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A STUDY ON THE IMPACT OF CHINA-UZBEKISTAN TRANSPORTATION CONNECTIVITY PROJECTS ON REGIONAL TRADE COSTS (E.G., THE CHINA-KYRGYZSTAN-UZBEKISTAN RAILWAY)

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Anatatsiya: Ushbu tadqiqot Xitoy-O'zbekiston transport aloqasi loyihalarining (Xitoy-Qirg'iziston-O'zbekiston temir yo'li, CKU temir yo'liga e'tibor qaratgan holda) 2013 va 2024 yillar oralig'idagi mintaqaviy savdo xarajatlariga ta'sirini o'rganadi. Tadqiqot 38 ta asosiy transport loyihasini, Jahon bankining savdo xarajatlari ma'lumotlar bazasidagi savdo xarajatlari ma'lumotlarini va ikki tomonlama savdo statistikasini tahlil qilish orqali quyidagi natijalarni ochib beradi: transport aloqasi loyihalari O'zbekistonning mintaqaviy savdo xarajatlarini o'rtacha 28,3% ga kamaytirdi, CKU temir yo'li (qurilish bosqichida) Xitoy va O'zbekiston o'rtasidagi quruqlik transporti xarajatlarini yanada 42% ga kamaytirishi kutilmoqda. Sektorlar bo'yicha ishlab chiqarish va qishloq xo'jaligi savdosi eng ko'p foyda ko'rdi, xarajatlar mos ravishda 31,7% va 26,5% ga kamaydi. Tadqiqot shuningdek, infratuzilmani bir-birini to'ldirish va bojxona xizmatlarini osonlashtirish xarajatlarni tejash ta'sirini kuchaytirish uchun juda muhimligini aniqladi. Siyosat bo'yicha tavsiyalar CKU temir yo'lini qurishni tezlashtirish, mintaqaviy transport standartlarini uyg'unlashtirish va chegaralararo bojxona hamkorligini mustahkamlashni o'z ichiga oladi.

Kalit so'zi: Xitoy-O'zbekiston transport aloqasi; Xitoy-Qirg'iziston-O'zbekiston temir yo'li; mintaqaviy savdo xarajatlari; savdoni osonlashtirish; "Bir kamar, bir yo'l" tashabbusi (BRI)

Abstract: This study investigates the impact of China-Uzbekistan transportation connectivity projects (with a focus on the China-Kyrgyzstan-Uzbekistan Railway, CKU Railway) on regional trade costs between 2013 and 2024. By analyzing 38 key transportation projects, trade cost data from the World Bank's Trade Costs Database, and bilateral trade statistics, the research reveals core findings: transportation connectivity projects have reduced Uzbekistan's regional trade costs by 28.3% on average, with the CKU Railway (under construction) expected to further lower land transport costs between China and Uzbekistan by 42%. Sectorally, manufacturing and agricultural trade have benefited most, with cost reductions of 31.7% and 26.5% respectively. The study also finds that infrastructure complementarity and customs facilitation are critical for amplifying the cost-saving effects. Policy recommendations include accelerating CKU Railway completion, harmonizing regional transport standards, and strengthening cross-border customs cooperation.

Key words: China-Uzbekistan transportation connectivity; China-Kyrgyzstan-Uzbekistan Railway;

regional trade costs; trade facilitation; Belt and Road Initiative (BRI)

Аннотация: В данном исследовании рассматривается влияние проектов транспортной взаимосвязи между Китаем и Узбекистаном (с акцентом на Китайско-Кыргызско-Узбекскую железную дорогу, ККУ) на региональные торговые издержки в период с 2013 по 2024 год. Исследование, основанное на анализе 38 крупных транспортных проектов, данных о торговых издержках из базы данных Всемирного банка и статистики двусторонней торговли, выявило следующие результаты: проекты транспортной взаимосвязи снизили региональные торговые издержки Узбекистана в среднем на 28,3%, а строительство ККУ-железной дороги (в стадии строительства) должно дополнительно снизить наземные транспортные издержки между Китаем и Узбекистаном на 42%. В разрезе секторов наибольшую выгоду получили обрабатывающая промышленность и сельскохозяйственная торговля, где издержки снизились на 31,7% и 26,5% соответственно. Исследование также показало, что взаимодополняемость инфраструктуры и упрощение таможенных процедур имеют решающее значение для усиления эффекта экономии издержек. Рекомендации по политике включают ускорение строительства ККУ-железной дороги, гармонизацию региональных транспортных стандартов и укрепление трансграничного таможенного сотрудничества.

Ключевое слово: Транспортное сообщение между Китаем и Узбекистаном; железная дорога Китай-Кыргызстан-Узбекистан; региональные торговые издержки; упрощение торговых процедур; инициатива «Один пояс, один путь» (BRI).

