Remittances Review
June 2024,
Volume: 9, No: 3, pp.1194-1210
ISSN: 2059-6588(Print) | ISSN 2059-6596(Online)

Received: 10 May 2024, Accepted: 28 June 2024
DOI: https://doi.org/10.33282/rr.vx9i2.62

"Exploring the Factors Influencing China-Sampled Asia Trade under the Belt and Road Initiative: Panel Data Analysis"

Naveed Ali[1], Samia Manan[2], Umar Hayat[3], Aqil Khan[4].

1. Department of economics & development studies, University of swat.
   Email: naveedali@uswat.edu.pk

2. Department of Economics, University of Chitral.
   Email: samia.manan@uoch.edu.pk

3. Department of Economics and Development Studies, University of Swat, Pakistan Email: umarhayat@uswat.edu.pk (corresponding author)

4. Directorate of commerce education and management science, Higher Education Archives and libraries, Pakistan. Email: aqilkhan47uop@gmail.com

Abstract

In an interconnected and rapidly evolving global economy, the dynamic forces of international trade have become a pivotal driver of economic growth and prosperity. Against this milieu, China started Belt and Road initiatives emerged as a transformative force reshaping the landscape of international trade and connectivity. This study investigates the determinants of China-Asia trade under the background of the Belt and Road Initiative (BRI). We use Gravity model of trade to analyze the determinants of China-Asia trade. Trade variable is captured by three alternative proxies such as trade, exports and imports. The sample countries of this study include: India, Laos, Nepal, Pakistan, Sri Lanka, Afghanistan and Maldives. We use Generalized Method of Moments (GMM) and instrumental variables Two Stage Least Square (2SLS) methods to estimate the gravity model of trade for China. The results show that economic growth in China and Asia, distance between China and Asian countries and improvement of industrialization in Asia has positive effects on China-Asia trade. While the development gap between China and selected Asian countries, China's investment to Asian country and Savings rate of Asian country has negative effects on China- Asia trade. Policy recommendations are provided at the end of the study.

Keywords: Belt and Road Initiative, Trade, Gravity Model, Generalized Method of Moments

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1. Introduction

The world has witnessed a remarkable transformation of global trade in recent decades, with Asia playing a central role in this new economic landscape. Amongst the ever-growing interdependence of nations, Belt and Road initiative by China has emerged as a defining phenomenon with the potential to reshape the dynamics of international trade and businesses. Spearheading this ambitious project, China aims to foster a new era of connectivity and cooperation, binding nations together through a web of infrastructure and trade relationships that span continents and foster mutual prosperity. The Belt and Road Initiative (BRI) is a comprehensive plan proposed by China in 2013 to promote trade and connectivity among China, Central and Sampled Asia, the Middle East, Europe, and Africa (Majeed et al., 2021). The initiative has made a tremendous impact on the global economy. Over sixty-four countries participated, representing roughly sixty-two percent of the world's population and thirty percent of global economic activity (Rahman, 2019; Akcay, 2017). The sheer size of the global population served by the One Belt, One Road initiative, as well as the global production it helps to sustain, speak volumes about the importance of the project to China and the other nations involved. Among many assignments under the BRI, China Pakistan Economic Corridor (CPEC) remained one of the important work initiated with $52bn for huge investment in the Pakistan's territory(Abid and Ashfaq, 2015) . The CPEC ambitions to engage as many as 200 state-owned Chinese companies and connect China with the EU through Central Asian Countries. Thus, it is China's most significant endeavor to channelize economies to a higher level of globalization. Beside this, China-India bilateral trades have also been far more successful which collectively worth about $90967millions in 2021 (WTO, 2021). Due to the one belt initiatives, China has expended its trade notonly with its bordered countries but also with the European Countries. Figure 1 presents the patterns of bilateral trade of China with seven Asian countries which are sample countries of this study. In Figure 1, it is explicitly shown that India's trade with China is greater than the sum of trade of the other six countries including Pakistan which has signed CPEC project as mega bilateral project. The export and Import of China with the selected Asian countries are presented in Figure2-3 respectively.

