the BRI, as it did in the two decades from 1989 to 2010. This is followed by discussion in international economics that covers topics such as trade, international finance and macroeconomic aspects of international trade (JEL code F). But a key change in the academic discourse is the rising importance of articles pertaining to health, education and welfare (JEL code I). During the 1989-2010 period only 3.6 per cent of the papers published in *China Economic Review* looked at issues pertaining to Health, Education and Welfare. But in the last 4 years this number has tripled with 9.4 per cent of the articles discussing these issues that include discussions on inequality, poverty, health care policy and those such as asymmetries in access to quality education. Similarly, another area of rising importance is labour and demographic economics with articles including those that look at skilled and unskilled employment, changes to wages and demographic economics (JEL code J). The percentage of articles in this area has increased from 6.5 to 9.5 over the two periods. Quite in contrast to

⁵ In the case of the Du and Taxiera (2012:747), the authors select only 'original research articles' and not conference papers to include their database. In the case of our bibliometric analysis we choose to include all research articles including conference papers as this allows us to capture a more representative sample of the recent debates and issues. Given the BRI announcement was recent, conference proceedings are a key source of gleaning insights regarding major issues of importance based on most up-to-date research.

the 1989-2010 period, recent papers focus less on issues pertaining to economic systems (JEL code P).

[Figure 1: see appendix]

The analysis above shows that the top 4 areas dominating recent discussion are those identified by JEL codes O, F, I and J amounting to 48.5 per cent of the papers published. Reflecting this trend the key topics in papers relating to the BRI, especially those in the CER special issues in September 2016 and February 2018, recognise key challenges and opportunities associated with the BRI to be associated with trade and growth, social disparities and the environment. The rest of this paper looks at the central arguments in each of these areas separately both from the perspective of the Chinese economy, and using the wider literature, other economies.

4. Will the BRI create a global economic boom or slump?

One of the key discussions in the post-2013 papers on 'international economics' (JEL code F) is with regard to how the older 'export-led' growth that characterised the Chinese economy since its open-door policies in the 1980s is now fast becoming obsolete and needs to give way to consumption-led growth. To elaborate, China's rapid growth in the past few decades and attraction of FDI was due, inter alia, to its comparative advantage in low-skilled exports⁶. This comparative advantage was generated by artificially low input costs,

⁶ In economic theory, comparative advantage refers to the relative advantage a country has in terms of producing a particular product or service compared to another country. A key source of comparative advantage, associated with 19th Century English Economist David Ricardo's definition

undervalued currency and abundant supplies of low-cost labour. But trade flows and trade specialisation has led to a structural shift in the economy from resource and labour intensive exports to capital and technology intensive exports, according to (Caporale, Sova, & Sova, 2015) who use data from 1992-2012. Moreover, the comparative advantage in low-skilled exports is no longer dominant as labour costs especially in the coastal areas have risen, regulations are tighter and currency has appreciated. The 2008 financial crisis only added to this by affecting productivity growth in the manufacturing sector. (Dang, Gu, Tang, & Van Assche, 2018). argue in their editorial to the special issue looking at 'China's Changing Integration into the global economy' that the Chinese economy needs to 'rebalance' by moving away from an export-led growth strategy to a consumption-led growth strategy and firms move into higher skill, value added production, if the country were to move from the 'middle income trap'. Initiatives such as the BRI aim to facilitate this economic rebalancing act partly through forging new forms of international economic corporation especially with new partners to its West⁷. Preliminary evidence shows that in

of the term, is through differences in production technologies between countries such that a country can produce a good relatively more efficiently than another country. Another source of comparative advantage is arises out of differences in factor endowments (i.e., land, resources, labour) between countries. The Heckscher-Ohline model of international trade suggests, for instance, that countries will specialise in the production of the good that uses intensively their abundant factor and export these goods while importing goods that use abundantly factors less abundant in their countries.

