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Foreign Investment across the Belt and Road

Patterns, Determinants and Effects

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Abstract

This paper examines the patterns and economic effects of foreign direct investment across the Belt and Road Initiative countries and assesses the potential role of the initiative in shaping the patterns and effects. Exploring cross-country bilateral transportation cost and foreign investment data, the analysis shows that, by reducing overall travel times and transportation costs, the proposed Belt and Road Initiative transportation network can pave the way for additional investments and increased growth in gross domestic product. But the magnitude of the effect varies significantly across source and destination countries. Aggregate foreign direct investment in Belt and Road Initiative countries is predicted to increase by around 5 percent, with regions such as Sub-Saharan Africa and East Asia and Pacific seeing greater potential gains. The increase in foreign direct investment can exert a positive effect on GDP, trade, and employment growth, especially for lower-income countries.

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Foreign Investment across the Belt and Road: Patterns, Determinants and Effects[1]

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JEL: F2, F1
Key words: foreign investment, the Belt and Road Initiative, transportation cost, time, growth

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1. Introduction

In fall 2013, President Xi Jinping introduced the *Belt and Road Initiative* (BRI) during his visits to Kazakhstan and Indonesia. The initiative aims to revive ancient Silk Roads by encouraging new trade and improving connectivity. The *Belt* is the land-based "Silk Road Economics Belt" that connects China and Europe through Central Asia and the Russian Federation. The *Road* is the oceangoing "Maritime Silk Road" that connects China with Southeast Asia, East Africa, the Middle East and ultimately the heart of the Mediterranean. The initiative includes 72 countries around the Belt and the Road and at the moment covers over 60 percent of global GDP and 70 percent of the world population.

The key element of the Belt & Road Initiative is infrastructure investment that improves connectivity and encourages trade and investment across BRI countries. During the Belt and Road Summit in May 2017, the joint communique stated a list of cooperation objectives of BRI. Among many, the two most important objectives are 1) to strengthen physical, institution and people-to-people connectivity among BRI countries; and 2) to expand economic growth, trade and investment. The communique envisions the future of BRI countries to be a win-win situation by creating "prosperous and peaceful community with shared future."

In this paper, we examine the patterns and economic effects of foreign direct investment across BRI countries in comparison to other nations and assess the potential role of BRI, by improving countries' physical connectivity and infrastructure, in shaping these patterns and effects.

Specifically, we address three broad questions:

- ***Patterns.*** What are the patterns of foreign investment in BRI nations compared to the rest of the world? How do these patterns vary across countries and over time?

- ***Determinants.*** Looking at historical data, what have been the roles of various types of transportation cost, infrastructure, and institutional factors in determining the volume and patterns of FDI in BRI countries? Are there synergies between infrastructure investment and general FDI? Which mediating institutional factors are underlying the effects? What is the potential impact of BRI on BRI countries' receipt of FDI?

- ***Effects.*** How has inward foreign investment affected the economic growth of host economies? How does the effect vary across income groups and geographic regions? What is the potential impact of BRI on BRI countries' growth through the channel of FDI?

In recent decades, foreign direct investment (FDI) flows as a share of GDP have more than doubled in both developed and developing nations. While developed countries still account for over 70 percent of the world's outward FDI flows, developing countries including China have become an increasingly important source of FDI as shown in Figure 1.

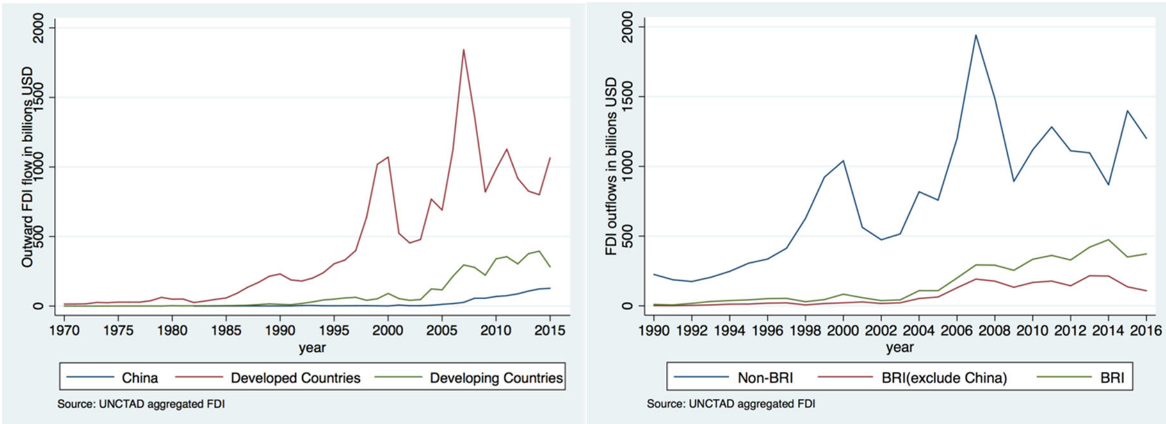

Figure 1: Trends of outward FDI

What is the role of geographic connectivity in the rapid growth of FDI? In Figure 2, we take a look at the spatial distribution of FDI flows in 2001 and 2012, respectively, using data from the UNCTAD FDI Statistics. When comparing the distribution in 2001 with the distribution in 2012, we observe a rightward shift along the distance axis; for example, the share of FDI concentrated at less than 2,500 km has fallen from around 40 percent to less than 30 percent. This change suggests an expansion of FDI flow across space in an era when transportation costs have sharply declined.

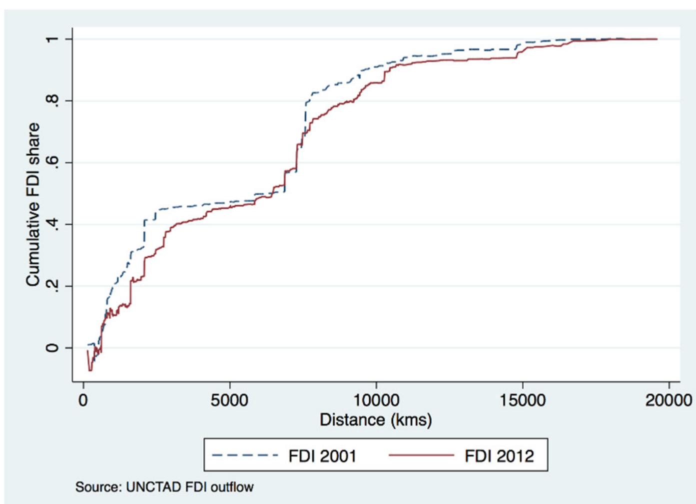

Figure 2: The distribution of FDI across space

Reductions in transportation costs could influence FDI through a variety of different mechanisms and the effect evolves with the integration and sourcing strategies of multinational firms. First, the nature of the effect depends critically on the specific motives to invest abroad. While high transportation costs may motivate firms to replicate production across countries (an activity referred to as horizontal FDI), reduction in transportation costs will allow firms to better exploit cross-country cost differences and engage in vertical or complex FDI strategies where multinational firms separate their production stages across countries and engage in extensive intra-firm trade. In the latter case, FDI and trade become positively interdependent and FDI growth can boost both export and import growth. Second, as FDI involves not only the flow of goods and inputs but also the flow of information, there is an important interplay between investment flows and the flows of ideas and knowhow. Finally, reduced regional transportation costs to transmit goods, intermediate inputs, and services could foster growth of regional value chains. The above effects could, however, vary significantly across countries depending on countries' business environment and absorptive capacity.

In this paper, we first document and compare the historical patterns of FDI around the world including BRI and non-BRI countries and investigate how different types of transportation cost and infrastructure have affected FDI. Based on the findings, we then assess the potential roles of BRI in fostering FDI growth by improving different types of connectivity and infrastructure. Finally, we evaluate the effects of FDI on economic growth and how BRI might potentially affect economic growth through the foreign investment channel.

The structure of this paper is as follows. Section 2 reviews the existing literature evaluating the patterns, determinants, and effects of FDI as well as existing analysis on BRI. Section 3 discusses the data sources and the patterns emerging from the data. Section 4 describes the econometric methodology and the empirical findings. Section 5 concludes.

2. Literature Review

2.1 The Patterns of FDI and the Role of Transportation Cost

An extensive volume of empirical literature in international trade has examined the patterns of FDI as a function of country characteristics including market size, factor endowment, transportation cost, tariff, and other factors such as corporate tax, institutional quality and exchange rate.

The literature shows that the relationship between transportation cost and FDI varies sharply with the nature and type of investment, in particular, between horizontal and vertical/complex FDI. To measure transportation cost, distance or a ratio of cost, insurance and freight (cif) relative to free-on-board import value has usually been used while it is widely acknowledged that distance could capture not only various forms of geographic friction including the costs of communication and monitoring but also other factors such as cultural distance and historical ties (see, for example, Head and Mayer, 2013).

The first stream of studies presents evidence that is in alignment with horizontal FDI by showing a positive relationship between FDI on the one hand and market size and trade cost on the other. Brainard (1997), one of the first empirical studies examining the proximity-concentration trade-off, finds that the patterns in which country characteristics relate to U.S. FDI are broadly in alignment with the market access motive. Specifically, she uses U.S. trade and affiliate sales data from the 1989 BEA Benchmark Survey of U.S. Direct Investment Abroad and finds that FDI increases with host-country income and trade cost including the transportation cost to ship goods between the headquarters country and the host country, consistent with the market access motive in horizontal FDI.

Similar findings are shown in Carr, Markusen, and Maskus (2001) who incorporate both horizontal and vertical FDI into a knowledge-capital model of multinational firms and offer support to both market access and knowledge capital hypotheses. In particular, the elasticity of affiliate sales with respect to distance is estimated to range from -0.8 to -1.8, suggesting strong gravity in FDI patterns. Affiliate sales tend to diminish by around 8 to 18 percent when the distance between parent and host countries rises by 10 percent. In fact, the extent of gravity in FDI is comparable to the extent of gravity in trade that has been found in the literature (see, for example, Head and Mayer, 2013).

Yeaple (2003a) extends earlier work by exploring an interaction between country and industry determinants of FDI and offers empirical support to both market access and comparative advantage motives. Specifically, he uses U.S. affiliate sales data in 39 countries and 50 manufacturing industries from the BEA Benchmark Survey of 1994 and finds that U.S. multinational firms from unskilled-labor intensive industries tend to invest in unskilled-labor abundant countries, a result consistent with the hypothesis that countries' factor endowment differences lead to vertical FDI. Unlike in Brainard (1997), the role of transportation cost is found to be negative and statistically insignificant, departing from the expected sign in the context of horizontal FDI.

Irarrazabal, Moxnes and Opromolla (2013) exploit the source of gravity in FDI by introducing intra-firm trade into the framework of Helpman, Melitz and Yeaple (2004) and generating gravity relationships for both exports and multinational production. The model rationalizes gravity in FDI by assuming that the headquarters produce a firm-specific tangible or intangible input that is required for production in any location and trade in such input is subject to trade costs including transportation costs or tariffs in the case of physical inputs and cultural and geographic remoteness from the headquarters in the case of headquarters services. The results suggest that intra-firm trade appears to play a crucial role in shaping the geography of multinational production; to justify the gravity observed, the affiliate's cost share related to input purchases from the headquarters must be about 90 percent. As suggested in the paper, this result may have captured other mechanisms that are dampening firms' multinational production as trade costs increase, such as imperfect transmission of technology between parents and affiliates either because of imperfect codifiability as discussed in Keller and Yeaple (2013) or because of higher frictions in the match between firms and workers.

Addressing the long-standing issue that FDI data are not systematically available across countries and over time, Ramondo, Rodriguez-Clare and Tintelnot (2015) present a comprehensive data set on the bilateral activity of multinational firms using UNCTAD data and an extrapolation procedure, with focus on two variables: affiliate revenues and the number of affiliates across country pairs. Among the various stylized facts, the analysis shows that the effects of distance on multinational production shares are similar to the ones found for trade shares (close to -1) and the extensive margin of multinational production is much more elastic to distance than the intensive margin.

While most empirical studies have examined FDI as bilateral relationships, an emerging literature accounts for the multi-country spatial interdependence of FDI flows predicted in Yeaple (2003b) and Ekholm, Forslid and Markusen (2007) as most multinational firms today employ complex integration strategies and operate multilateral production networks. Head and Mayer (2004) examine hypotheses of export-platform FDI and show that a country's market potential, measured by the distance-weighted sum of domestic and export market size, plays a significant role in countries' ability to attract multinational firms. The results show that Japanese multinationals are more likely to locate in regions proximate to large markets, suggesting that geographic proximity between host and third countries could also influence the investment decisions of multinational firms, especially those seeking to engage in export-platform FDI.

Spatial interdependence across FDI flows is also shown in Baltagi, Egger and Pfaffermayr (2007), Blonigen et al. (2007, 2008), and Chen (2011). Baltagi, Egger and Pfaffermayr (2007) estimate a knowledge-capital model that incorporates spatial correlations in the independent variables and find that third-country characteristics exert significant effects on FDI flows. The linkage between host countries declines with bilateral distance among the host countries. Using sectoral FDI data, Blonigen et al. (2007) examine how investments in third countries affect a country's receipt of U.S. FDI. They find evidence of negative interdependence across proximate host countries, a result consistent with export-platform FDI theory, among European OECD members. The importance of third-country effects in inbound FDI is shown in Blonigen et al. (2008). The authors find a strong parent market proximity effect whereby parent markets' proximity to large third nations increases the volume of FDI. Similarly, Chen (2011) examines the cross-country interdependence in French multinationals' production networks using subsidiary-level data and finds strong spatial interdependence in multinationals' foreign production networks. The role of distance and transportation cost depends on the input-output linkages between subsidiary locations. MNCs are more likely to locate final-good production in countries with large market potential, vertically linked subsidiaries in proximate countries, and horizontally linked subsidiaries in remote locations.[4]

2.2 The Impacts of FDI in BRI Countries

The economic impacts of FDI have been studied in a large body of literature, through macro, cross-country analysis as well as micro, firm-level research. At the macro level, numerous studies, including, for example, the work by Borensztein et al. (1998) and Alfaro et al. (2004), have examined the relationship between FDI and economic growth. Evidence suggests that FDI could exert a positive effect on economic growth when host countries meet certain economic conditions, including sufficient human capital stock and relatively developed financial markets. At the firm level, an extensive volume of research has examined the effects of FDI on host countries in a variety of dimensions including productivity, employment, wage rate, and export performance. The productivity effect of FDI, in particular, has attracted considerable empirical attention.

In this sub-section, we discuss the literature evaluating the impacts of inward FDI in the context of BRI countries. The literature presented here is based primarily on analysis of historical FDI data in OBOR countries prior to the OBOR initiative. Table A.1 in the appendix provides a summary of studies discussed in this Section.

An extensive empirical literature assesses the existence of productivity spillover from multinational to domestic firms. Such spillover could occur to domestic firms acquired by foreign multinational firms, domestic firms competing with the foreign multinationals, as well as those sharing vertical production linkages.

- **Foreign acquisition.** The impacts of foreign acquisition on targeted firms have been shown in terms of wage premium, employment growth, and productivity increase. In terms of wage premium, Lipsey and Sjholm (2004) use Indonesian manufacturing firm-level data to show that foreign firms tend to hire more educated workers and pay a wage premium even

[4] A prominent literature led by Helpman, Melitz and Yeaple (2004) introduces firm heterogeneity into the decision between exports and horizontal FDI and shows that not only are the most productive firms most likely to engage in FDI, FDI sales relative to exports are also larger in sectors with more firm heterogeneity, higher transportation cost, higher tariff, and greater capital intensity. The work by Helpman, Melitz and Yeaple (2004) is extended in numerous studies including, for example, Yeaple (2009) and Chen and Moore (2010).

conditional on workers' education level. Earle, Telegdy and Antal (2013) use linked employer-employee data in Hungary and find the wage premium of foreign acquisition to be around 4.5 percent. The wage premium is observed for all education, experience, gender, and occupation groups as well as across wage quantiles. Divestment to domestic owners, on the other hand, is shown to reverse the effects. On employment, Lipsey et al (2013) find that the shift from domestic to foreign ownership tends to raise employment growth in Indonesia. As for productivity, Arnold and Javorcik (2009) use Indonesian plant level data and find that plant productivity increases about 13.5 percent by the third year under foreign ownership. These productivity improvements occur simultaneously with increases in investment in machinery and equipment, employment, wages and output. Similarly, taking into account endogenous acquisition decisions in China, Wang and Wang (2015) find positive impacts of foreign acquisition on firm productivity, export, output, employment and wages.

- **Spillover to other domestic firms.** In addition to the direct benefits from foreign acquisition on targeted firms, many studies examine the spillover effect of FDI on other domestic firms in the host country. The literature distinguishes three types of spillover: intra-industry or horizontal spillover, inter-industry spillover through backward linkage, and inter-industry spillover through forward linkage. The literature provides little evidence in support of intra-industry productivity spillovers from FDI. Javorcik (2004) and many subsequent studies show that FDI exerts little or negative effects on the productivity of domestic firms in the same industry. Lu et al. (2017), for example, explore the relaxation of FDI regulations upon China's WTO accession to evaluate the spillover effect of horizontal FDI and find FDI to exert either a negative or an insignificant effect on the productivity of Chinese domestic firms.

  One of the potential explanations for the limited horizontal spillover is that domestic producers also face crowding out effects in product and factor markets when foreign competitors enter the market. Such crowding out effects tend to be nonexistent or relatively small for firms that are vertically linked to foreign firms (i.e. suppliers or customers of the foreign firms). Other explanations suggested in the literature include, in particular, mediating factors that are discussed below.

  While the evidence is ambiguous about the existence of positive and significant horizontal spillover, most studies find positive and significant productivity spillover through backward linkages. A leading study in this literature, Javorcik (2004), finds that a one-standard-deviation increase of foreign presence in the sourcing sectors is associated with 15 percent rise in domestic firms' output in supplying industries in Lithuania. Blalock and Gertler (2008) use firm level panel data from 1988-1996 and similarly find evidence of positive spillover through backward linkage in Indonesia. In Hungary, Halpern and Murakzy (2007) find evidence of positive horizontal spillover but only for firms that are geographically close to foreign-owned firms. Javorcik and Spatareanu (2009) find evidence of backward linkage spillover in the Czech Republic. Kee (2015) explores a new channel of productivity spillover and finds firms sharing the same suppliers with foreign firms in Bangladesh to experience productivity improvement.

- **Spillover from FDI in service sectors.** While most studies in the literature focus on spillovers from FDI inflows in manufacturing on manufacturing firms, research has also looked at the effects of FDI inflow in service sectors such as banking and telecommunication on manufacturing firms. Fernandes and Paunov (2012) examine the impact of FDI inflows in producer service sectors on the TFP of Chilean manufacturing firms and show that forward linkages from FDI in services explain 7% of the observed increase in Chile's manufacturing users' TFP. Javorcik and Li (2013) use data from Romania in 1997 – 2005 and find that an expansion of global retail chains leads to significant TFP increase in the supplying manufacturing sector. Arnold, Javorcik and Mattoo (2011) find a similar result in the Czech Republic and show that the presence of foreign firms in the service sector is associated with greater productivity in the manufacturing sector. A related study by Arnold et al (2016) finds that service reforms in India benefit both foreign and locally owned manufacturing firms, with the effect on the former being larger.

- **Mediating factors.** The existence and the magnitude of productivity spillover could be conditional on a variety of factors such as the absorptive capacity of countries and firms, forms of FDI, and domestic policies. For example, countries and firms with a stronger absorptive capacity such as R&D capacity and relatively skilled labor would be more likely to experience productivity spillovers. For example, Blalock and Gertler (2009) find that Indonesian firms with more R&D, more educated workers, and smaller technology gaps from foreign firms tend to benefit more from FDI. Another study by Javorcik and Spatareanu (2008) finds that ownership structure can also be a mediating factor. They find that vertical spillovers tend to arise from projects with shared domestic and foreign ownership but not from fully foreign owned plants. Du et al. (2012) examine how industrial policy – specifically tariff liberalization and tax subsidies – affects the magnitude and direction of FDI spillovers in China's manufacturing sector from 1998 through 2007. The study finds that liberalization measures during the critical 1998–2007 period on balance served to enhance productivity growth in Chinese industry. A study by Farole and Winkler (2014), using World Bank Enterprise Surveys data, shows three types of mediating factors: firms' absorptive capacity, investors' spillover potential measured by the share of FDI output sold domestically, and host-country institutional factors. Finally, Espitia et al. (2017) show that distance, the level of development of the host country, and institutions are important mediating factors using panel data for 62 countries from 2005 to 2012.

In addition to firm productivity, employment, wage and export performance, the effects of FDI have also been found on domestic investment and innovation, although these aspects have received far less attention. On domestic investment, Wang (2010) uses data from 50 countries over 1970 to 2004 and finds that FDI had a negative contemporaneous effect on domestic investment but a positive cumulative effect on domestic investment. Miun et al (2002) ask a similar question and find mixed results in the Czech Republic, Hungary, and Poland. In Sub-Saharan Africa, Ndikumana et al (2008) find FDI to crowd out domestic investment. On innovation, Cheung et al (2004) find FDI has increased the number of domestic patent applications in China.

Recently, using a large cross-country firm-level data set, Alfaro and Chen (2017) find factor market reallocation in labor and capital markets from less productive to more productive firms accounts for the majority of aggregate productivity gains from foreign multinational competition. Bao and Chen (forthcoming) show another important source of gains from FDI arises from domestic firms' responses to the threat of foreign multinational competition by upgrading productivity, raising innovation, investment and wage rate, and altering product composition.

2.3 The Determinants and Impacts of Chinese Outward FDI

Within the broad FDI literature, a new emerging strand of research focuses on China's outward FDI.[5] In its earliest stage, research in this area is primarily descriptive in nature. For example, Cai (1999) proposes that Chinese firms invest overseas to seek markets, natural resources, technology, managerial skills, and financial capital. Wu and Chen (2001) suggest two additional motives, namely, to transfer excessive production capacity overseas and to diversify production lines. A study by Morck, Yeung and Zhao (2008) shows that Chinese multinational firms tend to perform better than other foreign firms in environments with weak domestic institutions, possibly because Chinese firms are better at dealing with governments and operating in a country with inefficient domestic institutions.[6]

A new wave of empirical work examines the determinants of Chinese ODI at the aggregate level. For example, Cheung and Qian (2009) find Chinese ODI tends to be attracted to countries with a larger market size and richer resources. Buckley et al (2007) find that Chinese ODI is positively correlated with the levels of host-country political risk and cultural proximity to China. Ramasamy et al (2012) use annual report data from the 200 largest Chinese firms listed in Shenzhen and Shanghai stock markets to compile Chinese ODI measures. They find that while state-controlled firms are attracted to countries with greater natural resources and more risky political environments, private firms tend to be risk-averse market seekers.