Figure 1: China's Trade with Asian Countries

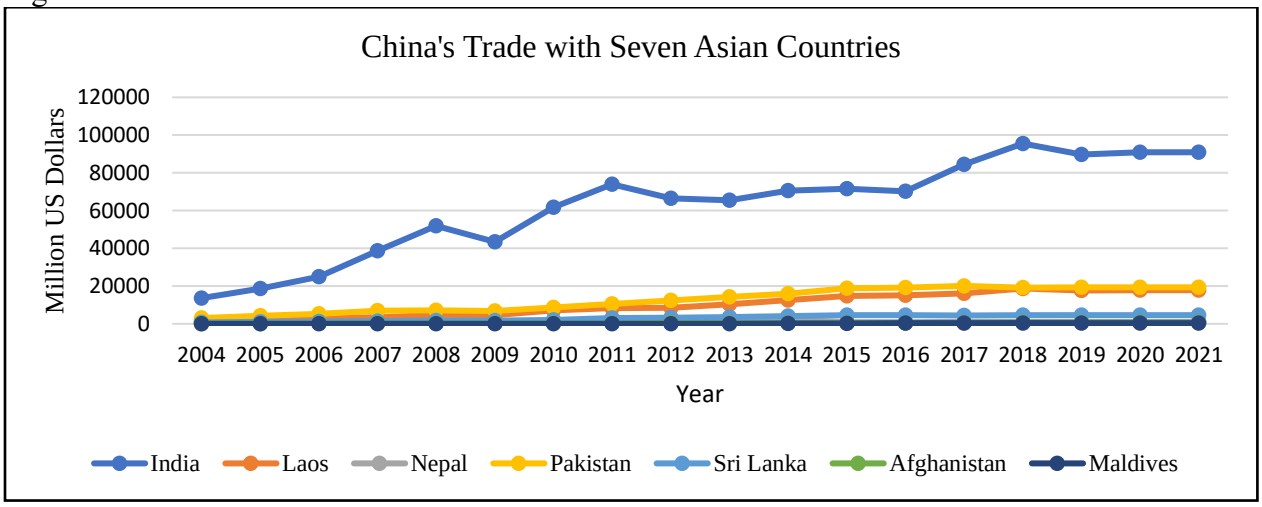

Figure 2: China's Exports to Asian Countries

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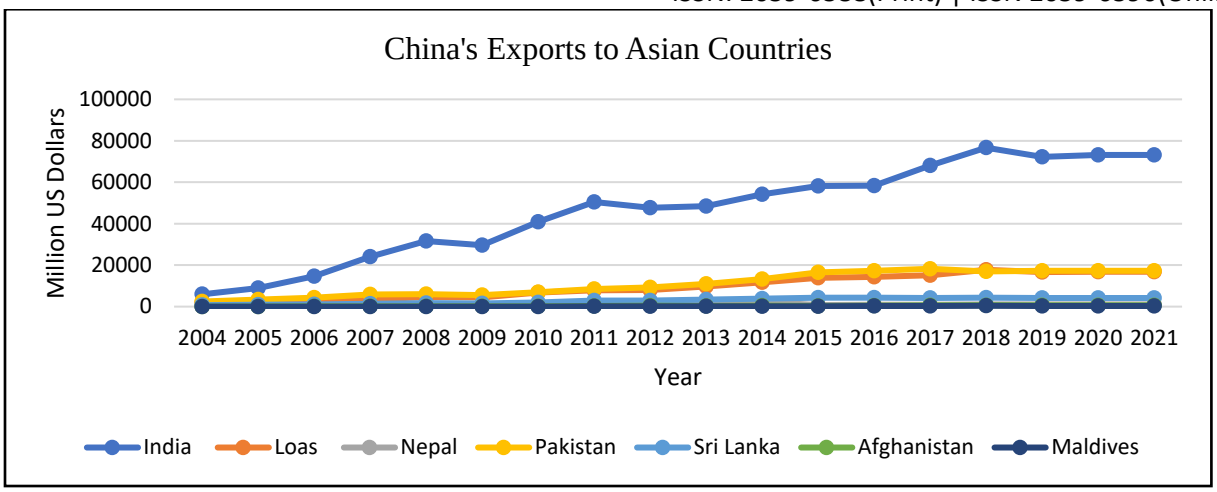

Figure 3: China's Imports from Asian Countries

The impact of BRI is significantly found on trade openness and economic growth For example, it is shown that there is increase in bilateral-trade of China with the countries situating along the Belt and Road (Kettunen, 2019). The BRI also facilitated policy coordination, unobstructed trade and financial integration and logistic support in the countries along the Belt and Road (Duodu and Baidoo, 2020). Overall, the BRI has had a significant impact on trade enhancement and economic cooperation among participating countries. In the study of Zahang (2022) it was discovered that CO2 emissions in Belt and Road countries rose sharply as a result of greater trade openness with the rest of the world. Hughes (2020) also concluded that foreign direct investment (FDI), trade openness and inflation have statistically significant correlation with FDI in BRI member countries (Hughes, 2020). According to Jahangir (2022), trade complementarity of agricultural goods in BRI nations has been decreased as a result of the BRI.

This research paper endeavors to empirically investigate the far-reaching impacts of Belt and Road initiatives and explore its potential benefits for the seven Asian countries during 2004-2022. By assessing the economic implications through foreign direct investment, saving and investment rate, and geographical distances, we aim to provide a comprehensive analysis of the BRI project on flow of international trade in the selected Asian countries. The study also attempts to analyze the mediating role of industrialization, FDI and geographical distance on trade openness.