⁷ Another recent initiative to help rebalancing is the ambitious ten year-reform termed 'Made in China 2025' (announced in 2015) that looks to veer China's manufacturing industry towards the high-tech sectors.

the two years since the BRI announcement in 2013, Chinese overseas direct investment (ODI) patterns have changed rapidly with disproportionately large increases in land based belt-road countries in Central Asia, West Asia, Western Europe and Russia (J. L. Du and Zhang, 2018). The investments were mainly merges and acquisitions with Chinese state owned enterprises (SOEs) leading in terms of infrastructure-related sectors and private firms lead in terms of non-infrastructure sectors.

But a key challenge to massive projects such as the BRI, identified in recent papers that focus on growth (JEL code O), are the rising signs of malinvestment, corporate debt and corruption (see for example Morck & Yeung, 2016; Woo, forthcoming; Gunter, 2017). Morck and Yeung (2016: 302) argue that several of China's previous infrastructure projects were malinvestments in the form of 'grandiose construction projects' with cities competing to erect municipal buildings for grandiosity and not functionality with the new town halls of some municipalities allegedly having capacities larger than their own populations (See also Allen, Qian, Zhang, & Zhao, 2013). They also argue that banks seem to have lent to unprofitable SOEs rather than profitable, growth generating non-SOEs and that China's total factor productivity has been declining over time to become negative since 2012, indicative of resource misallocation. Supporting this argument, Ansar, Flyvbjerg, Budzier and Lunn (2016:360) purport that three-decades of infrastructure investment in China has failed to deliver a positive risk-adjusted return and is 'far from being an engine of economic growth'. Thus decades of large scale infrastructure development may not have offered a 'big-push' to support China's miracle growth rates in the past. They also argue that the economic growth that seemingly correlates with infrastructure investment occurs partly during ongoing construction efforts but is followed by a bust as the over-investment in unproductive projects leads to the 'build-up of debt, monetary expansion, instability in financial markets

and economic fragility, exactly as we see in China today'. The Ansar et al. (2016) paper's conclusion is that poorly managed infrastructure investments are at the core of China's surfacing economic and financial woes and that further efforts in infrastructure investment, particularly if unproductive, can lead to an infrastructure-led national financial and economic crisis that drags down with it the international economy. Similar observations have been made elsewhere regarding the volatility of the Chinese financial system and potential contagion effects on the world economy (Allen & Gu, 2015).

An associated issue is that a global investment and lending venture such as the BRI can also create 'debt traps' that affect adversely participating developing countries. A classic example is the case of Sri Lanka's Hambantota harbour and airport development projects both funded by one of Beijing's largest state-owned enterprises. Both projects turned out to be failures with the Airport reaching fame in the Forbes for being the 'world's emptiest airport' (Shepard, 2016). Unable to service the debt, the country leased the port out to China for 99 years in 2017, using the revenue to pay back debt to China

5. Will rapid trade expansion increase inequality, poverty and structural unemployment?

An imminent issue for China in recent times is the high and rising income and social disparities as picked up by many recent articles covering JEL codes J, I and R in the CER. Figure 2 below shows how different per-capita GDP levels - just one dimension of inequality- are in the various regions of China, with coastal areas in the East enjoying substantially high incomes than the areas in the West.

[Figure 2: see appendix]

More startling is a finding in a recent review conducted by Peking University's Institute for Social Science Survey finds that China currently has one of the world's highest levels of income inequality, with the richest 1% of households owning a third of the country's wealth (J. Li, Ren, Wu, & Kong, 2015). These rising disparities are indicative of the fact that although there was policy promoting higher volumes of trade, rapid infrastructure development and income growth over the past decades, less attention has been paid to equitable redistribution of gains and non-income related aspects of development such as having effective 'social security and pension schemes, accessible healthcare, education in poorer areas, better judicial capabilities, and an efficient tax collection system' (Morck & Yeung, 2016). These areas are in dire need of development. Further large scale infrastructure development in this context and in the backdrop of poor rule of law ('institutions'), policy ambiguity and volatility can widen disparities within China and its neighbours, as trade flows increase.

