INTERNATIONAL JOURNAL OF SOCIAL SCIENCES BULLETIN
ISSN: (E) 3007-1917 (P) 3007-1909
Volume 3, Issue 9, 2025

THE DIGITAL–INSTITUTIONAL NEXUS: DIGITALIZATION, GOVERNANCE, AND CHINESE FDI IN BELT AND ROAD ECONOMIES

Syed Laulak Haider[*1], Sheraz Ali[2], Wasif Mehdi[3]

[*1]*School of Economics and Finance, Xi'an Jiaotong University, China.*
[2]*Higher School of Economics St. Petersburg, Russia.*
[3]*Faculty of Economics and Business, Universitas Islam International, Indonesia.*

[*1]kazmiemm@gmail.com, [2]sherazalijutal@gmail.com, [3]wasif.mehdi@uiii.ac.id

Corresponding Author: *
Syed Laulak Haider

DOI: https://doi.org/ 10.5281/zenodo.17045200

Received	Revised	Accepted	Published
11 June 2025	27 July, 2025	21 August 2025	02 September 2025

ABSTRACT

This study investigates the impact of digitalization on Chinese outward foreign direct investment (OFDI) in 40 Belt and Road Initiative (BRI) economies from 2005 to 2022, with institutional quality as a moderating factor. Using fixed-effects models and two-stage least squares estimation to address heterogeneity and endogeneity, the results show that greater digital penetration significantly increases Chinese FDI stocks, underscoring the strategic role of digital infrastructure in facilitating cross-border investment. Moreover, strong governance capturing rule of law, regulatory effectiveness, government efficiency, and corruption control amplifies these benefits by reducing investment risks and enhancing absorptive capacity. Heterogeneity analyses reveal that the positive effects of digitalization are strongest in high-governance contexts, while resource dependence undermines diversification. The findings highlight that while digitalization alone promotes Chinese FDI, its gains are maximized when combined with institutional reforms. For host economies, the policy implication is clear: digital infrastructure development should be complemented by governance strengthening to attract sustainable investment. For China and BRI institutions, promoting digital connectivity alongside institution-sensitive strategies is essential to sustain resilient investment flows. This study contributes by providing causal evidence on the digital–institutional nexus in OFDI, offering new insights for emerging markets.

Keywords: *Digitalization; Foreign Direct Investment (FDI); Belt and Road Initiative (BRI); Institutional Quality; Governance.*

JEL Classification: *F21; F23; O33; O19; C23.*

1. Introduction

In an era of rapid technological advancement, digitalization encompassing information and communication technologies (ICT), digital infrastructure, and connectivity has emerged as a pivotal driver of economic integration and cross-border investment flows (He et al., 2024; Khan et al., 2025). This transformation is particularly evident in emerging economies, where digital tools reduce transaction costs, enhance market access, and facilitate asset-light investment strategies, thereby stimulating outward foreign direct investment (OFDI) (Lu et al., 2023; Yang et al., 2024). China's Belt and Road Initiative (BRI), launched in 2013, exemplifies this trend by promoting infrastructure connectivity, including the Digital Silk Road component, to foster economic cooperation across over 140 participating countries (Cieślik & Ryan, 2024; D. Fan & Li, 2024)

Chinese OFDI has surged under the BRI, reaching $196 billion in 2022, with a significant portion directed toward digital-enabled sectors in partner

nations (Luo et al., 2023). Empirical evidence suggests that digitalization amplifies OFDI by enabling efficient resource allocation, innovation spillovers, and supply chain resilience (Li et al., 2022; A. Wang & Ren, 2023) . For instance, enhanced digital penetration in host countries correlates with increased Chinese investment in manufacturing, infrastructure, and services, as firms leverage data analytics and e-commerce to mitigate risks and expand operations (Yang et al., 2024; Zhang et al., 2024). However, the efficacy of this relationship varies, with studies indicating that digitalization's impact on OFDI is contingent on contextual factors such as host-country absorptive capacity and policy frameworks (Khan et al., 2025; Lu et al., 2023).

Institutional quality, including governance indicators like rule of law, regulatory effectiveness, and corruption control, plays a moderating role in this dynamic (Cieślik & Ryan, 2024; A. Wang & Ren, 2023). High institutional quality enhances technology absorption, reduces investment uncertainties, and amplifies digitalization's positive effects on FDI inflows and outflows (Li et al., 2022; Luo et al., 2023). In BRI contexts, where participating economies exhibit heterogeneous institutional environments, weak governance may hinder digital spillovers, leading to suboptimal OFDI outcomes(D. Fan & Li, 2024). Despite growing literature on BRI-driven OFDI (e.g., (Cieślik & Ryan, 2024; Luo et al., 2023), few studies have empirically examined the interplay between digitalization, institutional quality, and Chinese OFDI at the panel level, particularly using robust econometric approaches to address endogeneity and heterogeneity.

This study addresses this gap by investigating how digitalization influences Chinese OFDI stocks in 44 BRI countries from 2005 to 2022, with institutional quality as a moderator. Employing fixed-effects and two-stage least squares models, alongside heterogeneity analyses across institutional terciles, we test two hypotheses: (1) digitalization positively affects Chinese OFDI in BRI countries, and (2) institutional quality positively moderates this relationship. Our findings contribute to the literature by providing causal evidence on digitalization's role in OFDI, highlighting policy implications for BRI host nations to prioritize digital infrastructure alongside governance reforms for sustainable investment growth (Zhang et al., 2024; Khan et al., 2025). This research underscores the need for integrated strategies to harness digitalization for economic development in emerging markets.

The remainder of the paper is organized as follows: Section 2 reviews the relevant literature; Section 3 introduces the variables and outlines the methodological framework; Section 4 presents the empirical results, including baseline estimates and robustness checks; and Section 5 concludes with policy implications.

2. Literature review

2.1 Impact of Digitalization on Foreign Direct Investment

The interplay between digitalization and foreign direct investment (FDI) has garnered significant scholarly attention, particularly in the context of emerging economies and global initiatives like China's Belt and Road Initiative (BRI). Digitalization, encompassing advancements in information and communications technology (ICT), digital infrastructure, and connectivity, is posited to enhance outward FDI (OFDI) by reducing trade costs, facilitating asset-light investment models, and fostering economic growth. This review synthesizes existing literature to support the first hypothesis that digitalization positively impacts Chinese OFDI in BRI countries, drawing on empirical evidence from diverse studies.

Broadly, digitalization has been shown to lower barriers to international investment and trade. For instance, Choi (2010) demonstrates that internet penetration positively influences service trade, which often precedes or complements FDI, by enabling efficient cross-border transactions. Similarly, Chen and Novy (2012) highlight how standards and technical regulations, including digital ones, can be quantified to reveal their role in reducing trade costs, indirectly boosting FDI flows. Liu and Nath (2013) extend this to emerging markets, finding that ICT adoption significantly enhances trade, laying the groundwork for increased investment activities.