There are also studies analyzing Chinese ODI from the home country perspective. At the regional level, You (2015) finds that Chinese local government policy measured by willingness to approve local ODI and investment in R&D has a positive impact on regional ODI. Another home country characteristic found to have a significant effect is lagged inward FDI. Yao et al (2016) find that a country's lagged inward FDI stock in China is positively correlated with China's contemporaneous ODI to that country. A case study by Hertenstein et al (2017) looks into Chinese ODI in the auto component industry and argues that business networks explain the connections between lagged inward FDI and ODI.

More recent studies of Chinese ODI explore firm-level data. Using MOFCOM project data from 1998-2009, Chen and Tang (2014) find that the ex-ante larger, more productive, and more export-intensive firms are more likely to invest abroad. They also find that ODI helps firms to achieve higher TFP, employment, and export intensity and greater product innovation. Wang et al (2016) use firm-level data from Zhejiang Province to examine the impact of financial constraints on firms' ODI decisions and suggest that lowering a firm's financial constraints can increase both the probability and volume of ODI. Chen, Dollar, and Tang (2016) focus on the determinants of Chinese ODI in Africa and show that Chinese ODI in Africa is shaped by firms' profit

[5] Another related literature has examined the patterns of FDI from other emerging economies. Gómez-Mera et al. (2015), for example, study the patterns of FDI from Brazil, India, the Republic of Korea, and South Africa and find that FDI from these emerging economies deals with a fundamental trade-off between market attractiveness and the transactions costs of entering distant and remote markets.

[6] This "institutional advantage argument" is supported by Cuervo-Cazurra and Genc's (2008) cross-country analysis, which argues that disadvantages at home due to weak institutions could become advantages abroad.

maximization objective and the strategy of choosing locations based on local comparative advantages.

In sum, the literature finds that China's ODI tends to be attracted to larger markets and rich resource areas just like other countries' ODI. What differentiates Chinese investors is that they are more willing to invest in risky environments. At the firm level, evidence shows that more productive firms and less financially constrained firms are more likely to invest abroad. Investing abroad also makes investing firms more productive and grow faster. While studies on the determinants of China's ODI are extensive, relatively little work has been done to evaluate the impacts of Chinese ODI.

2.4 Reports on BRI

Existing economic analysis of the BRI is very limited. Most of the available discussions are descriptive reports. For example, Johnson's (2016) CSIS report provides a general assessment of the BRI and discusses the benefits of BRI to China. It also documents the responses from participating and non-participating countries. The Economist (2016) published a report on BRI countries using data from InfraPPP and Competitiveness Group/Long-term Asset Infrastructure to provide a general outlook of the ongoing infrastructure projects in each BRI country. American Enterprise Institute's Scissors et al (2017) also provides a descriptive summary of China's outward investment since the introduction of the BRI and argues that China's increasing construction projects in BRI could become costly for recipient countries to maintain. Similar concerns have been expressed by Dollar (2017), who observes that most of China's ODI still flows to rich developed countries. He also points out that Chinese investors' willingness to take risk will benefit BRI countries. A similar point is made in another report by the Economist (2017) which characterized BRI countries as high opportunities but also high risk countries. UNDP China et al (2017) suggests that the initiative can help BRI countries achieve industrial diversification and economic growth and discussed the conditions for achieving the Sustainable Development Goals.

3. Data and Stylized Facts

In this section, we describe the main data sources of FDI and related economic characteristics and an array of stylized facts emerging from the data.

3.1 Foreign Investment in BRI: Data and Patterns

The main sources of FDI data used are UNCTAD's bilateral FDI flow database and China Global Investment Tracker. In addition, we have also collected FDI statistics from individual countries' official agencies as supplementary data.[7]

[7] Generally, four types of FDI data have been used for economic analysis in the literature, including (i) aggregate FDI data from international agencies such as UNCTAD and OECD which tend to provide a relatively comprehensive country coverage; (ii) MNC activity data from national agencies, which offer national coverages but usually impose strict nationality and other restrictions on access and are not available systematically across countries; (iii) proprietary firm ownership or mergers and acquisitions (M&A) data sets provided by publishers such as Dun & Bradstreet, Bureau van Dijk,

UNCTAD FDI statistics compile annual country bilateral FDI data from each country's national census. To examine China's FDI, we obtain detailed data from China Global Investment Tracker (CGIT) from the American Enterprise Institute and the Heritage Foundation.[8] CGIT collected all the verifiable Chinese investment transactions and construction contracts that are worth 100 million USD or more from 2005 to 2017. The data set now includes approximately 2,700 large transactions across energy, technology, transportation and other sectors, as well as over 200 troubled transactions. An alternative to CGIT is the MOFCOM data; however, a major drawback of the MOFCOM data is its treatment of Hong Kong SAR, China, as an external customs port, as a result of which Hong Kong SAR, China, has been assigned for over half of China's outward FDI in the MOFCOM data when the funds only pass through Hong Kong SAR, China, as a transition point. We hence choose to draw our main analysis based on the CGIT data.[9]

Figure 3 plots the decomposition of BRI's inward FDI flow. As shown, the majority of BRI countries' FDI inflow comes from non-BRI countries. Within BRI, China is the largest investor to invest in the BRI region and its share has increased significantly since 2008. This event coincided with a significant drop of investment from developed countries during the global financial crisis. Chinese investors seized the opportunities to invest while firms from developed countries pulled back.

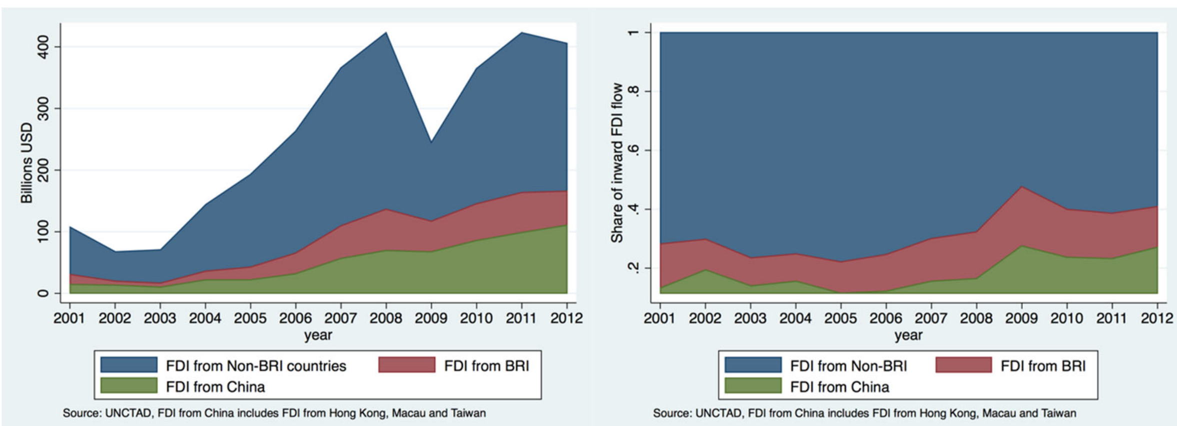

Figure 3: The decomposition of BRI's inward FDI (UNCTAD)

This observation is summarized below:

Stylized Fact 1: *The majority of BRI's FDI comes from non-BRI countries but the share of intra-BRI FDI, in particular, China's FDI in BRI, is growing.*

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and Thomson and Reuter; and (iv) FDI news announcement data such as FDI Market constructed by Financial Times, which tracks announcements of new foreign greenfield investments made in major news including those that might not be materialized in the end.

[8] CGIT data are collected by Derek Scissors at the American Enterprise Institute and the Heritage Foundation.

[9] Table A.3 reports the summary statistics of the CGIT data. Tables A.4 and A.5 list the top investors and construction companies based on transaction frequency and value, respectively.

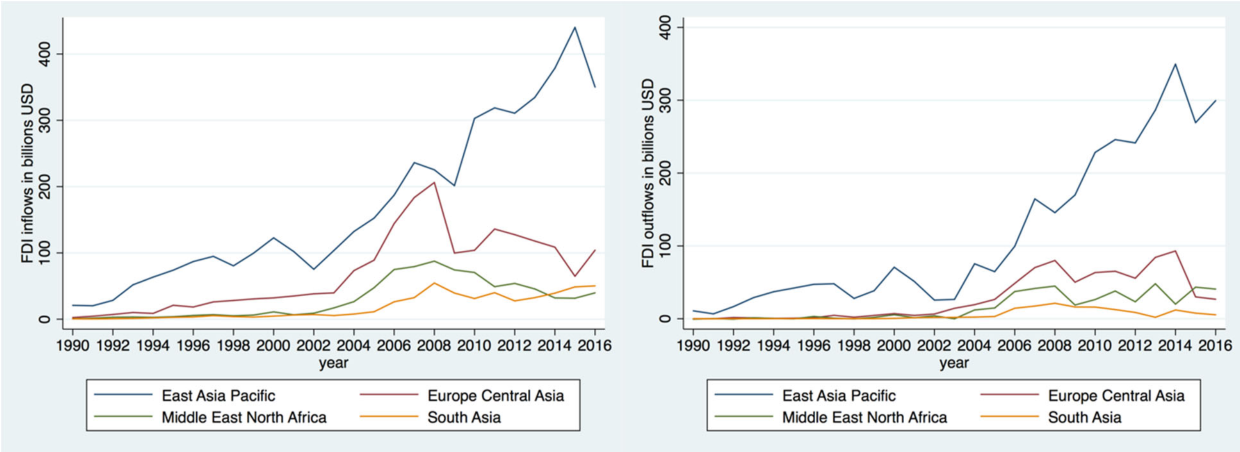

Figure 4: FDI patterns within BRI by Region

Using UNCTAD's aggregate data, we group BRI countries based on their geographic regions and income following WBG classification. Figure 4 plots the BRI countries' FDI flow by regions with FDI inflow on the left and FDI outflow on the right. We find that the East Asia and Pacific region is the main FDI recipient as well as the driver of FDI outflows. Europe and Central Asia follows in 2nd with a significant and growing gap relative to East Asia and Pacific.

When separating BRI countries by income, we find that high income and upper middle income groups have higher levels of inflows and outflows and account for 80 percent of FDI inflows and over 90 percent of outflows in recent years. This indicates that BRI countries with higher income attract more investment and are more likely to invest abroad.

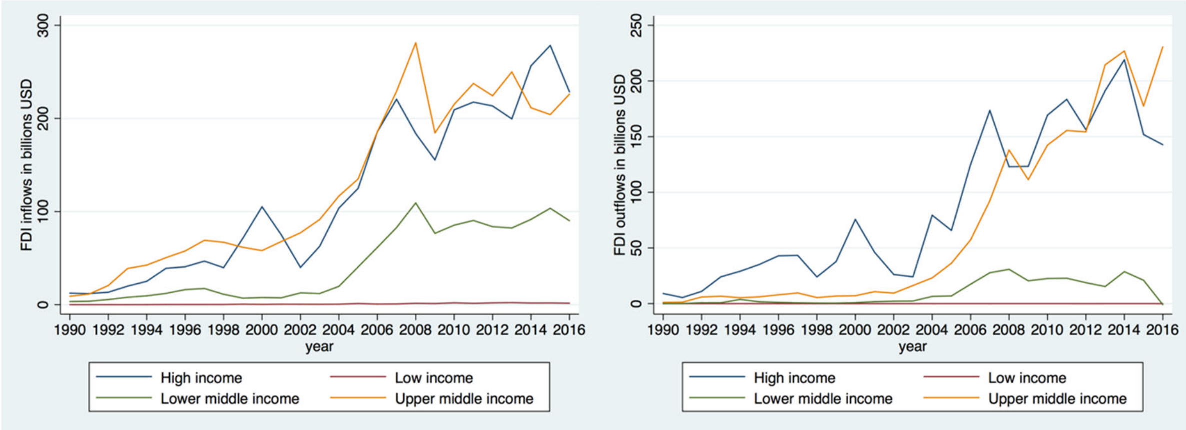

Figure 5: FDI patterns within BRI by income group

The left panel of Figure 6 shows that China's overall outward investment has increased significantly since 2013. However, the volume of China's outward investment in non-BRI countries has increased more rapidly than the volume of investment in BRI nations. The outward investment in non-BRI countries almost tripled in 2016 compared to 2013. The right panel of Figure 6 shows that China's outward investment was relatively balanced between developing and developed countries until 2014. Since then, China's investment in developed countries has risen faster than its investment in the developing world.

One feature of the CGIT data is that the data record both China's foreign direct investment and construction contracts. For instance, most activities for the China-Pakistan economic corridor are construction contracts. In our analysis, we take into account both types of activities to gain a more comprehensive perspective on China's foreign investment under the BRI.

Figure 7 shows that China's construction contracts abroad experienced a similar upward trend. However, BRI accounts for a much larger share in China's construction contracts overseas than in China's FDI. Also, unlike FDI, the vast majority of China's construction contracts occur in developing countries. In 2016, the share of BRI exceeded the share of non-BRI countries in China's construction projects.

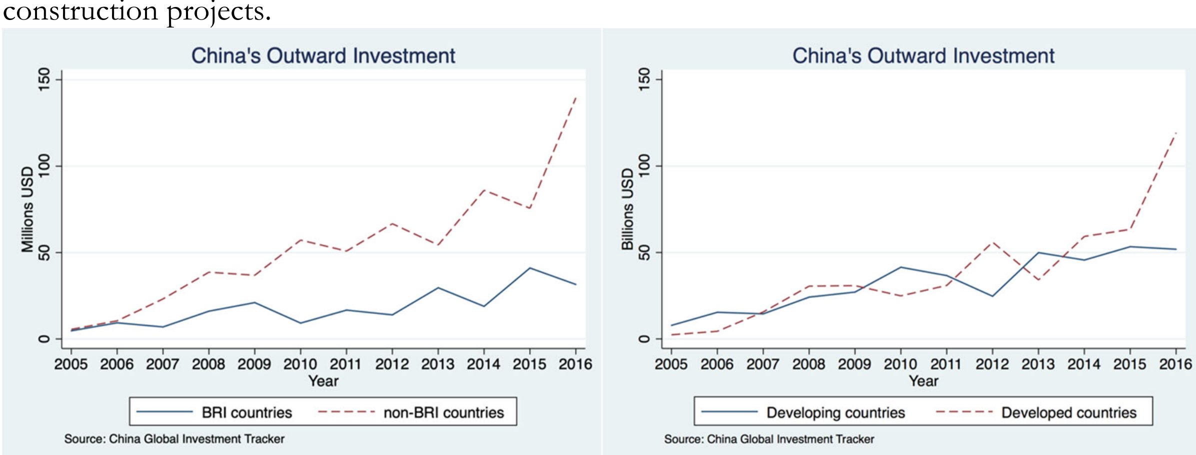

Figure 6: Trends of China's outward investment

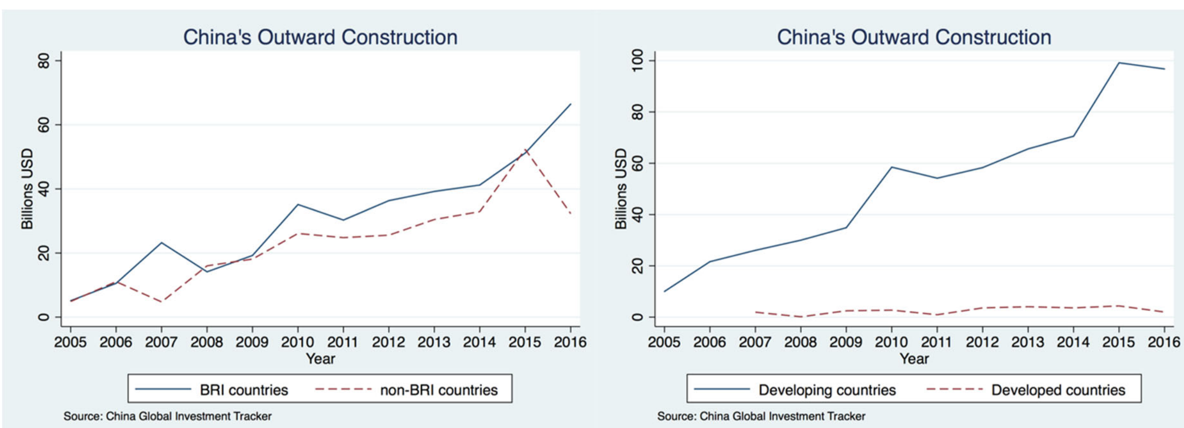

Figure 7: Trends of China's outward construction contracts

The above observations are summarized below:

Stylized fact 2: *China's ODI growth is led by its investment towards developed and non-BRI countries while the majority of China's construction contracts are in developing and BRI countries.*

In Figure 8, we plot the spatial distributions of China's outward FDI and construction contracts, respectively. It is evident that there exist sharp variations in the geographic distributions of the two types of activities. While China's ODI is concentrated primarily in large, mostly developed countries, China's construction contracts are concentrated in developing or even low-income nations.

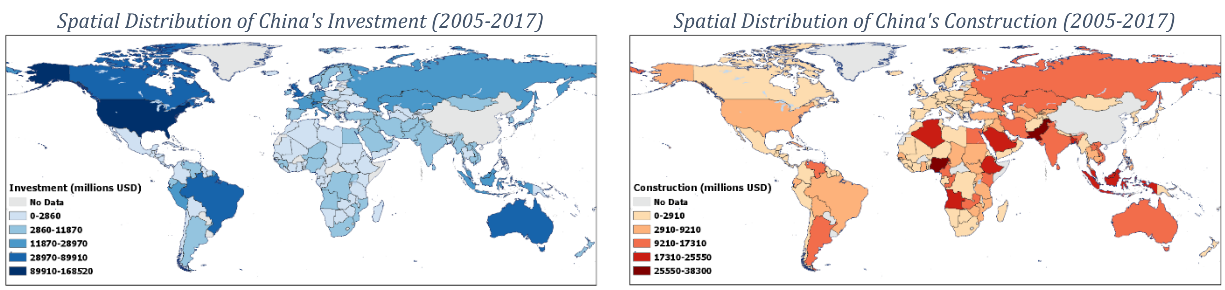

Figure 8: The spatial distributions of China's outward FDI and construction contracts

CGIT also provides sectoral information for each investment transaction. Figure 9 shows the trends of China's ODI and construction contracts in different sectors. It is clear that energy has been the dominant sector since 2007 and investment in transportation has grown enormously since the introduction of the BRI.

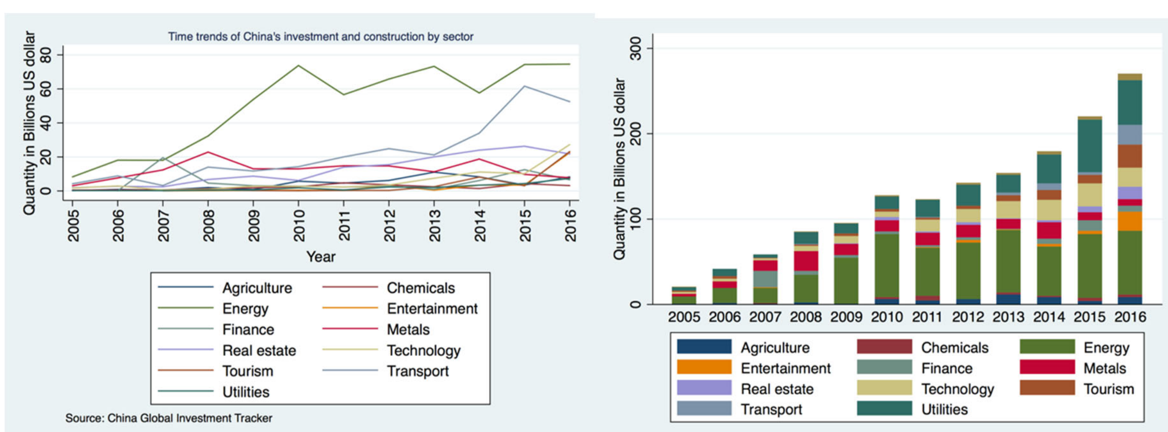

Figure 9: Trends of China's outward investment and construction contracts by sector

Zooming in on China's investment in BRI countries, a similar pattern is observed: energy is the dominant sector for China's outward investment. Since 2014 after the introduction of the BRI, there is a spike of construction contracts in the transportation sector.

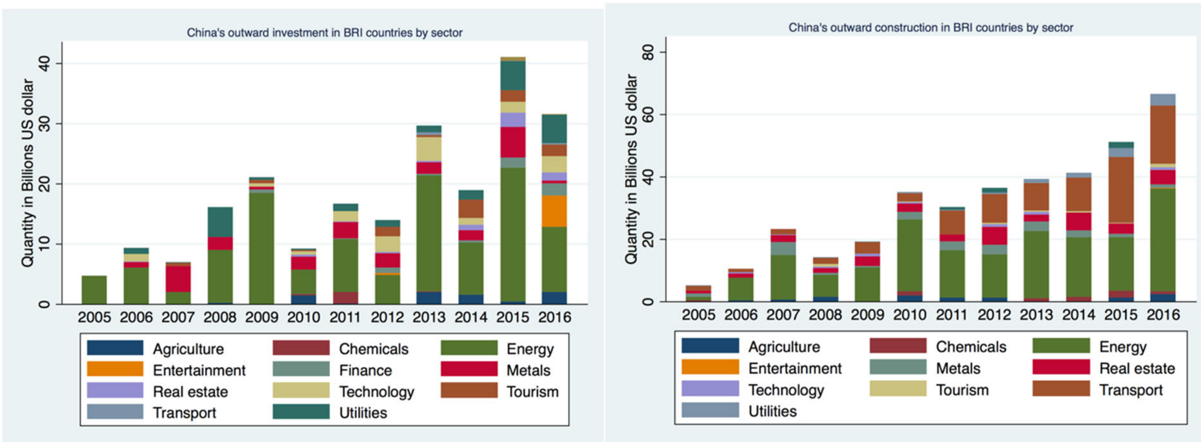

Figure 10: Trends of China's outward investment and construction contracts in BRI countries by sector

The above finding is summarized below:

Stylized fact 3: *Energy continues to be the leading sector in both China's ODI and construction contracts.*

From 2014 to June 2017, data from CGIT show a total of $170.11 billion investment in construction projects and $99.87 billion investment to BRI countries. Table 1 and Table 2 list the top 10 investment transactions and construction projects from China to BRI since the introduction of the BRI. For some of the smallest BRI countries, China provided an important source of external finance. For instance, the Lao People's Democratic Republic, GDP was 15.9 billion in 2016. China's railway investment in Lao PDR in 2017 represents about 16 percent of Lao PDR's annual GDP.