The widening of disparities in the absence of effective ways to handle it can occur due to the infrastructure project itself or the associated potential increase in trade flows (and labour migration) within and between countries. With regard to the former, there is the risk that large scale infrastructure development projects themselves can lead to wider regional disparities within nations, with those cities close to the transport links urbanising and developing rapidly, attracting rapid migration while the regions in the periphery are left behind. (Demurger, 2001) show, for instance, that infrastructure development is key to regional growth rate disparities in within China. The issue is relevant to all countries

connected to the BRI, especially if they have inadequate redistribution mechanisms, safety nets and mechanisms within countries to deal with asymmetric regional growth⁸.

More trade, per se, can also lead to wider disparity within countries. It is well established within trade theory that trade brings about winners and losers and unless there is adequate redistribution of the gains of trade within an economy it can lead to increased inequality, poverty, long-term unemployment, *inter alia*, that could all eventually translate to civil unrest. Empirical evidence in this regard shows that there are indeed winners and losers. For example, Autor, Dorn, and Hanson (2013) argued that the effect of rising Chinese import competition between 1990 and 2007 -a period when China had a comparative advantage in low-skilled exports- had a negative impact on US labour markets, increased unemployment, reduced labour force participation and reduced wages in import-competing manufacturing industries. Similarly Bloom, Draca and Van Reenen (2016) find that Chinese import competition led to increases in unemployment and falls in profits and the skill share in 12 European countries over 1996-2001 although it had positive impacts on research and development (R&D) and productivity. Dauth, Findeisen and Suedekum (2014) also argue, using data for Germany from 1988-2008, that substantial job losses occurred in

⁸ At an international level, large scale international infrastructure development can also lead to large scale migration of skilled workers in search of better opportunities, creating potential for a fresh wave of the 'brain drain' phenomenon that saw the more skilled workers from developing countries moved to more developed countries. Such trade related changes to patterns in migration can have implications on a country's longer term growth trajectory, with countries that are poorer in terms of development lagging even further behind.

German regions specializing in import-competing industries due to trade with China and Eastern Europe. But they also argue that the gain in employment in export-competing industries outweighed this loss. Even if there is a net gain in terms of employment, those who are left behind may increase the pool of long term unemployed adding to the phenomena of persistent increases in structural unemployment (i.e., 'hysteresis in unemployment' using an economists' lingo, as seen in the case of USA's relatively more open manufacturing sectors according to (Campbell, 2016). In essence, the issues for countries with a relative advantage in terms of having higher skilled labour is one of those with lower skills losing out, unless adequate safety nets are provided such that these workers are retrained, redeployed or otherwise supported. With China's current push to increase high-skilled exports, this issue is important to China as well. Another issue identified in countries such as the UK and wealthier European countries⁹ is that of job polarization that leads to 'lousy' versus 'lovely' jobs: a phenomenon where there is a relative rise in demand for high skilled jobs and a fall in relative demand for low paid less skilled jobs as argued in Goos and Manning (2007).

Historically, there have also been other, indirect disadvantageous impacts of higher integration and related migration. For example, increased trade and liberalisation in developing countries in the past few decades has seen increased labour force participation of women in particular, as trade opened up employment opportunities and higher wages. Although viewed as a positive consequence this has also brought about negative consequences to child schooling health outcomes if these opportunities meant mothers had

⁹ Austria, Belgium, Denmark, Finland, France, Greece, Ireland, Italy, Luxembourg, the Netherlands, Norway, Portugal, Spain, Sweden as used in Goos, Manning and Salomons (2009)

