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A Study on the Impact of China-Laos Railway on ASEAN Supply Chain

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Abstract

This study examines the impact of the China-Laos Railway construction project on the economic and industrial supply chains of the two countries. The collected data was analyzed through journal articles, official government websites, institutional statistical reports, and in-depth interviews. Research and discussion show that the China-Laos Railway will effectively reduce logistics costs and enhance the convenience of land transportation. It can promote the development of Laos' economy and science and technology. The China-Laos Railway will also drive the accelerated transformation and upgrading of Laos' domestic industrial structure, promote the integration of Laos' domestic economy and the coordinated development of the regional economy of mainland Southeast Asia. However, some results show that the China-Laos Railway may also bring some negative impacts, which deserve special prevention by the competent unit.

Keywords: China-Laos railway, supply chain, social impact, ASEAN countries

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Introduction

Research background

The railway economic effect refers to a new economic form that relies on the comparative advantages of railways to achieve optimal allocation of resources and market agglomeration development. It can accelerate the free and orderly flow of production factors such as capital, technology, and manpower along the railway, as well as the close combination of consumer groups, consumer materials, service enterprises, and other consumption factors, and can be between stations along the railway. The economic effects generated by this and the optimization of the transportation network system in the region. It can play an important role in promoting the development of regional economic integration such as regional industrial structure division of labor and linkage of economic sectors along the route (Lingaitis & SinkeviČius , 2014).

Laos is a small landlocked country with an area of 236,800 square kilometers, two-thirds of which are mountainous (north); As a result, its geographical environment limits the quantity and quality of agriculture and creates difficulties for the development of trade, social infrastructure, and transport and communication links. Located in the heart of Southeast Asia's vibrant and prosperous region, Laos has great potential for strategic resource bases, bordering five neighboring countries: China, Cambodia, Vietnam, Thailand, and Myanmar. The country is divided into 3 main regions: Northern, Central, and Southern. In 2009, Laos had a total population of 6.26 million, most of whom lived in the valley region of the Mekong River and its tributaries, with a population density of only 27 people per square kilometer. Vientiane is the capital and largest city with about 799,000 inhabitants. As the only landlocked country in Southeast Asia, Laos' geographical features of numerous mountains and mountains and rivers restrict the construction and development of rail transit such as railways. (Hatthachan, 2012)

The China-Laos Railway is a cross-border transportation route from China to Southeast Asia, connecting Vientiane, the capital of Laos, and Kunming, an important city in southwest China, and will also drive other countries in the Indochina Peninsula such as Thailand, Myanmar, Cambodia and Vietnam. (Kyophilavong et al., 2017)

Modern rail transit such as railways is a product of economic globalization and a new type of national foreign development policy carrier. By connecting different regions, exchanges and communication between different countries and people can be promoted, mutual understanding and awareness can be enhanced, so as to achieve multiple goals such as international cooperation, social development and people's benefits. (Melissen, 2005)

Due to the spatial distribution of resources and the imbalance in economic development, Laos has a great demand for the cross-regional movement of people and materials. On the other hand, Laos' transportation infrastructure is backward, making it impossible for transportation capacity to adapt to the long-term development of the national economy. Due to the concentration of passenger flow, transportation capacity is more limited. In recent years, with the rapid development of urbanization, urban agglomerations in Laos have continued to emerge. Therefore, the demand for passenger transport in central cities and urban agglomerations

is increasing, and people's requirements for the carrying capacity of transportation infrastructure are getting higher and higher.

Since the beginning of the 21st century, high-speed railways, railways and other tracks have gradually become the key projects of international economic cooperation, and cross-border cooperation in large-scale infrastructure projects has further enriched the economic effect of railway projects. Many researchers have turned their attention to related issues, including overseas infrastructure research on China's high-speed rail. So far, much of the literature on high-speed rail has covered the application of related technologies, policies, risk management, operational management, and program evaluation.

With the smooth development of the China-Laos Railway project, the research literature on the China-Laos Railway is also increasing, but its research focuses mainly on the economic fields such as freight value, tourism potential, investment mode, and debt problem of the China-Laos Railway. The research perspective of railways is too single. According to our review of the relevant literature on the China-Laos Railway, it is confirmed that so far there is no comprehensive overview of the supply chain management of the China-Laos Railway. This study therefore attempts to fill this research gap.

Research Objectives

1. The most important goal of this study is to analyze the economic effects of the China-Laos Railway, as well as the derived scientific and technological effects and related positive and negative effects.
2. The industrial supply chain effect of the China-Laos Railway after its operation includes logistics efficiency, industrial structure transformation, and micro and macroeconomic changes.