2. Literature Review

The One Belt One Road initiative (thereafter "BRI"), is a strategically comprehensive development plan of China to enhance regional connectivity and cooperation among countries in various aspects, including trade interdependences and economic cooperation (Hughes et al., 2020). Several literatures are available regarding BRI and its associated variables which are as follows:

2.1. Trade openness and Economic Growth

The bi-relationship of the trade openness and economic growth has been studied in the empirical studies of the economic literature with some ambiguous results. Keho (2017) examined the impact of trade liberalization on economic growth in the case study of Cote d'Ivoire. Keho (2017) applied the multivariate framework that incorporated some repressors including: labor, trade openness and capital stock. In results, it has been shown that trade openness had positive effects on economic growth in the short as well as in the long run. In addition, they also concluded that a positive and significant complementary relationship between openness in trade and capital formation which ultimately promote economic growth (Keho, 2017). Khan et al. (2019) has also concluded that due to financial liberalization economic development happened in the case of Pakistan. Another study by Raghutla (2020) examined the relationship between economic growth and trade openness in the emerging economies including India. They found that trade liberalization had a statistically positive impact on economic growth in India (Raghutla, 2020). Intisar et al. (2020) observed a significant and positive relationship between trade openness and economic growth in the West African States (Also see Intisar et al., 2020; Acharya, 2019 for similar studies). Acharya (2019) also conducted research as empirical study of Nepal and found that international trade played a significant role in the economic growth of Nepal. While analyzing the impact of the Belt and Road initiative on bilateral trade in Europe, Fardella and Prodi (2017) have found that the through developed and modern railway connections, Nordic and Central European countries are expected to take mostly benefits. Interestingly, Bhagwati (2004) argues that the poor benefit from the liberalization and integration that occur from economic globalization through immediate economic and income affects as well. Doller and Kraary (2004) argue that developing nations who have implemented tariff reduction policies have benefited greatly from greater trade, while those that have not are left behind. Nasim (1988) mentioned technology adoption in the context of the trade openness-growth nexus in South and East Asian nations. All these cross-sectional studies have endogeneity issues and may replicate time-invariant traits rather than the effects of globalization, reflecting mixed signals about the direction of causation. Some research on panel data analysis is also accessible to account for this kind of issue. Trade openness, as measured by FDI and trade

inflow, has been linked to stronger economic development, as found by researchers such as Dollar and Kraay (2001). Furthermore, in the study of Greenaway et al. (1999), the index of trade to capital account as proxy of globalization. But Edison et al. (2002) concluded that FDI had no substantial influence on GDP growth. Vaubel (1999) looked at the connections between globalization and economic growth and found that a liberalized economy tends to have lower levels of government spending. However, most studies up to this point have focused on cross-national comparisons. Khan et al. (2016) and Chanda (2001) both used a measure of globalization known as the capital account openness index to find that emerging nations face inequality issues.

2.2. Challenges and Impact of Belt and Road initiative

The Belt and Road Initiative (BRI) is a multi-infrastructure project proposed in 2013 by the President of China aiming to accelerate regional connectivity and economic cooperation among countries in Asia, Europe, Africa, and beyond. However, since then, it confronts with many challenges and hurdles while implementation of one belt initiatives in true spirits. Like in the study of Pu (2016), he acknowledges three significant challenges to One Belt One Road where security threats and border disputes are the front line in addition to the geopolitical competition. China confronts very severe opposition from the USA side as one of the challenge in the conceptualization of Belt and Road Initiative. Regional apprehension is another hurdle in the implementation of Belt and Road Initiatives. Due to the steeping of disputes in South China Sea; the Southeast Asian countries believe that the Belt and Road Initiative is the only geopolitical move of China. This generates aversion in the Belt and Road Initiative project. In addition, Pu (2016) considers the domestic challenges that threaten to Belt and Road initiatives. The project's global acceptance is threatened by China's sluggish economic pace. The One Belt One Road initiative may have trouble getting funded if foreign exchange reserves continue to fall. Increased energy connection between China and Eurasia is identified by Brugier (2014) as a key factor in strengthening the gravitational pull between the two regions. China's growing appetite for energy has prompted exploration of hitherto untapped areas rich in such resources. It is anticipated that China would encourage more energy interconnection with Central Asia under the One Belt One Road initiative. Furthermore, Brugier (2014) thinks the new, more inward route between China and Europe will boost China's exports in the area. China's motivation for local growth, regional and global advantages through energy interconnection are all likely to play a role in pushing this project forward. In similitude with Brugier, Haiquan (2017) emphasizes on Gravity between China and Eurasia and the security challenges to the one Belt one Road initiatives. He categorizes the difficulties faced by the Belt Road program into two groups: conventional and unconventional. The BRI has attracted significant attention and has been the subject of various studies examining its impact on trade interdependence and economic development. One study by Duckworth (2023) focused on Latin American and Caribbean (LAC) countries' participation in the BRI. The study analyzed the relationship between trade interdependence with China and the likelihood of signing a MOU with China to join the BRI. The findings showed that those countries which are more interdependence on the China’s trade are more likely to participate in the BRI. The study also advocated diplomatic and political factors can also play role in decision of BRI participation. For trade interdependence, Kali & Reyes (2007) utilized a network approach to examine the global