Table 1: China's top 10 investment transactions in BRI countries since 2014

Year-Month	Investor	Transaction Partner	Country	Sector	Subsector	Value (million USD)
2015-11	China General Nuclear	Edra	Malaysia	Energy		5960
2016-08	Shanghai Giant-led consortium	Playtika	Israel	Entertainment		4400
2017-04	China Railway Corp, China Railway Engineering		Lao PDR	Transport	Rail	2560
2016-04	Zhuhai Zhenrong		Myanmar	Energy	Oil	2100
2015-05	Shanghai International Port	Haifa	Israel	Transport	Shipping	1990
2016-03	China Railway Engineering		Malaysia	Transport	Rail	1970
2015-05	Zhongrun Resources		Mongolia	Metals	Steel	1940
2017-02	CNPC		United Arab Emirates	Energy	Oil	1770
2015-07	Southern Power and State Power Investment	Vinacomin	Vietnam	Energy	Coal	1760

2014-12	Jiangsu Changjiang	STATS ChipPAC	Singapore	Technology		1660

Source: China Global Investment Tracker.

Table 2: China's top 10 construction projects in BRI countries since 2014

Year-Month	Constructor	Transaction Partner	Country	Sector	Subsector	Value (million USD)
2017-04	China Railway Engineering		Indonesia	Transport	Rail	3190
2016-08	China Railway Engineering		Bangladesh	Transport	Rail	3140
2015-12	State Construction Engineering		Pakistan	Transport	Autos	2890
2015-08	China Railway Construction and China Railway Engineering		Thailand	Transport	Rail	2840
2016-01	Shanghai Electric		Egypt, Arab Rep.	Energy	Coal	2640
2017-04	CNPC		Russian Federation	Energy	Gas	2520
2016-01	Three Gorges		Pakistan	Energy	Hydro	2400
2016-06	Harbin Electric	DEWA	United Arab Emirates	Energy	Coal	2150
2016-11	China Railway Contruction, China Railway Engineering, and China Communications Construction		Malaysia	Transport	Rail	2120
2016-03	Sinomach	Electricite du Laos	Lao PDR	Energy		2100

Source: China Global Investment Tracker.

3.2 Transportation Cost

To measure transportation costs, we construct detailed transportation cost data by the mode of transportation. First, we measure air distance using the population-weighted great-circle distance from the CEPII GeoDist data set. Second, we measure sea distance using data from Feyrer (2009).[10] Lastly, we construct road distance and driving time data using Google Maps Distance Matrix API.[11]

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[10] We thank Jim Feyrer for kindly sharing the data.

[11] In a related project, Baniya et al. (2018) examine the role of BRI in international trade by estimating the effects of driving time reductions. We thank Michele Ruta for the valuable suggestion of looking at driving time as a measure of transportation cost.

For the 4,434 source-host pairs in our sample, all pairs have air distance, 2,715 pairs have sea routes, and 2,366 pairs are connected in Google Maps Distance Matrix.

We find that unit transportation costs vary significantly across regions. One measure for unit transportation cost is average driving distance per hour within each region, which depends on the quality of road as well as congestion.

Using the driving distance and driving time data from Google, we calculated the average driving distance per hour for each WBG region using source-host pairs located within the same region. To see how BRI countries compare with these regions, we report the average driving distance for BRI and non-BRI in Table 3 and Figure 11. We find that North America has the highest driving speed, around 103 km per hour, followed by the Middle East & North Africa (89 km per hour) and Europe & Central Asia (88 km per hour). South Asia has the lowest driving speed among all the regions with an average of 41 km per hour. BRI countries fall behind North America, MENA and ECA regions with an average of 85 km per hour.[12]

Table 3: Driving speed across regions

Region	Driving Speed (km per hour)
East Asia & Pacific	57.62335
Europe & Central Asia	88.189293
Latin America & Caribbean	70.214012
Middle East & North Africa	89.411758
North America	103.63007
South Asia	41.549953
Sub-Saharan Africa	69.450729
Non BRI	77.015732
BRI	85.389648

[12] For some country pairs in the East Asia & Pacific region, the drive route involves a ferry. For example, driving from Brunei to Singapore requires a ferry from Sampit to Surabaya.

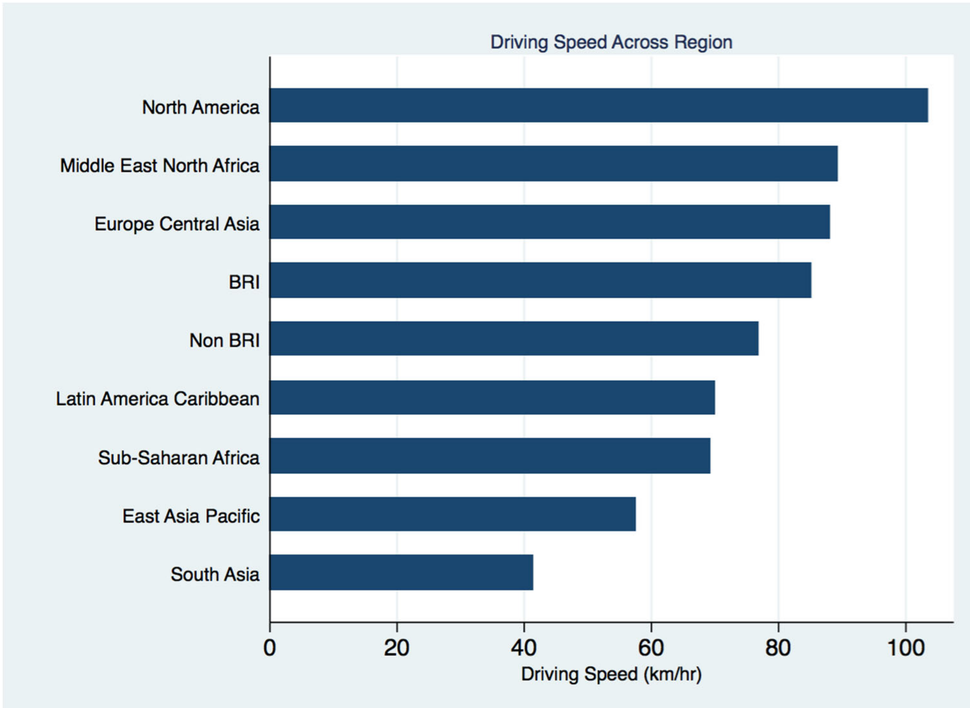

Figure 11: Average driving distance per hour across regions

We also construct measures of transportation infrastructure using data from the World Development Indicators (WDI). For railway and airway, WDI reports information on each country's goods transported (million tons per km) and passengers carried (million per km) in a given year. We normalize both of these measures by population and rescale them from 1 (inadequate capacity) to 100 (adequate capacity) across UNCTAD sample countries and sample years to form two indicators. We then take the average of the two sub-indicators as a railway index to proxy for the railway infrastructure quality. While horizontal FDI relies mostly on destination's infrastructure, vertical FDI would rely on both host and source countries' transportation infrastructure. Therefore, for each source-host pair, we construct a pair-year specific "railway index (OxD)" as the product of the logged host railway index and the logged source railway index.[13] Airway index is constructed using a similar approach. We construct the sub-indices based on the goods transported and the passengers carried normalized by the country population. The average of the two indices is then constructed as the airway index. The pair-year specific "airway index (OxD)" is the product of the logged host airway index and logged source airway index. We also measure port quality using WDI's port quality index.

Similar to land transportation cost, we observe significant regional differences in infrastructure adequacy. Using the constructed railway index and airway index and WDI's the quality of port index, we report country averages by region and by BRI for year 2012 in Table 4. As shown, there is a clear and positive correlation between income level and infrastructure quality. Not surprisingly, all infrastructure indicators tend to be higher for higher-income countries. Comparing BRI countries with the other country groups, we notice that while the average infrastructure quality of BRI countries is below that of high income countries and BRI's railway index falls slightly below that of

[13] See Blyde and Molina (2015) for a similar approach to measure logistics infrastructure quality.

upper middle income countries, its airway index and quality of port index are above upper middle income countries. We also report the averages of the three indexes across WBG regions in Table 5 and find that BRI countries are behind North America, East Asia & Pacific and Europe & Central Asia regions but fare better than Latin America & Caribbean, South Asia, and Sub-Saharan Africa.

Table 4: Transport Infrastructure Proxies Average across Income Groups (2012)

	BRI	Non-BRI	High income	Upper middle income	Lower middle income	Low income
Railway index	11.880	13.469	18.479	12.260	6.544	1.173
Airway index	3.460	3.794	8.304	2.060	1.319	1.071
Quality of Port	4.095	4.405	5.304	3.805	3.703	3.541

Table 5: Transport Infrastructure Proxies Average across Region Groups (2012)

	BRI	Non-BRI	EAP	ECA	LAC	MENA	NA	SA	SSA
Railway index	11.880	13.469	13.151	17.204	3.158	4.228	28.904	7.940	2.370
Airway index	3.460	3.794	4.840	4.899	2.342	5.381	6.627	1.188	1.253
Quality of Port	4.095	4.405	4.740	4.462	3.877	4.531	5.650	3.860	3.875

Zooming into BRI, we also observe a consistent pattern within BRI countries that higher income countries also tend to score higher on the transportation index. The exception is for the railway index, where we found upper middle incomes BRI has higher score than high income groups. This is because Russia has one of the longest railway systems, and one of the highest freight volumes hauled in the world. When we exclude Russia from the calculation, the average of railway index for the upper middle income group drops to 11.46, a level that is close to BRI's overall average. In addition, we found that BRI's high income countries score lower than the world's high income countries in all three types of infrastructure. We report each BRI country's infrastructure proxies score in the appendix.

Table 6: Infrastructure Proxies within BRI countries based on countries income

Country Income	**Railway**	**Airway**	**Port Quality**
High Income	12.702	7.402	5.011
Upper Middle Income	14.963	1.939	3.782
Lower Middle Income	8.0430	1.335	3.500
Low Income	NA[14]	1.110	2.700

In the next table, we calculate the averages for the 6 corridors in BRI, while these 6 corridors do not cover every BRI country, they cover countries whose geographic locations have strategic

14 Afghanistan and Nepal are the only low-income countries within BRI. For both countries, data for railway goods transported and passengers transported are missing.

importance. These 6 corridors are:

Table 7: BRI corridor definitions

Corridor:	Countries:
China, Pakistan Economic Corridor	China, Pakistan
China, Mongolia, Russian Federation Economic Corridor	China, Russian Federation, Mongolia
New Eurasian Land Bridge Economic Corridor	China, Berlarus, Kazakhstan, Kygyzstan, Poland, Czech Republic, Romania, Ukraine, Slovak Republic, Moldova,
China, Central Asia, West Asia Economic Corridor	China, Russian Federation, Afghanistan, Azerbaijan, Georgia, Islamic Republic of Iran, Kygyzstan, Tajikistan, Turkey, Turkmenistan, Uzbekistan
China, Indochina Peninsula Economic Corridor	China, Cambodia, Lao PDR, Malaysia, Myanmar, Singapore, Thailand, Vietnam
Bangladesh – China-India-Myanmar Economic Corridor	China, Bangladesh, India, Myanmar

Overall, we see intra-BRI variation across corridors. The China, Mongolia, and Russia Corridor scores the highest in terms of railway infrastructure index, while the China, Indochina Peninsula Economics Corridor scores the highest in terms of port quality and airway. For railway infrastructure, the China, Central Asia, West Asia Economic Corridor appears to be the weak link.

Table 8: Infrastructure Proxies within BRI countries based on corridor

Corridor	Railway	Airway	Port Quality
China, Pakistan Economic Corridor	11.022	1.363	4.400
China, Mongolia, Russian Federation Economic Corridor	36.440	1.752	3.700
New Eurasian Land Bridge Economic Corridor	22.175	1.399	3.444
China, Central Asia, West Asia Economic Corridor	5.867	1.518	3.471
China, Indochina Peninsula Economic Corridor	6.959	3.973	4.817
Bangladesh – China-India-Myanmar Economic Corridor	18.527	1.279	4.200

The above observations are summarized below:

Stylized fact 4: *The infrastructure quality of BRI countries is, on average, lower than that of developed countries and regions including NA, ECA and EAP and exhibits great heterogeneity within BRI.*

3.3 FDI Regulations and Trade Agreements

In addition to transportation and infrastructure data, we also obtain information on FDI regulations and trade and investment agreements. To measure FDI regulations across countries, we use the Investing Across Borders data set, which compares FDI laws and regulations across 87 economies. It presents quantitative indicators on economies' laws, regulations, and practices affecting how foreign companies invest across sectors, start businesses, access industrial land, and arbitrate commercial disputes:

Specifically, it includes the following indices:

- Investing Across Borders: its offers measures of statutory restrictions on foreign ownership of equity in new investment projects (greenfield FDI) and on the acquisition of shares in existing companies (mergers and acquisitions).
- Starting a Foreign Business: it quantifies the procedural burden that foreign companies face when entering a new market. It comprises 3 components measuring the time needed, procedural steps required, and regulatory regime for establishing a foreign-owned subsidiary.
- Accessing Industrial Land: it quantifies several aspects of land administration regimes important to foreign companies seeking to acquire land for their industrial investment projects, including the strength of land rights, the scope of available land information, and the process of leasing land in a country's largest business city.
- Arbitrating Commercial Disputes: it reflects different aspects of domestic and international arbitration regimes in each country applicable to local and foreign companies, including the strength of the legal framework for alternative dispute resolution, rules for the arbitration process, and the extent to which the judiciary supports and facilitates arbitration.

Figure 12 compares BRI countries with non-BRI countries as well as high-income OECD countries in the above FDI policy indicators.[15] For each indicator, a higher score implies better performance and more attractiveness to foreign investors.

Figure 13 shows a comparison of FDI openness at the sector level.[16] A few patterns emerge from the data. First, in terms of foreign ownership restrictions, BRI countries, on average, are more restrictive than non-BRI countries and high-income OECD countries. Moreover, as shown in Figure 13, the degree of openness varies across sectors: service sectors such as construction, tourism, retail, media, banking, insurance and telecom tend to see more restrictions in BRI countries than in non-BRI or high-income OECD countries.

Second, BRI countries, on average, impose more restrictions and burdens than OECD high-income countries on starting a foreign business, accessing industrial land, and arbitrating commercial disputes. The gap from high-income OECD countries is particularly pronounced. For example, while the ease index of starting a foreign business is around 80 in high-income OECD, it is around 70 in BRI countries.

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[15] The value of each index is based on the average value of sub-indices.

[16] Table A.5 reports the summary statistics of the Investing across Borders data.

Third, when comparing the top 10 and bottom 10 BRI countries in FDI policy, we observe a large heterogeneity within BRI as shown in Tables A.6-A.9. For example, it takes around 16 days to lease land in the Philippines, but more than two-thirds of a year (259 days) to lease land in Afghanistan. While Georgia fully opens all its sectors to foreign investment, Thailand only scores 52 in the openness index.

These observations are summarized below:

Stylized fact 5*: FDI policy is more restrictive in BRI countries than in high-income countries, in terms of starting a foreign business, accessing industrial land, and arbitrating commercial disputes, and exhibits great heterogeneity across BRI members.*

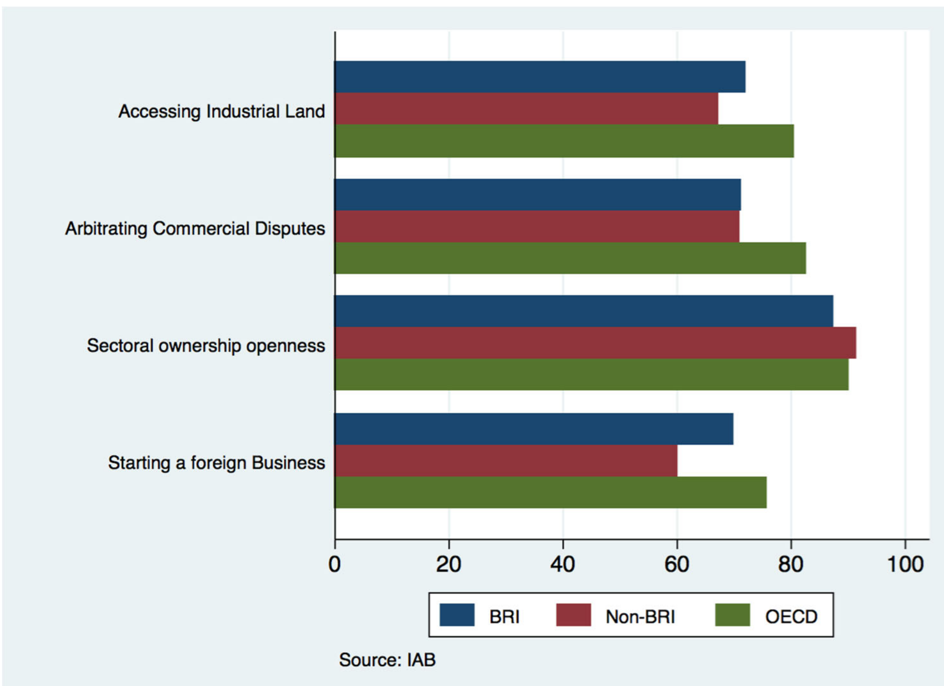


Figure 12: FDI policy in BRI, Non BRI and High income OECD countries

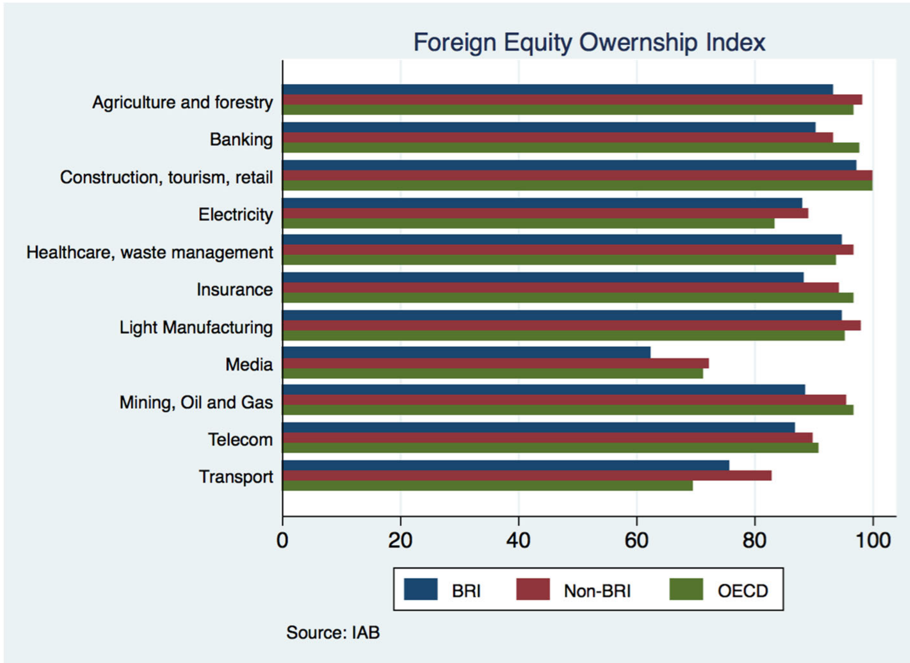


Figure 13: Sectoral openness to FDI across sectors

In addition to FDI policy, we also examine BRI countries' participation in preferential trade agreements (PTAs) and international investment agreements (IIAs). We obtain the PTA data from the WTO RTA database and the World Bank PTA data, which provide contents and enforcement dates of PTAs across countries. We examine not only the volume of PTAs but also the depth of the agreements. Specifically, following Rocha et al (2017), we define the depth of a PTA as the number of provisions that can be legally enforceable. Trade agreements are classified as either deep or shallow agreements, with shallow agreements concerning only the removal of border barriers to trade and deep agreements involving policies and institutions that facilitate trade.

Figure 14 plots the number of PTAs (on the left panel) and the average depth of PTAs (on the right panel) in BRI vs non BRI countries. It is clear that while the two groups account for a similar number of PTAs, BRI countries' PTAs are significantly shallower.

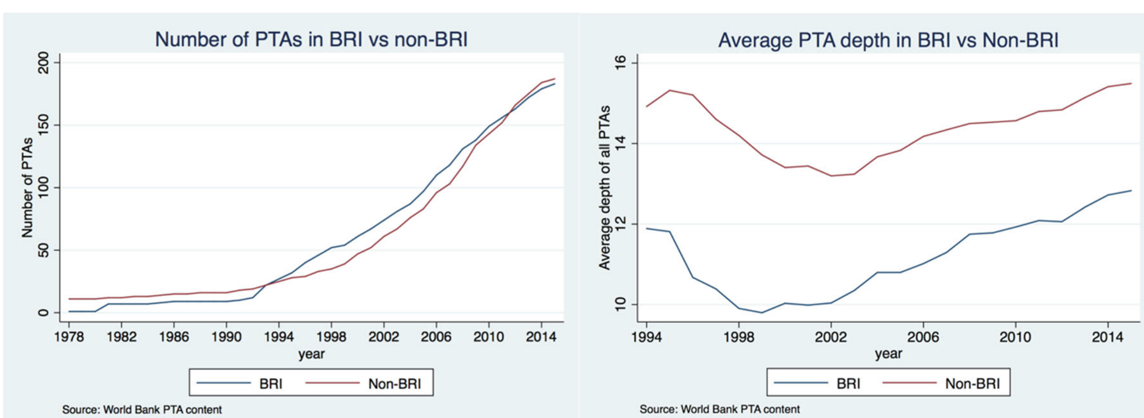


Figure 14: Trends of PTAs in BRI vs non BRI countries

Zooming in on BRI countries, the rapid increases in number of PTAs in BRI since 1994 are mainly driven by the increase in BRI countries that are in the ECA region. Figure 15 shows that for ECA the number of PTAs increased from 7 in 1992 to 110 in 2015. As the main receiver of BRI FDI inflow and the main driver of FDI outflow, BRI countries in EAP did not increase the number of PTAs until 2002. The rapid increase in PTA depth in 2002 coincides with the rapid increase in FDI inflow and outflow as shown in Figure 4. While EAP does not have fewer PTAs, its PTA depth is however deeper than that of the ECA region since 2002.