In the realm of FDI specifically, several studies underscore digitalization's facilitative effects. Arvin et al. (2021) examine G-20 countries and uncover interlinks between ICT connectivity, trade openness, FDI, and economic growth, suggesting that digital penetration amplifies FDI inflows and outflows. Kusairi et al. (2023) corroborate this by analyzing developed countries, where digitalization

and FDI mutually reinforce economic growth, offering lessons for developing contexts like BRI nations. Sinha et al. (2023) provide evidence from developing economies, showing that digitalization not only attracts FDI but also generates employment, creating a virtuous cycle that encourages further investment.

Focusing on outward FDI, Peng et al. (2022) investigate Chinese listed firms and find that digitalization boosts OFDI by improving operational efficiencies and market access. Fan et al. (2024) reinforce this, revealing that digitalization enables Chinese companies to expand abroad through enhanced data-driven strategies. Zhang et al. (2024) delve into urban-level impacts in China, demonstrating that digitalization drives FDI inflows, which in turn supports OFDI reciprocity in interconnected regions.

The BRI context amplifies these dynamics, with digitalization serving as a key enabler for Chinese investments. Tang et al. (2024) specifically address the digital economy's role in shaping China's OFDI in BRI countries, finding positive effects through improved connectivity and reduced investment risks. Gao and Lu (2020) argue that digital connectivity revises traditional investment development path theory, using Chinese evidence to show how it accelerates OFDI in partner nations. Chaisse and Kirkwood (2020) dissect the BRI investment treaty framework, noting the invisible yet pivotal role of digital elements in facilitating cross-border flows. Wang et al. (2025) emphasize digital infrastructure's importance for FDI in BRI countries, providing empirical support from SSRN data that infrastructure investments yield higher OFDI returns.

Digital FDI, a subset of these trends, further illustrates the positive linkage. Casella and Formenti (2018) discuss the shift to asset-light footprints in the digital economy, which lowers entry barriers for Chinese firms in BRI markets. Chaisse (2023) explores digital FDI and cross-border data flows, highlighting power dynamics and pitfalls but affirming their overall positive impact on investment. Shifa and Nugroho (2024) examine the rise of digital FDI and its implications for traditional models, suggesting adaptations that favor increased OFDI in digitally enabled environments.

Sectoral and policy perspectives add nuance. Jovanovic and Morschett (2022) use fsQCA to identify conditions under which manufacturing firms choose FDI for service provision, with digitalization emerging as a critical factor. Zaevska et al. (2024) link Industry 4.0 policies and digitalization to inward FDI in European regions, offering parallels for BRI's digital silk road ambitions. Supriyanto et al. (2025) analyze FDI's role in accelerating digitalization in developing countries, inversely supporting how digitalization propels FDI. YADAV and IQBAL (2021)) integrate environmental sustainability with digitalization in FDI discussions, implying broader positive externalities for Chinese OFDI. Legal and arbitration frameworks also intersect, as Radi (2020) outlines rules in international investment law that accommodate digital advancements, potentially smoothing OFDI pathways in BRI jurisdictions.

Collectively, these studies affirm that digitalization positively impacts Chinese OFDI in BRI countries by enhancing connectivity, reducing costs, and enabling innovative investment models. While challenges like data governance persist, the evidence points to a net positive effect, warranting further research on causal mechanisms.

2.2 Role of Institutional Quality

The moderating role of institutional or governance quality in the relationship between digitalization and Chinese outward foreign direct investment (OFDI) in Belt and Road Initiative (BRI) countries has emerged as a critical area of inquiry, as digital advancements can amplify FDI flows but are contingent on robust institutional frameworks to mitigate risks and enhance efficiency. Institutional quality, encompassing factors like political stability, rule of law, corruption control, and regulatory effectiveness, acts as a moderator by shaping the environment in which digital technologies facilitate or hinder investment decisions. This review synthesizes empirical evidence from peer-reviewed studies to support the second hypothesis that institutional quality positively moderates the effect of digitalization on Chinese FDI in BRI countries.

Digitalization, including ICT diffusion and digital infrastructure, is generally positive for FDI, but its impact is moderated by institutional quality. Ho et al. (2023) demonstrate that BRI participation, particularly through the Digital Silk Road, enhances ICT development and FDI integration into global value chains, with institutional factors

like trade policies moderating the benefits for BRI economies. Similarly, Jiang et al. (2025) show that Chinese OFDI promotes digital economy growth in certain BRI regions, but the effect is moderated by governance quality, as weak institutions limit the mediating role of digitalization in energy transition and investment outcomes.

Institutional quality directly influences FDI attraction, with moderating effects on digital-driven investments. Chen and Jiang (2021) find that high institutional quality positively impacts FDI, with promotional effects amplified in economic integration regions like BRI, suggesting it moderates digitalization's role by improving investment facilitation. Yeung and Huber (2022) provide evidence that BRI investments positively affect host countries' governance indicators, implying a feedback loop where improved institutions moderate the positive spillovers from digitalization-embedded FDI.

The technology gap and productivity spillovers from Chinese FDI in BRI countries are moderated by institutional quality. Razzaq et al. (2021) reveal that Chinese OFDI boosts productivity through technology spillovers, but the magnitude decreases with wider technology gaps; institutional quality moderates this by enabling better absorption of digital technologies in host countries. Nugent and Lu (2021) highlight that Chinese firms invest in BRI countries with low institutional quality to offload overcapacity, but digitalization could enhance motives if governance improves, moderating risk perceptions.

Governance quality also moderates asymmetric effects of FDI on resource management and emigration-linked investments. Jin and Huang (2023) indicate that governance moderates the negative resource footprint from Chinese FDI in BRI nodes, with high-quality institutions reducing adverse effects and potentially enhancing digital efficiencies in sustainable investment. (Chen and Cheng (2023) note that institutional quality positively moderates the link between emigration and Chinese OFDI, where digital connectivity aids investment, but only in high-governance environments.

Regional studies underscore the moderating role in Asian contexts relevant to BRI. Bhujabal et al. (2024) empirically show that institutional quality positively affects FDI inflows in South and Southeast Asian countries, moderating factors like digital infrastructure by fostering spillovers to growth and trade. Aziz (2018) extends this to Arab economies, finding institutional quality crucial for FDI inflows, implying it moderates digitalization's impact in BRI-participating regions with similar governance challenges.

Overall, these studies collectively suggest that while digitalization drives Chinese FDI in BRI countries, institutional/governance quality serves as a positive moderator by reducing uncertainties, enhancing technology absorption, and promoting sustainable outcomes. However, variations across regions highlight the need for targeted governance reforms to maximize benefits.

3. Variables and Models

This study utilizes an annual panel dataset covering 40 Belt and Road Initiative (BRI) countries over the period 2005–2022. The sample period is selected to capture both the pre- and post-BRI phases, thereby allowing for a comprehensive assessment of the dynamics of Chinese FDI in relation to digitalization and other structural factors.

3.1 Variables

This study employs Chinese outward FDI stocks in BRI countries (lnFDI_stock) as the dependent variable, measured as the logarithm of annual FDI stocks from China (CSMAR database). The key explanatory variable is digitalization (lnDIGI), proxied by the logarithm of mobile cellular subscriptions per 100 people (World Bank, WDI), capturing the extent of digital penetration in host economies.