Research Questions

1. Investigate the current construction status of the China-Laos Railway
2. The impact of the China-Laos Railway on the ASEAN supply chain

Literature review

The value of high-speed rail

About 40 years ago, the Shinkansen high-speed train service between Tokyo and Osaka in Japan was opened, with a maximum running speed of 210 km/h, marking the re-emergence of trains as an important mode of passenger transportation. Since then, many countries have introduced high-speed train (HST) services, and more countries are planning, and trains once again becoming the main mode of transport on many routes. High-speed rail is best designed to replace traditional rail service on routes that require higher capacity, and to reduce travel times, further improving rail service, also relative to other modes, resulting in model substitution. However, based on its economic development benefits, it is worth noting whether the high investment in high-speed rail infrastructure is reasonable because these economic and social benefits are uncertain and need to be more carefully evaluated (Givoni, 2006)

After the Second Industrial Revolution, technological development and the global flow of capital also promoted the rapid upgrading of rail vehicles, which also made Germany, Germany, Countries such as France and Japan make a lot of theoretical and practical innovations in the field of high-speed rail (Hood, 2006).

Nakamura and Ueda (1989) pointed out through the study of the Japanese Shinkansen that railway lines represented by high-speed railways can accelerate the flow of population between regions and have a strong attraction and pulling effect on the population of the surrounding areas of the railway, thereby promoting the reorganization of the population size and number between different regions along the railway line, and then providing human resource support for the economic belt formed by the railway trunk line.

The China-Laos Railway is an important part of the Trans-Asian Railway Central Line and an important connecting passage between China and the Indochina Peninsula Economic Corridor. The construction of the China-Laos Railway is of great significance to Laos' economic upgrading such as rapid cross-border transportation, domestic industrial structure upgrading, and economic growth power conversion. According to the World Bank report, once the China-Laos Railway is completed and operated, it will have a huge driving effect on the development of regional economic integration in China, Laos, and even the entire Indochina Peninsula, and the China-Laos Railway extending vertically from north to south will build a land economic corridor between Kunming, China and Vientiane, Laos, which can not only reduce the cost of cargo transportation between China and Laos4 0-50%, on the basis of which it is possible to further reduce the domestic transport cost of Laos by 2 0-40%, The World Bank (2020) will provide development opportunities for the upgrading of industrial structure and economic momentum transformation in Laos.

Bai et al. (2012) believe that the current analysis perspective of overseas infrastructure projects such as high-speed rail can no longer fully apply the original classical theoretical framework, and the 21st century has undergone profound changes compared with the era of Mackinder more than 100 years ago, and the geoeconomics method displayed by China in the world in the past 30 years has gradually replaced the traditional geopolitical method. The Eurasian economic corridors connecting Southeast Asia, Central Asia, East Asia and Central and Eastern Europe connected by China's high-speed rail not only help prevent the reversal of globalization and promote the development of global free trade but also provide a relatively moderate transition period for China's transition to a domestic demand-oriented economy.

Rostow (1960) believes that railway transportation has a strong economic driving force in the field of public transportation, which will have three main impacts on countries in the economic take-off stage, one is to reduce transportation costs and expand the market hinterland for new producers and new products, the other is to further enrich and expand the industrial structure and form of the transportation industry, thereby deriving more new industries, and the third is that railway transportation will be a regional coal, Commodities such as non-ferrous metals, iron ore and agricultural products provide faster and more efficient modes of transportation, leading to rapid industrialization.