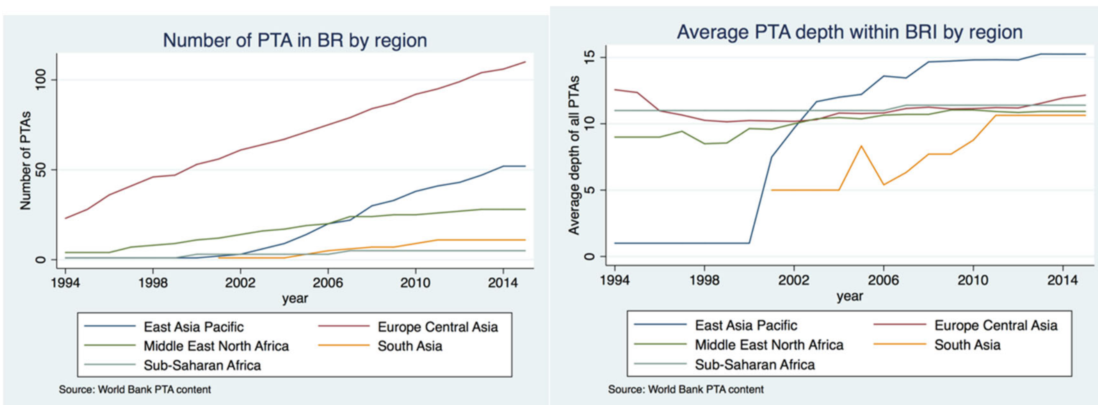


Figure 15: Trends of PTAs among BRI countries

Figure 16 plots the depth of PTA across BRI members. There is a large variation across countries: the top countries' PTA depth averages around 17 while the bottom countries' PTA depth averages less than 5. China's average PTA depth ranks 17th within BRI countries. At the top of the ranking are mainly Eastern European countries such as Slovenia, Slovak Republic, Romania, Poland, Latvia, Hungary, Estonia, and Czech Republic.

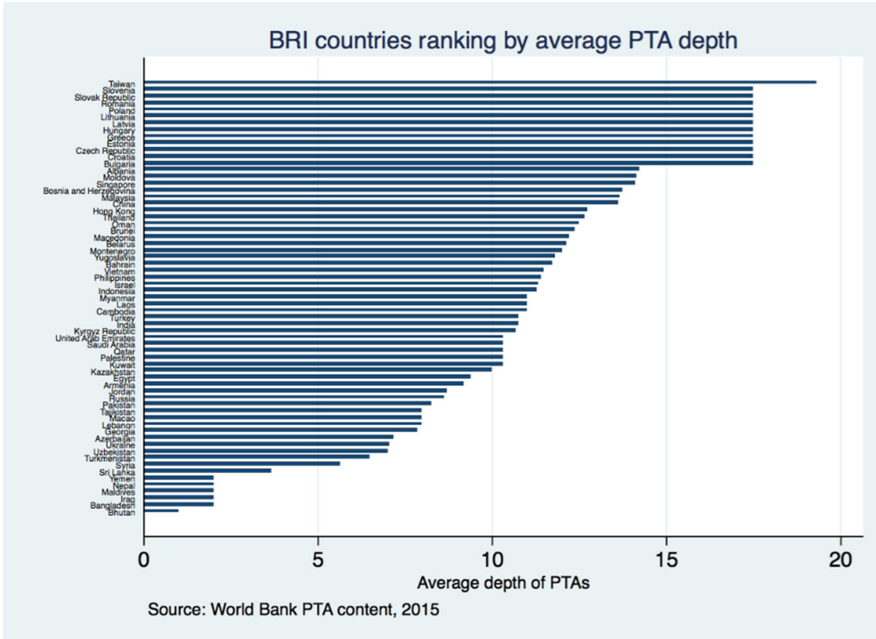


Figure 16: Average PTA depth among BRI countries

3.4 Other Country Characteristics

Finally, we obtain data on several key country-level economic variables for evaluating the impacts of FDI, including, for example, productivity, employment, wages, and exports. Sources for these variables include Conference Board's Total Economy database, International Labor Organization's ILOSTAT database, and World Development Indicators.

To examine the determinants of FDI inflow into BRI countries, we also obtain country characteristics such as GDP, GDP per capita, infrastructure, human capital (host and source country difference in secondary school enrollment), and institutional quality, all of which are available from the World Development Indicators (WDI). Gravity variables including, for example, distance, contiguity, and language are available from CEPII's GeoDist database. Lastly, industrial level skill intensity is obtained from NBER-CES Manufacturing Industry Database. Table A.14 lists all the related variables and their sources.

4. Empirical Evidence

In this section, we assess empirically the determinants of foreign investment, in particular, the roles of transportation cost and infrastructure. We explore the heterogeneity across different types of transportation cost and infrastructure as well as across countries and time and examine how the roles of geographic connectivity might vary with transportation technology and across countries. Based on the empirical findings, we then estimate the impact of BRI on countries' ability to attract FDI by reducing different types of transportation cost and improving host-country infrastructure.

4.1 The Determinants of FDI

We examine the determinants of FDI flows using the gravity-type empirical specification that has been widely used in previous studies such as the seminal work by Markusen et al. (2001) and Yeaple (2003). The specification is as follows:

$$BilateralFDI_{ijt} = \alpha_1 + \alpha_2\, MktSize_{ijt} + \alpha_3\, HCdiff_{ijt} + \alpha_4\, Transport_{ij} + \alpha_5 Infrastructure_{ij} + \alpha_6 PTAdepth_{ij} + \alpha_7\, X_{ij} + D_i + D_j + D_t + \epsilon_{ijt} \qquad (1)$$

where subscripts i and j index host and parent countries, respectively, and the subscript t indexes year, BilateralFDI is the bilateral FDI flow from country i to country j, MktSize a vector of GDP of the host and source countries, HCdiff measures the host and source countries' difference in human capital, Transport is a vector of transportation cost measures between country i and country j including air distance, sea distance, driving distance and driving time, Infrastructure is a vector of indices that measure the quality of trade-related logistic infrastructure including railway, airway, and port quality, PTAdepth measures the depth of the trade agreement between the host and source countries using the WTO RTA data, X is a vector of other country characteristics including a dummy variable for sharing border, a dummy for using same language, a dummy for sharing colonial ties, and a measure of business environment using the number of days required to start a business, D_i and D_j are vectors of country dummies used to control for all time-invariant country characteristics, and D_t ia a vector of year dummies.

Figure A.3 shows positive and statistically significant correlations between FDI inflows and host countries' GDP per capita, school enrollment, logistics performance, and port infrastructure quality. Countries with a higher income, higher levels of human capital, and better logistic and port infrastructure quality are shown to receive greater FDI inflows.

To examine empirically the effects of host-country economic characteristics, we estimate equation (1) first for a pooled sample of countries and then separating BRI and non-BRI countries to investigate how the determinants of investment flows might vary between BRI and the rest of the world.

Table 9 shows that most of the empirical regularities established in previous studies hold in our broad cross-country data. Most of the factors that have been considered in the literature exert significant and expected effects. As in earlier studies, transportation costs between source and host countries are found in general to reduce FDI, but the effect varies significantly by the mode of transportation. A 1-percent increase in air distance is associated with 0.7-1 percent decrease in the volume of FDI. Land transportation cost, measured by either driving distance or driving time, is also found to exert a significant and negative effect: a 1-percent increase in driving time, for instance, leads to a close to 1-percent decrease in FDI. In contrast, the effect of sea distance is weaker (insignificant in some specifications): a 1-percent increase in sea distance is related to around 0.1-percent decrease in FDI flows.

Infrastructure quality is found to matter: the results show a significant and positive relationship between each of the three infrastructure quality measures, namely, railway, airway and port qualities, and FDI inflows. Countries with higher railway and airway indices and better ports tend to attract a greater volume of FDI. For example, improving the level of railway index from BRI countries (11.8) to the level of high-income countries (18.5) is associated with 4.3 percent increase in FDI flows.

Logistics performance of the source-host pair is also found to be matter: a one-percent increase in the logistics performance index leads to 0.1 to 0.2 percent increase in FDI flows.

Most other country characteristics including market size, contiguity, common language, and colonial ties are also found to exert expected effects. Countries with a larger market size not only attract more FDI but also invest more abroad. Country pairs with contiguity, common languages, or colonial ties are also shown to have greater investment flows. However, the PTA depth is found in Table 9 to have only a weakly positive effect on FDI.

In Table 10, we repeat the analysis using a Poisson Pseudo Maximum Likelihood (PPML) Estimator following Santos Siliva and Tenreyro (2006) to address the zero FDI values in the data sample. The results are qualitatively similar. Both air transportation and land transportation costs, proxied by either distance or driving time, have a significant and negative effect on FDI flows. The effect of sea distance is largely insignificant. The PTA depth in this table is found to be positively and significantly associated with FDI flows, suggesting that deeper trade agreements that cover more provisions have a stronger effect on FDI flows.

We also separately examine FDI flows from OECD source countries using a longer time series of OECD FDI statistics. The results on transportation costs shown in Table 11 are qualitatively similar to Table 9. The elasticities of FDI with respect to air distance, driving distance, and driving time are found to be all around -1 for OECD source countries. The elasticity of FDI with respect to sea distance is also found negative and significant, albeit much smaller in magnitude and around -0.1. OECD countries' FDI outflows are also responsive to host countries' airway and port qualities, but insignificantly related to railway. The PTA depth exerts a significant and positive effect on OECD countries' FDI flows.

Next, we explore how the effects of distances have evolved over time given the technological improvements in transportation. To do so, we interact the three transportation measures with a vector of dummies that divide the time series into six 5-year windows and allow the distance elasticity of FDI to vary over time. The results are reported in Table 12 and Figure 17. We find that while the sea distance elasticity of FDI has remained stable in the last three decades, there has been a significant rise in the elasticities of FDI with respect to air distance and driving time, with the estimates nearly doubled. This result, in alignment with Feyrer (2009) which shows similar findings for trade, can be explained by the endogenous selection of goods into the different transportation mode and the increasing usage of air and railway transportation with the technological improvement in air and rail transportation and the proliferation of GVCs. Exporters tend to choose air and rail for goods that are more time sensitive and sea for goods that are less time sensitive. Hence, when there is a change in travel time, goods will respond more to travel time in air and railway than in sea. Over time, with falling air and rail transportation costs and an increasing prevalence of GVCs and intermediate trade, more exports are carried out by air and rail than sea, leading to a growing importance of air and land transportation cost in FDI growth.

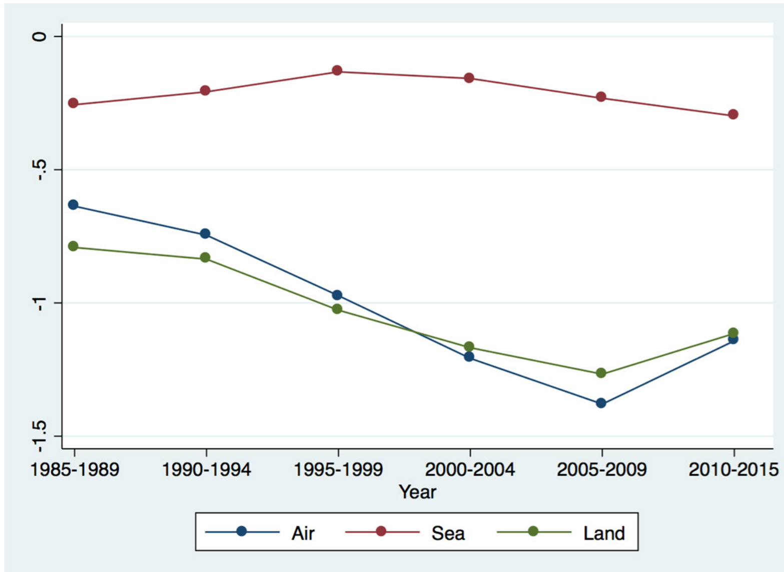


Figure 17: The Distance Elasticity of FDI over Time

4.2 Heterogeneity across Host Country Groups

Next, we examine how the determinants of FDI, in particular, the effects of transportation cost and infrastructure, vary across country groups and regions. First, we compare BRI countries with developed and developing countries, respectively. We find in Table 13 that compared to developed countries, FDI inflows to BRI countries tend to be more sensitive to air transportation as well as land transportation costs. The air distance elasticity of FDI is -1.1 and -0.6 for BRI and developed countries, respectively. The driving time elasticity of FDI is -1.2 for BRI countries, in comparison to -1.1 among developed countries. However, the BRI countries' elasticities are slightly smaller than the average elasticities of developing and least developed countries, which are estimated to be -1.2 and -1.3 for air distance and driving time, respectively. Another notable difference is the effect of PTA depth. The level of PTA depth does not exhibit a significant relation with FDI flows for BRI host countries while a positive and significant relation is found for developed countries as well as the pooled sample of developed and least developed countries.

We then proceed by separately considering the different geographic regions. Table 14 reports the regional comparison. We find that BRI countries' air distance elasticity of FDI (-1.1) is smaller than the elasticity estimated for Europe and Central Asia (-1.4) and Latin America (-1.6). The driving time elasticity of FDI is estimated to be -1.2 for BRI countries, smaller than the estimates for North America (-7.8) and Europe and Central Asia (-1.5).

Next we distinguish between intra-BRI FDI flows and FDI flows to BRI from the rest of the world. We show in Table 15 that compared to intra-BRI FDI flows, FDI flows from OECD countries exhibit greater sensitivities to air and land transportation costs, suggesting that reductions in these transportation costs could offer a greater stimulus to investments from OECD. Similarly, FDI flows from OECD are more responsive to airway and port qualities.

We then examine country heterogeneity within BRI countries. Table 16 shows that the effects of transportation cost and infrastructure vary significantly across countries within BRI. A reduction of driving time is found to have the strongest positive effect on FDI in Middle East and North Africa followed by Europe and Central Asia and no significant effect in East Asia Pacific, South Asia and Sub-Saharan Africa. Longer railway is found to have a significant positive effect in South Asia and Middle East and North Africa, but not in the other regions. A better airway index significantly attracts more FDI in East Asia Pacific and Europe and Central Asia, but not in the other regions. The effect of port quality is found to be the strongest for Sub-Saharan Africa, albeit statistically insignificant, followed by Middle East and North Africa and South Asia.

When interacting transportation cost, for instance, driving time with country characteristics, we find in Table 17 that the elasticity of FDI flow with respect to transportation cost rises with host country GDP and the number of days to start a business. FDI flows to countries with a larger market size and less efficient business environment appear to be more affected by transportation cost. The results also suggest that the positive FDI effect of reduced transportation cost can be magnified when accompanied by an improvement in business regulatory environment.

Next, we consider alternative measures of transport cost obtained from de Soyres et al. (2018) which use a network analysis to measure the shortest time needed to travel from one country to another and its implied ad valorem trade cost taking into account the quality and quantity of physical infrastructure, physical obstacles (e.g., rough terrain) and borders, and relative performance measures (e.g., rail service frequency). de Soyres et al. (2018) also compute the measures for both before and after the implementation of BRI taking into account the proposed transportation network as part of BRI.[17]

Tables 18 and 19 report the estimation results using the travel time and ad valorem measures, respectively. The results suggest that reducing travel time by one day can increase total FDI inflows to BRI countries by 7 percent, FDI flows within BRI countries by 6 percent, FDI flows from OECD countries to BRI countries by 8 percent, and FDI flows from non-BRI countries to BRI countries by 8 percent.

When using the ad valorem time barrier measure, the results suggest that a 10-percent decrease in the ad valorem time barrier is associated with a 11-percent increase in total FDI inflows to BRI countries, a 10-percent increase in intra-BRI FDI flows, a 13.2-percent increase in FDI flows from OECD to BRI countries, and a 13.3-percent increase in FDI flows from non-BRI to BRI countries.

4.2 Determinants of Chinese ODI

In this sub-section, we focus on China's outward investment; given the available information in the CGIT data set, we can differentiate China's investment across types and sectors. This enables us to explore potential interactions between China's construction contracts and its ODI and how the former might serve as a catalyst for the latter.

For China's investment, the following specification is considered:

$$ChinaFDI_{jt} = \alpha_1 + \alpha_2\, MktSize_{jt} + \alpha_3\, SkillDiff_{jt} \\ + \alpha_4\, Transport_j + \alpha_5 Infrastructure_j + \alpha_6 PTAdepth_j + \alpha_7\, Construction_{jt-1}$$

[17] We thank the authors for kindly providing the shipment time and trade cost estimates.

$$+ D_j + D_t + \epsilon_{ijt} \qquad (2)$$

where *Construction* represents the value of China's construction contracts in a given host country. Both contemporaneous and lagged values are considered in the analysis.

As shown in Figure 18, we observe a positive and significant correlation between China's construction projects and outward investment. As reported in Table 18, a 10-percent increase in the value of construction contracts is associated with an increase in outward investment by 7 percent in the same year, 11 percent the next year, and 16 percent in two years. This result suggests that investments in infrastructure could serve as an effective catalyst for attracting foreign investments in manufacturing and service sectors.[18]

Figure 18 shows a positive and significant correlation between China's construction projects and outward investment. As reported in Table 20, a 10-percent increase in the value of construction contracts is associated with an increase in outward investment by 7 percent in the same year, 11 percent the next year, and 16 percent in two years. This result suggests that investments in infrastructure could serve as an effective catalyst for attracting foreign investments in manufacturing and service sectors.[19]

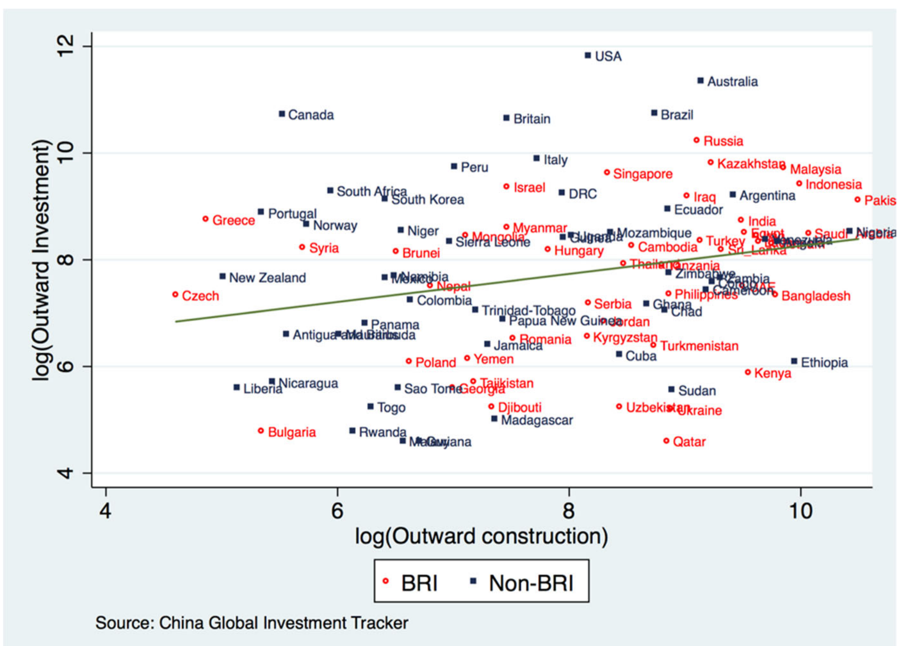


Figure 18: The correlation between China's outward investment and construction contracts (based

[18] In addition to the synergies between infrastructure investment and FDI, there also exist positive synergies in the location decisions of multinational firms. Alfaro and Chen (2014), for example, show multinational firms from industries with greater agglomeration economies tend to agglomerate overseas.

[19] In addition to the synergies between infrastructure investment and FDI, FDI in different industries can also exhibit positive synergies. Alfaro and Chen (2014), for example, show multinational firms from industries with greater agglomeration economies such as stronger production linkages and knowledge spillover tend to agglomerate overseas.

on aggregate values from 2005-2016)

Airway and port infrastructure also play a significant role in attracting Chinese foreign investment. Interestingly, a positive relationship is observed between the host-country number of days required to start a business and the volume of FDI flows from China. PTA depth, on the other hand, does not have a significant relation with China's investment flow.

4.3 Missing FDI

In this sub-section, we examine countries' potential as FDI destination countries and how their potential compares to the realized value of FDI inflow. We refer to the difference between FDI potential and realized FDI as missing FDI. Specifically, we obtain predicted values of FDI based on the baseline estimation results reported in Table 13 and compute the difference between the predicted value of FDI based on each country's characteristics and the estimated effects of these characteristics on FDI and the country's actual value of FDI.

Figure 19 plots the ratio of missing FDI relative to actual FDI by country groups. We find the ratio to be the highest (around 4.6) for low-income countries and substantially lower for the rest of the country groups and lowest for the upper-middle income group. Within BRI, we notice that the ratio of missing FDI relative to actual FDI is around 0.7 on average, suggesting a significant potential for attracting additional foreign investment.

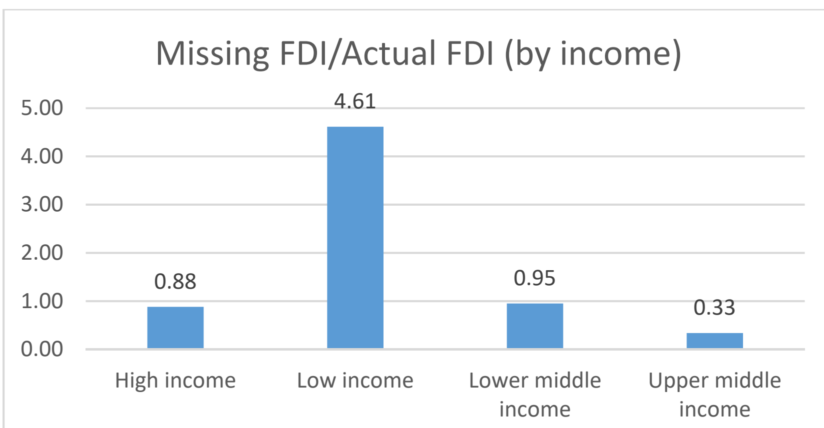


Figure 19: Missing FDI across Countries

4.4 Quantifying the FDI Impact of BRI

Based on the above empirical results, we now estimate the impact of BRI on countries' ability to attract FDI by reducing transport costs and improving host-country infrastructure. The results in Table 15, in particular, the elasticity of FDI with respect to driving time estimated for BRI host countries, suggest that a 10-percent decrease in driving time between host and source countries could increase FDI flows by 12 percent. Specifically, a 10-percent decrease in driving time could increase intra-BRI FDI flows by about 11.7 percent, FDI flows from OECD by 13.4 percent, and FDI flows from all non-BRI countries by 9.1 percent.

If an improvement in road quality reduces unit driving time in BRI countries to the average level in Europe and Central Asia, total FDI inflow in BRI countries could increase by about 3.6 percent, with 3.5 increase in intra-BRI FDI flow, 4 percent increase in FDI from OECD countries, and 2.7 percent increase in FDI from all non-BRI countries.

The results also suggest that improving the port quality from the current BRI country level (4.1) to the level of high-income countries (5.3) would lead to 10-percent increase in total FDI inflow, 10-percent increase in FDI from OECD countries and 12-percent increase in FDI from non-BRI countries. The effects on intra-BRI FDI are statistically insignificant.