I. Introduction. Transportation connectivity is a core pillar of the Belt and Road Initiative (BRI), and Central Asia—geographically positioned at the intersection of Eurasian trade routes—has become a key focus of connectivity projects (Wikipedia, 2024). For Uzbekistan, a landlocked country, inefficient transportation networks and high cross-border logistics costs have long constrained its integration into regional and global markets. Prior to 2013, Uzbekistan's average regional trade cost was 37% higher than the Eurasian average, with land transport to China taking up to 35 days and costing \$2,800 per TEU (World Bank, 2014). Since 2013, China and Uzbekistan have jointly promoted a series of transportation connectivity projects,

including the Tashkent Metro expansion, the Termez-Mazar-i-Sharif railway upgrade, and the flagship China-Kyrgyzstan-Uzbekistan Railway (CKU Railway), which broke ground in December 2024 (Zhen, 2024). These projects aim to shorten transport distances, improve logistics efficiency, and reduce trade costs. By 2023, bilateral trade between China and Uzbekistan had surged from \$4 billion in 2017 to \$13.7 billion, with transportation connectivity widely recognized as a key driver (Consulate General of the Republic of Uzbekistan in Aktau, 2025). Against this backdrop, this study addresses two core research questions: What is the overall impact of China-Uzbekistan transportation connectivity projects on Uzbekistan's

regional trade costs (2013–2024)? How does the CKU Railway, as a flagship project, compare to other connectivity initiatives in reducing sector-specific trade costs? The research relies on secondary data from international organizations, government reports, and project databases, adopting a qualitative descriptive approach combined with quantitative trend analysis.

II. Literature Review. Scholars have long emphasized the link between transportation infrastructure and trade costs. Limão and Venables (2001) found that improving transportation infrastructure can reduce trade costs by 10–15% for landlocked countries. In the Central Asian context, Kassenova (2020) notes that China’s BRI transportation projects have focused on addressing the region’s “infrastructure deficit,” with a particular emphasis on cross-border railways and road networks. Regarding the CKU Railway, Zhen, L. (2024) argues that the project will shorten the transport route between China and Central Asia by 900 kilometers compared to the existing Trans-Caspian route, significantly reducing logistics time and costs. Rogozhin (2023) adds that transportation connectivity projects have strengthened China’s economic leverage in Central Asia, as reduced trade costs have increased regional dependence on Chinese markets and supply chains. Existing studies have two key limitations: 1) Most focus on the general economic impact of connectivity

projects rather than quantifying trade cost reductions; 2) Few studies compare the differential effects of different types of transportation projects (e.g., railways vs. roads) on sector-specific trade costs. This research fills these gaps by analyzing trade cost data across sectors and evaluating the relative effectiveness of flagship and auxiliary connectivity projects.

III. Methodology. This research uses secondary data and adopts a mixed-methods design (qualitative + quantitative): Data Sources: Primary data: 38 China-Uzbekistan transportation connectivity projects (from BRI Portal, 2025), trade cost indicators (2013–2024) from the World Bank’s Trade Costs Database, and bilateral trade statistics from the World Integrated Trade Solution (WITS). Secondary data: Academic papers, international organization reports (Eurasian Development Bank, 2024), and logistics cost analyses from the International Transport Forum (ITF, 2023). Analysis Methods: Trade Cost Trend Analysis: Track changes in three core trade cost indicators—transport costs, customs clearance costs, and time-related costs—before and after the implementation of key connectivity projects. Sectoral Comparison: Evaluate trade cost reductions across manufacturing, agriculture, energy, and services sectors to identify the most benefited industries. Case Study: Focus on the CKU Railway, using feasibility study data and expert forecasts to

quantify its expected impact on trade costs compared to existing projects (e.g., Tashkent Metro, Termez-Mazar-i-Sharif railway).

IV. Results and Discussion. Overall Impact of Transportation Connectivity on

Regional Trade Costs Table 1 summarizes the changes in Uzbekistan's regional trade costs (2013–2024) following the implementation of China-Uzbekistan connectivity projects:

Trade Cost Indicator	2013 (Baseline)	2024(Post Project)	Reduction Rate
Average Transport Cost per TEU (China-Uzbekistan)	\$2,800	\$1,996	28.7%
Customs Clearance Cost per Shipment	\$320	\$215	32.8%
Average Transport Time (China-Uzbekistan)	35 days	22 days	37.1%
Overall Regional Trade Cost Index (100=2013)	100	71.7	28.3%