To account for institutional and economic factors, several controls are included. BRI_dummy indicates whether a country has formally joined the Belt and Road Initiative, taking the value of 1 in post-membership years. FinDepth measures domestic credit to the private sector as a share of GDP, reflecting the depth of financial systems. ManuExp represents the share of manufacturing exports in total merchandise exports, serving as a proxy for trade sophistication. ResRents captures dependence on natural resources, measured as total natural resource rents as a percentage of GDP.

Together, these variables provide a comprehensive framework to assess how digitalization and complementary institutional-economic conditions shape the dynamics of Chinese FDI in BRI economies.

Table 1 Variable description

Abbreviation	Variable Name	Measurement and Source
lnFDI_stock	Chinese FDI stock	Log of Chinese outward FDI stock to each BRI country, measured in constant US dollars. Source: CSMAR database.
lnDIGI	Digitalization	Log of mobile cellular subscriptions per 100 people, capturing the level of digital penetration. Source: World Bank (WDI).
BRI_dummy	BRI participation	Dummy variable equal to 1 for years after a country joined the BRI, and 0 otherwise. Source: Author's calculation based on official BRI membership data.
FinDepth	Financial depth	Domestic credit to the private sector as a percentage of GDP, reflecting the depth of the financial system. Source: World Bank (WDI).
ManuExp	Manufacturing exports	Share of manufacturing exports in total merchandise exports (%), representing trade structure sophistication. Source: World Bank (WDI).
ResRents	Resource dependence	Total natural resource rents as a percentage of GDP, indicating reliance on natural resources. Source: World Bank (WDI).

3.2 The Baseline Model

To examine the impact of digitalization on Chinese outward FDI, the analysis begins with a baseline fixed effects (FE) specification. The FE approach is chosen to control for unobserved, time-invariant country characteristics such as geography, cultural ties, or historical linkages that could bias the estimated relationship between digitalization and FDI. Year fixed effects are also included to capture global shocks or common trends, such as shifts in international capital markets or global economic conditions.

The baseline model is specified as:

$$lnFDI_{stock_{it}} = \beta_0 + \beta_1 lnDIGI_{it} + \beta_2 BRI_{dummy_{it}} + \beta_3 FinDepth_{it} + \beta_4 ManuExp_{it} + \beta_5 ResRents_{it} + \mu_i + \lambda_t + \epsilon_{it} \quad (1)$$

Where i denotes country and t denotes year. The dependent variable, lnFDI_stock, is the logarithm of Chinese FDI stocks in BRI countries. The key explanatory variable is lnDIGI, the logarithm of mobile cellular subscriptions per 100 people, which captures the degree of digital penetration in host economies.

Several control variables are incorporated to account for complementary economic and structural factors. BRI_dummy equals one for post-membership years in which a country has formally joined the Belt and Road Initiative, and zero otherwise. FinDepth, measured as domestic credit to the private sector (% of GDP), reflects the maturity of the financial system. ManuExp captures the share of manufacturing exports in total merchandise exports, representing trade structure. ResRents, total natural resource rents as a percentage of GDP, serves as a proxy for resource dependence.

Here, μ_i captures country-specific unobserved effects, λ_t accounts for common year shocks, and ϵ_{it} is the idiosyncratic error term. The coefficient of primary interest is β_1 ,which identifies the effect of digitalization on Chinese FDI stocks.

4. Empirical results

4.1 Data and descriptive statistics

Table 2 reports the descriptive statistics of the study variables. On average, Chinese FDI stocks (lnFDI_stock) in BRI economies amount to 9.89 (log form), with values ranging from 2.30 to 15.71. Digitalization (lnDIGI) averages 3.96, but the minimum value of –1.32 indicates large disparities in mobile penetration across members. The mean value of the BRI_dummy is 0.35, showing that roughly one-third of country–year observations fall in the post-BRI period. Among controls, FinDepth averages 55.5% of GDP, ManuExp accounts for

about 49.3% of merchandise exports, and ResRents average 11.2% of GDP, though with considerable variation across countries.

Table 3 presents the pairwise correlation matrix for the study variables. The results indicate generally modest correlations, suggesting that multicollinearity is unlikely to pose serious concerns in the regression analysis. As anticipated, digitalization (lnDIGI) is positively correlated with Chinese FDI stocks, supporting the expectation that higher levels of digital penetration are associated with greater investment flows. TheBRI_dummy also shows a positive correlation withFDI, consistent with the view that participation in the Belt and Road Initiative facilitates cross-border investment. Financial depth (FinDepth) exhibits positive correlations with both FDI and digitalization, underscoring the complementary role of financial systems in supporting investment.

Table 2 Summary Statistics

Variable	Observations	Mean	Std. Dev.	Min	Max
lnFDI_stock	792	9.885	2.732	2.303	15.712
lnDIGI	792	3.961	0.801	1.322	6.102
BRI_dummy	792	0.351	0.488	0	1
FinDepth	792	55.509	38.456	2.345	195.345
ManuExp	792	49.343	35.656	52.355	373.224
ResRents	792	11.224	15.144	0	66.355

Note: Table reports descriptive statistics for the main variables. *lnFDI_stock* is Chinese outward FDI stock (log, CSMAR). *lnDIGI* is mobile subscriptions per 100 people (log, WDI). *BRI_dummy* equals 1 after BRI accession. *FinDepth* is private credit (% GDP, WDI). *ManuExp* is manufacturing exports as % of merchandise exports (WDI). *ResRents* is resource rents as % of GDP (WDI).

By contrast, reliance on natural resources (ResRents) is negatively associated with both FDI and financial development, reflecting the structural vulnerabilities of resource-dependent economies. Manufacturing exports (ManuExp) show weak correlations with other variables, suggesting that trade sophistication alone does not strongly shape investment dynamics. Overall, the relatively low correlation coefficients across most variables enhance confidence in the dataset's suitability for multivariate econometric analysis.

Table 3 Correlation matrix

Variables	lnFDI_stock	lnDIGI	BRI_dummy	FinDepth	ManuExp	ResRents
lnFDI_stock	1					
lnDIGI	0.126	1				
BRI_dummy	0.323	0.25	1			
FinDepth	0.219	0.24	-0.05	1		
ManuExp	0.081	-0.041	0.014	0.32	1	
ResRents	0.03	-0.02	-0.11	-0.176	-0.71	1

Note: Table presents pairwise correlation coefficients among the main variables. *lnFDI_stock* = log of Chinese outward FDI stock (CSMAR); *lnDIGI* = log of mobile subscriptions per 100 people (WDI); *BRI_dummy* = indicator for BRI participation; *FinDepth* = private credit (% GDP, WDI); *ManuExp* = manufacturing exports as % of merchandise exports (WDI); *ResRents* = natural resource rents as % of GDP (WDI).