trading system. The study developed network-based measures of international economic integration through mapping the topology of the international trade network. Their finding revealed with a core-periphery structure at higher levels of trade, and hierarchical structure in the global trade network. The study also highlighted the importance of country's level of economic growth within the network (Rani et al., 2023; Kali & Reyes, 2007). Al-Samhi & Al-Samhi (2020) also examined the impact of the BRI on trade and investment for bilateral trade between China and the United Arab Emirates. Using a gravity model analysis and found a positive impact on the economies of both China and the UAE. Moreover, they also highlighted the role of the BRI in promoting bilateral trade between these member countries. Li et al. (2020) also found that Belt and Road Initiative has raised Green-Total Factor Productivity (GTFP) in provinces connected along the sides of one belt initiatives route due to the development of internet facility. Moreover, the BRI has been found to associate with higher trade and connectivity among China, Middle East, Europe, and Africa (Hughes et al., 2020). Due to the transfer of the industrial sector from the eastern to the western part, the development and industrial innovation along with the upgraded infrastructure has been significantly increased. However, the provinces have led towards environmental challenges like water shortage, arid climate, and land pollution (Ahmad et al., 2018). For similar purpose, Sattar et al. (2022) have also concluded environmental degradation due to the Belt and Road Initiative, particularly in terms of carbon emissions (Sattar et al., 2022). Moreover, Sattar et al. (2022) has also suggested special attention to environmental degradation and to establish global standards to mitigate the adverse impact of Belt and Road Initiative on environment (Sattar et al., 2022).

2.3. Literature Summery and Gap

In the existing literatures various studies have been conducted regarding the impact of trade openness on economic growth in addition to the various determinants of one belt and road initiatives. Like Fardella and Prodi (2017) discussed numbers of countries which are to be benefited through this project. Similarly Bhagwati (2004) has also discussed tariff rate as policy indicator for trade openness and its impact on economic growth. Whereas challenges to the Belt and Road initiative has also been discussed by Pu (2016) where he discussed geopolitical competition from the USA as through to the project. However, researchers have not attempted to explore the impact of membership of one belt one road on their export, import and overall international trade in the selected Asian countries. In particular, this study attempts to fill the research gap by analyzing the impact of Belt and Road Project on the economic development of the selected Asian countries. In addition, the mediating role of influencing factors including geographical distance, industrialization, Chines foreign direct investment in the selected countries and saving rate have also been modeled in this study. The study is based on the empirical dataset during the periods of 2004-2021 for the selected seven countries including Laos, India, Nepal, Pakistan, Sarilanka, Afghanistan and Maldives.

3. Theoretical framework

Inspired by Newton's Laws of Universal Gravitation, which state that every particle in the universe attracts every other particle with a force equal to the product of their masses and inversely proportional to the square of the distance between their centers, the Gravity Model of Trade proposes that economic relationships should be based on the same principles. The Gravity Model of Trade, which has been used to study international trade since the 1950s, posits that a country's distance from another and the size of its economy are the two most important determinants in determining the volume of goods and services traded between them. According to the Gravity Hypothesis, a positive correlation exists between the size of a country and its trade flows, while a negative correlation exists between the distance between countries and their trade flows. The size of a country's market may change as its economy develops. The greater the size of the market, the higher the demand for both imports and exports. In international trade, transportation costs can be affected by the distance between the two nations. Using the Gravity Model of Trade and prior research on the factors that affect global trade, we examine whether or not China's and Asia's economies, locations, levels of industrialization, savings rates, and BRI membership all play a role in bilateral trade.

4. DATA AND METHODOLOGY

4.1. Data Specification

Economic growth of China and Asia: The country's Gross Domestic Product is the standard by which its export potential is measured. The GDP of the exporting nation is indicative of production capacity, while the GDP of the importing nation is indicative of consumption. As a result, we anticipate that bilateral trade will contribute favorably to GDP. *Geographical distance*: Academics have a common belief that the cost of transporting goods from one country to another is directly proportional to the physical distance between them. The price of travelling a greater distance increases. *International investment:* Through knowledge transfer, diffusion, and spillovers, FDI has increased the production efficiency of host nations under China's Go-Out Strategy, which has in turn boosted trade cooperation. *Savings rate:* If a country has a low savings rate, its population is more likely to spend money now, whereas a high savings rate implies that its people will spend money in the future. The savings rate has an indirect effect on output and investment. Investments in savings at home raise the stock of capital and help the economy grow and expand. *Industrial structure:* The composition of a country's manufacturing sector determines the nature of its commodity trade. Sampled Asian countries have lagged behind in economic progress. As indicated above, Sampled Asian countries are slowly transitioning from an agrarian economy to one centered on mass production of products and services, as evidenced by the shift in the types of commodities China imports from the region. The level of industrialization is quantified by looking at the industrial value added (as a percentage of GDP). We're also curious about how the BRI will affect trade. The "Five Links" of the Belt and Road Initiative are coordination of policies, connectivity of infrastructure, trade facilitation, financial capital flows, and interaction between people. All the variables except Distance, saving and industrial added value are presented in natural log form for the periods of 2004-2021. Data of the variables are extracted from World Data Index and dataset of Asian International Monetary Fund.