Geopolitics and supply chains

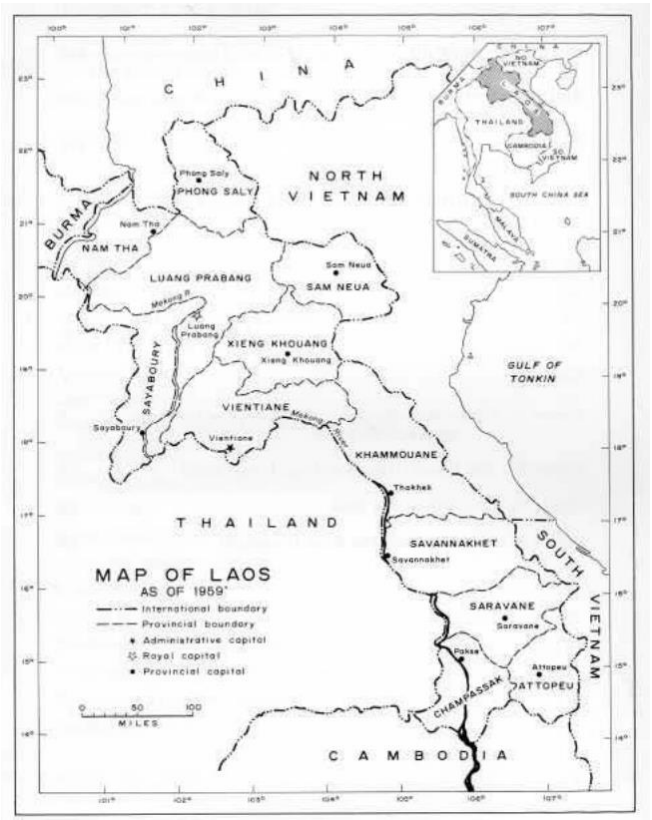

Figure 1 The map of Laos

The industrial supply chain in economics is a product of geopolitics. In the early twentieth century, the British geopolitician Mackinder put forward the "heartland theory", believing that the heart of Eurasia has an important role in the development of world politics and economy, and the railway trunk line has served as a "supply line for ocean-going commerce" since the steam age, especially in the heart of Eurasia (Mackinder, 1904).

In the forties of the twentieth century, Spykman (2017) further proposed the "marginal zone theory" on the basis of Mackinder, pointing out that the periphery of Eurasia will have an important impact on the overall global pattern, and the modern transportation system dominated by railway trunk lines, highways, and shipping will further aggravate this geopolitical distribution feature.

Zoellner (2016) pointed out that the new mode of transportation represented by high-speed rail is of great significance at the geo-economic and geopolitical levels, and the investment and construction of China's high-speed rail in Southeast Asia and other regions not only sends a large number of production factors such as capital, technology, and manpower to local countries but also provides development support for China to shape its international image and enhance its regional discourse power.

The China-Laos Railway can ease the pressure of domestic and cross-border transportation in Laos, change the single mode of transportation based on road transportation, and enrich the travel mode options between different regions of Laos, to form a comprehensive transportation system in Laos together with existing highway lines such as Vientiane Expressway (Vientiane-Vang Vieng) and Laos NR13 Highway. At present, road transport is still the main mode of transportation in Laos, and from 2012 to 2017, the road mileage in Laos has increased from more than 44,000 kilometers to 2017 (51,000 km), but only a few roads are asphalted, and the rest are highly vulnerable to climate change and natural disasters (Ministry of Public Works and Transport of Lao PDR, 2013; Asian Infrastructure Investment Bank, 2019)

At the same time, the World Bank further pointed out in its report that Laos accounts for more than 9.8% of total road passenger traffic and 8.6% of total road freight transport %, the single mode of transportation has seriously restricted the travel choices and cargo transportation efficiency of the Lao people. (The World Bank, 2020)

Rowedder (2020) critically examines the geo-economic win-win thesis of China's "Belt and Road" connectivity construction in line with Laos' development strategy of "land-locked countries becoming land-linked countries", and also examines the financial mechanism and potential economic benefits of the China-Laos Railway project and evaluates the sustainable long-term development model and future revenue mechanism of the China-Laos Railway. The stable operation of the China-Laos Railway requires China to assume corresponding social responsibilities along the railway to receive more support from the local people for the railway project.

Overseas infrastructure projects represented by the China-Laos Railway, China-Thailand Railway, Malaysia's East Coast Railway and Yawan High-Speed Railway are important carriers of the "Belt and Road" connectivity, which can accelerate the full flow of energy, capital, population, technology and other production factors between China and Southeast Asian countries. Based on this, the transnational transportation network built by the railway trunk line can not only drive the economic development of China and the countries along the route, but also form an interregional economic corridor, and then produce large-scale economic benefits.

Status and prospects of ASEAN supply chains

At the end of 2015, the Association of Southeast Asian Nations (ASEAN) officially announced the establishment of the ASEAN Economic Community (AEC), marking a new step in the integration process. This chapter discusses the characteristics, challenges and responses of ASEAN integration. The birth of the ASEAN Economic Community is often considered a clear outcome of ASEAN integration, as the ASEAN Economic Community's zero-tariff policy is very different from other economic frameworks under negotiation, such as the Trans-Pacific Strategic Economic Partnership (TPP) and the Regional Comprehensive Economic Partnership (Regional Comprehensive Economic Partnership). ASEAN has many opportunities, such as good economic development, large population, expanding consumer market, developed regional infrastructure and well-developed supply supply network. However, ASEAN faces challenges such as the end of the demographic

dividend, aging, domestic wealth gap, weak business competitiveness, rapid urbanization, expanding food and energy demand, and increasing disaster risk (Sakane, 2017).