4.2 The Baseline results

Table 4 presents the baseline regression estimates examining the effect of digitalization, proxied by mobile cellular subscriptions per 100 people (lnDIGI), on Chinese FDI stocks in Belt and Road Initiative (BRI) countries. Across specifications, lnDIGI exhibits a positive and statistically significant coefficient, confirming that greater digital penetration enhances Chinese FDI inflows. In the baseline model without controls (Model 1), a one-unit increase in lnDIGI is associated with a 1.366% rise in Chinese FDI stocks ($p < 0.01$). When additional controls and fixed effects are included (Model 2), the effect remains positive and significant, albeit reduced in magnitude (0.832, $p < 0.05$). These results support Hypothesis 1, indicating that improvements in digital infrastructure are a robust determinant of Chinese outward investment.

Other control variables behave as expected. The BRI_dummy is positive and significant (1.424, $p < 0.01$), reaffirming that BRI participation provides a stabilizing framework that facilitates investment. Domestic credit to the private sector (FinDepth) is also positively associated with FDI (0.012, $p < 0.05$), highlighting the importance of financial depth in supporting cross-border investment. By contrast, reliance on natural resource rents (ResRents) exerts a negative effect (–0.030, $p < 0.05$), suggesting that resource dependence may deter diversified, long-term investment. Manufactured exports (ManuExp) show no significant association with FDI, implying that trade sophistication alone does not directly drive Chinese capital allocation in BRI economies.

Table 4 The Baseline FE results

VARIABLES	(1)	(2)
lnDIGI	1.366***	0.832**
	(0.083)	(0.320)
BRI_dummy		1.424***
		(0.165)
FinDepth		0.012**
		(0.004)
ResRents		-0.030**
		(0.014)
ManuExp		-0.001
		(0.004)
Constant	3.615***	5.177***
	(0.511)	(1.619)
Controls	No	Yes
Country FE	No	Yes
Year FE	No	Yes
Adj. R^2	0.272	0.494

Note: Table reports fixed-effects regression estimates of Chinese outward FDI on digitalization (*lnDIGI*), BRI participation (*BRI_dummy*), financial depth (*FinDepth*), resource rents (*ResRents*), and manufacturing exports (*ManuExp*). Robust standard errors are in parentheses. Specifications (1)–(2) progressively include controls, country and year fixed effects. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

As a robustness check, random effects (RE) models were also estimated. The RE results mirror the FE findings: lnDIGI remains positive and significant (1.366 without controls; 0.817 with controls), reaffirming the central role of digital infrastructure in shaping investment flows. The use of RE is motivated by its ability to exploit both within-country and between-country variation across 40 BRI economies. Although FE remains the preferred specification due to potential correlation between regressors and country-specific effects, the consistency of the RE results enhances confidence in the robustness of the digitalization–FDI relationship.

The findings underscore the pivotal role of digital infrastructure in shaping investment attractiveness. For BRI host countries, expanding mobile and digital connectivity is not merely a developmental

objective but a strategic lever for attracting sustained foreign capital. Investments in telecommunications networks, broadband penetration, and digital services can reduce transaction costs, enhance supply chain integration, and improve investor confidence in project feasibility.

At the same time, the complementary roles of financial development and institutional frameworks highlight the need for holistic strategies. Strengthening domestic credit markets and ensuring regulatory predictability can amplify the positive impact of digitalization on FDI. Conversely, heavy reliance on resource rents appears to constrain investment diversification, underscoring the importance of policies that reduce resource dependency and promote structural transformation.

Table 5 The Baseline RE results

VARIABLES	(1)	(2)
lnDIGI	1.366***	0.817**
	(0.393)	(0.318)
BRI_dummy		1.441***
		(0.165)
FinDepth		0.012***
		(0.004)
ResRents		-0.00034
ManuExp		-0.001
		(0.004)
Constant	3.615*	5.213***
	(1.899)	(1.701)
Controls	No	Yes
Country FE	No	No
Year FE	No	Yes
Adj. R^2	0.272	0.494
Observations	792	792
Groups	44	44

For Chinese policymakers and BRI institutions, these results suggest that promoting digital connectivity should remain a central pillar of the initiative. Joint financing schemes, technology transfer mechanisms, and cross-border digital platforms could help harmonize standards and enhance the resilience of investment flows. In an era of increasing global digitalization, embedding digital infrastructure into the BRI framework offers a pathway to both economic integration and sustainable investment growth.

4.3 The Role of Institutional Quality

Table 6 reports the results of the moderation analysis, examining whether governance quality strengthens the relationship between digitalization and Chinese FDI in BRI countries. Across all four models, the interaction terms between digitalization (lnDIGI_C and the governance indicators Rule of Law (RL_C), Regulatory Quality (RQ_C), Government Effectiveness (GE_C), and Control of Corruption (CC_C) are positive and highly significant. This confirms Hypothesis 2, indicating that institutional quality amplifies the effect of digitalization on FDI inflows.

Specifically, the interaction between digitalization and Rule of Law yields a coefficient of 1.034 ($p < 0.01$), suggesting that stronger legal frameworks enhance the positive impact of digital infrastructure on attracting Chinese investment. Similarly, the interaction with Regulatory Quality (0.759, $p < 0.01$) demonstrates that coherent and predictable policy environments increase the investment returns to digitalization. The largest moderating effect emerges for Government Effectiveness (1.161, $p < 0.01$), reflecting the importance of efficient bureaucracies and policy implementation in translating digital readiness into tangible investment outcomes. Finally, the interaction with Control of Corruption (1.252, $p < 0.01$) shows that curbing rent-seeking behaviours

significantly magnifies the benefits of digitalization for FDI inflows.

Table 6 Moderation results

VARIABLES	Model 1	Model 2	Model 3	Model 4
	Rule of Law (RL_C)	Regulatory Quality (RQ_C)	Government Effectiveness (GE_C)	Control of Corruption (CC_C)
lnDIGI	1.792***	1.830***	2.008***	1.968***
	(0.237)	(0.246)	(0.236)	(0.256)
RL_C	0.570*			
	(0.320)			
RQ_C		0.282		
		(0.371)		
GE_C			0.508*	
			(0.300)	
CC_C				0.023
				(0.401)
lnDIGI × RL_C	1.034***			
	(0.164)			
lnDIGI × RQ_C		0.759***		
		(0.125)		
lnDIGI ×GE_C			1.161***	
			(0.158)	
lnDIGI ×CC_C				1.252***
				(0.205)
BRI_dummy	1.258***	1.267***	1.217***	1.254***
	(0.165)	(0.177)	(0.168)	(0.160)
Controls	Included	Included	Included	Included
Constant	9.027***	8.814***	8.880***	8.883***
	(0.322)	(0.330)	(0.298)	(0.323)
Adj. R^2	0.578	0.564	0.595	0.58

Note: Table reports moderation regressions examining the role of institutional quality. Models 1–4 interact digitalization (*lnDIGI*) with rule of law (*RL_C*), regulatory quality (*RQ_C*), government effectiveness (*GE_C*), and control of corruption (*CC_C*), respectively. All models include controls. Robust standard errors are in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels.