Table 1. Changes in Uzbekistan's Regional Trade Costs (2013–2024) Source: Compiled by the author based on World Bank Trade Costs Database (2024) and ITF (2023) Key drivers of these reductions include: Infrastructure Upgrades: Projects such as the Termez-Mazar-i-Sharif railway (investment \$450 million) and the Tashkent-Bukhara highway expansion have improved domestic transport networks, reducing intra-Uzbekistan logistics costs by 23% (Uzbekistan

Ministry of Transport, 2024). Customs Facilitation: Joint China-Uzbekistan customs clearance centers (established in 2019) have simplified documentation processes, cutting customs clearance time by 40% (General Administration of Customs of China, 2023). Sectoral Differences in Trade Cost Reductions Transportation connectivity has had uneven impacts across sectors, with manufacturing and agriculture benefiting most:

Sector	Trade Cost Reduction Rate (2013–2024)	Key Drivers
Manufacturing(Textiles, Machinery)	31.7%	Reduced transport time for time-sensitive goods; improved access to Chinese component supplies
Agriculture (Fruits, Vegetables)	26.5%	Refrigerated transport infrastructure (funded by China) reduced spoilage rates by 18%
Energy (Natural Gas, Petroleum Products)	19.2%	Existing pipeline networks limit incremental benefits from railway/road projects
Services (Tourism, Logistics)	24.8%	Improved connectivity boosted cross-border tourism and logistics services demand

Table 2. Sectoral Trade Cost Reduction Rates (2013–2024) Source: Compiled by the author based on WITS (2024) and Uzbekistan Ministry of Economy (2024) The Expected Impact of the China-Kyrgyzstan-Uzbekistan (CKU) Railway The CKU Railway, with a total investment of \$4.5 billion (China contributing 65%), is expected to further transform regional trade costs upon completion (2027): Cost Reductions: The railway will shorten the China-Uzbekistan transport route by 900 kilometers, lowering land transport costs per TEU to \$1,624 (a further 18.6% reduction from 2024 levels) and cutting transport time to 10 days (a 54.5% reduction from 2024) (Zhen, 2024). Sectoral Benefits: Manufacturing trade is projected to see the largest cost reduction (25% post-completion), as the railway will enable faster delivery of intermediate goods between Chinese and Uzbekistani factories. Regional Spillover Effects: The CKU Railway will connect Uzbekistan to China's rail network, integrating it into the Eurasian Land Bridge, and is expected to increase Uzbekistan's regional trade volume by 38% by 2030 (Eurasian Development Bank, 2024). Challenges to Maximizing Trade Cost Reductions Despite progress, three key challenges remain: Transport Standard Divergence: Differences in rail gauges (China uses standard gauge, Uzbekistan uses broad gauge) require transshipment, adding

\$150–\$200 per TEU in costs (ITF, 2023). Border Infrastructure Gaps: Kyrgyzstan's border checkpoints lack sufficient capacity, causing occasional delays for CKU Railway test shipments (Eurasianet, 2024). Policy Coordination Deficits: Inconsistent customs regulations across China, Kyrgyzstan, and Uzbekistan hinder seamless cross-border transport.

V. Conclusion. This study analyzes the impact of China-Uzbekistan transportation connectivity projects on regional trade costs (2013–2024), with a focus on the flagship CKU Railway. The findings reveal that connectivity projects have reduced Uzbekistan's overall regional trade costs by 28.3%, with manufacturing and agriculture sectors benefiting most from improved transport efficiency and customs facilitation. The CKU Railway, once completed, is expected to further lower China-Uzbekistan transport costs by 18.6% and integrate Uzbekistan more deeply into Eurasian trade networks. Key conclusions include: Transportation connectivity is a powerful tool for reducing trade costs in landlocked Central Asian countries, with complementary infrastructure and customs facilitation amplifying its effects. The CKU Railway will have a transformative impact on regional trade, surpassing the benefits of existing connectivity projects due to its direct link to China's rail network. Addressing transport standard divergence and policy

coordination gaps is critical to maximizing the trade cost-saving potential of connectivity projects. Policy Recommendations: Accelerate CKU Railway Completion: Prioritize infrastructure construction in Kyrgyzstan's border regions to minimize delays and ensure timely operation by 2027. Harmonize Regional Transport Standards: Promote gauge conversion or invest in dual-gauge rail sections to eliminate transshipment costs between China and Uzbekistan. Strengthen Cross-Border

Policy Coordination: Establish a trilateral (China-Kyrgyzstan-Uzbekistan) transport and customs coordination mechanism to align regulations and streamline processes. This study provides empirical evidence for the impact of BRI transportation connectivity on trade costs and offers insights for policymakers seeking to enhance regional economic integration. Future research could focus on the long-term economic growth effects of trade cost reductions driven by the CKU Railway.

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