Following the U.S.-China trade war and the COVID-19 pandemic, the restructuring of global supply chains has accelerated, with the ICT industry being the most active, with the proximity to Chinese mainland and strategically at the heart of the Indo-Pacific region, highlighting the advantages of ASEAN, which is adjacent to and strategically located in the Indo-Pacific region, and has undergone a major shift in its role and position in the East Asian and global ICT supply chains (Yang, 2022).

As Sino-US trade has led to the transfer of supply chains to Southeast Asia and other countries, as well as the emergence of the global minimum tax system, it is necessary to understand the global minimum tax system, the current situation of Sino-US trade, and then conduct a summary analysis of the tax environment in Singapore, Malaysia, Thailand, the Philippines, Vietnam, Indonesia, Myanmar, Cambodia, Laos and India. (He, 2022).

It will be interesting to see the trade frictions between the United States and China, and whether these frictions have an impact on ASEAN's trade relations with these countries. There has been friction between the two countries since the early 90s of the 20th centuries, with the United States blaming the Chinese government for the trade deficit and pointing to the depreciation of the yuan against the dollar as the culprit. While previous U.S. presidents have taken a softer approach to China on the issue, they have taken a hard line since President Donald Trump. President Trump's starting point was to correct U.S. economic imbalances, and he made good on his promise to impose high tariffs on Chinese products. Because there are many American companies that operate in China and export a large number of products to their domestic market. This trade friction will undoubtedly have a spillover effect on ASEAN, the trading partner of the two countries (Aslam, 2019).

The US-China trade war and technological confrontation have led to the restructuring of global industrial supply chains, and the new crown epidemic has brought major enlightenment to the global economy, highlighting the risk that many countries around the world are highly dependent on China's supply chain, and the importance of improving supply chain resilience and risk diversification, especially the serious shipping congestion, port congestion, and soaring freight rates since 2020, which has highlighted the risks and uncertainties of cross-continental and transnational production. In order to diversify risks, companies hit hard by the epidemic will have to consider sourcing strategies and supply chain adjustments to wean themselves off dependence on the Chinese market or imports. Under this trend, supply chains need to be more diversified and fragmented, and developed countries have promoted manufacturing reshoring) and reindustrialization), which will further accelerate the phenomenon of global supply chain restructuring.

With the US-China trade conflict, the trend of global supply chain restructuring has accelerated, moving towards decentralization, diversification, regionalization, and short-chain. Countries around the world have begun to face up to the risk of too single supply chains and dependence on imports, and have adjusted their industrial, foreign investment, and trade policies to strengthen the goal of promoting the localization of key manufacturing industries, hoping to avoid serious chain or material disruption when major external risks occur.

Among the trends of supply chain restructuring and mobility, the shift to ASEAN is the most obvious, which has led to ASEAN's rising position in the global supply chain. According to the International Monetary Fund (IMF), the overall gross domestic product (GDP) of the 10 ASEAN countries reached US$3.36 trillion in 2021, ranking the fifth largest economy in the world, and in recent years, it has jumped to the world's attention for new factories in Asia. After the outbreak of the US-China trade conflict, the interest of multinational companies and Taiwanese companies in ASEAN investment and markets has increased, and after the outbreak of the new crown epidemic in 2020, the risk and vulnerability of supply chains concentrated in a single country Chinese mainland have been further highlighted, thus further stimulating the pace of diversification of investment and production capacity from China. In order to win foreign investment and establish supply chains, ASEAN has also successively proposed new industrial and foreign investment policies, hoping to seize opportunities under the current trend of supply chain migration and enhance the localization of key manufacturing industries.

Research methods

This paper uses qualitative comparative analysis, logical reasoning, and in-depth interviews to compare the different impacts of the China-Laos Railway on economic growth.

Literature analysis

This study is based on a comprehensive review of all publicly available materials and data on the China-Laos Railway, including articles in English journals, and English newspapers, as well as United Nations reports, World Bank reports, and Chinese and Lao government documents. The resulting information can inform a more efficient and rational China-Southeast Asia transportation network.

In-depth interviews

This article uses in-depth interviews to interview government officials, people, etc. in Laos. The topics of the interview are as follows.

1. What do you think of the China-Laos Railway?
2. What kind of positive impact will the China-Laos Railway have on Laos?
3. What kind of negative impact will the China-Laos Railway have on Laos?
4. Can the China-Laos Railway contribute to the development of a more sound industrial supply chain in Laos?
5. What kind of policy should the government adopt to welcome the opening and operation of the China-Laos Railway?