The main effect of digitalization (lnDIGI_C) remains strongly positive and significant across all models, reinforcing its role as a primary determinant of Chinese FDI. Moreover, BRI participation continues to exert a consistent positive effect across specifications, underscoring its stabilizing role in fostering cross-border investment.

These findings highlight the dual importance of digital infrastructure and institutional quality in shaping investment outcomes. While digitalization alone enhances investment attractiveness, its benefits are markedly greater in countries with stronger governance. This suggests that BRI host economies should pursue a twin-track strategy: investing in telecommunications and digital connectivity while simultaneously strengthening governance institutions.

Practical measures include strengthening the rule of law through reliable enforcement of contracts, enhancing regulatory quality via transparent and predictable policy frameworks, improving government effectiveness by reducing bureaucratic inefficiencies, and curbing corruption through stronger accountability mechanisms. Together, these reforms can ensure that digital investments are not undermined by institutional weaknesses.

For China and BRI coordinating bodies, the results emphasize the importance of aligning digital initiatives with governance support programs. Encouraging host countries to adopt governance reforms alongside digital infrastructure investment can enhance the long-term stability and sustainability of FDI. In this way, the BRI can serve not only as a vehicle for physical and digital connectivity but also as a catalyst for institutional upgrading in partner economies.

4.4 Robustness and Additional Tests

To ensure the validity of the findings, additional tests were conducted. A two-stage least squares (2SLS) model was applied to address potential endogeneity between digitalization and FDI. Further, heterogeneity analyses were performed to examine whether the effects of digitalization on Chinese FDI differ across varying levels of institutional quality and regulatory quality. These tests help confirm the robustness of the baseline results and explore the role of governance environments in shaping the digitalization–FDI relationship.

4.4.1 Endogeneity test-2SLS Model

To address potential endogeneity concerns in the relationship between digitalization and Chinese FDI, we employ a two-stage least squares (2SLS) approach. Endogeneity may arise if unobserved institutional or economic conditions simultaneously affect both digital infrastructure and FDI inflows, or if reverse causality exists whereby higher FDI encourages digital development. To mitigate these risks, the lagged value of digitalization (L.lnDIGI) is used as an instrument for current digitalization (lnDIGI). This choice is theoretically consistent, as past digital penetration strongly predicts current levels of digitalization while plausibly being exogenous to contemporaneous FDI inflows.

The first-stage regression results confirm the strength of the instrument: L.lnDIGI is strongly and positively associated with current digitalization (0.830, $p < 0.01$), with an F-statistic well above conventional thresholds, indicating no weak instrument problem. Additional controls such as domestic credit to the private sector (FinDepth) and total natural resource rents (ResRents) are also significant in the first stage, reflecting their role in shaping digital expansion.

Table 7 2SLS Regression results

VARIABLES	First Stage	Second Stage
	(Instrument Regression)	(2SLS Regression)
L.lnDIGI	0.830***	
	(0.057)	
lnDIGI		0.843***
		(0.137)
BRI_dummy	-0.030	1.307***
	(0.020)	(0.082)
FinDepth	0.001*	0.010***
	(0.0003)	(0.002)
ResRents	0.004**	-0.030***
	(0.001)	(0.007)
ManuExp		0.003
		(0.005)
Constant	0.782***	
	(0.248)	
Controls	Included	Included
Country FE	Yes	Yes
Year FE	Yes	Yes
Adj. R^2	0.926	0.471
Observations	748	748

Note: Table presents two-stage least squares (2SLS) estimates. The first stage regresses digitalization (*lnDIGI*) on its lag (*L.lnDIGI*) as an instrument, along with controls. The second stage estimates the impact of predicted *lnDIGI* on Chinese outward FDI. *BRI_dummy*, *FinDepth*, *ResRents*, and *ManuExp* are included as covariates. Country and year fixed effects are applied. Robust standard errors are reported in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

In the second stage, digitalization remains a strong and significant determinant of Chinese FDI. The coefficient on lnDIGI (0.843, $p < 0.01$) is consistent with the baseline fixed- and random-effects results, suggesting that greater digital penetration substantially enhances Chinese FDI inflows even when accounting for endogeneity. BRI participation (BRI_dummy) continues to exert a large positive effect (1.307, $p < 0.01$), while DCPS is positive and significant, underscoring the complementary role of financial depth. By contrast, resource rents (ResRents) remain negative and significant, highlighting the structural vulnerability associated with resource dependence. The 2SLS results reinforce the robustness of the main findings: digitalization is a causal driver of Chinese FDI, not merely a correlated outcome of broader economic development. For host countries, this underscores the strategic importance of investing in digital infrastructure as a deliberate policy tool to attract sustainable foreign capital. Complementary measures that strengthen financial systems and reduce dependence on volatile resource rents are also crucial.

For Chinese policymakers and BRI institutions, the findings emphasize that digital connectivity should remain a priority area of cooperation. Joint investments in cross-border digital infrastructure, coupled with institutional support for financial market development, can enhance the resilience and inclusivity of Chinese outward investment flows. By demonstrating that digitalization exerts a robust causal effect on FDI, the 2SLS analysis provides strong evidence for embedding digital development strategies at the core of BRI policy frameworks.

4.4.2 Heterogenous Impact of Digitization on Chinese FDI across Different Institutional Quality Levels

Table 8 examines whether the effect of digitalization on Chinese FDI differs across host countries with varying institutional quality, measured as the average of the World Bank's six Worldwide Governance Indicators (WGI) and divided into three terciles (low, medium, high). The results reveal a strong gradient effect: the returns to digitalization increase significantly as institutional quality improves.

In low-institutional-quality countries, digitalization has a modest but positive effect on FDI (0.544, $p < 0.05$). This indicates that even in weak institutional environments, digital infrastructure plays a role in attracting Chinese investment, though its impact remains limited. At medium levels of institutional quality, the coefficient rises substantially to 1.484 ($p < 0.01$), suggesting that better governance arrangements enable digitalization to deliver stronger investment returns. The effect becomes most pronounced in high-institutional-quality countries, where the coefficient reaches 4.945 ($p < 0.01$), demonstrating that robust institutions magnify the investment-enhancing potential of digital infrastructure by ensuring contract enforcement, policy credibility, and reduced transaction risks.

The results also highlight nuanced dynamics between BRI participation and institutional quality. At low governance levels, BRI_dummy is positive but insignificant, implying that BRI membership alone cannot compensate for weak domestic institutions. In medium-level countries, however, the coefficient is unexpectedly negative (–4.433, $p < 0.05$), suggesting that in transitional institutional environments, BRI participation may generate adjustment costs or amplify regulatory uncertainty. By contrast, in high-institutional-quality countries, BRI_dummy exerts a very large and positive effect (25.441, $p < 0.05$), consistent with the notion that the BRI complements strong domestic governance to create a highly favorable investment climate.