Based on the upper-bound estimates in de Soyres et al. (2018), the BRI proposed transportation network can lead to an average reduction of travel time by 0.69 day, or equivalently, around 3.2 percent for BRI destination countries. The estimated travel time reduction varies by origin and is slightly higher for trade within BRI country pairs (3.9 percent) and lower for trade from OECD origins (2.9 percent). Based on the estimates reported in Table 18, the estimated travel time reductions are associated with a 4.97-percent increase in total FDI flows to BRI countries, a 4.36-percent increase in FDI flows within BRI, a 4.63-percent increase in FDI flows from OECD countries, and a 5.75-percent increase in FDI flows from non-BRI countries. Across BRI regions, the proposed BRI transportation network is estimated to increase FDI flows to BRI's East Asia Pacific region by 6.25 percent, Europe and Central Asia by 4.7 percent, Middle East and North Africa region by 3.37 percent, South Asia by 5.19 percent, and 7.47 percent in Sub-Saharan Africa, as shown in Figure 20.

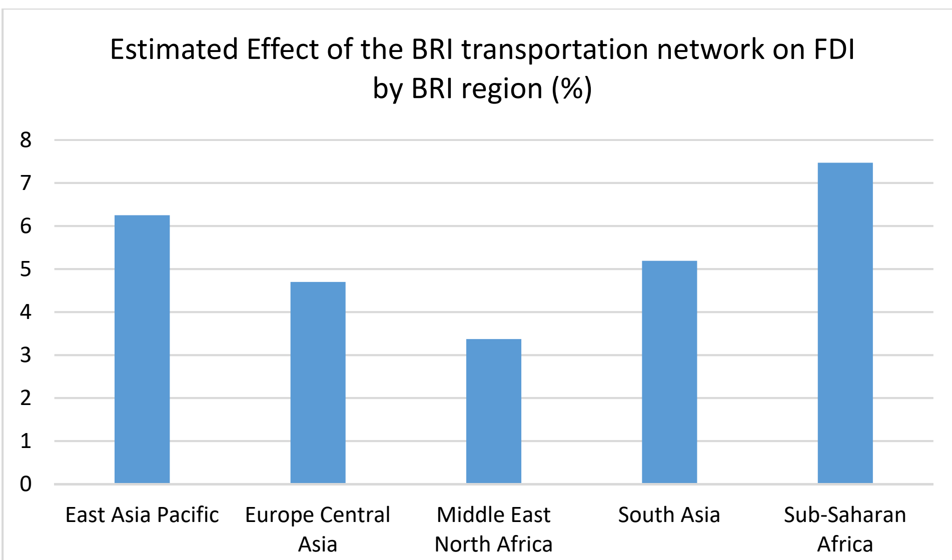


Figure 20: The estimated effects of the BRI transportation network on FDI by BRI region

4.5 The Economic Growth Effects of FDI

Next we examine how investment inflows influence host-economy economic growth including the growth of GDP, TFP, technology and trade, taking into account the endogenous patterns of investments.

Specifically, we consider the following specification:

$$\Delta Growth_{jt} = \beta \widehat{FDI_{jt-1}} + \mu X_{jt-1} + \lambda_j + \lambda_t + \epsilon_{jt} \quad (3)$$

where $\Delta Growth_{jt}$ represents ΔGDP_{jt}, ΔTFP_{jt}, $\Delta Tech_{jt}$ $\Delta Employment_{jt}$, $\Delta Export_{jt}$ and $\Delta Import_{jt}$, respectively, which are measured by growth in GDP, total factor productivity, number of patent applications, employment, exports, and imports of host country j at year t, $\widehat{FDI_{jt-1}}$ is either the actual value or the instrumented value of total investment inflow in country j and year t-1, the coefficient β is the coefficient of interest, and X_{jt-1} is a vector of other variables that might affect the economic outcomes of interest.

A central challenge in evaluating the economic growth effects of FDI is the endogeneity of FDI flows arising from either its correlations with unobserved factors that could similarly affect economic growth or potential reverse causality between FDI and economic growth. This challenge is particularly difficult to overcome in cross-country analysis for two reasons. First, most country economic characteristics are directly associated with both FDI and economic growth and thus cannot serve as instruments for FDI. Second, some of the instruments that have been considered in recent literature such as Alfaro and Chen (2018) explore supply-side variations across multinational firms and require detailed firm-level operation and investment data that are usually unavailable across a wide range of countries.

In this analysis, we follow the identification strategy employed in Autor et al. (2014) when evaluating the employment effects of imports and instrument FDI inflow to a host country with average FDI inflow to countries that have similar income levels and are located in the same geographic region as the host country. The motivation is to explore variations on the supply of investment which would influence FDI flows to similar countries but are less likely to be associated with economic growth in a particular country via other, non-FDI related channels. We then evaluate how the instrumented FDI inflows affect host-country economic growth and how the effects might vary across countries.

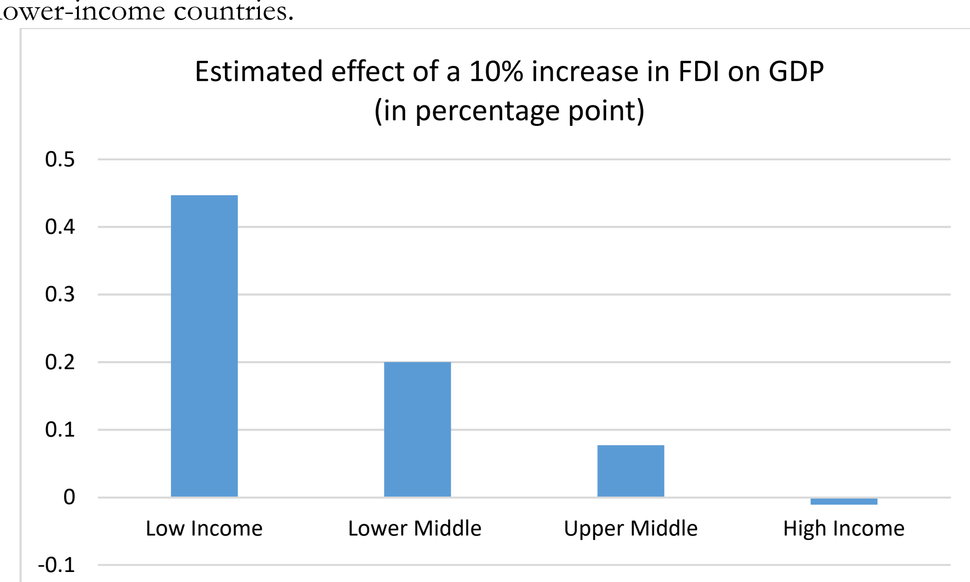
Tables 21 and 22 present the OLS and the IV results, respectively.[20] We find that in both the OLS and IV specifications, FDI inflow tends to exert a positive and significant effect on GDP growth but the effects on TFP and patent growth are statistically insignificant. A 10-percent increase in FDI inflow is associated with a 0.17 percentage-point increase in GDP growth rate, 1.2 percent increase in exports and 1.1 percent increase in imports. The effects of FDI on TFP, patent, and employment growth are found insignificant. The latter results are consistent with the existing literature which shows the effects of FDI on productivity and employment to be largely ambiguous due to the opposing ways through which FDI could influence these outcomes.

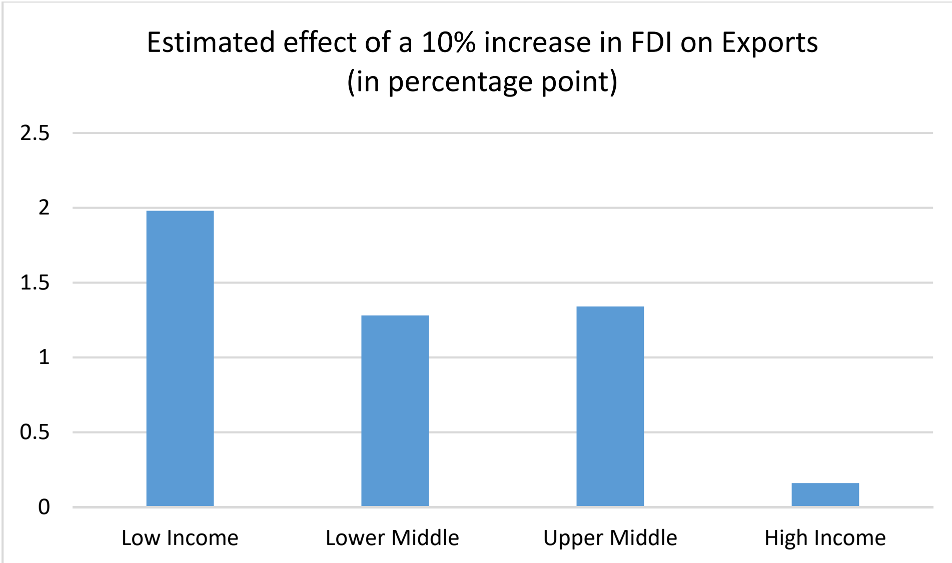
[20] The first-stage IV results are reported in Table A.15. As shown, FDI inflows to the control group countries (countries with similar income and located in the same geographic region) are a good predictor of a host country's FDI inflows.

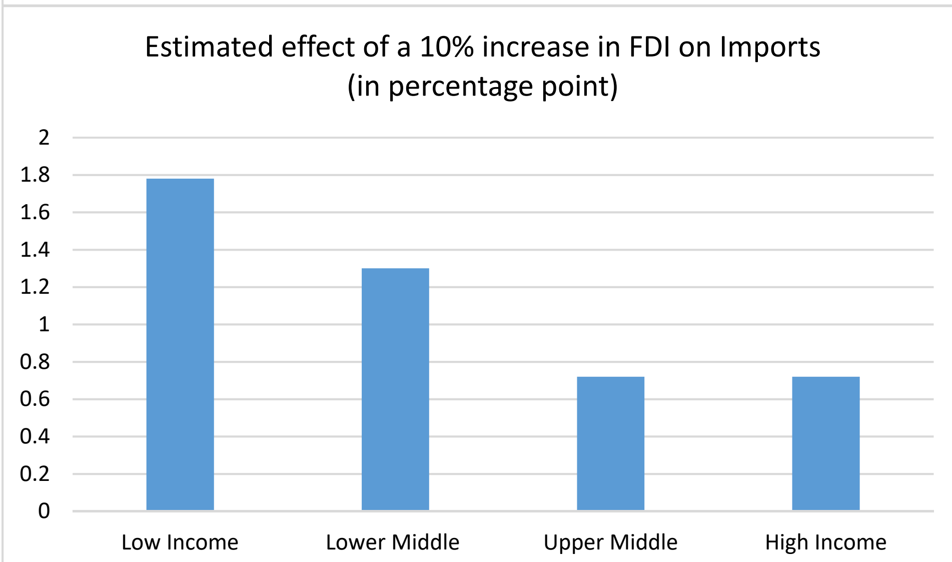
As discussed in Section 2, the extent to which a country could benefit from inward FDI can vary across countries depending on their institutional characteristics and absorptive capacity. Next, we explore the heterogeneity and the possible mediating factors in the economic growth effects of FDI.

Figure 21 plots the estimated effects of FDI on GDP, trade and employment growth by country income groups. In general, the effects of FDI are found to diminish with country income level and the strongest for low-income countries. For example, a 10-percent increase in FDI inflow is found to be associated with 0.45 percentage-point increase in GDP in low-income countries, 0.2 percentage-point increase of GDP in lower-middle-income countries, and 0.08 percentage-point increase of GDP in upper-middle-income countries. The GDP effect in high-income countries is found close to 0 and statistically insignificant. This could be due to the ambiguous effect of M&As, the main type of FDI in high-income countries, on GDP and employment growth. The effect of FDI on import is more pronounced and as the GDP effect diminishes with income level. A 10-percent increase in FDI inflow is shown to raise imports by 1.78 percent, 1.3 percent, 0.7 percent, and 0.3 percent in low-, lower-middle-, upper-middle-, and high-income countries, respectively. Similarly, FDI exerts a strong effect on exports, especially for lower-income countries.

The positive impacts of FDI on trade are consistent with the growing prevalence of vertical FDI and global value chains which leads trade and FDI to co-move in the same direction. The stronger effects on lower-income countries are also consistent with the expectation that vertical FDI and subsequently intra-firm trade are more likely to occur between high- and low-income countries because of their complementarity in task comparative advantage. While the employment effect of FDI is generally insignificant, we find the effect to follow a similar pattern with a greater positive effect on lower-income countries.




Estimated effect of a 10% increase in FDI on Exports
(in percentage point)
2.5
2
1.5
1
0.5
0
Low Income
Lower Middle
Upper Middle
High Income


Estimated effect of a 10% increase in FDI on Imports
(in percentage point)
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
Low Income
Lower Middle
Upper Middle
High Income

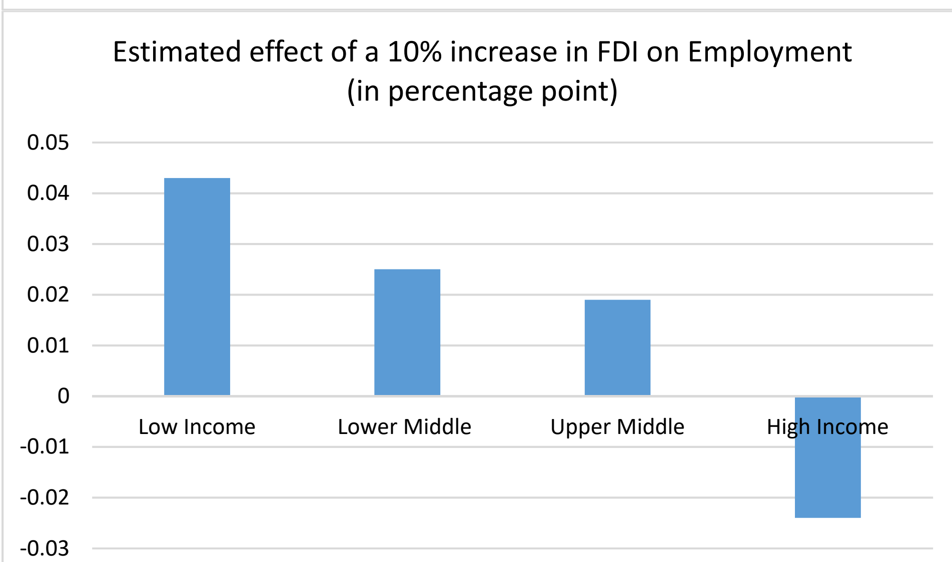

Estimated effect of a 10% increase in FDI on Employment
(in percentage point)
0.05
0.04
0.03
0.02
0.01
0
-0.01
-0.02
-0.03
Low Income
Lower Middle
Upper Middle
High Income

Figure 21: The Heterogeneous effects of FDI on economic growth by country income groups

When examining the heterogeneous effect of FDI across geographic regions, we find in Figure 22 the effect to be the strongest in Sub-Saharan Africa, followed by South Asia and East Asia and Pacific. The estimated GDP growth effect for the BRI countries is similar to the estimated effect for Latin America and Caribbean countries.

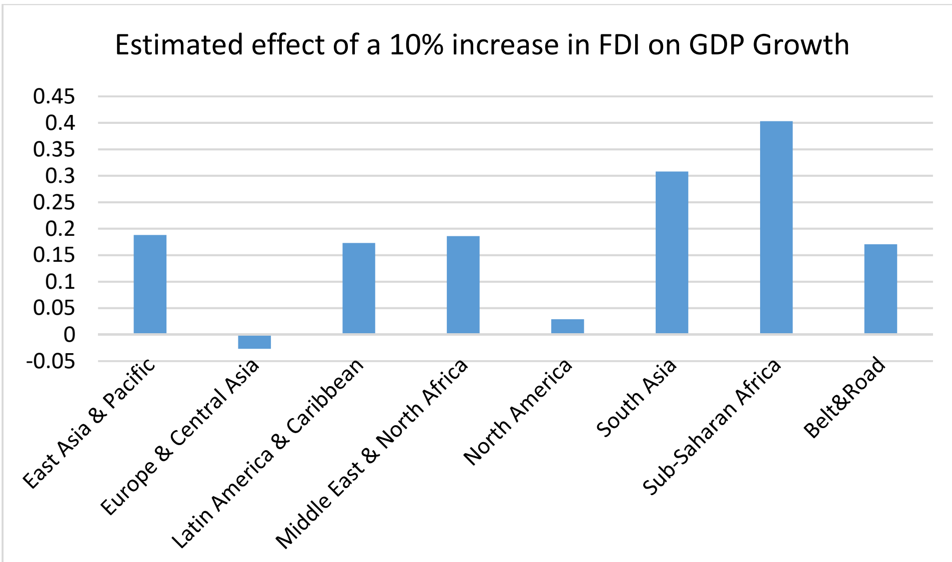


Figure 22: The Heterogeneous effects of FDI on economic growth by geographic region

4.6 Quantifying the Growth Impact of BRI through the FDI Channel

To assess the effect of BRI on economic growth through the channel of foreign investment, we combine the estimation results from the two stages. If BRI reduces driving time between host and source countries by 10 percent, FDI flows into BRI countries are estimated to increase by 12 percent and the 12-percent increase in FDI inflow is estimated to raise GDP growth rate by 0.2 percentage point for BRI countries as a whole. But the effect is estimated to be around 0.5 percentage point increase in GDP growth rate for South Asian BRI countries and 0.35 percentage point increase in GDP growth rate for East Asia & Pacific and Middle East & North Africa BRI countries.

If an improvement in road quality reduces unit driving time in BRI countries to the average level in Europe and Central Asia, total FDI inflow in BRI countries could increase by about 3.6 percent and GDP growth rate in BRI countries is estimated to increase by 0.06 percentage point. The effect again is estimated to be strongest (around 0.16) for South Asia BRI countries.

Improving the port quality from the current BRI country level (4.1) to the level of high-income countries (5.3) would lead to 10-percent increase in total FDI inflow and 0.17 percentage point increase in GDP growth rate in BRI countries. Across regions, the effect on GDP is estimated to be around 0.45 percentage point in South Asia, 0.3 percentage point in East Asia & Pacific and Middle East & North Africa, and negligible in Europe and Central Asia and Sub-Saharan Africa.

If the proposed BRI transportation network leads to an average 0.69 shipping day reduction, based on the upper bound estimates from de Soyres et al (2018), our analysis suggests that the improved transportation network can raise BRI countries' GDP growth rate by 0.09 percentage point through the FDI channel. Across regions, the transportation network is estimated, based on Table 18 and Figure 21, to increase GDP growth rate by about 0.08 percentage point in East Asia & Pacific, 0.04 percentage point in Europe and Central Asia, 0.01 percentage point in Middle East & North Africa, 0.13 percentage point in South Asia, and 0.23 percentage point in Sub-Saharan Africa, as shown in Figure 23.

It is noteworthy that the BRI transportation network can also stimulate growth in non-BRI countries through a spillover effect of the transportation network. For example, non-BRI countries in Sub-Saharan Africa may also benefit from access to ports in Kenya and consequently attract more FDI. Our analysis suggests that such spillover is significant in Africa; non-BRI Sub-Saharan African countries are estimated to see a 3.98 percent increase in FDI inflow with the BRI transportation network and, through the increase in FDI, a 0.13 percentage-point increase in GDP growth.

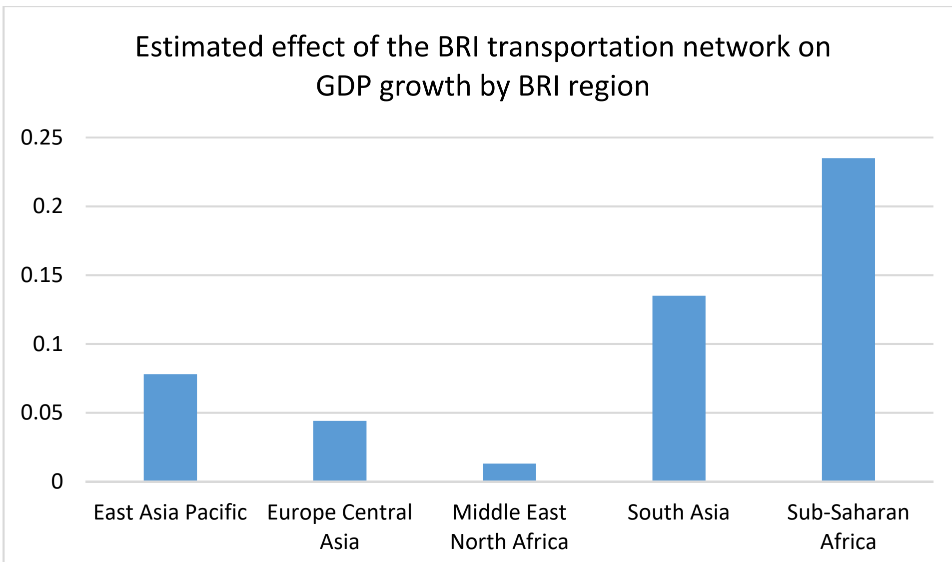


Figure 23: The estimated effects of the BRI transportation network on GDP growth by BRI region

5. Conclusion

In this paper, we evaluate the patterns, determinants and effects of FDI in BRI countries and the potential impacts of BRI on member countries' FDI and economic growth through reductions of transportation costs. We first document and compare the historical patterns of FDI around the world including BRI and non-BRI countries and investigate how different types of transportation cost and infrastructure have affected FDI. Based on the findings, we then assess the potential roles of BRI in fostering FDI growth by improving different types of connectivity and infrastructure. Finally, we evaluate the effects of FDI on economic growth and how BRI might affect economic growth through the foreign investment channel. The following main findings emerge from the analysis:

Finding 1: Reductions in transportation costs raise FDI, but the magnitude of the effect varies by the mode of transportation, with the effects of air and land transportation costs exceeding the effect of sea transportation. Over time, while the sea distance elasticity of FDI has remained stable in the last three decades, the elasticities of FDI with respect to air distance and driving time nearly doubled.

Finding 2: The BRI proposed transportation network can lead to a 4.97-percent increase in total FDI flows to BRI countries, a 4.36-percent increase in FDI flows within BRI, a 4.63-percent increase in FDI flows from OECD countries, and a 5.75-percent increase in FDI flows from non-BRI countries. Across BRI regions, the proposed BRI transportation network could increase FDI flows to BRI's Middle East and North Africa region by 11.39 percent, the East Asia and Pacific region by 6.56 percent, and Europe and Central Asia by 3.8 percent.

Finding 3: Across transportation modes, a reduction of driving time is found to have a strong positive effect on FDI in Middle East and North Africa followed by Europe and Central Asia. A longer railway is found to have a significant positive effect in South Asia and Middle East and North Africa. A better airway index significantly attracts more FDI in East Asia and Pacific and Europe and Central Asia. The positive FDI effect of reduced transportation cost can also be magnified when accompanied by an improvement in business regulatory environment.