Results and discussion

The current economic situation in Laos

Laos is the poorest and most backward agricultural country in Southeast Asia. Affected by war for a long time, political turmoil, and economic backwardness; The other is inland and has a weak foundation. Therefore, both countries are now taking economic construction as their main task in the future and attach particular importance to agricultural development. Since the implementation of the policy of opening in Laos in the mid-80s, the political and economic environment has greatly improved. In 2001, a medium- and long-term development plan was formulated with the goal of narrowing the gap with other ASEAN countries, but there are many problems (Bourdet, 2001).

After more than 20 years of economic policy adjustment and economic reform, the Lao economy has made great progress, but it is also facing many problems. First, the main problems of the Lao economy are that the economic foundation is weak, and the infrastructure and education have not yet come to the forefront of development. Second, the key to accelerating the development of Laos' economy lies in vigorously developing education and infrastructure construction and making good use of its comparative advantages. Third, the geographical advantage and the population resource ratio advantage of the small country model determine that the Lao economy will be able to develop well in the long run (Phimphanthavong, 2014).

After the establishment of the Lao People's Democratic Republic, a communist economic attempt to implement the agricultural collective system ended in failure. In the late 80s of the 20th century, under the dual influence of domestic difficulties and foreign pressure, Laos began market-oriented reforms, and the ownership policy, economic operation mechanism, and foreign economic policy underwent fundamental adjustments. In the early 90s, Laos proposed a principled comprehensive reform of the economy and the implementation of the policy of opening up to the outside world, the poverty situation in the country has been improved to a certain extent, and the living standards of the people have been improved, and the regional status has gradually been valued. However, due to the special political culture in Laos and the excessive dependence on the resources of foreign and international organizations, the development prospects of Laos' reform and opening up routes still a long way to go (Dana, 1995).

Economic globalization is an inevitable trend in the development of the world economy today, and economic globalization is a double-edged sword, which not only brings benefits and opportunities but also has great risks, especially for developing countries. As a developing country with a lagging economy, Laos has to join the operation of the big machine of economic globalization, whether willingly or unwillingly, so as to make strategic choices that suit the national conditions (Evans, 1998).

After Laos' independence in 1975, the country implemented a socialist system, and the government determined and controlled what was produced, how it was produced, and who received the final product (in contrast, in a market economy, individuals owned property and property freely traded such property and received income from the exchange of property, and the price of goods was determined in a free market system, where demand determined the content of production). In the early 80s of the 20th century, this system

did not meet its goals due to economic performance that could not meet the expected goals, the population became increasingly poor, and the economic system was weak. These problems confirmed that a separate centrally planned economic system was not suitable for Laos, which led to economic reforms. The transition from a centrally planned economy to a market economy was initiated in 1986 with the aim of promoting economic activity, including economic activity. Various assessments of systemic and macroeconomic characteristics, which are grouped into four main headings: first, all the features of the microeconomic view, aimed at improving the structure of intensification and encouraging the growth of private production. The second is trade liberalization, which aims to bring into play the country's professional advantages and integrate into the international economy, especially the Southeast Asian economy. The third is less accommodative macroeconomic policies to ensure price stability and reap the growth benefits of economic liberalization. The last one is the legal and institutional measures necessary for the functioning of the market economy.

Vongpraseuth and Choi's (2015) research focuses on the conflict between urban growth management (UGM) in urban planning policy and the growing impact of globalization and foreign direct investment (FDI) on Vientiane, the capital of Laos. He posed the question, "Does FDI affect UGM in Vientiane, the capital of Laos?" Important decrees, tasks, technical reports, field investigations, and interviews are also explored in his articles. The results show that FDI has been an important tool for promoting economic development and supporting urban development in Vientiane. On the other hand, a core conflict has emerged between government growth management policies and the spatial impact of FDI on land use, the natural environment, socio-cultural values, and the transformation of cooperation stages. Moreover, globalization and FDI affect not only economic growth but also the implementation of UGM in Vientiane. Although the urban planning sector has been fairly strict, the investment sector prefers to encourage FDI and domestic investment by giving incentives. Therefore, in order for the "least developed country" to achieve more balanced development, cooperation between similar institutions (such as planning, investment, and land management) should be seen as a necessary long-term strategy. The China-Laos Railway is the concrete realization of his thesis.

Regarding Laos' economic problems, respondents have high hopes for the completion of the China-Laos Railway.

Interviewee (number A003) had a very positive opinion of the China-Laos Railway. He spoke

This is "*the most convenient railway, I myself have ridden the China-Laos Railway many times, it is very fast, cheap and therefore very competitive", as China expands investment in Laos through the China-Laos Railway, many Laos "people can gain considerable benefits from this*".