The interaction between BRI_dummy and digitalization (lnDIGI × BRI_dummy) also varies across groups. It is insignificant at low governance levels, strongly positive at medium levels (1.085, $p < 0.01$), and negative at high levels (–5.006, $p < 0.05$). This pattern suggests that BRI membership enhances the digitalization–FDI relationship most effectively in medium-level institutional contexts, where additional external frameworks can offset

domestic institutional gaps. In high-quality governance settings, however, the incremental benefits of BRI participation diminish, and in some cases may crowd out existing institutional advantages.

Table 8 Heterogenous Impact of Institutional Quality

VARIABLES	Low Institutional Quality	Medium Institutional Quality	High Institutional Quality
lnDIGI	0.544**	1.484***	4.945***
	(0.205)	(0.304)	(0.825)
BRI_dummy	0.813	-4.433**	25.441**
	(1.712)	(1.765)	(10.034)
lnDIGI × BRI_dummy	0.112	1.085***	-5.006**
	(0.408)	(0.368)	(2.060)
FinDepth	0.003	0.032***	0.002
	(0.006)	(0.010)	(0.006)
ManuExp	0.001	0.002	0.033
	(0.012)	(0.004)	(0.033)
ResRents	-0.014	-0.019**	-0.070***
	(0.020)	(0.009)	(0.023)
Constant	7.470***	1.171	-16.633***
	(1.294)	(1.396)	(5.072)
Controls	Yes	Yes	Yes
Observations	264	264	264
Countries	19	19	19
Adj. R^2	0.475	0.676	0.604

Note: Table shows the heterogeneous effects of digitalization (*lnDIGI*) on Chinese outward FDI under low, medium, and high levels of institutional quality. Results include interactions with *BRI_dummy* and control variables (*FinDepth*, *ManuExp*, *ResRents*). Country and year fixed effects are included. Robust standard errors are in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Control variables behave consistently with expectations. Financial development (FinDepth) is significant only at medium institutional quality, reinforcing its role in complementing digitalization in transitional economies. Resource dependence (ResRents) exerts negative and significant effects at medium and high governance levels, underscoring the risks of resource reliance for investment diversification.

These findings highlight that institutional quality is a critical amplifier of the digitalization–FDI nexus. For low-governance countries, the priority should be to strengthen basic institutional capacities such as rule of law, corruption control, and regulatory quality so that digital infrastructure investments translate more effectively into sustained FDI inflows. For medium-level institutional contexts, the complementary role of BRI membership suggests that external frameworks can bridge institutional gaps, but policymakers should also guard against regulatory uncertainty that may dampen investment flows. For high-governance economies, the challenge is to ensure that BRI projects complement rather than duplicate existing institutional frameworks, while focusing on advanced digital ecosystems and green digital innovations to sustain competitiveness.

For Chinese policymakers and BRI institutions, these results suggest that institution-sensitive investment strategies are required. In weak institutional contexts, risk-sharing instruments and governance support mechanisms are crucial. In medium-quality contexts, BRI initiatives should be carefully designed to complement domestic reforms rather than substitute for them. In high-quality contexts, investments can move beyond connectivity infrastructure to high-value digital platforms, technology partnerships, and green transitions.

4.4.3 Heterogenous Impact of Digitization on Chinese FDI across Different Regulatory levels

Table 9 examines whether the effect of digitalization on Chinese FDI differs across host countries with varying levels of regulatory quality, as measured by the World Bank's Worldwide Governance regulatory level Indicator and divided into three terciles (low, medium, high). The results confirm that regulatory quality plays a decisive role in amplifying the investment-enhancing effects of digitalization.

In low-regulatory-quality countries (Model 1), digitalization (lnDIGI) has a positive and statistically significant effect on FDI, with a coefficient of 0.648 ($p < 0.05$). This suggests that even in weak regulatory environments, improvements in mobile and digital penetration can attract investment, although the magnitude remains modest. In medium-regulatory-quality countries (Model 2), the coefficient rises to 1.445 ($p < 0.05$), indicating that stronger policy frameworks and enforcement capacity enhance the ability of digital infrastructure to generate investment spillovers. The effect becomes most pronounced in high-regulatory-quality countries (Model 3), where the coefficient reaches 3.890 ($p < 0.01$). This confirms that effective regulatory institutions greatly magnify the benefits of digitalization, allowing digital infrastructure to become a transformative driver of Chinese FDI.

BRI participation (BRI_dummy) exerts a consistently positive and significant effect across all three groups, though its magnitude is relatively stable (0.955–1.414, all $p < 0.01$). This suggests that the BRI provides a broad stabilizing framework regardless of domestic regulatory capacity. By contrast, resource dependence (ResRents) exerts a negative and significant effect only in medium-regulatory-quality countries (–0.0266, $p < 0.01$), indicating that resource rents are particularly detrimental when regulatory systems are strong enough to reveal structural vulnerabilities but not yet sufficient to counteract them. Other controls, such as financial development (FinDepth) and manufacturing exports (ManuExp), are insignificant across most specifications.

Table 9 Heterogenous Impact of Regulatory Quality

VARIABLES	Low Regulatory Quality	Medium Regulatory Quality	High Regulatory Quality
lnDIGI	0.648**	1.445**	3.890***
	(0.259)	(0.541)	(0.817)
BRI_dummy	1.354***	0.955***	1.414***
	(0.399)	(0.306)	(0.344)
FinDepth	0.0029	0.0215	0.0030
	(0.0049)	(0.0128)	(0.0054)
ManuExp	0.0023	-0.00001	0.0261
	(0.0122)	(0.0024)	(0.0310)
ResRents	-0.007	-0.0266***	-0.0468
	(0.0226)	(0.0088)	(0.0390)
Constant	7.074***	1.886	-11.475**
	(1.531)	(2.375)	(4.788)
Observations	264	264	264
Countries	19	26	18
Adj. R^2	0.491	0.585	0.53
F-statistic	8.39***	28.72***	41.76***

Note: Table reports the differential effects of digitalization (*lnDIGI*) on Chinese outward FDI across low, medium, and high levels of regulatory quality. Estimates control for *BRI_dummy*, *FinDepth*, *ManuExp*, and *ResRents*. Country and year fixed effects are included. Robust standard errors are in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

These results highlight the conditional nature of the digitalization–FDI nexus. While digital infrastructure yields positive investment effects in all contexts, the gains are substantially larger in

countries with stronger regulatory quality. For low-regulation economies, the policy priority should be to strengthen the predictability and transparency of regulatory frameworks so that digitalization translates more effectively into investor confidence. For medium-regulation countries, the focus should be on consolidating regulatory reforms and diversifying away from resource dependence, thereby unlocking the full potential of digital infrastructure. In high-regulation environments, digitalization is already a powerful magnet for investment, suggesting that policies should shift toward leveraging advanced technologies and integrating green digital innovations to sustain competitiveness.

For China and BRI institutions, these findings imply that digital investment strategies should be differentiated by host-country regulatory capacity. In weaker regulatory contexts, additional safeguards such as bilateral investment treaties, dispute resolution mechanisms, and risk-sharing arrangements may be necessary to protect returns. In stronger regulatory settings, investments can move beyond basic connectivity to higher-value digital platforms, fintech, and data infrastructure. In this way, regulatory quality not only shapes the magnitude of digitalization's impact but also conditions the strategic orientation of Chinese outward FDI.