Finding 4: China's infrastructure investments in BRI countries are found to serve as an effective catalyst for attracting Chinese investments in manufacturing and service sectors. A 10-percent increase in construction contracts is associated with an increase in FDI by 7 percent in the same year, 11 percent the next year, and 16 percent in two years.

Finding 5: The proposed BRI transportation network can increase BRI countries' GDP growth by 0.09 percentage point through the FDI channel, including 0.08 percentage point in East Asia & Pacific, 0.04 percentage point in Europe and Central Asia, 0.01 percentage point in Middle East & North Africa, 0.13 percentage point in South Asia, and 0.23 percentage point in Sub-Saharan Africa.

Finding 6: The BRI transportation network can also stimulate growth in non-BRI countries, including a 0.13 percentage-point increase in non-BRI Sub-Saharan African countries' GDP growth, through a spillover effect of the transportation network.

These findings convey several policy implications. First, initiatives improving physical infrastructure such as BRI can stimulate FDI growth and subsequently GDP and trade growth, but the effects of FDI on aggregate productivity and innovation are insignificant. Second, the impacts vary significantly with host- and source-country development level, across types of infrastructure, and over time. Investment allocation should take into account the great heterogeneity in the expected returns across different projects and geographic areas. Third, the positive effects of infrastructure investment can be magnified when accompanied with an improvement in business environment, specifically an improvement in the ease of business entry. Fourth, there exists a significant amount of missing FDI, i.e., unrealized FDI potential, across countries. Market size and unobserved institutional factors play a central role in explaining missing FDI, especially for developing countries.

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Table 9: The Effects of Air, Sea, and Land Transportation Costs on FDI (OLS)

	(1)	(2)	(3)	(4)	(5)	(6)
log(air distance)	-0.955***	-0.905***	-1.058***	-0.869***	-0.805***	-0.772***
	(0.057)	(0.104)	(0.343)	(0.291)	(0.095)	(0.094)
log(sea distance)		-0.089	0.008	0.013	-0.100*	-0.132**
		(0.074)	(0.083)	(0.083)	(0.055)	(0.054)
log(driving distance)			-0.308		-0.982***	
			(0.274)		(0.107)	
log(driving time)				-0.535**		-0.985***
				(0.245)		(0.104)
Railway Index	0.050	0.053	0.065	0.054	0.056*	0.066**
	(0.030)	(0.037)	(0.060)	(0.061)	(0.032)	(0.032)
Airway Index	0.453***	0.462***	0.100	0.109	0.459***	0.473***
	(0.048)	(0.084)	(0.128)	(0.126)	(0.048)	(0.048)
Port Quality	0.055***	0.018	0.029	0.031	0.046***	0.049***
	(0.013)	(0.016)	(0.023)	(0.023)	(0.013)	(0.013)
PTA depth	0.000	-0.000	0.000	0.000	0.001*	0.001
	(0.000)	(0.001)	(0.001)	(0.001)	(0.000)	(0.000)
Logistics Performance Index	0.158***	0.253***	0.217***	0.222***	0.160***	0.166***
	(0.035)	(0.050)	(0.059)	(0.059)	(0.035)	(0.035)
Trade Across Borders indicator	-0.000	-0.003	0.003	0.003	0.001	0.001
	(0.004)	(0.005)	(0.007)	(0.007)	(0.004)	(0.004)
Days to Start Business	0.000	-0.002	-0.003	-0.003	0.000	-0.000
	(0.001)	(0.002)	(0.002)	(0.002)	(0.001)	(0.001)
log(source GDP)	1.142***	1.182***	0.174	0.148	1.160***	1.140***
	(0.271)	(0.311)	(0.529)	(0.529)	(0.277)	(0.276)
log(host GDP)	0.673***	0.973***	2.034***	2.002***	0.698***	0.679***
	(0.259)	(0.312)	(0.500)	(0.500)	(0.260)	(0.260)
Skill difference	-0.116	-0.080	-0.064	-0.067	-0.125	-0.125
	(0.105)	(0.126)	(0.146)	(0.146)	(0.108)	(0.108)
contiguity	0.430***	0.429***	0.234	0.187	0.321**	0.310**
	(0.120)	(0.155)	(0.194)	(0.194)	(0.138)	(0.138)
colonial ties	0.641***	0.389***	-0.140	-0.127	0.627***	0.630***
	(0.128)	(0.147)	(0.186)	(0.186)	(0.134)	(0.135)
common language	0.471***	0.983***	1.403***	1.398***	0.566***	0.570***
	(0.119)	(0.164)	(0.276)	(0.278)	(0.127)	(0.127)
Dep Var Mean	3.79	3.85	3.65	3.65	3.8	3.8
R-squared	0.641	0.665	0.678	0.679	0.637	0.637
Origin FE	Yes	Yes	Yes	Yes	Yes	Yes
Destination FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Dist x Dummy					Yes	Yes
Observation	11,289	7,251	3,458	3,458	10,693	10,693

Robust standard error clustered at country pair. All columns estimated with OLS. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 10: The Effects of Air, Sea, and Land Transportation Costs on FDI (PPML)

	(1)	(2)	(3)	(4)	(5)	(6)
log(air distance)	-0.468***	-0.521***	-0.890***	-0.597*	-0.789***	-0.785***
	(0.077)	(0.124)	(0.323)	(0.344)	(0.123)	(0.122)
log(sea distance)		-0.052	-0.091	-0.026	-0.056	-0.059
		(0.088)	(0.133)	(0.128)	(0.057)	(0.055)
log(driving distance)			0.103		-0.193	
			(0.251)		(0.122)	
log(driving time)				-0.243		-0.246*
				(0.276)		(0.127)
Railway Index	0.103**	0.087*	-0.091	-0.096	0.089*	0.093*
	(0.051)	(0.052)	(0.085)	(0.087)	(0.050)	(0.051)
Airway Index	0.243***	0.313***	-0.121	-0.098	0.234***	0.236***
	(0.056)	(0.103)	(0.137)	(0.136)	(0.055)	(0.055)
Port Quality	0.027	0.008	-0.008	-0.004	0.016	0.016
	(0.017)	(0.017)	(0.028)	(0.029)	(0.018)	(0.018)
PTA depth	0.002**	0.001	0.002*	0.002*	0.003***	0.003***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Logistics Performance Index	0.144**	-0.047	-0.118	-0.098	0.137**	0.139**
	(0.062)	(0.063)	(0.082)	(0.082)	(0.064)	(0.064)
Trade Across Borders indicator	-0.000	0.001	0.005	0.005	0.000	0.000
	(0.007)	(0.008)	(0.012)	(0.012)	(0.007)	(0.007)
Days to Start Business	-0.003	-0.006**	-0.003	-0.003	-0.003	-0.003
	(0.002)	(0.003)	(0.004)	(0.004)	(0.002)	(0.002)
log(source GDP)	2.304***	2.150***	1.417	1.334	2.324***	2.325***
	(0.553)	(0.615)	(0.982)	(0.981)	(0.563)	(0.564)
log(host GDP)	1.407***	1.736***	3.746***	3.633***	1.485***	1.482***
	(0.281)	(0.306)	(0.767)	(0.763)	(0.290)	(0.291)
Skill difference (O-D)	-0.139	-0.209	-0.268	-0.262	-0.141	-0.141
	(0.158)	(0.193)	(0.218)	(0.216)	(0.159)	(0.159)
contiguity	0.102	0.119	0.103	0.145	0.273*	0.254*
	(0.147)	(0.163)	(0.164)	(0.164)	(0.147)	(0.148)
colonial ties	0.279*	0.079	0.228	0.095	0.247	0.255
	(0.169)	(0.159)	(0.287)	(0.295)	(0.178)	(0.174)
common language	0.327**	0.841***	0.573	0.683*	0.317**	0.304**
	(0.150)	(0.156)	(0.388)	(0.393)	(0.145)	(0.141)
Dep Var Mean	496	499	455	455	488	488
R-sqaured	0.612	0.656	0.646	0.646	0.634	0.635
Origin FE	Yes	Yes	Yes	Yes	Yes	Yes
Destination FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Dist x Dummy					Yes	Yes
Observation	19,676	12,214	5,961	5,961	18,358	18,358

Robust standard error clustered at country pair. All columns estimated with PPML. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 11: The Effects of Air, Sea, and Land Transportation Costs on FDI (OECD Countries)

	(1)	(2)	(3)	(4)	(5)	(6)
log(air distance)	-1.128***	-0.843***	-1.410***	-1.013***	-1.144***	-1.118***
	(0.078)	(0.149)	(0.404)	(0.363)	(0.143)	(0.142)
log(sea distance)		-0.264***	-0.005	0.054	-0.118*	-0.139**
		(0.097)	(0.123)	(0.124)	(0.061)	(0.060)
log(driving distance)			-0.434		-1.026***	
			(0.344)		(0.118)	
log(driving time)				-1.043***		-1.113***
				(0.362)		(0.129)
Railway index	-0.041	-0.032	-0.140**	-0.149**	-0.055	-0.055
	(0.034)	(0.040)	(0.061)	(0.060)	(0.035)	(0.035)
Airway index	0.385***	0.281***	0.085	0.082	0.381***	0.382***
	(0.049)	(0.068)	(0.107)	(0.104)	(0.049)	(0.049)
Quality of Port	0.052***	0.028*	0.000	0.007	0.038**	0.039***
	(0.014)	(0.017)	(0.027)	(0.026)	(0.015)	(0.015)
PTA Depth	0.002***	0.001**	0.001	0.001	0.003***	0.003***
	(0.000)	(0.001)	(0.001)	(0.001)	(0.000)	(0.000)
logistics Performance index	0.279***	0.389***	0.304***	0.310***	0.287***	0.290***
	(0.041)	(0.059)	(0.078)	(0.078)	(0.041)	(0.041)
Trade Across Borders indicator	0.000	0.000	0.002	0.003	0.003	0.003
	(0.006)	(0.006)	(0.007)	(0.007)	(0.006)	(0.006)
Days to start business	0.001	-0.001	0.005**	0.005**	0.001	0.001
	(0.001)	(0.002)	(0.003)	(0.003)	(0.001)	(0.001)
log(source GDP)	1.150***	0.875***	2.318***	2.317***	1.198***	1.189***
	(0.302)	(0.325)	(0.599)	(0.599)	(0.305)	(0.305)
log(host GDP)	1.018***	1.207***	1.475***	1.392***	1.051***	1.035***
	(0.164)	(0.183)	(0.381)	(0.381)	(0.166)	(0.166)
Skill difference (O-D)	-0.532***	-0.515***	-0.426***	-0.436***	-0.542***	-0.547***
	(0.083)	(0.098)	(0.107)	(0.107)	(0.085)	(0.085)
contiguity	0.427**	0.506**	0.193	0.084	0.486***	0.434**
	(0.174)	(0.230)	(0.228)	(0.231)	(0.169)	(0.171)
colonial ties	0.946***	0.468**	0.102	0.077	0.811***	0.823***
	(0.171)	(0.184)	(0.319)	(0.337)	(0.177)	(0.178)
common language	0.325**	1.170***	1.149**	1.194***	0.502***	0.506***
	(0.137)	(0.175)	(0.448)	(0.449)	(0.139)	(0.139)
Dep Var Mean	3.81	3.95	3.76	3.76	3.79	3.79
R-squared	0.682	0.695	0.715	0.717	0.683	0.683
Origin FE	Yes	Yes	Yes	Yes	Yes	Yes
Destination FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Dist x Dummy					Yes	Yes
Observation	16,811	11,525	5,061	5,061	16,233	16,233

Table 12: The Effects of Distances over Time

	(1) ln(FDI)
ln(Air Distance)*Year(1985-1990)	-0.637***
	(0.176)
ln(Air Distance)*Year(1990-1995)	-0.746***
	(0.163)
ln(Air Distance)*Year(1995-2000)	-0.973***
	(0.153)
ln(Air Distance)*Year(2000-2005)	-1.208***
	(0.147)
ln(Air Distance)*Year(2005-2010)	-1.380***
	(0.149)
ln(Air Distance)*Year(2010-2015)	-1.142***
	(0.155)
ln(Sea Distance)*Year(1985-1990)	-0.256***
	(0.090)
ln(Sea Distance)*Year(1990-1995)	-0.208***
	(0.069)
ln(Sea Distance)*Year(1995-2000)	-0.133**
	(0.064)
ln(Sea Distance)*Year(2000-2005)	-0.158**
	(0.063)
ln(Sea Distance)*Year(2005-2010)	-0.232***
	(0.066)
ln(Sea Distance)*Year(2010-2015)	-0.298***
	(0.068)
ln(Land Distance)*Year(1985-1990)	-0.792***
	(0.153)
ln(Land Distance)*Year(1990-1995)	-0.836***
	(0.144)

ln(Land Distance)*Year(1995-2000)	-1.027***
	(0.135)
ln(Land Distance)*Year(2000-2005)	-1.168***
	(0.133)
ln(Land Distance)*Year(2005-2010)	-1.267***
	(0.136)
ln(Land Distance)*Year(2010-2015)	-1.115***
	(0.137)
Depth of PTAs between parent and host	0.001
	(0.001)
Railway index	-0.049
	(0.034)
Airway index	0.315***
	(0.052)
Quality of Port	0.055***
	(0.015)
R-squared	0.684
Origin FE	Yes
Destination FE	Yes
Year FE	Yes
Dist x dummy	Yes
Observation	16,789

Robust standard error clustered at country pair. Regressions estimated using OLS.
Other controls include: Market size (GDP) and bilateral control (colonial tie, contiguity, common language).
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 13: The Heterogeneous Effects of Transportation Costs by Income Group

	(1) Belt Road	(2) Developed	(3) Developing and LDC
log(air distance)	-1.115***	-0.649***	-1.249***
	(0.157)	(0.133)	(0.144)
log(sea distance)	-0.073	-0.135**	0.073
	(0.083)	(0.068)	(0.092)
ln(DrivingTime)	-1.241***	-1.134***	-1.305***
	(0.151)	(0.155)	(0.166)
Railway Index	-0.009	0.078	0.122***
	(0.045)	(0.056)	(0.047)
Airway Index	0.297**	0.365***	0.891***
	(0.119)	(0.056)	(0.151)
Port Quality	0.089***	0.027	0.073***
	(0.021)	(0.017)	(0.022)
PTA depth	-0.000	0.002***	0.003***
	(0.001)	(0.001)	(0.001)
Logistics Performance Index	0.148***	0.162***	0.132**
	(0.047)	(0.048)	(0.057)
Trade Across Borders indicator	0.006	0.003	0.001
	(0.006)	(0.007)	(0.007)
Days to Start Business	-0.001	0.003	-0.003
	(0.002)	(0.002)	(0.002)
log(source GDP)	0.876**	1.306***	1.221***
	(0.392)	(0.385)	(0.396)
log(host GDP)	0.572	0.147	-0.109
	(0.374)	(0.530)	(0.419)
Skill difference (O-D)	-0.168	-0.072	-0.128
	(0.128)	(0.151)	(0.129)
contiguity	0.352*	0.206	0.359*
	(0.199)	(0.183)	(0.209)
colonial ties	0.196	0.670***	0.451**
	(0.194)	(0.181)	(0.192)
common language	0.744***	0.531***	0.629***
	(0.260)	(0.171)	(0.198)
Dep Var Mean	3.48	4.09	3.41
R-squared	0.557	0.687	0.588
Origin FE	Yes	Yes	Yes
Destination FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Dist x dummy	Yes	Yes	Yes
Observation	4,987	6,130	4,563

Robust standard error clustered at country pair. All column estimated with OLS. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 14: The Heterogeneous Effects of Transportation Costs by Geographic Region

	(1) Belt Road	(2) East Asia Pacific	(3) Europe Central Asia	(4) Middle East North Africa	(5) North America	(6) South Asia	(7) Sub-Saharan Africa	(8) Latin America Caribbean
log(air distance)	-1.115***	0.052	-1.411***	0.516	4.182	0.936	1.671**	-1.487*
	(0.157)	(0.461)	(0.234)	(0.361)	(3.167)	(2.633)	(0.788)	(0.831)
log(sea distance)	-0.073	-0.330	-0.021	-0.936***	-14.795***	0.113	-0.592	0.221
	(0.083)	(0.337)	(0.067)	(0.316)	(4.468)	(2.721)	(0.377)	(0.263)
ln(driving time)	-1.241***	-0.314	-1.475***	0.256	-7.853**	1.879	1.208	-0.960
	(0.151)	(0.354)	(0.134)	(0.459)	(3.167)	(2.888)	(0.836)	(0.607)
Railway Index	-0.009	0.086	-0.009	0.193	-0.104	0.690***	0.245	-0.023
	(0.045)	(0.069)	(0.049)	(0.124)	(0.180)	(0.131)	(0.217)	(0.153)
Airway Index	0.297**	0.537***	0.395***	0.034	-0.005	0.533	-0.043	0.044
	(0.119)	(0.131)	(0.051)	(0.261)	(0.209)	(1.561)	(0.624)	(0.422)
Port Quality	0.089***	0.042	0.047***	0.196***	-0.010	0.182*	0.207*	0.023
	(0.021)	(0.034)	(0.016)	(0.067)	(0.047)	(0.097)	(0.112)	(0.061)
PTA depth	-0.000	0.027***	0.000	0.024	-0.028	0.078*	-0.027	0.030***
	(0.001)	(0.009)	(0.001)	(0.026)	(0.017)	(0.047)	(0.044)	(0.011)
Logistics Performance Index	0.148***	0.178	0.182***	-0.264**	-0.106	0.346	0.325	-0.077
	(0.047)	(0.121)	(0.042)	(0.132)	(0.153)	(0.224)	(0.311)	(0.199)
Trade Across Borders indicator	0.006	-0.014	0.004	-0.020	0.948**	0.068	0.002	-0.031
	(0.006)	(0.011)	(0.006)	(0.031)	(0.362)	(0.046)	(0.023)	(0.027)
Days to Start Business	-0.001	-0.005	0.004**	0.003	0.686***	-0.007	-0.008*	0.014**
	(0.002)	(0.004)	(0.002)	(0.007)	(0.204)	(0.005)	(0.005)	(0.007)
log(source GDP)	0.876**	1.242**	1.421***	0.659	2.908***	0.061	0.716	1.303
	(0.392)	(0.578)	(0.377)	(1.019)	(0.996)	(0.979)	(0.808)	(1.264)
log(host GDP)	0.572	0.084	0.506	-1.004	-48.670***	-1.243	-0.308	0.619
	(0.374)	(0.585)	(0.404)	(2.539)	(15.170)	(2.540)	(1.351)	(1.804)
Skill difference	-0.168	-0.085	-0.135	-0.543	0.545	1.454**	-0.328	0.168
	(0.128)	(0.390)	(0.114)	(0.413)	(0.463)	(0.609)	(1.122)	(0.740)
contiguity	0.352*	0.456	0.167	0.929	114.317*	0.756	1.444	0.980*
	(0.199)	(0.398)	(0.161)	(0.704)	(58.696)	(1.058)	(1.853)	(0.570)
colonial ties	0.196	0.338	0.299*	0.279	-0.027	-0.026	1.460*	0.813
	(0.194)	(0.368)	(0.166)	(0.499)	(0.179)	(2.441)	(0.768)	(4.914)
common language	0.744***	-0.171	0.394**	0.836*	-0.750***	0.941*	0.660	2.880
	(0.260)	(0.328)	(0.184)	(0.459)	(0.258)	(0.509)	(0.491)	(3.900)
Dep Var Mean	3.48	4.06	3.81	3.14	4.95	3.27	2.82	3.86
R-squared	0.557	0.753	0.645	0.601	0.886	0.780	0.724	0.722
Origin FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Destination FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Dist x dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observation	4,987	1,503	6,173	810	621	436	437	713

Robust standard error clustered at country pair. All column estimated with OLS.

Table 15: The Pattern of BRI FDI

	(1) World to BRI	(2) BRI to BRI	(3) OECD to BRI	(4) non-BRI to BRI	(5) CHN to BRI
log(air distance)	-1.115***	-0.988***	-1.362***	-1.248***	0.096
	(0.157)	(0.209)	(0.184)	(0.206)	(1.354)
log(sea distance)	-0.073	0.049	-0.082	-0.262**	-0.835
	(0.083)	(0.078)	(0.110)	(0.117)	(0.784)
log(driving time)	-1.241***	-1.182***	-1.345***	-0.902***	0.000
	(0.151)	(0.168)	(0.244)	(0.262)	(.)
Railway Index	-0.009	-0.089	-0.010	0.061	0.025
	(0.045)	(0.060)	(0.066)	(0.080)	(0.091)
Airway Index	0.297**	-0.046	0.278**	0.208*	2.904**
	(0.119)	(0.294)	(0.127)	(0.121)	(1.379)
Port Quality	0.089***	0.029	0.091***	0.116***	0.017
	(0.021)	(0.035)	(0.024)	(0.028)	(0.064)
PTA depth	-0.000	0.001	-0.000	-0.000	0.121**
	(0.001)	(0.001)	(0.001)	(0.001)	(0.053)
Logistics Performance	0.148***	-0.032	0.180***	0.043	-0.253
Index	(0.047)	(0.066)	(0.053)	(0.059)	(0.212)
Trade Across Borders	0.006	0.003	0.007	0.004	-0.016
indicator	(0.006)	(0.008)	(0.008)	(0.009)	(0.017)
Days to Start Business	-0.001	0.001	-0.001	-0.001	0.006
	(0.002)	(0.003)	(0.002)	(0.002)	(0.006)
log(source GDP)	0.876**	2.305***	-0.218	-0.429	0.000
	(0.392)	(0.457)	(0.628)	(1.044)	(.)
log(host GDP)	0.572	-0.436	1.025**	1.256**	0.406*
	(0.374)	(0.646)	(0.407)	(0.492)	(0.204)
Skill difference	-0.168	-0.232*	-0.246*	-0.198	0.330
	(0.128)	(0.134)	(0.144)	(0.189)	(0.295)
contiguity	0.352*	0.565***	0.498	-0.522	1.409**
	(0.199)	(0.192)	(0.320)	(0.401)	(0.605)
colonial ties	0.196	-0.048	-0.060	0.901***	1.527
	(0.194)	(0.227)	(0.261)	(0.272)	(1.310)
common language	0.744***	0.674**	1.215***	1.058***	0.098
	(0.260)	(0.285)	(0.383)	(0.332)	(0.452)
Dep Var Mean	3.48	2.48	3.81	4.25	3.18
R-squared	0.557	0.456	0.565	0.623	0.611
Origin FE	Yes	Yes	Yes	Yes	
Destination FE	Yes	Yes	Yes	Yes	
Year FE	Yes	Yes	Yes	Yes	Yes
Dist x dummy	Yes	Yes	Yes	Yes	Yes
Observation	4,987	2,155	3,727	2,832	211

Robust standard error clustered at country pair. All column estimated with OLS.