Impact of the China-Laos Railway on the Lao Economy

To improve the level of domestic transportation infrastructure, Laos has adopted the "Eighth Five-Year Plan for Socio-Economic Development (2016-2020)" and "Ten-Year Socio-Economic Development Strategy (2016-2025)" and other plans to speed up the process of infrastructure construction (Jasmina, 2017).

According to the construction plan, the China-Laos Railway is divided into two sections, the total mileage of the Laos section (Boten-Vientiane) is about 414 kilometers of passenger and freight co-line railway line, of which the total length of the tunnel reaches about 198 km, the total length of the bridge reaches about 62 km, the design speed for passenger transport is 160 km / h (the maximum speed is 200 km / h), and the freight speed is 120 km / h (Taejun, 2020).

Tai (2021) pointed out that the China-Laos Economic Corridor (C LEC) constructed by the China-Laos RailwayAs an important part of the "Belt and Road" initiative, the China-Laos Railway will transform Laos from a landlocked country into a land-linked country, connecting important seaports, gateway cities and regional economic centers in the Indochina Peninsula such as China, Laos, Cambodia, Thailand and Vietnam through railways, thereby driving the rapid development of Laos' tourism, labor, goods trade, service trade and cross-border logistics, which is of great significance to Laos' economic improvement.

Gao and Zhen (2020) pointed out that the international railway transportation network built by high-speed rail and railway rail transit overseas infrastructure projects represented by China-Laos Railway, China-Thailand Railway, Yawan High-speed Railway, and Hungary-Serbian Railway will accelerate economic cooperation across Eurasia, thereby creating new economic cooperation opportunities between China and countries along the Belt and Road. In turn, the countries of Eurasia, which are on the margins of traffic congestion and economic globalization, have reintegrated into global economic development.

The China-Laos Railway strengthens the coordinated development of the China-Indochina Peninsula Economic Corridor, which is mainly reflected in the fact that the China-Laos Railway and the future China-Thailand Railway will become an important part of the Trans-Asian Railway Central Line, thereby revitalizing the regional economic development of the entire Indochina Peninsula. Therefore, the economic effect of the China-Laos Railway in the construction process not only meets the social and economic development needs of Southeast Asian countries, but also establishes China's image as a responsible major country in the international community, and its economic effects are also transmitted from China and Laos to the entire Southeast Asian region.

The China-Laos Railway has accelerated the transformation and upgrading of Laos' domestic industrial structure, which is mainly manifested in the upgrading and optimization of Laos' domestic industrial and service industrial structure. During the construction of the China-Laos Railway, a large amount of technology spillover will occur, which can accelerate the transfer of science and technology to Southeast Asian countries such as Laos, and at the same time, these countries gradually expand from railway transportation to other related industries such as steel production, power transmission and spare parts manufacturing through the way of "learning by doing", thereby enhancing the technical element endowment of their domestic industrial manufacturing industry. Give its products and services more technical content.

As the export of the whole industrial chain of China's high-speed railway technology, the China-Laos Railway can provide Laos and other Southeast Asian countries with technical manufacturing technology and technical management experience in many fields such as railway, electric power, and bridge construction, thereby providing an industrial development foundation for the social and economic development of Laos. The

China-Laos Railway will build a rapid transportation network system between Southwest China and Indochina Peninsula countries, accelerate the high-speed flow and effective allocation of scientific and technological resources between China and Southeast Asian countries, not only accelerate the export of China's complete sets of technical equipment and complete industrial chain of technical products, enhance the added value and scientific and technological competitiveness of China's manufacturing industry, but also fully meet the market demand for transportation infrastructure upgrading in Laos and other Southeast Asian countries, and inject more industrial technology into its industrialization process. Industrial science and technology and industrial equipment and other scientific and technological production factors, so as to achieve a win-win situation between China and Laos and a win-win situation between China and Southeast Asian countries in the field of science and technology

From the in-depth interview, we find the interviewee has the opinion.

Interviewee (number A012) says:

"China accounts for more than 80% of Laos' agricultural exports, funds at least 800 projects, and has a total value of more than US$16 billion, so the opening of the China-Laos Railway will further promote the common cooperation and development between the two countries, and can also promote smoother adjustment of logistics supply chains".

Interviewee (No. 004) suggested the Lao government's response to the China-Laos Railway, saying.

Laos, a latecomer to ASEAN in the 'CLMV' (Cambodia, Laos, Myanmar, and Vietnam), is certainly more pronounced in the face of this vulnerability to the inducements of such powers. The establishment of closer political, economic, and cultural ties between Laos and these countries in the region has shaped Laos' independent system of diplomatic relations".