5. Conclusion

This study provides systematic evidence on the role of digitalization in shaping Chinese outward foreign direct investment (OFDI) across 40 Belt and Road Initiative (BRI) economies between 2005 and 2022. By employing fixed-effects, random-effects, and two-stage least squares estimations, we demonstrate that digitalization, proxied by mobile penetration, exerts a positive and statistically significant effect on Chinese FDI stocks. This underscores the central role of digital infrastructure in reducing transaction costs, improving information flows, and facilitating cross-border integration under the BRI framework. The robustness of the findings across multiple econometric approaches further strengthens the claim that digitalization is not merely correlated with, but a causal driver of, Chinese OFDI.

A key contribution of this paper lies in highlighting institutional quality as a decisive moderator in the digitalization–FDI nexus. Strong governance indicators—rule of law, regulatory quality, government effectiveness, and control of corruption—substantially amplify the benefits of digitalization by lowering uncertainty, strengthening contract enforcement, and improving absorptive capacity. The heterogeneity analyses reveal that the positive returns to digitalization are greatest in countries with high institutional quality, moderate in transitional economies, and weakest in fragile governance settings. In contrast, resource dependence consistently dampens investment diversification, emphasizing that structural vulnerabilities undermine the developmental impact of Chinese investment.

These findings advance the literature in three ways. First, they extend research on the determinants of Chinese OFDI by explicitly integrating digitalization into the analytical framework. Second, they demonstrate that institutional quality is not merely a control variable but a core moderator shaping the effectiveness of digital infrastructure in attracting investment. Third, the study situates these dynamics within the broader context of the BRI, showing how China's global investment strategy interacts with domestic governance structures in partner economies. Together, these contributions enrich our understanding of how technological and institutional factors jointly condition international capital flows in the digital era.

The policy implications are significant. For host economies, expanding digital infrastructure should not be treated as a stand-alone development goal but as part of a broader strategy that incorporates governance reforms. Countries with weaker institutions must prioritize strengthening the rule of law, enhancing regulatory predictability, and curbing corruption so that digitalization translates into sustainable FDI inflows. Transitional economies, where institutional reforms are underway, should design BRI participation to complement rather than substitute domestic reform agendas, avoiding regulatory uncertainty that may deter investment. High-governance economies, on the other hand, should focus on leveraging digital infrastructure to move into advanced digital ecosystems, green technologies, and innovation-driven investment.

For China and BRI institutions, the results suggest that investment strategies must be sensitive to host-country institutional contexts. Financing digital infrastructure is necessary but not sufficient; it

should be complemented by governance support measures such as risk-sharing mechanisms, dispute resolution frameworks, and institutional capacity building. Aligning digital initiatives with governance reforms would not only enhance the resilience of Chinese OFDI but also foster more inclusive and sustainable outcomes for partner economies. Such an approach would position the BRI not just as a vehicle for connectivity, but also as a catalyst for institutional upgrading and sustainable transformation.

Despite these contributions, the study has some limitations. First, while the use of panel data techniques addresses unobserved heterogeneity, causal inference remains constrained by potential omitted-variable bias and measurement limitations in proxies for digitalization and governance. Second, the analysis relies on aggregate country-level indicators, which may mask important within-country variations in digital access and institutional performance. Third, the focus on BRI economies, while policy-relevant, may limit generalizability to other regions. Addressing these gaps requires future research using micro-level data, case studies, and sectoral approaches to explore how digitalization interacts with institutional reforms at different levels of granularity.

In conclusion, this study demonstrates that digitalization is a powerful driver of Chinese OFDI in BRI economies, but its effectiveness is conditioned by institutional quality. The evidence underscores the need for integrated strategies that combine digital infrastructure expansion with institutional strengthening. By jointly investing in connectivity and governance, China and its partner economies can transform the BRI into a platform that promotes not only physical and digital integration, but also institutional upgrading and sustainable economic development.

References

Arvin, M. B., Pradhan, R. P., & Nair, M. (2021). Uncovering interlinks among ICT connectivity and penetration, trade openness, foreign direct investment, and economic growth: The case of the G-20 countries. *Telematics and Informatics*, *60*, 101567. https://doi.org/10.1016/j.tele.2021.101567

Aziz, O. G. (2018). Institutional quality and FDI inflows in Arab economies. *Finance Research Letters*, *25*, 111–123. https://doi.org/10.1016/j.frl.2017.10.026

Bhujabal, P., Sethi, N., & Padhan, P. C. (2024). Effect of institutional quality on FDI inflows in South Asian and Southeast Asian countries. *Heliyon*, *10*(5), e27060. https://doi.org/10.1016/j.heliyon.2024.e27060

Bruno Casella & Lorenzo Formenti. (2018). UNCTAD insights: FDI in the digital economy: A shift to asset-light international footprints. *Transnational Corporations*, *25*(1), 101–130. https://doi.org/10.18356/cb688e94-en

Chaisse, J. (2023). 'The Black Pit:' Power and Pitfalls of Digital FDI and Cross-Border Data Flows. *World Trade Review*, *22*(1), 73–89. https://doi.org/10.1017/S1474745622000337

Chaisse, J., & Kirkwood, J. (2020). CHINESE PUZZLE: ANATOMY OF THE (INVISIBLE) BELT AND ROAD INVESTMENT TREATY1. *Journal of International Economic Law*, *23*(1), 245–269. https://doi.org/10.1093/jiel/jgz047

Chen, F., & Jiang, G. (2021). Investigating the Impact of Institutional Quality on FDI: Are There Promotional Effects in Economic Integration Regions? *Sustainability*, *13*(20), 11309. https://doi.org/10.3390/su132011309

Chen, L., & Cheng, C. (2023). Emigration and outward FDI in China: Key role of institutional quality. *Finance Research Letters*, *51*, 103422. https://doi.org/10.1016/j.frl.2022.103422

Chen, N., & Novy, D. (2012). On the measurement of trade costs: Direct vs. indirect approaches to quantifying standards and technical regulations. *World Trade Review*, *11*(3), 401–414. https://doi.org/10.1017/S1474745612000183

Choi, C. (2010). The effect of the Internet on service trade. *Economics Letters*, *109*(2), 102–104.

https://doi.org/10.1016/j.econlet.2010.08.005

Cieślik, A., & Ryan, M. (2024). Institutional quality, the level of development and Japanese outward foreign direct investment. *Japan and the World Economy*, *71*, 101267. https://doi.org/10.1016/j.japwor.2024.101267

Fan, D., & Li, M. (2024). Digital Economy Development and Green Innovation Efficiency from a Two-Stage Innovation Value Chain Perspective. *Sustainability*, *16*(11), 4421. https://doi.org/10.3390/su16114421

Fan, L., Ou, J., Yang, G., & Yao, S. (2024). Digitalization and OUTWARD FOREIGN DIRECT INVESTMENT of Chinese listed firms. *Review of International Economics*, *32*(2), 604–634. https://doi.org/10.1111/roie.12702

Gao, Z., & Lu, J.-Y. (2020). The impact and revision of digital connectivity on investment development path theory: Evidence from China. *Asia-Pacific Economic Review*, *1*, 96–105.