4.2 Methodology

This study investigates the determinants of China-Asia trade under the background of the Belt and Road Initiative (BRI). We use Gravity model of trade to analyze the determinants of China-Asia trade. The variable trade is captured by three alternative proxies such as trade, exports and imports. The model specification for this study is given as:

$$lntr_{i,c,t} = \lambda_0 + \lambda_1 DIS_{i,t} + \lambda_2 lnGDP_{i,t} + \lambda_3 lnGDP_{c,t} + \lambda_4 lnGDP_{i,t} + \lambda_5 lnGDPP_{i,c,t} + \lambda_6 FDI_{i,t} + \lambda_7 SA_{i,t} + \lambda_8 IND_{i,t} + \lambda_9 BR_{i,t} + \varepsilon_{i,t} \quad (1)$$

Where, tr_{ict} represents the total trade volume between China with the ith country in the tth year, DIS_{ic} represents the distance between the capitals of China and the capital of ith country. GDP_{it} represents the GDP of the i^{th} country in the t^{th} year. GDP_{ct} is the Chines GDP in in tth year. $GDPP_{ict}$ shows the difference of GDP per capita between China and i^{th} country in the t^{th} year. FDI_{ict} represents the China's investment to country *i* in year *t*. SA_{it} is the savings rate of country *i* in year *t*. IND_{it} represents the industrial added value (% of GDP) in Asian i^{th} country in the t^{th} year. BRI_{it} is a dummy variable. If country *i* join the Belt and Road Initiative or attempted towards a free trade agreement in the t^{th} year, proxy it one other wise zero.

Furthermore, model 2 is estimated by taking Chinese exports to sampled Asian countries as dependent variable. The model is:

$$lnex_{i,c,t} = \lambda_0 + \lambda_1 DIS_{i,t} + \lambda_2 lnGDP_{i,t} + \lambda_3 lnGDP_{c,t} + \lambda_4 lnGDP_{i,t} + \lambda_5 lnGDPP_{i,c,t} + \lambda_6 FDI_{i,t} + \lambda_7 SA_{i,t} + \lambda_8 IND_{i,t} + \lambda_9 BR_{i,t} + \varepsilon_{i,t} \quad (2)$$

Where, ex_{ict} represents China's exports to country *i* in year *t*. Next, we estimate the mode 3 by taking import to China from the sampled Asian countries as dependent variable. The model is:

$$lnim_{i,c,t} = \lambda_0 + \lambda_1 DIS_{i,t} + \lambda_2 lnGDP_{i,t} + \lambda_3 lnGDP_{c,t} + \lambda_4 lnGDP_{i,t} + \lambda_5 lnGDPP_{i,c,t} + \lambda_6 FDI_{i,t} + \lambda_7 SA_{i,t} + \lambda_8 IND_{i,t} + \lambda_9 BR_{i,t} + \varepsilon_{i,t} \quad (3)$$

Where, im_{ict} represents China's imports from the i^{th} sampled Asian country in the t^{th} year. The descriptive statistics are given in table 1.

Table 1: Descriptive Statistics of the variables

Variable	Obs	Mean	Std.Dev.	Min	Max
LNTR	126	12.295	2.239	6.696	16.072
LNEX	126	12.195	2.156	6.673	15.853
LNIM	126	9.03	3.521	1.099	14.664
$LNGDP_{ct}$	126	29.582	.632	28.302	30.242
$LNGDP_{it}$	126	24.78	1.993	20.875	28.631
$LNFDI_{ict}$	126	9.032	3.363	0	13.256
$LNPGDP_{ict}$	126	8.103	.812	6.093	9.132
DIS_{ic}	126	4149.714	971.746	3017	5896
SA_{it}	126	28.903	14.813	10.414	119.246
IND_{it}	126	21.618	6.744	8.058	31.137

4.3. Analytical Techniques

4.3.1 The Generalized Method of Moments (GMM)

In order to estimate parameters in a panel data study, GMM is a popular econometric technique. The GMM method can be used to examine the interplay between trade and other factors relevant to the Belt and Road Initiatives. The GMM method can be used to deal with problems in panel data analysis that could be caused by endogeneity, such as those caused by dynamic panel data models and instrumental variable estimation. GMM can ensure the validity of empirical findings by providing consistent and efficient estimates of the parameters of interest while simultaneously controlling for endogeneity. Panel data on trade flows between China and seven Asian nations participating in the Belt and Road Initiatives has been collected before applying the GMM econometric technique. Additionally, information on economic, institutional, and geographical elements that may affect trade has been gathered. An appropriate econometric model accounting the interplay between international trade and its driving forces has been developed. To account for potential heterogeneity and dynamics, the model definition should take into account both cross-sectional and time-series dimensions. In addition, instrumental factors thatare both relevant and exogenous to the instrument. Economic theory and empirical evidence were used to narrow down the pool of potential instrumental factors capable of accounting for endogeneity. A GMM estimate is then used, which requires the specification of moment conditions depending on the assumed data creation process. These boundary conditions concern the orthogonality of the model's instruments with respect to the disturbances. This study used the GMM method to provide a rigorous econometric analysis of the interplay between trade and its affecting factors as they pertain to the Belt and Road Initiatives. Potential endogeneity problems have been dealt with via the GMM method, which yields trustworthy and solid empirical findings that can add to the body of literature on the topic.