Table 16: The Heterogeneous Effects of Transportation Costs by Geographic Region within BRI

	(1) East Asia Pacific	(2) Europe Central Asia	(3) Middle East North Africa	(4) South Asia	(5) Sub-Saharan Africa
log(air distance)	-0.767	-1.150***	-2.970***	0.936	62.388
	(0.575)	(0.361)	(0.825)	(2.633)	(223.640)
log(sea distance)	-0.264	-0.118	-0.162	0.113	-144.451
	(0.355)	(0.091)	(0.512)	(2.721)	(233.932)
log(driving time)	-0.427	-1.347***	-2.172**	1.879	53.180
	(0.387)	(0.201)	(0.838)	(2.888)	(169.213)
Railway Index	0.024	-0.010	0.352**	0.690***	-0.069
	(0.100)	(0.060)	(0.156)	(0.131)	(3.651)
Airway Index	0.427**	0.414***	0.280	0.533	-1.581
	(0.190)	(0.141)	(0.261)	(1.561)	(12.062)
Port Quality	0.051	0.076***	0.270***	0.182*	23.460
	(0.038)	(0.027)	(0.098)	(0.097)	(15.875)
PTA depth	0.018*	-0.000	-0.032	0.078*	-16.180
	(0.011)	(0.001)	(0.026)	(0.047)	(13.504)
Logistics Performance Index	0.207	0.146***	-0.133	0.346	-31.015*
	(0.161)	(0.054)	(0.171)	(0.224)	(16.494)
Trade Across Borders indicator	-0.028**	0.010	-0.036	0.068	0.000
	(0.014)	(0.008)	(0.036)	(0.046)	(.)
Days to Start Business	-0.003	0.006**	0.009	-0.007	-0.046
	(0.004)	(0.003)	(0.008)	(0.005)	(0.052)
log(source GDP)	1.192	0.829	0.408	0.061	3.550
	(0.727)	(0.504)	(1.208)	(0.979)	(6.859)
log(host GDP)	-0.698	0.327	-0.186	-1.243	4.604
	(0.938)	(0.533)	(2.438)	(2.540)	(13.110)
Skill difference (O-D)	-0.057	-0.206	-0.990	1.454**	-35.454*
	(0.346)	(0.127)	(0.697)	(0.609)	(19.976)
contiguity	0.191	0.325	2.755***	0.756	0.000
	(0.393)	(0.241)	(0.604)	(1.058)	(.)
colonial ties	0.895*	-0.215	0.852	-0.026	73.678
	(0.480)	(0.241)	(0.742)	(2.441)	(87.842)
common language	-0.871**	0.723**	1.923***	0.941*	-77.616
	(0.432)	(0.348)	(0.650)	(0.509)	(79.263)
Dep Var Mean	4.06	3.36	3.33	3.27	2.34
R-squared	0.759	0.553	0.658	0.780	0.887
Origin FE	Yes	Yes	Yes	Yes	Yes
Destination FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Dist x dummy	Yes	Yes	Yes	Yes	Yes
Observation	942	3,118	491	436	57

Robust standard error clustered at country pair. All column estimated with OLS.

Table 17: The Interactive Effects of Transportation Costs and Country Characteristics

	(1) ln(FDI)	(2) ln(FDI)	(3) ln(FDI)	(4) ln(FDI)
ln(air dist)	-0.772***	-0.093	-0.689***	-0.553***
	(0.094)	(0.385)	(0.203)	(0.207)
ln(sea dist)	-0.132**	-0.047	-0.065	-0.070
	(0.054)	(0.070)	(0.070)	(0.069)
ln(DrivingTime)	-0.985***	-0.819**	-1.366***	-1.264***
	(0.104)	(0.359)	(0.147)	(0.146)
contiguity	0.311**	0.068	0.105	0.091
	(0.138)	(0.164)	(0.161)	(0.160)
colonial ties	0.631***	0.238	0.238	0.248
	(0.135)	(0.164)	(0.164)	(0.164)
common language	0.569***	0.525***	0.523***	0.548***
	(0.127)	(0.159)	(0.160)	(0.160)
log(source GDP)	1.139***	-0.086	-0.096	-0.150
	(0.276)	(0.473)	(0.476)	(0.474)
log(host GDP)	0.678***	1.091***	0.764**	0.657*
	(0.260)	(0.417)	(0.371)	(0.377)
Skill difference (O-D)	-0.124	-0.095	-0.091	-0.092
	(0.108)	(0.120)	(0.121)	(0.120)
PTA depth	0.001	0.002***	0.004	0.002***
	(0.000)	(0.001)	(0.006)	(0.001)
Days to Start Business	-0.000	0.001	0.001	0.041**
	(0.001)	(0.002)	(0.002)	(0.018)
Railway Index (OxD)	0.065**	0.050	0.067	0.063
	(0.032)	(0.046)	(0.044)	(0.044)
Airway Index (OxD)	0.472***	0.327***	0.332***	0.340***
	(0.048)	(0.053)	(0.053)	(0.052)
Port Quality (OxD)	0.049***	0.040**	0.039**	0.036**
	(0.013)	(0.018)	(0.018)	(0.018)
Logistics Performance Index	0.166***	0.137***	0.137***	0.148***
	(0.035)	(0.042)	(0.042)	(0.042)
tradeacrossborder	0.001	0.009	0.008	0.008
	(0.004)	(0.006)	(0.006)	(0.006)
= 1 if not landlocked	0.309	-0.030	0.015	0.032
	(0.248)	(0.254)	(0.252)	(0.251)
= 1 if same contient has Google Drive route	5.443***	8.752***	10.577***	10.401***
	(1.386)	(2.652)	(2.367)	(2.308)
log(host GDP) # ln(DrivingTime)		-0.024*		
		(0.014)		
PTA depth # ln(DrivingTime)			-0.000	
			(0.001)	
Days to Start Business # ln(DrivingTime)				-0.004**
				(0.002)
Constant	-42.851***	-18.438	-12.743	-9.596
	(10.093)	(16.679)	(16.353)	(16.453)
Observations	10695	5927	5927	5927
R^2	0.637	0.647	0.646	0.647

Standard errors in parentheses
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 18: Alternative Measures of Transport Cost: Shipping Days

	(1) World to BRI	(2) BRI to BRI	(3) OECD to BRI	(4) non-BRI to BRI
Days	-0.072***	-0.063***	-0.083***	-0.082***
	(0.007)	(0.010)	(0.007)	(0.007)
contiguity	1.147***	1.201***	1.565***	0.563
	(0.183)	(0.172)	(0.251)	(0.343)
colonial ties	0.136	-0.293	-0.120	0.845**
	(0.238)	(0.287)	(0.310)	(0.328)
common language	1.110***	0.771**	1.503***	1.507***
	(0.308)	(0.312)	(0.372)	(0.329)
log(source GDP)	0.817**	2.520***	-0.478	-0.516
	(0.400)	(0.470)	(0.654)	(1.077)
log(host GDP)	0.659*	-0.176	1.024**	1.239**
	(0.396)	(0.659)	(0.415)	(0.491)
Skill difference (O-D)	-0.192	-0.261**	-0.234*	-0.262
	(0.123)	(0.127)	(0.138)	(0.190)
PTA depth	0.001	0.001	0.001	0.001
	(0.001)	(0.001)	(0.001)	(0.001)
Days to Start Business	-0.000	0.002	-0.001	-0.001
	(0.002)	(0.003)	(0.002)	(0.002)
Railway Index (OxD)	-0.007	-0.107	0.029	0.102
	(0.047)	(0.065)	(0.067)	(0.081)
Airway Index (OxD)	0.240*	-0.027	0.218*	0.224*
	(0.122)	(0.294)	(0.128)	(0.119)
Port Quality (OxD)	0.076***	0.021	0.088***	0.122***
	(0.023)	(0.038)	(0.026)	(0.031)
Logistics Performance Index	0.122**	-0.043	0.149***	0.019
	(0.049)	(0.071)	(0.054)	(0.060)
tradeacrossborder	0.010	0.005	0.010	0.006
	(0.007)	(0.009)	(0.008)	(0.009)
Constant	-39.185***	-57.163***	-9.660	-19.098
	(14.984)	(20.300)	(22.574)	(31.329)
Dep Var Mean	3.493	2.468	3.819	4.223
R-squared	0.542	0.439	0.555	0.604
Origin_FE	Yes	Yes	Yes	Yes
Destination_FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Observation	4916	2045	3701	2871

Robust standard error. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 19: Alternative Measures of Transport Cost: Ad Valorem Trade Barrier from Shipping Time

	(1) World to BRI	(2) BRI to BRI	(3) OECD to BRI	(4) non-BRI to BRI
Time barrier	-1.156***	-1.044***	-1.326***	-1.336***
	(0.116)	(0.168)	(0.127)	(0.125)
contiguity	1.180***	1.228***	1.606***	0.560
	(0.184)	(0.171)	(0.254)	(0.350)
colonial ties	0.128	-0.298	-0.130	0.859**
	(0.241)	(0.288)	(0.315)	(0.335)
common language	1.112***	0.767**	1.524***	1.532***
	(0.308)	(0.310)	(0.374)	(0.329)
log(source GDP)	0.814**	2.526***	-0.504	-0.536
	(0.402)	(0.470)	(0.657)	(1.080)
log(host GDP)	0.666*	-0.171	1.037**	1.249**
	(0.395)	(0.662)	(0.415)	(0.488)
Skill difference (O-D)	-0.191	-0.261**	-0.233*	-0.262
	(0.123)	(0.127)	(0.138)	(0.191)
PTA depth	0.001	0.001	0.001	0.001
	(0.001)	(0.001)	(0.001)	(0.001)
Days to Start Business	-0.000	0.002	-0.001	-0.001
	(0.002)	(0.003)	(0.002)	(0.002)
Railway Index (OxD)	-0.003	-0.107*	0.033	0.105
	(0.047)	(0.065)	(0.068)	(0.082)
Airway Index (OxD)	0.238*	-0.038	0.220*	0.231*
	(0.123)	(0.294)	(0.129)	(0.121)
Port Quality (OxD)	0.076***	0.021	0.088***	0.122***
	(0.024)	(0.038)	(0.026)	(0.031)
Logistics Performance Index	0.120**	-0.046	0.150***	0.020
	(0.049)	(0.071)	(0.054)	(0.060)
tradeacrossborder	0.010	0.005	0.010	0.006
	(0.007)	(0.009)	(0.008)	(0.010)
Constant	-39.246***	-57.408***	-9.229	-18.827
	(15.005)	(20.367)	(22.642)	(31.383)
Dep Var Mean	3.493	2.468	3.819	4.223
R-squared	0.538	0.438	0.551	0.600
Origin_FE	Yes	Yes	Yes	Yes
Destination_FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Observation	4916	2045	3701	2871

Robust standard error. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 20: The Pattern of China's ODI

	(1)	(2)	(3)	(4)	(5)	(6)
log(air distance)	0.172	4.200	239.521***			
	(5.776)	(14.835)	(66.274)			
log(sea distance)	-5.644	9.925	-133.373***			
	(4.690)	(32.169)	(37.921)			
log(Construction)	0.134	0.288*	1.005***	0.060	0.369**	0.798***
	(0.120)	(0.150)	(0.292)	(0.137)	(0.173)	(0.232)
1 year lag ln(construction)		0.104	1.557***		0.257	1.229***
		(0.174)	(0.390)		(0.190)	(0.335)
2 year lag ln(construction)			1.556***			1.705***
			(0.545)			(0.558)
log(host GDP)	4.744	8.017	29.468**	2.427	12.073*	16.897
	(3.787)	(5.543)	(11.564)	(2.693)	(6.272)	(10.434)
Skill difference (O-D)	0.440	1.608	5.819	-0.434	2.197*	2.416
	(0.931)	(1.221)	(3.887)	(0.948)	(1.289)	(2.276)
PTA depth	0.822***	-1.823	3.205***	1.835***		
	(0.167)	(6.026)	(0.970)	(0.098)		
Days to Start Business	0.003	0.011	0.121***	-0.014	0.013	0.116***
	(0.010)	(0.012)	(0.023)	(0.012)	(0.011)	(0.023)
Railway Index (D)	0.151	-0.605	9.466	-0.184	-1.481	10.834*
	(1.761)	(2.478)	(6.322)	(1.080)	(2.138)	(6.253)
Airway Index (D)	1.620	3.512	10.732**	0.807	4.720	10.212***
	(2.622)	(5.190)	(5.082)	(2.089)	(4.388)	(3.605)
Quality of Port (D)	0.280	0.770	2.488*	0.520	0.457	2.787**
	(0.999)	(1.849)	(1.360)	(0.443)	(1.306)	(1.337)
Logistics Performance Index	0.871		7.848***	-0.306	3.160	
	(1.198)		(2.608)	(1.143)	(2.209)	
Trade Across Borders	-0.107**		-0.043	-0.094***	0.149**	
	(0.050)		(0.264)	(0.036)	(0.067)	
contiguity	-19.839	8.631	23.030*			
	(15.999)	(80.769)	(12.129)			
common language	-21.258	-4.319	-59.439***			
	(16.703)	(63.009)	(11.959)			
Destination FE				Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Log likelihood	-54,966	-25,679	-8,443	-65,340	-24,114	-9,709
Observation	168	93	61	142	72	47

Robust standard error clustered at country pair. All columns estimated with PPML.

Table 21: The Effects of FDI on GDP, TFP, Trade and Employment Growth (OLS)

	(1) GDP Growth	(2) TFP Growth	(3) Patent Applications Growth	(4) Import Growth	(5) Export Growth	(6) Employment Growth
ln(FDI)	0.352**	-0.032	-0.056	-0.006	0.014	0.045
	(0.178)	(0.115)	(0.052)	(0.007)	(0.011)	(0.053)
ln(GDP)	-6.232**	-4.898**	0.519	0.300***	0.743	0.616
	(3.061)	(2.411)	(0.417)	(0.095)	(0.554)	(0.784)
ln(Educational attainment)	0.122	0.931	-3.048	-0.017	-0.390	-0.915
	(3.055)	(2.637)	(3.042)	(0.221)	(0.420)	(1.084)
Population growth	-0.679	-0.490*	0.019	-0.016	-0.009	-0.256**
	(0.459)	(0.262)	(0.042)	(0.017)	(0.034)	(0.128)
ln(Government Expenditure)	-1.839	-0.166	-0.453	-0.137	-0.065	-1.291**
	(1.416)	(1.205)	(0.423)	(0.094)	(0.137)	(0.570)
ln(Trade Volume)	0.957	0.326	0.084	-0.238***	-0.538*	0.254
	(1.082)	(0.753)	(0.249)	(0.081)	(0.284)	(0.295)
Dep Var Mean	3.689	-0.051	0.081	0.089	0.098	0.075
R-squared	0.583	0.539	0.343	0.630	0.413	0.236
Country FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Observation	862	788	691	849	847	858

All regressors are lagged by one year. Robust standard error. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 22: The Effects of FDI on GDP, TFP, Trade and Employment Growth (IV)

	(1) GDP Growth	(2) TFP Growth	(3) Patent Applications Growth	(4) Import Growth	(5) Export Growth	(6) Employment Growth
ln(FDI)	1.785*	1.096	-0.236	0.115*	0.121*	0.212
(instrumented)	(0.987)	(0.740)	(0.261)	(0.064)	(0.069)	(0.304)
ln(GDP)	-7.181**	-5.512**	0.633	0.285***	0.710	0.453
	(3.272)	(2.517)	(0.460)	(0.100)	(0.570)	(0.795)
ln(Educational	1.074	1.423	-3.008	0.046	-0.322	-0.893
attainment)	(3.107)	(2.706)	(3.013)	(0.210)	(0.420)	(1.099)
Population growth	-0.711	-0.444*	0.030	-0.017	-0.011	-0.269**
	(0.482)	(0.264)	(0.047)	(0.017)	(0.034)	(0.129)
ln(Government	-1.608	-0.160	-0.474	-0.160*	-0.070	-1.255**
Expenditure)	(1.437)	(1.208)	(0.432)	(0.086)	(0.138)	(0.580)
ln(Trade Volume)	1.247	0.214	0.025	-0.266***	-0.545*	0.335
	(1.056)	(0.770)	(0.223)	(0.083)	(0.289)	(0.302)
Dep Var Mean	3.691	-0.046	0.080	0.088	0.099	0.078
R-squared	0.584	0.542	0.343	0.642	0.415	0.234
Country FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Observation	853.000	783.000	687.000	841.000	838.000	852.000

All regressors are lagged by one year. Robust standard error. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table A.1: Literature on the Effects of FDI

Country	Authors	Journal (Year)	Key result
Foreign Acquisition			
Indonesia	Lipsey et al	Journal of Development studies 2013	Shifts from domestic to foreign ownership raise the growth rate of employment, but no significant effects of shifts from foreign to domestic ownership.
Indonesia	Lipsey et al	JDE 2004	Wages in foreign owned plants are about 12% and 20% higher than in private domestic plants for blue- and white-collar workers, respectively.
Indonesia	Beata Javorcik et al	Journal of the European Economics Association 2017	Divestment of foreign affiliates is associated with a drop in TFP accompanied by a decline in output, markups, export and import intensities.
Indonesia	Arnold and Javorcik	JIE 2009	Foreign ownership leads to significant productivity improvements in the acquired plants. The improvement is visible in the acquisition year and continue in subsequent periods.
Indonesia	Bernard and Sjöholm	NEBR working 2003	Plants with any foreign ownership are less likely to close than wholly-owned domestic plants. But such result reverse if controlling for plant size and productivity.
Turkey	Yasar et al	JIE 2007	Firms with international linkages are more productive. In particular, foreign ownership is most important compare to export, import and licensing.
Hungary	Earle, Telegdy, and Antal	working paper 2012	Foreign ownership raises wage about 4.5%. The positive effect is found for all education, experience, and gender groups, occupation and wage quantiles.
Spain	Guadalupe, Thomas	AER 2012	Acquired firms conduct more product and process innovation and adopt foreign technologies, leading to higher productivity.
China	Manova et al	ReStat 2015	Foreign affiliates and joint ventures have better export performance than private domestic firms in financially more vulnerable sectors.
China	Jian Wang, Xiao Wang	JIE 2015	No evidence of foreign acquisition on improving productivity, but improve financial condition and more export activities, which results in increased output, employment and wage.
Spillover from FDI in the manufacturing sector			
Lithuania	Beata Javorcik	AER 2004	A one standard deviation increase in foreign presence in the souring sectors is associated with a 15% rise in output of each domestic firm in the supplying industry.
Indonesia	Blalock et al	JIE 2008	Downstream FDI cause productivity gains, greater competition, and lower prices among local firms in upstream.
Chile		JDE	

Czech Republic	Kosova	ReStat 2010	The crowding out effect from FDI within the same industry is only short term. After initial entry shakeout, growing foreign sales increase domestic firm growth and survival.
Czech Republic	Javorcik and Spatareanu	Scandinavian Journal of Economics 2009	High productive firms are more likely to supply multinationals as well as suppliers learning from their relationships with multinationals.
Bangladeshi	Kee	JDE 2015	Foreign presence increases productivity of domestic firms that shared the same suppliers with MNEs.
Buglaria, Romania, Poland	Jozef Konings	Economics of transition 2001	No evidence of positive horizontal spillovers, but negative or no spillover of foreign investment to domestic firms.
China	Swenson and Chen	Oxford Bulletin of Economics and Statistics 2014	One standard deviation increases in multinational presence (measured by the export value), was associated with 6.3% increase in unit transaction value.
China	Lu and Tao and Zhu	JIE 2017	The presence of foreign MNCs has no significant effects on the exporting performance or R&D investment of domestic firms in the same industry. But it leads to significant increase in wage rate paid by the domestic firms in the same industry, decrease the exit probability of domestic firms in the same industry.
China	Zhiqiang Liu	JDE 2008	Spillover lower the short-term productivity level, but raise the long-term rate of productivity growth of domestic firms in the same industry. However, backward linkages is statically most important channel for spillover to occur.
China	Du, Harrison, and Jefferson	Journal of Asian Economics 2012	There were significant positive productivity spillovers via backward and forward linkages, but insignificant horizontal spillovers.
Spillover from FDI in service sector			
Chile	Fernandes, Paunov	JDE 2012	Forward linkages from FDI in services explain 7% of the observed increase in Chile's manufacturing users' TFP.
Romania	Javorcik, Li	JIE 2013	The expansion of global retail chains leads to a significant increase in the TFP in the supplying manufacturing industries: a 10% increase in the number of foreign chains' outlets is associated with a 2.4% to 2.6% boost to the TFP in the supplying industries.
Czech Republic	Arnold et al	JIE 2011	There is positive correlation between liberalization in services sectors and the productivity of downstream manufacturing firms: a one-standard-deviation increase in foreign presence in services industries is associated with a 7.7% increase in the productivity of manufacturing firms relying on services inputs.

India	Arnold et al	Economic Journal 2016	They found that banking, telecommunications, insurance and transport reforms all had significant positive effects on the productivity of manufacturing firms. Services reforms benefited both foreign and locally owned manufacturing firms, but the effects on foreign firms tended to be stronger.
Mediating factors			
Indonesia	Blalock et al	JDE 2009	Firms with more investment in research and development, with more educated workers benefited more from FDI spillover
Romania	Javorcik et al	JDE 2011	Origin of FDI affects the degree of spillover effect. Firms more likely to source locally if host-origin distance is large. Sourcing pattern also depends on preferential trade agreements.
Romania	Javorcik and Spatareanu	JDE 2008	Vertical spillovers are associated with projects with shared domestic and foreign ownership but not with fully owned foreign subsidiaries.
Cross-country	Farole and Winkler	Working paper 2012	This study tries to identify different types of mediating factors: firms' absorptive capacity; investors' spillover potential measured by share of FDI output sold domestically, and national and institutional factors. They found all these three types of MF have effects but firms' absorptive capacity has the strongest influence.
Determinants and impacts of China's ODI			
China	Wenjie Chen, David Dollar, Heiwai tang	The world bank economic review 2016	By study the determinant of China's ODI in Africa, they found that China's ODI is more concentrated in skill intensive sectors in skill-abundant countries but in capital-intensive sectors in capital-scarce countries.
China	Wenjie Chen, Neiwai Tang	Asian Development review 2014	They find ex-ante larger, more productive, and more export-intensive firms are more likely invest abroad. Firms that made ODI achieve higher TFP, employment, and export intensity.
China	Wenjie Chen, Neiwai Tang	Academy of Management Annual Meeting Proceedings 2014	Find evidence of export-promotion effects of OFDI: after OFDI, exporters increase their number of countries served and export variety. The average sales per product line and average unit value of exports both increase, along with product diversification away from existing core competencies.
China	Wang, Tan, Yu, Huang	Pacific Economic Review 2016	Firms with higher productivity and less financial constraints are more likely to increase volume of ODI.
China	Ramasamy et al	Journal of world business 2012	State-controlled firms are attracted to countries with larger source of natural resources and risky political environment. Private firms are more market seekers.
China	Haiyue Liu et al	Applied Economics 2016	Renminbi appreciation has a negative impact on China's ODI flows, and both higher exchange rate volatility and expected depreciation encourage ODI.