to migrate to cities or overseas for employment leaving offspring in the care of relatives. For example Cortes (2015) shows that in the Philippines maternal migration has more significant negative impact on the education levels of children left behind than paternal migration. Similarly Jampaklay (2006) finds for Thailand that long term maternal migration has negative impacts of child education levels where as paternal migration has no such effects. Studies such Wen and Lin (2012) as have shown that in the case of China, the migration of both fathers and mothers can leave those children left behind suffer both in terms of health behaviour and school engagement. Trade increases driven by the BRI are likely to generate higher migration within countries as wage inequalities increase between areas that benefit from the project and those that do not. This is likely to encourage more between country migrations as well. As has happened historically, such migration due to the BRI, especially if it leaves the children and elderly behind, is likely to increase inequality in various dimensions, affect aspects of welfare and sustainable growth. In terms of trade and impacts on poverty, it has been noted that the poor might be more vulnerable to the effects of trade liberalization particularly in the short term if opportunities for retraining and safety nets are inadequate (Topalova, 2010) although they benefit from lower prices of goods if trade targeted goods that are essential for them (Fajgelbaum & Khandelwal, 2016). But even if trade can benefit the poor in the long run, the gains of trade can be highly unequal with the rich benefitting relatively more (Nigai, 2016). This disparity can lead to higher relative poverty i.e., poverty not in absolute terms below a given income threshold but relative to those who are richer. Higher relative poverty and higher inequality can be particularly problematic as power is often concentrated among those that are richer (Gilens, 2012). Widening gaps in power structures is a well-known cause leading to social unrest and even civil strife (Cederman, Gleditsch, & Buhaug, 2013). Thus a key consideration for countries

involved in the BRI is to anticipate that with increases in trade certain sectors and groups that may be disadvantaged within nations and that adequate safety nets or mechanisms for distributing more equally the gains from such trade will have to be developed. Thus the institutional frameworks (for example, incentive structures, rule of law, property rights, social safety net works) need to be strengthened to cope with anticipated changes.

6. Environmental concerns

Environmental degradation, pollution and stresses on natural resources all exacerbated due to inadequate regulatory frameworks is another area of rising importance identified in the CER under code O, Economic Development and Technological Change. (Overholt, 2016) argues for instance that

South China Sea, one of the world's most important sources of fish, natural beauty, and biodiversity, has been correctly characterized as providing a toilet for more than a billion people, including of course Southeast Asians as well as Chinese. China is hardly alone in contributing to this problem, but the amount of human and industrial waste pouring into the South China Sea as a ramification of China's economic success transforms a manageable problem into a potential catastrophe. Chinese, Japanese and Korean overfishing, and Chinese destruction of reefs magnify the risks, not just in the South China Sea but also throughout the world.

These environmental risks become global and even more imminent as projects such as the BRI accelerate the world into an industrial economy rapidly, before putting in place rules of law and regulations -that arguably take longer to establish and enforce (not the

least because countries differ in terms of how developed they are in this regard) than building infrastructure- to mitigate the damage¹⁰.

Another critical issue is the increasing natural resource constraints, particularly water, that countries in Central Europe currently face that in the context of increased trade is likely to increase resource use as well as tensions in sharing it (Li, Qian, Howard, & Wu, 2015). To elaborate, much of the overland silk-route would be over semi-arid and arid regions where the environment is vulnerable and water resources are under stress (Libert, Orolbaev, & Steklov, 2008; Immerzeel, van Beek, & Bierkens, 2010; Li, et al., 2015). The region is also subject to ecological disasters such as the Aral Sea Crisis due to human-lead contributions. The Aral Sea is situated in Central Asia between Kazakhstan and Uzbekistan and was the world's fourth largest saline lake until about the 1950s. But in the 1960s, the Soviet government diverted the two rivers that fed the sea in order to irrigate the desert region surrounding the sea in order to promote agriculture. The environmental and socioeconomic costs of this human intervention has been immense with the desiccation of the sea, salinization of soil, desertification, dust storms and even contributing to climate change and melting glaciers in surrounding areas (Micklin, 2007). These environmental impacts have also lead to changes in water availability, land use and agricultural patterns as well as socioeconomic impacts in the region including potential negative effects on poverty and health (Zetterström, 1999). Any large-scale 'productionist' development project