The impact of the China-Laos Railway on the logistics industry in Laos

On December 3, 2021, the China-Laos Railway (CLR), which has been under construction since 2016, launched its first operation between the two terminals in Kunming, the capital of southwestern Yunnan Province. Vientiane, the capital of China and Laos. In many ways, CLR is an unprecedented cross-border rail project in terms of size, length, connection location, type of construction, and potentially significant regional impact. Chen's (2022) study analyzes the China-Laos Railway (CLR), drawing on evidence from its late construction and early operation. It explores CLR's connectivity effects, highlighting the broader impact of "corridorization" on the region.

Launched in 2016 and scheduled for completion by the end of 2021, the China-Laos Railway, which has been proposed within a number of regional multilateral frameworks, will provide Laos with unprecedented rail infrastructure to connect its capital Vientiane to China through the northern border town of Boten.

After the completion and operation of the China-Laos Railway, it will build an economic corridor connecting different regions in the north and south of Laos, alleviating many problems faced by road transportation, such as excessive traffic flow, serious overload of goods and many restrictive conditions, and improve the investment environment and residential traffic conditions along the railway. The China-Laos Railway

will form a comprehensive transportation system with complementary advantages with different levels of highways such as Wanwan Expressway and NR13 Highway, especially can undertake the transportation of bulk commodities such as coal, non-ferrous metals, and grain, as well as agricultural products with a short shelf life such as vegetables and fruits, so as to form a coordinated transportation mode between highways, expressways and ordinary highways, and alleviate the transportation pressure of domestic road traffic in Laos. Provide important support for the industrialization process and the creation of characteristic service industries in Laos.

The means of transportation represented by modern rail transit such as high-speed rail and railway can significantly accelerate the flow of scientific and technological elements along the railway line, form a concentration of scientific and technological elements with railway trunk lines and stations as key nodes, and thus provide a better platform for the sharing and development of scientific and technological elements in cities along the route (Chen & Hall, 2011). The China-Laos Railway has promoted the economic layout of regional economic integration in Laos, which is mainly reflected in the fact that different provinces, key cities and economic development zones in Laos are located in the hinterland of the China-Laos Railway.

The impact of infrastructure investment on the economy is clear, and the route and mode of transportation from Bangkok, Thailand to Kunming, China generally has (1) road mode, and (2) road and rail mode. The China-Laos Railway can affect the transportation of logistics services, and we can analyze from the four main functions, namely logistics, economy, tourism, and safety. In addition, the time cost distance can also be analyzed using the moving cost and time composition, and the same results can be obtained.

Southeast Asia has made many efforts to improve multimodal transport connectivity. The strategic location of logistics centers facilitates the transportation, handling, storage, and transshipment of goods in international trade. Various evaluation criteria for logistics center site selection analysis. Using analytic hierarchy and target planning methods, Laos' logistics center location was analyzed, with Laos aiming to transform from a landlocked to a land-linked country. Developed based on primary data collected from public and private sector transport stakeholders. The findings indicate that the China-Laos Railway will undoubtedly exert a substantial influence on Laos' logistics in the coming years.

The article in Rowedder (2020) critically examines the potential geoeconomics win-win narrative of combining China's BRI regional ambitions with Laos' national vision of transforming into a land-linked country. In the context of the more enduring neoliberal development trajectory in Laos and the region, the authors learn about the latest BRI infrastructure connectivity label, examine the financial mechanisms of railway projects and the calculation of different spatial and temporal scales of potential benefits in Laos and China. These juxtapose with the empirical reality of the already visible dynamics and impacts of Chinese investment along the railway. The plan's promoters paint a picture of a future that will reap Chinese profits at the expense of Laos' sustainable long-term development. In order to contribute to the much-needed basic description of the large-scale projects supported by China as they unfold on the ground, the authors also pay special attention to local discourse and experience to fully understand the nature, process, and impact of BRI financing. This argument is something

we should be particularly concerned about when we are concerned about the benefits of the China-Laos Railway.

Interviewee (number A006) says

"The quality of Lao coffee is very good, we have started to export coffee beans to China, and it will be more convenient to export coffee when a train opens in the future. Investment opportunities will grow in the future, and I believe that the Chinese will choose Lao coffee as the first choice for beverages".

Interviewee (number A002) says

"The opening of the China-Laos Railway will create good conditions for trade relations and cooperation between Laos and China. It can create a lot of convenience, especially in terms of production cost reduction, will greatly promote the development of the Lao economy".

Analysis of the negative impact of the China-Laos Railway on the Lao economy

Economic globalization has promoted the economic development of underdeveloped areas, but it has also affected the ecological environment of these areas, such as the degradation of natural forests. For inland development areas with underdeveloped transportation, is the impact on the ecological environment equally obvious?