China	Buckley et al	Journal of International Business Studies 2007	They find Chinese ODI to be positively correlated with the levels of political stability in and cultural proximity to host countries. It is also positively related to host countries' natural resource endowment in recent years.
China	Cheng and Ma	working paper 2007	The result is in line with the general results from other economics: China's ODI positively correlated with host economies' GDP and negatively correlated with respective distances from China is negatively correlated with FDI flow from China.
The role of policy in FDI			
Cross-country	Harding and Javorcik	Economic Journal 2011	Investment promotion leading to higher FDI flows to countries in which red tape and information asymmetries are likely to be severe. IPA works well in developing countries but not in industrialized economies.
Cross-country	Wagle	Working paper 2011	Inward FDI is highly responsive to cross-country variation in specific institutional provisions, such as arbitration of disputes and legal procedures to establish foreign subsidiaries.
Cross-country	Rocha et al	World Bank document 2017	Depth of preferential trade agreement positively related with vertical FDI inflow
Cross-country	Blyde et al	JIE 2014	A change from the first quartile to the third quartile of the logistic infrastructure distribution increases the number of vertically integrated subsidiaries by 29 percent.

Table A.2: Summary Statistics of CGIT Data

	Mean	**S.D.**	**Min**	**Max**	**Count**
Year	2012.74	3.022247	2005	2017	2712
Investment/Construction Quantity (millions USD)	732.8392	1425.891	100	41190	2712
Total Share	.5360935	.3304285	.01	1	768
Greenfield	.1349558	.3417393	0	1	2712
Sector	6.524336	3.355732	1	12	2712
Subsector	11.93333	7.138129	1	25	2040

Source: China Global Investment Tracker

Table A.3: China's top 10 investors and constructors based on the number of transactions since 2005

Investor	**transaction frequency**	**Contractors**	**transaction frequency**
CIC	63	China Communications Construction	171
CNPC	46	Sinomach	155
HNA	33	State Construction Engineering	102
Sinopec	33	Power Construction Corp	98
SAFE	28	Sinohydro	50

Fosun	26	Sinoma	49
Dalian Wanda	19	Three Gorges	44
Three Gorges	19	China Railway Construction	43
CITIC	15	China Railway Engineering	39
CNOOC	15	China Energy Engineering	37

Source: China Global Investment Tracker

Table A.4: China's top 10 investors and constructors based on transaction value since 2005

Investor	Value (millions USD)	Contructor	Value (millions USD)
CNPC	68030	CNPC	119380
Sinopec	62260	Sinopec	89120
CIC	56710	China Communications Construction	82000
HNA	47400	Sinomach	76240
China Reform Holdings, Chem China	41190	CNOOC	76170
CNOOC	31680	China Railway Construction	72840
SAFE	22940	CIC	60770
Chinalco	22050	Chinalco	54150
Dalian Wanda	19930	Power Construction Corp	50870
State Grid	18760	State Construction Engineering	50260

Source: China Global Investment Tracker

Table A.5: Summary statistics of FDI policy (Investing Across Borders 2010)

	BRI countries[21]	Non-BRI countries	High income OECD[22]
Economy Openness (Foreign Equity ownership restriction)			
Openness (100 = fully allow foreign ownership in all sectors)	87.46668	91.39487	91.18182
Procedure burden to start a foreign business			
Average Procedure to start a foreign business (number)	9	10.96	9
Average Time (days) to start a foreign business	30.62162	50.12	21

[21] Investing Across Borders (2010) includes the following BRI countries: Afghanistan, Albania, Armenia, Azerbaijan, Bangladesh, Belarus, Bosnia and Herzegovina, Bulgaria, Cambodia, China, Croatia, Czech Republic, Egypt, Arab Rep., Georgia, India, Indonesia, Kazakhstan, Kyrgyz Republic, Macedonia FYR, Malaysia, Moldova, Montenegro, Pakistan, Philippines, Poland, Romania, Russian Federation, Saudi Arabia, Serbia, Singapore, Slovak Republic, Sri Lanka, Thailand, Turkey, Ukraine, Vietnam, and the Republic of Yemen.

[22] High-income OECD countries include: Austria, Canada, Czech Republic, France, Greece, Ireland, Japan, Korea, Rep., Slovak Republic, Spain, United Kingdom, and United States.

Ease of Establish Index (100 = Most Ease)	70.03514	60.374	77.8
Access to Industrial Land			
Strength of Lease right	83.05946	81.44898	92.2
Strength of Ownership right	92.22333	92.22973	100
Access to land Information	43.34054	39.66531	52.5
Availability of land information	74.76216	67.5	84.2
Time to lease private land	56.05405	64.02128	50
Time to lease public land	142.8824	139.102	88
Arbitrating Commercial Disputes			
Strength of law Index	85.66216	84.938	94.2
Ease of process index	69.54054	71.436	83.3
Extent of judicial assistance index	58.57027	57.338	77.6
N	37	50	1

Table A.6: Top 10 and bottom 10 BRI countries in term of FDI Openness

Top 10 (most open)	**Average Openness score[23]**	**Bottom 10 (Least open)**	**Average Openness score**
Montenegro	100	Thailand	52.07273
Bangladesh	100	Saudi Arabia	58.79091
Georgia	100	Philippines	60.06364
Afghanistan	100	Malaysia	67.5
Slovak Republic	98.14545	Vietnam	68.75455
Kyrgyz Republic	98.14545	China	70.52728
Romania	98.14545	Indonesia	71.89091
Czech Republic	98.14545	India	74.98182
Macedonia, FYR	98.14545	Belarus	81.66364
Bulgaria	98.14545	Pakistan	83.32727

Note: Openness score = 100 when foreign ownership is fully allowed across all sectors
Source: Investing Across Borders (2010)

Table A.7: Top 10 and bottom 10 BRI countries in term of procedural burden

[23] The score is calculated by taking the simple average of all sectors' openness index.

Top 10 (Least procedural burden)	Ease of Establish foreign subsidiary Index	Bottom 10 (most procedural burden)	Ease of Establish foreign subsidiary Index
Slovak Republic	92.1	Saudi Arabia	35
Romania	89.5	Cambodia	44.7
Poland	85	Sri Lanka	47.9
Georgia	84.2	Indonesia	52.6
Albania	84.2	Bangladesh	55.3
Serbia	84.2	Vietnam	57.9
Croatia	81.6	Philippines	57.9
Czech Republic	81.6	Thailand	60.5
Ukraine	80	Malaysia	60.5
Montenegro	78.9	Egypt, Arab Rep.	63.2

Source: Investing Across Borders (2010)

Table A.8: Top 10 and Bottom 10 BRI countries in terms of accessing Industrial land

Top 10 (Least time required)	Time to lease public/private land (in days)[24]	Bottom 10 (Most time required)	Time to lease public/private land (in days)
Philippines	16	Afghanistan	259.5
Georgia	29	Malaysia	225.5
Bosnia and Herzegovina	31	Bulgaria	205.5
Armenia	33.5	India	192.5
Saudi Arabia	42.5	Poland	154
Turkey	43.5	Bangladesh	149
Egypt, Arab Rep.	45	Russian Federation	146.5
Macedonia, FYR	46	Ukraine	129.5
Moldova	47	Vietnam	126.5
Yemen, Rep.	52.5	Serbia	122

Source: Investing Across Borders (2010)

Table A.9: Top 10 and Bottom 10 BRI countries in terms of Arbitrating Commercial Disputes

[24] This is the simple average of time to lease private land and time to lease public land.

Top 10	Simple Average of arbitrating Indexes[25]	Bottom 10	Simple Average of arbitrating Indexes
Singapore	90.06667	Afghanistan	22.7
Slovak Republic	89.1	Saudi Arabia	43
Serbia	85.66666	Montenegro	56.66667
Romania	84.4	Azerbaijan	57.66667
Czech Republic	83.9	Cambodia	62.33333
Malaysia	81.13333	Albania	64.4
Belarus	80.73333	Pakistan	66.3
Macedonia, FYR	79.23333	Armenia	66.5
Ukraine	79.1	Yemen, Rep.	66.76667
Poland	78.1	Vietnam	67.96667

Source: Investing Across Borders (2010)

Table A.10: Transportation Proxies within BRI's High Income Economy

Economy	**Railway**	**Airway**	**Port Quality**
United Arab Emirates	NA	21.48868	6.4
Bahrain	NA	12.81528	6
Brunei Darussalam	NA	8.346565	4.5
Czech Republic	17.74247	1.841388	4.6
Estonia	15.39093	2.69963	5.6
Greece	3.778588	2.950139	4.2
Hong Kong SAR, China	NA	15.94337	6.5
Hungary	13.57965	4.036458	4
Israel	6.428323	2.969349	3.9
Kuwait	NA	3.744403	4.1
Lithuania	17.74314	1.489467	5.2
Latvia	26.40113	4.486195	4.8
Macao	NA	7.904864	
Oman	NA	4.338698	5.4
Poland	11.51436	1.323211	3.5

[25] The indexes being averaged are: the strength of laws index (0-100), the ease of process index (0-100) and the extent of judicial assistance index (0-100).

Qatar	NA	26.97952	5.2
Saudi Arabia	1.396244	3.419926	5.3
Singapore	NA	18.26711	6.8
Slovak Republic	NA	1.020447	4
Slovenia	13.051	1.974575	5.2
Taiwan, China	NA	NA	NA
Average	12.7025835	7.40196375	5.01052632

Table A.11: Transportation Proxies within BRI's Upper Middle Income Economy

Economy	Railway	Airway	Port Quality
Albania	1.272423	1.688155	3.7
Azerbaijan	4.909567	1.415471	4
Bulgaria	7.439412	1.327222	3.7
Bosnia and Herzegovina	2.378325	1.016712	1.7
Belarus	35.58848	1.244771	NA
China	18.62882	1.611843	4.4
Croatia	7.93923	2.076799	4
Iran, Islamic Rep.	6.498254	1.569582	4
Iraq	1.083575	1.060074	NA
Kazakhstan	65.0559	1.602789	3.4
Lebanon	NA	2.101489	4.1
The FYR of Macedonia	NA	NA	4.2
Montenegro	NA	3.1505	3.6
Malaysia	3.63507	4.48696	5.5
Romania	6.904698	1.439907	2.6
Russian Federation	67.50262	2.090101	3.7
Serbia	4.500102	1.423001	2.7
Thailand	3.384635	2.434443	4.6
Turkey	2.691326	3.158554	4.4
Average	14.9632773	1.9387985	3.78235294

Table A.12: Transportation Proxies within BRI's Lower Middle Income Economy

Economy	Railway	Airway	Port Quality
Armenia	1.709385	1.313269	3

Bangladesh	1.978615	1.037428	3.3
Egypt, Arab Rep.	10.63697	1.265411	4
Georgia	NA	1.114626	4.3
Indonesia	2.762852	1.792393	3.6
India	18.42477	1.143692	4
Jordan	2.424771	2.12367	4.4
Kyrgyzstan	1.762315	1.216624	1.5
Cambodia	NA	1.084388	4.2
Lao People's Dem. Rep.	NA	1.335872	NA
Sri Lanka	NA	1.612404	4.9
Moldova, Republic of	3.789249	1.375384	3
Myanmar	NA	1.080184	NA
Mongolia	23.18946	1.555539	3
Pakistan	3.416169	1.114586	4.4
Philippines	NA	1.738362	3.3
Syrian Arab Republic	3.190721	1.109645	NA
Tajikistan	1.264567	1.19991	1.7
Ukraine	38.59198	1.318197	4
Uzbekistan	5.315387	1.224439	NA
Vietnam	2.187424	1.485202	3.4
Yemen, Rep.	NA	1.127882	3
Average	8.04297567	1.33495941	3.5

Table A.13: Transportation Proxies within BRI's Low Income Economy

Economy	**Railway**	**Airway**	**Port Quality**
Afghanistan	NA	1.149955	NA
Nepal	NA	1.069477	2.7
Average	NA	1.109716	2.7

Table A.14: Variables and Data Sources

Variable	**Description**	**Source**

Bilateral FDI	FDI flow from parent country to host country, measured in millions USD, between 2001 and 2012	UNCTAD bilateral Statistic
China's outward Investment	Investment no less than 100 million USD (measured in millions USD)	China Global Investment Tracker
China's outward construction	Construction projects no less than 100 million USD	China Global Investment Tracker
Greater-circle weighted distance	Greater-circle weighted distance (pop-wt, km)	GeoDist database from CEPII
Sea distance	Transportation distance by sea	Feyrer (2009)
Driving distance and time	Driving distance and time between countries' capital cities	Google Maps Distance Matrix API
Railway index	Product of logged host and logged source railway index. Host or source railway index is the average of sub-indicator of railway goods transported and sub-indicator for passengers carried	Calculated based on data from World Development Indicator
Airway index	Product of logged host and logged source airway index. Host or source airway index is the average of sub-indicator of airway goods transported and sub-indicator for passengers carried	Calculated based on data from World Development Indicator.
Quality of Port	Range from 1 (extremely underdeveloped) to 7 (well developed and efficient by international standards)	World Development Indicator
Sub-indicator for railway goods transported	Railway goods transported (million ton per km) normalized by country population and rescaled from 1 to 100	Calculated based on data from World Development Indicator
Sub-indicator for railway passenger carried	Railway passengers carried (million per km) normalized by country population and rescaled from 1(inadequate) to 100(adequate)	Calculated based on data from World Development Indicator
Sub-indicator for airway goods transported	Airway goods transported (million ton per km) normalized by country population and rescaled from 1(inadequate) to 100(adequate)	Calculated based on data from World Development Indicator
Sub-indicator for airway passenger carried	Airway passengers carried (million per km) normalized by country population and rescaled from 1(inadequate) to 100(adequate)	Calculated based on data from World Development Indicator
Contiguity	Dummy variable equal to 1 if parent and host country share the same border	GeoDist database from CEPII
Common official language	Dummy variable equal to 1 if parent and host use the same official language	GeoDist database from CEPII
GDP	GDP (constant 2010 US$), NY.GDP.MKTP.KD	World Development Indicator

Country human capital	Average years of secondary education	World Development Indicator
Days to start business	Average days to start business	World Bank's Do Business data
School enrollment rate	School enrollment, secondary (% net)", SE.SEC.NENR	World Development Indicator
Days	Average number of days needed to start a foreign business	Investing Across Borders (2010)
Ease of Establishment index	0 = Extremely difficult, 100 = Extremely easy	Investing Across Borders (2010)
Sector openness	Score of foreign ownership restriction at sector: 1) Mining, oil & gas, 2) Agriculture & forestry, 3) Light manufacturing, 4) Telecom 5) Electricity 6) Banking 7) Insurance 8) Transport 9) Media 10) Sector group 1 (Construction, tourism & retail) 11) Sector group 2 (Health care & waste management)	Investing Across Borders (2010)
Accessing Industrial land indexes	Include: Strength of lease rights index (0-100), Strength of ownership rights index (0-100), Access to land information index (0-100), Availability of land information index (0-100), Time to lease private land (in days), Time to lease public land (in days)	Investing Across Borders (2010)
Arbitrating Commercial Disputes	Include: Strength of laws index (0-100), Ease of process index (0-100), Extent of judicial assistance index (0-100)	Investing Across Borders (2010)
Logistics Performance Index		World Bank's Doing Business data set
Trade Across Borders		World Bank's Doing Business data set

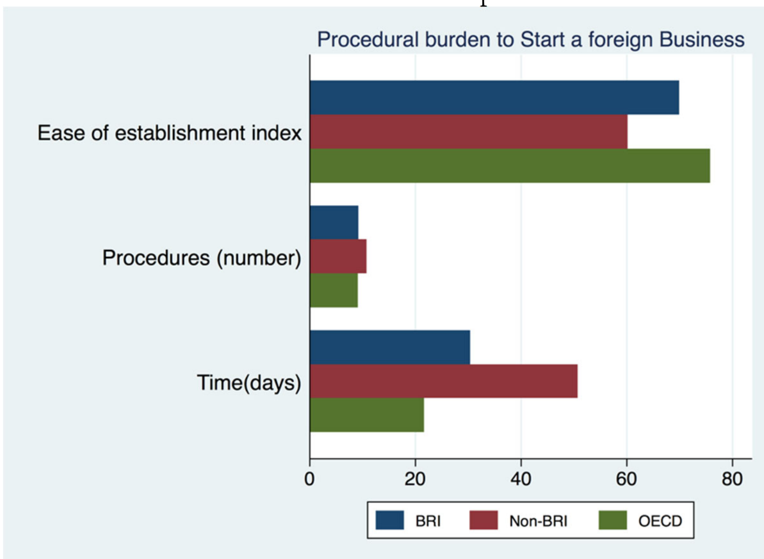
Table A.15: First-Stage IV Estimates

	(1) log_FDI
FDI in control group	0.365***
	(0.056)
Constant	9.040***
	(1.314)
Dep Var Mean	21.246
R-squared	0.899
Country FE	Yes
Year FE	Yes
Observation	1589

Robust standard error. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

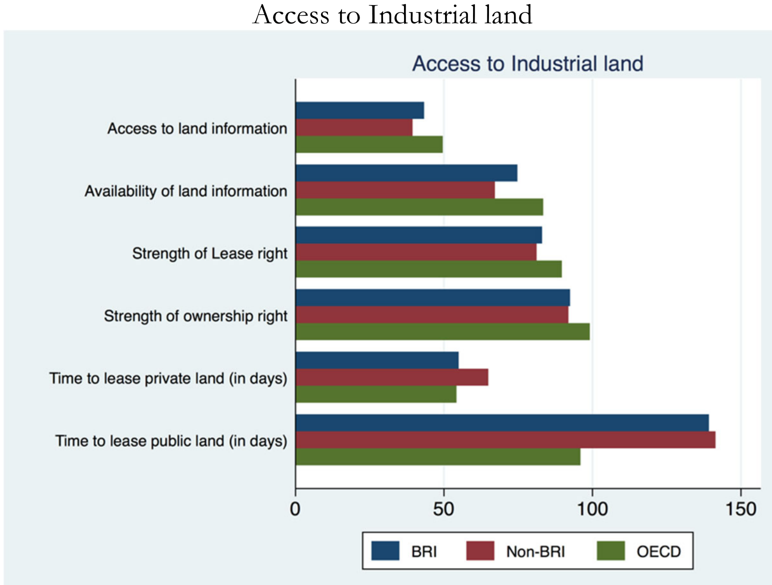
Figure A.1: FDI policy Comparison

Procedural burden comparison



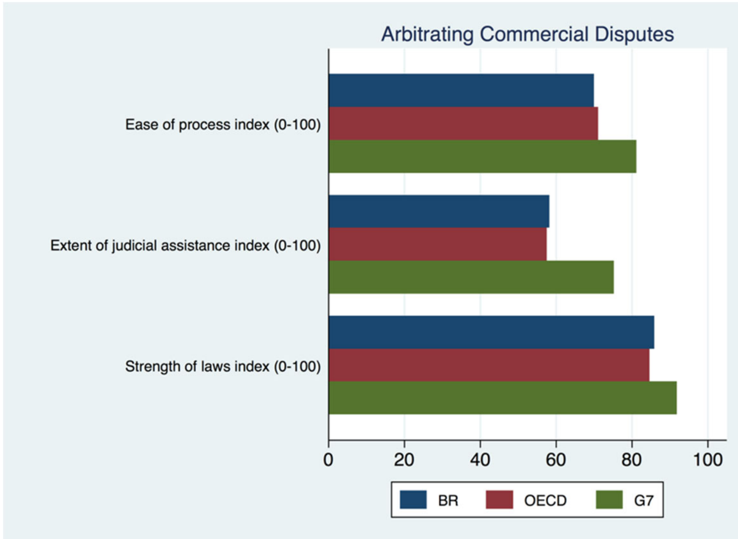
Source: Investing Across Borders (2010)

Access to Industrial land



Source: Investing Across Borders (2010)

Arbitrating Commercial dispute



Source: Investing Across Borders (2010)

<In figure A.2, x-axis labels, use Russian Federation and Korea, Rep.>

Figure A.2: Average depth of PTA agreement for select countries

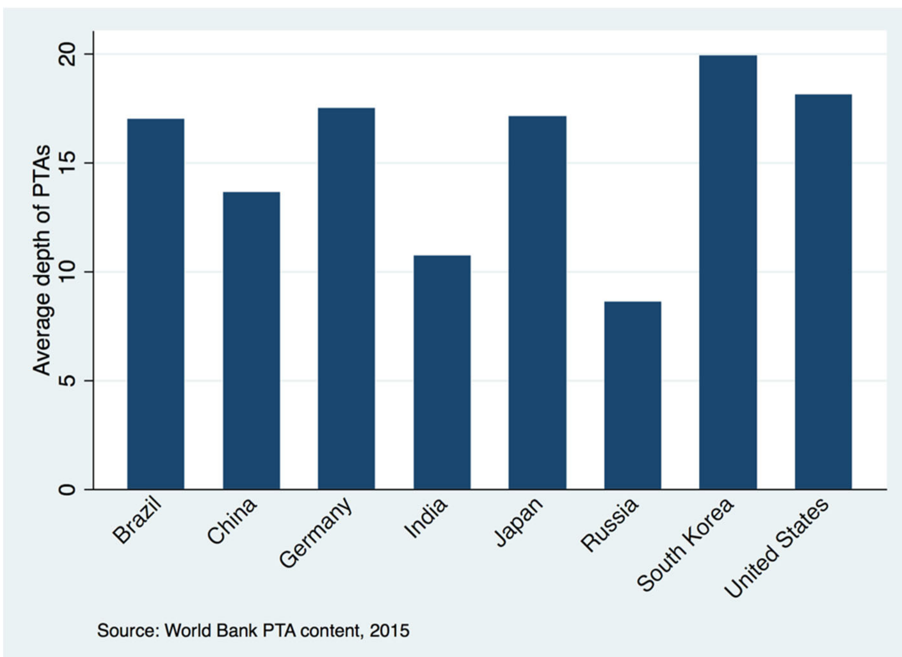


Figure A.3: Correlations between the FDI inflow-to-GDP ratio and host country characteristics