¹⁰ Classical trade models ignore environmental aspects of trade given assumptions made. However as the rest of the section discusses, empirical evidence show clearly how large infrastructure development projects (that aim ultimately to improve growth and living standards, partly at least through trade) should indeed consider environmental aspects.

involving the region including projects such as the revived Silk Road will undoubtedly increase pressures on natural resources and can have dire effects on the environment unless environmental issues are at the forefront of any such development. Nobel prize winning economists such as Ronald Coase and Elinor Ostrom offer path breaking insights as to how to address some of the potential environment-related these issues within a capitalist, market economy framework using policy, regulation and tools such as marketable permits. But implementing these suggestions require credible, enforceable rules and regulations and other measures of effectively handling environmental issue. Paramount for the success of any such measure will be political commitment. But many countries along the silk route are new market economies or are developing countries with weak legal and political institutions. Moreover, given variations in the economic systems in these countries it is unclear as to what extent market-based solutions to environmental issues are effective. What will all this mean for environmental concerns? Will short term developmental goals result in more irreversible disasters such as the Aral Sea crisis? Even if countries such as China currently acknowledge environmental concerns and intend to go through a 'green shift' aimed at improving regulations, reducing pollution and adopting green technologies it is not clear to what extent such efforts extend to large scale cross-border infrastructure development projects (Tracy, 2017).

7. Conclusion

The BRI at its core contains a large infrastructure development effort that can facilitate higher trade and integration that can lead to greater overall national and international welfare. However, there are several challenges that can arise. The paper

identifies these challenges by looking at key research areas in Sino-centric economics literature post-2013. First, although the BRI aims, inter alia, to kick-start stagnating economic growth rates in China through massive infrastructure investment that boosts trade and connectivity, this may be quite a challenge in the context of increasing evidence of malinvestment and resource misallocation in the past, rising corporate debt and corruption. If the BRI worsens these issues, the consequent financial and economic crisis in China is likely to have serious contagion effects with global ramifications. An associated issue for some participating countries is the possible debt burden that large scale infrastructure investments can entail.

Second, a rapid increase in trade generated through the BRI may well increase overall national welfare among participating countries and opportunities for the Service sector but unless the countries involved have effective ways of redistributing such gains and effective social safety nets social disparities are only likely to increase. Social safety nets include accessible pension and health care systems, effective tax revenue collection systems, social security and skills retraining mechanisms, effective labour market policies. It is questionable whether the relevant systems can be effectively created and enforced at the same speed of infrastructure building. If they cannot then these could arise wider inequalities in income and other dimensions accompanied by poverty and increases in structural unemployment. Adding to the complexity will be the demographic transition occurring in many nations along a revived silk route with an increase in the elderly population and migration-related stresses.

Finally, the BRI can raise pressures on the environment and natural resources including water. Exacerbating the complexity of this issue is the fact that many countries on

the Silk Route are relatively new 'market economies' with legal and political institutions that may not yet be mature in terms of adapting to solutions offered within market economies (such as marketable permits) to handle environmental issues. Moreover, given the countries within the Silk Route have different types of economic systems and strands of capitalism operating within them new tools of environmental protection may need to be developed. Paramount for the success of any such measure will be political commitment. Thus although the revived silk route offers opportunities for connected nations in particular to improve welfare through more trade and integration unless some of the challenges and potential issues are addressed upfront in the official plan and implementation stages of the BRI, the trade-based 'wins' may well be stifled.

What implications does this review have for further research and innovation in the tourism and hospitality sectors in BRI participating countries? Two implications are discussed below. First, the key challenge to growth these sectors may come largely from external forces such as substantial shifts to regulatory frameworks, institutions, trade patterns and competition. There could also be shifts to macro aspects such as poverty, unemployment and fiscal issues in the absence of appropriate institutional frameworks to mitigate such issues. But these shifts may also provide opportunity. For example, in some countries the context the tourism and hospitality industries face would be one of significant fiscal stress, national debt and along with it an eagerness on the part of the government to make their debt serviceable. This may offer new opportunities for research and innovations in how tourism is conducted, for instance, with avenues such as debt swap for tourism being a possibility. Another opportunity that may arise for stake holders is the ability to influence institutional and regulatory changes, to ensure the gains from BRI are realised equitably and

efficiently. A second key implication of the review is the importance of research into sustainable, responsible tourism and a service sector with a 'moral conscience', given the social and environmental consequences the BRI might entail.