4.3.2 2SLS Method

This study employs the 2SLS method to investigate the interplay between trade and other variables within the framework of the Belt and Road Initiatives. In econometric models, endogeneity problems like simultaneous causality or unobserved heterogeneity are especially acquiescent to the 2SLS method. By employing instrumental variables to overcome endogeneity issues, this method enables reliable parameter estimates. In addition we select instrumental variables that meet the relevant and exogenous instrument assumption criteria. The correlation between the endogenous explanatory variables should not be high; however nor correlated with error term. To begin the 2SLS procedure, we regressed endogenous factors against our hand-picked set of instrumental variables based on economic theory and empirical evidence. The estimated values of the endogenous variables are calculated, which account for the instruments' exogenous variation. In addition, the fitted values from the first stage of the 2SLS technique, along with additional exogenous variables, to estimate the parameters of interest in the second stage were used. Within the context of the BRI initiatives, the 2SLS method used in this study helps to resolve endogeneity difficulties and offer credible estimates of the linkages between trade and influencing factors. The

2SLS approach adds to the literature on this topic by utilizing instrumental factors to guarantee accurate identification of causal effects.

4. Results and Discussions

The results of the test to determine the unit root are presented in table 2. The results show that all variables except Import are integrated of order zero.

Table-2: Results of Unit Root Test

Variable	I (0)	I(1)
LNTR	-2.432**	
LNEX	-2.429**	
LNIM	-2.137	-4.009*
$LNGDP_{It}$	-2.075**	
$LNGDPP_{ict}$	-2.894*	
LNFDIict	-2.378**	
SAit	-2.246***	
INDit	-2.581**	

*Note: *** means significant for 1%.*

This study uses GMM method to estimate the gravity model of trade for China. The results show that economic growth (lnGDPit) in China with sample sampled Asian countries, an increase in China's GDP ($LNGDP_{Ct}$), distance between China and country *i* (DIS_{ic}) and improvement of industrialization (IND) in Sampled Asia has a significant and positive impact on China-Asia trade. While the gap between China and Asia in economic development, China's investment to the i^{th} country *(*LNFDIict*)* and Savings rate of selected Asian country (SA), have negative effect on China- Asia trade.

Table 3: Generalized Method of Moments' Estimates

Variable	Mode 1 (DV = LNTR Coef. [Standard Errors]	Mode 2 (DV = LNEX Coef. [Standard Errors]	Mode 3 (DV = LNIM Coef. [Standard Errors]
$LNGDP_{It}$	1.009***	0.914***	1.586***
	[0.114]	[0.133]	[0.150]
$LNGDP_{Ct}$	0.790***	0.896***	-0.774***
	[0.140]	[0.147]	[0.243]
$LNGDPP_{ict}$	-0.468***	-0.450***	0.278*
	[0.120]	[0.139]	[0.159]
$LNFDI_{ict}$	-0.020	-0.017	0.065
	[0.041]	[0.048]	[0.067]
DIS_{ic}	0.0001***	0.0001***	0.0001
	[0.000]	[0.000]	[0.000]
SA_{it}	-0.010*	-0.013*	-0.016***
	[0.006]	[0.007]	[0.003]
IND_{it}	0.009	0.017	0.005

	[0.019]	[0.022]	[0.032]
BR_{it}	0.190	0.134	0.497
	[0.210]	[0.207]	[0.305]
Constant	-30.381***	-31.347***	-9.451
	[4.314]	[4.637]	[7.983]
Number of obs.	126	126	126
Chi-square	18639.163	9465.013	1450.656
Prob > chi2	0.000	0.000	0.000

**** p<0.01, ** p<0.05, * p<0.1*

Table 2 shows the empirical outcomes of this study. It shows that economic growth (lnGDPit) in China and sampled Asian countries and an increase in China's GDP ($LNGDP_{Ct}$) has a significant positive effect on China-Asia trade. These outcomes show that the economic growth in China and Asia has significantly increased trade between those two regions. The rise of bilateral and multinational trade agreements is an important factor. As the economies of China and other Asian countries improved, they saw the benefits of working together in trade. As a result, both China and Asian states have signed numerous trade agreements, including free trade agreements (FTAs) and regional trade blocs, greatly increasing trade volumes. These pacts have made it simpler for companies to engage in international commerce by eliminating or lowering tariffs and non-tariff obstacles. This has led to significant expansion and diversity in the total volume of trade between China and the rest of Asia. The middle class in China has grown rapidly alongside the country's economy, giving its citizens more disposable income. As a result, there has been a significant increase in demand for many different goods, including those made in Asia. Asian countries' manufacturing and export sectors have expanded to fulfill China's growing demand. The demand boost has helped Asian countries in many ways, including the expansion of their industrial sectors and the creation of new jobs. The country's rising prosperity has also prompted massive investments in domestic and regional infrastructure across Asia. As a result of these improvements to the transportation network, trade and commerce between China and other Asian countries have received a significant boost. Logistics bottlenecks have been alleviated, and trade has become more efficient and cost-effective thanks to the development of better roads, railways, and ports. As a result, cross-border trade between China and the rest of Asia has increased because of these investments. In addition, China's booming economy has sparked a surge in technological development and creativity, opening doors for increased cooperation and the exchange of ideas with other Asian nations. China's economic growth and competitiveness have been boosted by its cooperation with other Asian countries in the areas of R&D and technology transfer. As a result of this convergence, commerce and cooperation have increased as different sectors learn from and build upon one another.