Chan (2017) proposed in his book that China's high-speed rail "going global" is a kind of geo-development, and the geo-economic value generated by China's high-speed rail overseas infrastructure projects will largely reshape the traditional political and economic pattern of Eurasia, forming a new international political and economic order dominated by East Asia. This is also a footnote to the "China threat theory" currently being put forward in this post.

Freeman (2019) discusses the debt impact that the China-Laos railway project has been facing for Laos and the economic significance of the railway project for Laos. The issue of debt has always been a concern of Laos. Under the premise of the Chinese threat, the scramble for overseas high-speed rail projects has become a prominent feature of Chinese diplomacy in recent years, including in Southeast Asia. These efforts are widely described as part of Beijing's agenda to change the balance of power in Southeast Asia at the expense of the economic, political, and security well-being of countries in the region. But in the article PavliĆeviĆ and Kratz (2018), this interpretation is questioned and argues that these are 'high-speed railways' The project has neither the intention nor the capacity to pursue such a hostile and far-reaching agenda.

Vörös and Somsack (2020), analyze China's growing direct investment and construction projects in Laos, especially the China-Laos railway construction project linking China and Laos. The completion of the China-Laos Railway will help reduce transportation and logistics costs and can even drive the rapid development of Laos' tourism industry, thereby benefiting the domestic economy of Laos. But some scholars have questioned who will benefit the most from the railway project and how Laos can avoid the so-called "debt trap".

Tengyuan et al. (2019) discuss the political and economic risks of international high-speed rail construction projects, with financing and cost, social support, and government attitudes as determinants of managing the political and economic risks of projects, and point out that overseas infrastructure projects need to fully understand the political and economic risks involved in the project in order to implement more effective response strategies.

Dragan (2017). used the Jakarta-Bandung high-speed rail project in Indonesia as a case study to analyze the fierce competition between China and Japan in the infrastructure sector in Southeast Asia, pointing out that the zero-sum game between China and Japan in the infrastructure sector in Southeast Asia will lead to a lose-lose situation, and the resulting negative economic effects will lead to unsustainable development of the infrastructure market in Southeast Asia.

In order to reveal the characteristics of the response of the ecological environment of landlocked developing countries to globalization, Laos as an example, land use/cover change data and import and export data were used to analyze ecological environment changes over the past thousand years. The analysis of the land use transfer matrix shows that from 2000 to 2017, 14.43% of the natural forests in Laos were converted to plantations, and 5.94% of the natural forests were degraded into shrublands and grasslands. Landscape pattern analysis shows that these changes are the main causes of ecological patch fragmentation, which in turn leads to biodiversity loss. In addition, topographic analysis further shows that degradation of natural forests occurs mainly at high altitudes and large slopes, which may increase the likelihood of natural disasters such as flooding. The coupling analysis with its import and export data shows that although Laos is a landlocked developing country, economic globalization still has a significant impact on its ecological environment. Laos should strengthen the supervision of renewable resources such as forests and water resources to avoid losing the renewable resources market while enjoying the dividends of economic globalization. At the same time, it is necessary to accurately assess the indirect impact of development on neighboring countries to ensure sustainable development (Vongpraseuth & Choi, 2015).

Interviewee (number A009) says:

"Chinese do whatever they want, they bring their people to work here, which puts the local area out of work." They do not respect the people and regulations we have here. We are also unable to communicate with the Chinese, which has also become a problem brought to us by the China-Laos Railway."

Interviewee (number A002) says

"China is building more and more hydropower dams on the Mekong, and we are very worried that it will destroy or affect environmental security and people's livelihoods, or have a social impact on downstream countries, so I am worried that the China-Laos railway will also be another dam or power plant."

Conclusions and recommendations

1. The China-Laos Railway effectively enables Laos to realize the development strategy of "turning a land-locked country into a land-linked country" and is an important carrier for international economic

cooperation and regional production capacity coordination between China and Laos, and its connotation and extension have been greatly expanded.

2. As a new passage of the China-Indochina Peninsula Economic Corridor, the China-Laos Railway not only plays an important role in promoting economic development, regional industrial division of labor and deep integration of urbanization along the line, but also accelerates the export of technical standards and intellectual property rights related to railway infrastructure projects such as survey, design, construction and operation, while providing regional public goods and sharing development dividends for Laos and other countries in the Indochina Peninsula.

3. The China-Laos Railway can promote the effective development of Laos' industrial supply chain, thus having a very positive impact on the economy, but after the opening of the train, appropriate measures should be taken to minimize its negative impact.

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