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Table 1: Trade in 2015 between China and the rest of the world(Billions of USD)

Region	China's Exports	China's Imports	Total Trade
Asia	1,140.1	954.3	2,094.4
Europe	403.2	293.1	696.3
North America	439.0	174.1	613.1
Latin America	132.1	103.8	235.9
Africa	108.5	70.3	178.8
Oceanic and Pacific Islands	50.5	82.9	133.4

Note: Figures are for mainland China, excluding the special administrative regions

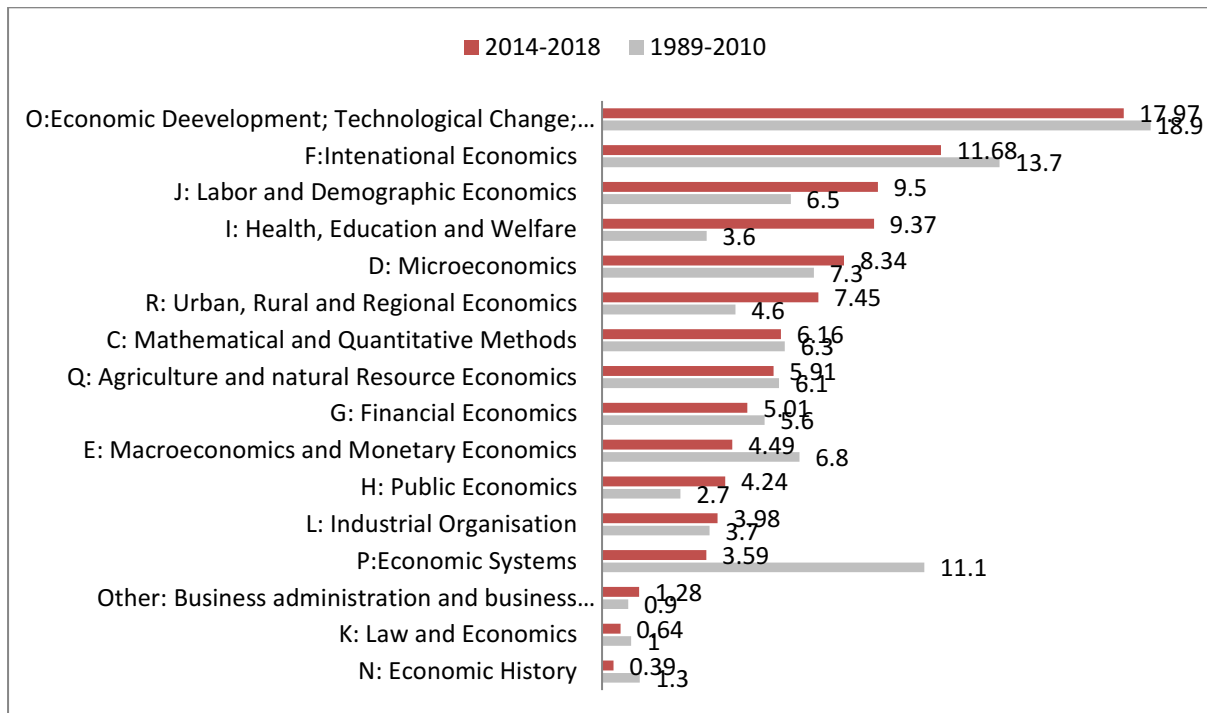
Source: National Bureau of Statistics of China

Table 2: Exports to China as a percentage of total exports from Selected Asian countries over the 2005-2013 period (Average)

Asian Country	Exports to China as a % of total exports	
	2013	Average (2005-2013)
Mongolia	50	54
North Korea	67	35
South Kora	39	34
Turkmenistan	96	30
Japan	23	24
Austria	39	24
Phillipines	17	23
Malaysia	26	22
Kazakhstan	27	21
Thailand	19	18
Papua New Guinea	12	14
Indonesia	16	13
New Zealand	22	10
Laos	15	10
Russia	8	8
Vietnam	10	8
India	5	6

Source: Adapted from Morck and Yueng (2016), Table 2.