Similarly, distance between China and sample countries *i* (DIS_{ic}) has a significant positive effect on China-Asia trade. The geographical distance between China and rest of the Asian countries has increased the importance of trade and collaboration between China and other Asian nations. Asia's compact continent means that many of its countries are next to one another or share common borders. Therefore, the significance of the interdependence between these nations increases. Due to the proximity and shared borders, trade networks and logistical infrastructure have developed to ease the trans-border transport of products and services. Because of their close geographic

proximity, China and the other Asian countries are able to conduct trade in a quick and efficient manner. Secondly, the physical separation has helped propel the growth of the shipping and warehousing sectors. Major expenditures have been made to improve transportation networks, including the development of road, rail, and sea lines, in order to overcome geographical barriers and ensure the free flow of trade. Transportation times and costs have been cut, and internal and international connectivity have been enhanced thanks to these improvements. Since firms can now readily carry their products across borders, increasing overall China-Asia trade has been greatly facilitated by efficient logistics and transportation networks, which in turn have fostered mutually advantageous trade partnerships. The geographic distance between China and the rest of Asia has also encouraged complementary regional specialization. Asia is home to a wide variety of countries, each with its own mix of resources, capabilities, and experience. Because of their geographical distance, countries can focus on developing their competitive advantages in specific sectors. In this way, countries are able to build off of each other's strengths and engage in trade that benefits everyone involved. China's and Asia's thriving commercial infrastructure is the result of the region's rich variety of goods and services.

The results further showed that improvement of industrialization (IND) in selected Asian countries has a significant positive effect on China-Asia trade. China-ASIA trade has greatly benefited from the region's increasing industrialization. As a result of industrialization, Asian countries now produce more varied and high-quality commodities. Manufacturing, textiles, pharmaceuticals, automobiles, and technology are just some of the industries that have flourished as Asian countries have undergone industrial change. The countries of ASIA and China may now work together and trade more freely as a result of the former's increased production capacity. Asian countries have provided China with access to its raw material, component, and intermediate goods markets, while China has provided Asian countries with access to its massive consumer market and finished product export opportunities. The entire amount of trade between China and ASIA has increased thanks to this symbiotic exchange. Furthermore, industrialization in ASIA has prompted creativity and technical progress. Research and development (R&D) and the incorporation of cutting-edge technology have received more attention as Asian industries have grown. As a result, we now have more efficient manufacturing methods and a wider variety of cutting-edge items. The development of these technologies has opened up new channels of communication and cooperation between China and Asian countries. It has been mutually beneficial for China and Asian countries to collaborate on research and development thanks to China's reputation as a technical powerhouse. The entire amount of trade between China and ASIA has been bolstered by the sharing of innovative technologies.

On the other hand, the outcomes of the empirical estimation show that development gap between China and Asia, China’s investment to country *i (*LNFDIict*)* and Savings rate of Asian country (SA), have negative effect on China-Asia trade. These outcomes show that trade imbalances already exist between China and Sampled Asian countries and the development disparities make matters worse. China's massive investments in Sampled Asian nations are often geared toward the improvement of infrastructure, the expansion of industry, and the exploitation of natural resources. These investments can help developing countries improve their economies, but they also shift trade patterns in China's favor. The ability of Sampled Asian countries to diversify their exports and work toward a more equitable trade relationship with China is hampered by their frequent roles as

resource providers or manufacturing bases for China. In addition, the gap in development levels can make it harder for Asian countries to compete economically with China. China has a leg up on the competition in a number of industries thanks to its strong technological capabilities and economies of scale. Sampled Asian countries may find it difficult to develop their own sectors and create a level playing field in trade ties as a result of this competitive advantage, which might exacerbate existing trade imbalances.

The coefficient of (LNFDIict) is negative and significant. This show that China's investments in Asian countries may also lead to increased debt levels, which could disrupt existing trade patterns. Loans and financing from the Chinese usually come with interest rates attached. There is a risk of trade imbalances and economic dependence on China if Sampled Asian countries are unable to earn enough export revenue to pay their debts.

Similarly, the empirical result further show that the coefficient of Savings rate of Asian country (SA), is negative and significant. This show that trade imbalances can be exacerbated by the high savings rate in some Asian countries. The people and enterprises of many Asian nations have a strong preference for putting money away rather than spending it on material goods. Overdependence on exports to drive economic growth is a risk when a country has a high saving rate. This results in a substantial amount of output from these countries being exported, which adds to the trade deficit with China.