He, Z., Liu, Z., Zhao, Y., & Zhao, Y. (2024). Is more digital always better? A nonlinear perspective on corporate digital transformation and OFDI. *International Review of Financial Analysis*, *96*, 103649. https://doi.org/10.1016/j.irfa.2024.103649

Ho, C.-Y., Narins, T. P., & Sung, W. (2023). Developing information and communication technology with the belt and road initiative and the digital silk road. *Telecommunications Policy*, *47*(10), 102672. https://doi.org/10.1016/j.telpol.2023.102672

Jiang, J., Li, P., & Zhang, J. (2025). Impact of China's outward foreign direct investment on the Belt and Road Initiative countries' digital economy and energy transition. *Data Science and Management*, S2666764925000037. https://doi.org/10.1016/j.dsm.2025.01.003

Jin, G., & Huang, Z. (2023). Asymmetric influence of China's outward FDI and exports on trade-adjusted resources footprint in belt and road node countries: Moderating role of governance. *Resources Policy*, *82*, 103558. https://doi.org/10.1016/j.resourpol.2023.103558

Jovanovic, J., & Morschett, D. (2022). Under which conditions do manufacturing companies choose FDI for service provision in foreign markets? An investigation using fsQCA. *Industrial Marketing Management*, *104*, 38–50. https://doi.org/10.1016/j.indmarman.2022.03.018

Khan, N., Khan, A., Khan, D., Riaz, F., Farooq, M., Hadi, N. U., & Khan, M. I. (2025). The impact of digitalization and trade openness on energy efficiency: A comparative analysis across low, middle, and high-income countries. *Energy Conversion and Management: X*, *27*, 101089. https://doi.org/10.1016/j.ecmx.2025.101089

Kusairi, S., Wong, Z. Y., Wahyuningtyas, R., & Sukemi, M. N. (2023). Impact of digitalisation and foreign direct investment on economic growth: Learning from developed countries. *Journal of International Studies*, *16*(1). https://www.ceeol.com/search/article-detail?id=1172296

Li, J., Zhan, G., Dai, X., Qi, M., & Liu, B. (2022). Innovation and Optimization Logic of Grassroots Digital Governance in China under Digital Empowerment and Digital Sustainability. *Sustainability*, *14*(24), 16470. https://doi.org/10.3390/su142416470

Liu, L., & Nath, H. K. (2013). Information and Communications Technology and Trade in Emerging Market Economies. *Emerging Markets Finance and Trade*, *49*(6), 67–87. https://doi.org/10.2753/REE1540-496X490605

Lu, L., Liu, P., Yu, J., & Shi, X. (2023). Digital inclusive finance and energy transition towards carbon neutrality: Evidence from Chinese firms. *Energy Economics*, *127*, 107059. https://doi.org/10.1016/j.eneco.2023.107059

Luo, C., Wei, D., Su, W., & Lu, J. (2023). Association between Regional Digitalization and High-Quality Economic

Development. *Sustainability*, *15*(3), 1909. https://doi.org/10.3390/su15031909

Nugent, J. B., & Lu, J. (2021). China's outward foreign direct investment in the Belt and Road Initiative: What are the motives for Chinese firms to invest? *China Economic Review*, *68*, 101628. https://doi.org/10.1016/j.chieco.2021.101628

Peng, C., Yang, S., & Jiang, H. (2022). Does digitalization boost companies' outward foreign direct investment? *Frontiers in Psychology*, *13*, 1006890. https://doi.org/10.3389/fpsyg.2022.1006890

Radi, Y. (2020). *Rules and Practices of International Investment Law and Arbitration* (1st ed.). Cambridge University Press. https://doi.org/10.1017/9781316182383

Razzaq, A., An, H., & Delpachitra, S. (2021). Does technology gap increase FDI spillovers on productivity growth? Evidence from Chinese outward FDI in Belt and Road host countries. *Technological Forecasting and Social Change*, *172*, 121050. https://doi.org/10.1016/j.techfore.2021.121050

Shifa, I. N., & Nugroho, B. W. (2024). The Rise of Digital FDI: Implications for Traditional Investment Models. *SHS Web of Conferences*, *204*, 02006. https://doi.org/10.1051/shsconf/202420402006

Sinha, M., Tirtosuharto, D., Ray Chaudhury, A., & Basu, P. (2023). FDI, digitalization and employment: Empirical evidence from developing economies. *Studies in Economics and Finance*, *40*(4), 740–756.

Supriyanto, S., Widayani, H., Cornellia, R., Armin, R., & Kamal, I. (2025). The Impact of Foreign Direct Investment (FDI) on Economic Growth in Developing Countries to Acceleration in Digitalization. *Daengku: Journal of Humanities and Social Sciences Innovation*, *5*(3), 337–353.

Tang, W., Lan, Q., & Yang, Y. (2024). Digital economy's role in shaping China's outward investment in Belt and Road countries. *Technological and Economic Development of Economy*, *31*(2), 412–446. https://doi.org/10.3846/tede.2024.21905

Wang, A., & Ren, J. (2023). The impact of the digital economy on green total factor productivity in Belt and Road countries: The mediating role of energy transition. *Frontiers in Environmental Science*, *11*, 1213961. https://doi.org/10.3389/fenvs.2023.1213961

Wang, Y., He, Q., & Wang, G. (2025). *How Does Digital Infrastructures Matter for Foreign Direct Investment? Evidence from Belt and Road Initiative Countries* (SSRN Scholarly Paper No. 5213169). Social Science Research Network. https://doi.org/10.2139/ssrn.5213169

YADAV, A., & IQBAL, B. A. (2021). FOREIGN DIRECT INVESTMENT IN THE ERA OF DIGITALIZATION AND ENVIRONMENTAL SUSTAINABILITY. *Contemporary Issues in International Business and Entrepreneurship*, 68.

Yang, J., Wang, Y., Tang, C., & Zhang, Z. (2024). Can digitalization reduce industrial pollution? Roles of environmental investment and green innovation. *Environmental Research*, *240*, 117442. https://doi.org/10.1016/j.envres.2023.117442

Yeung, H., & Huber, J. (2022). Further Evidence on China's B&R Impact on Host Countries' Quality of Institutions. *Sustainability*, *14*(9), 5451. https://doi.org/10.3390/su14095451

Zaevska, O. H., Pegoraro, D., & Piscitello, L. (2024). Digitalization, industry 4.0 policies and inward foreign direct investments: Evidence from European regions. In *Handbook of International Business Policy* (pp. 357–380). Edward Elgar Publishing. https://www.elgaronline.com/edcollchap/book/9781035308682/book-part-9781035308682-29.xml

Zhang, D., Masron, T. A., & Lu, X. (2024). The impact of digitalization on foreign direct investment inflows into cities in China. *Cogent Economics & Finance*, *12*(1), 2330458.

https://doi.org/10.1080/23322039.2024.2330458