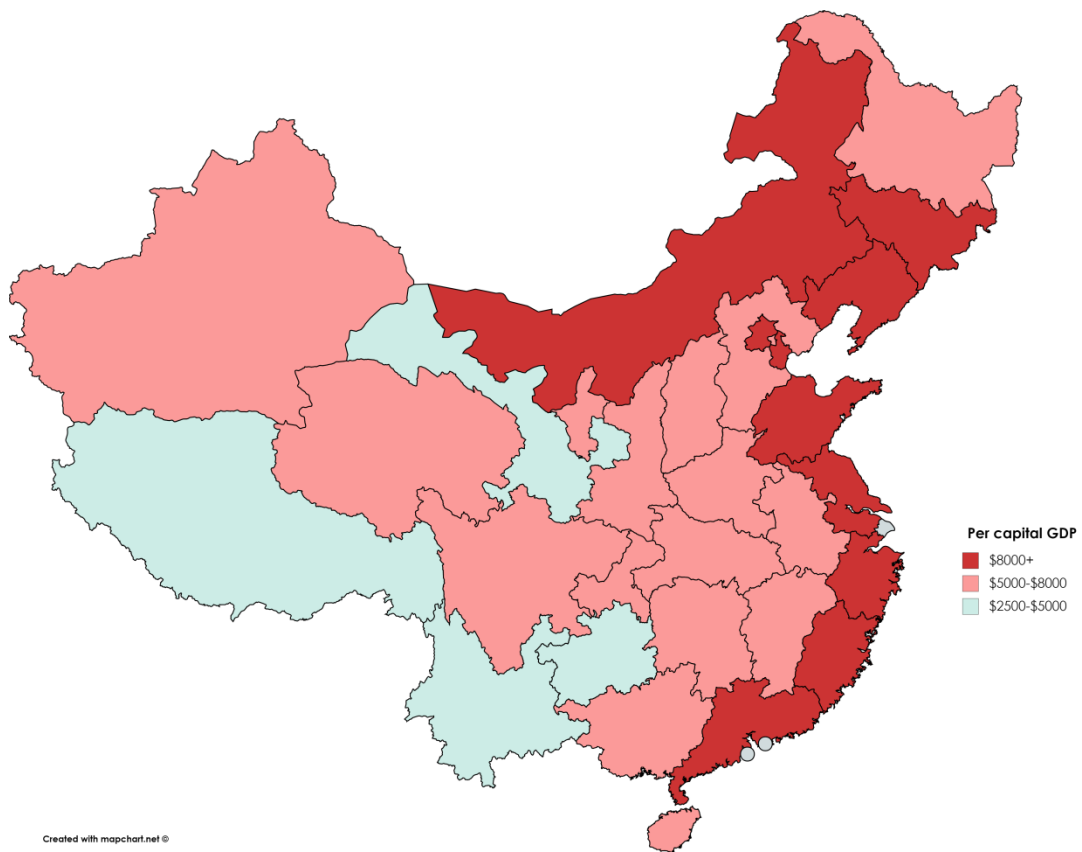
Figure. 1. Distribution (% total) of articles published in CER by JEL codes, 1989–2010. and post BRI announcement, 2014-2018.



Note: The mean and median of JEL codes assigned per article during 1989-2010 is 3 with a standard deviation of 1.149; during 2014-2018 the mean is 2.6 with standard deviation 1.587.

Source: 1989-2010, Du and Texiera (2012:748); 2014-18: Authors' computation.

Figure 2: Regional disparities in per capita GDP



Source: Adapted from Mathai et. al. (2016:8)