Table 3 Instrumental variables (2SLS) regression Estimates:

Variable	Mode 1 (DV = lntr Coef. [Standard Errors)	Mode 2 (DV = lnex Coef. [Standard Errors)	Mode 3 (DV = lnim Coef. [Standard Errors)
$LNGDP_{ct}$	3.024	3.086	3.747***
	[0.423]	[0.456]	[0.806]
$LNGDPP_{ict}$	-1.234	-1.293	-1.436***
	[0.286]	[0.309]	[0.546]
DIS_{ic}	-0.001	-0.001	-0.002***
	[0.000]	[0.000]	[0.000]
SA_{it}	-0.050	-0.053	-0.083***
	[0.008]	[0.008]	[0.015]
IND_{it}	0.206	0.216	0.352***
	[0.016]	[0.017]	[0.030]
BR_{it}	-0.614	-0.654	-0.847*
	[0.269]	[0.290]	[0.513]
CONSTANT	-64.036	-65.253	-86.217***
	[10.319]	[11.128]	[19.671]
R-squared	0.726	0.705	0.627
Number of obs	126	126	126
Chi-square	371.159	339.756	266.202
Prob > chi2	0.000	0.000	0.000

Economic growth of country i in year t ($LNGDP_{it}$) is used as instrument variable.

For robustness check, this study uses 2SLS (Instrumental variables) regression method. The 2SLS estimates are consistent with the GMM's estimates. It is evident that China's GDP (lnGDPct) in China and Asia has a positive effect on China-Asia trade. While the development gap between China and Asia, distance between China and country *i* (DIS_{ic}) and improvement of industrialization (IND) in Sampled Asia China's investment to country *i (*LNFDIict*)* and Savings rate of Asian country (SA), have negative effect on China-Sampled Asia trade.

6. Conclusion and Policy Recommendations

This study investigates the determinants of China-Asia trade under the background of the Belt and Road Initiative (BRI). We use Gravity model of trade to analyze the determinants of China-Asia trade. The sample countries of this study include India, Laos, Nepal, Pakistan, Sri Lanka, Afghanistan and Maldives. Generalized Method of Moments (GMM) and instrumental variables Two Stage Least Square (2SLS) methods have been employed to estimate the gravity model of trade for China. The findings demonstrate that China-Asia trade has benefited from the region's progress and industrialization, as well as from China's close distance to other Asian countries. Connectivity, trade integration, and resource sharing have all contributed to the region's rapid economic development. In a similar vein, the close geographic distance of China and other Asian countries has improved accessibility to markets, decreased transportation costs, and boosted supply chain network efficiency. This has improved economic cooperation and facilitated the free exchange of products, services, and capital across national boundaries. Increased trade in Asia is a result of the region's continual development and industrialization initiatives. Significant progress has been achieved by many Asian countries, particularly China, to diversify their economies, expand their industrial sectors, and improve the quality and competitiveness of their products. As a result, China and other Asian countries have benefited from greater exports and improved trade prospects. While China's investments in Sampled Asian countries and Asia's high saving rates discourage bilateral trade, the existence of a development gap between China and Selected Asian countries can have a detrimental impact. It is possible that trade deficits, reduced competitiveness, and debt loads resulting from these causes could slow regional economic growth and upset the delicate balance of trade ties. When it comes to trade and economic cooperation, it's crucial that China and Sampled Asian countries work to close the development gap. Sampled Asian nations need to have their capabilities and competitiveness bolstered, their exports diversified, and the advantages of China's investments shared more fairly with the populace. Additionally, Asian nations should think about taking strategic measures to successfully control their savings rates, thereby boosting domestic consumption and lessening their dependency on exports.

Based on the findings of the empirical research conducted this study recommends that efforts should be made to close the development gap between China and Sampled Asian countries. More money should be spent on developing nations' infrastructure, education, and transfer of technology in order to accomplish this goal. They can also take steps to diversify and make their economies more competitive through policy initiatives. China's investments in Sampled Asian nations also need to be sustainable and mutually beneficial. Instead of concentrating on resource extraction and low-value activities, it should work towards improved cooperation, technology sharing, and

knowledge transfers. Long-term economic growth will be aided in both China and Sampled Asian countries as a result of this improved trade balance. Asian nations, especially those with strong savings rates, need to rebalance their economies by boosting local demand and cutting back on exports. Income redistribution, improved social services, and reformed financial markets are all ways to accomplish this goal. The stability of China-Asia trade will be aided by these policies, which will increase domestic demand and decrease trade imbalances. Distance from one another is an asset that may be used to advance regional integration and boost commercial collaboration. It's important to work on eliminating trade obstacles and streamlining customs procedures on a regional level. This will allow for more efficient trade within the region, boost competitiveness, and broaden access to markets. By reducing the negative consequences of the development gap, China's investment policies, and saving rates, these policy ideas will increase the positive impact of China's and Asia's development. The Chinese and Asian economies will benefit from a more stable and mutually beneficial trading partnership.

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