

Does the Belt and Road Initiative Promote Entrepreneurship in Participating Countries?

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Received: June 16, 2026

Accepted: August 7, 2026

Online Published: September 3, 2026

doi:10.11114/bms.v12i2.8951

URL: <https://doi.org/10.11114/bms.v12i2.8951>

Abstract

In the context of global economic restructuring and the rise of emerging markets, the Belt and Road Initiative (BRI), a key international economic cooperation platform led by China, has not only reshaped regional economic ties but also provided external opportunities for the restructuring of entrepreneurial ecosystems in countries along the route. Based on data from 22 co-built countries and 15 non-co-built countries from 2010 to 2019, this paper considers the Belt and Road Initiative as a quasi-natural experiment and constructs a staggered difference-in-differences framework to identify the path of the initiative's impact on entrepreneurial activities. The empirical results show that the initiative significantly increases the entrepreneurial participation rate in participating countries, and the policy effect is more significant in developing countries, countries with low capital openness, as well as in Asia and Africa. Mechanism tests further find that digital infrastructure development and total factor productivity enhancement play a mediating role in the path of policy impact on entrepreneurial activities, suggesting that the initiative effectively stimulates entrepreneurial behavioral responses at the national level by improving the institutional environment and resource allocation conditions. This paper theoretically expands the research on the behavioral mechanism of the economic effects of BRI and empirically reveals how external institutional policies promote entrepreneurial activity through ecological improvement and efficiency enhancement. In terms of policy recommendations, entrepreneurship development should be incorporated into the key agenda of the "Belt and Road" cooperation framework, promote the cross-border collaborative construction of digital infrastructure, and strengthen the institutional supply and entrepreneurship support system, to further stimulate the entrepreneurial potential of developing regions.

Keywords: the Belt and Road Initiative, entrepreneurship, digital infrastructure, total factor productivity

1. Introduction

Since the turn of the 21st century, the global economic landscape has undergone a profound transformation. Growth in traditional advanced economies has decelerated, while the influence of emerging markets and developing countries has steadily expanded. Since its inception in 2013, the Belt and Road Initiative (BRI) has evolved into a pivotal platform for international economic cooperation, spanning multiple nations across Asia, Europe, and Africa. By prioritizing infrastructure connectivity, policy coordination, unimpeded trade, and financial integration, the initiative aims to foster regional economic integration and sustainable development (Du & Zhang, 2018). The BRI has not only restructured the framework of international economic cooperation but has also unlocked new developmental opportunities for participating countries along its routes.

Entrepreneurship serves as a fundamental driver for stimulating economic growth, catalyzing innovation, and enhancing employment opportunities. Consequently, the level of entrepreneurial activity directly shapes a nation's economic dynamism and social stability. While existing literature has extensively examined the macro-level impacts of the Belt and Road Initiative (BRI) on trade flows (Wang, Gao, & Wang, 2024) and digital economy advancement (Tian & Zhang, 2025), there remains a significant gap in systematic empirical evidence regarding how the initiative influences entrepreneurial activities in participating countries. In particular, the heterogeneous effects of the BRI across diverse stages of economic development and varying institutional environments require further rigorous investigation.

The drivers of entrepreneurial activity are multifaceted and complex. Existing literature systematically categorizes these

determinants into several dimensions: policy and institutional environments, socio-cultural factors, individual entrepreneurial characteristics, and economic and financial conditions. Specifically, policy-related research highlights the impact of smart city initiatives and institutional spillover effects (Miao, Gast, & Laouiti, 2022; Hoppmann & Vermeer, 2020). Socio-cultural studies emphasize the role of social capital, the vibrancy of entrepreneurial culture, and gender dynamics (Nguyen, Hideg, & Engel, 2024). At the individual level, psychological traits and human capital are identified as primary factors (Davidsson & Honig, 2003; Zhao, Seibert, & Lumpkin, 2010), while economic and financial research focuses on the availability of financial resources and the quality of infrastructure (Hasan, Kobeissi, Wang, & Zhou, 2017; Cuntz & Peuckert, 2023). Despite these insights, there remains a lack of systematic empirical research on the specific mechanisms through which the Belt and Road Initiative stimulates entrepreneurship in participating countries. While scholars generally agree that the BRI creates a favorable environment by improving infrastructure (Yang, Huang, Huang, & Chen, 2020), optimizing institutional frameworks (Casas-Klett & Li, 2022), and fostering cross-border cooperation, the precise transmission pathways and the differentiated impacts across varying levels of economic development and market environments constitute a significant research gap.

To address these questions, this study treats the BRI as a quasi-natural experiment. Utilizing a staggered DID approach, we combine data from the GEM, the World Bank, and other international databases to empirically examine the initiative's impact on entrepreneurial activity in participating countries. By comparing the entrepreneurial participation rates of BRI and non-BRI countries before and after the initiative's implementation, this research seeks to identify the causal effects of the BRI. Furthermore, we investigate the underlying mediating mechanisms, specifically focusing on how the initiative optimizes the entrepreneurial ecosystem by enhancing digital infrastructure and increasing Total Factor Productivity.

The remainder of this paper is organized as follows: Section 2 reviews the relevant literature and develops the theoretical rationale; Section 3 describes the empirical strategy, variables, and data; Section 4 reports the baseline, robustness, and heterogeneity results; Section 5 examines the proposed mechanisms; Section 6 discusses the findings in relation to existing literature; and Section 7 concludes with the study's contributions, policy implications, limitations, and directions for future research.

2. Literature Review

As a new paradigm of global cooperation championed by China, the Belt and Road Initiative aims to drive high-quality economic development in participating countries through core mechanisms of infrastructure connectivity, trade and investment facilitation, and policy coordination. Within this macro-landscape, entrepreneurship as a crucial endogenous engine of economic growth and its interaction with the BRI have increasingly attracted scholarly attention. Although existing literature has explored the BRI's macro-impacts across diverse dimensions such as policy environments, cultural backgrounds, investment drivers, and infrastructure, and while some studies have examined the initiative's specific effects on regional entrepreneurial activities (Radović & Vučekočić, 2024; Mathur & Nathani, 2020), there remains a lack of systematic synthesis and mechanistic integration regarding how the BRI drives entrepreneurship in participating nations.

From an institutional perspective, the BRI provides critical structural support for entrepreneurial activities by reshaping institutional environments, reducing transaction costs, and expanding market access (Li, Liu, & Qian, 2019; De Soyres, Mulabdic, & Ruta, 2020; Casas-Klett & Li, 2022). Specifically, Yang, Wang, Liu, Huang, and Wu (2022) demonstrate that the BRI, serving as a potent home-country institutional arrangement, significantly enhances the corporate social responsibility performance of emerging market multinational enterprises through the interplay of institutional pressure and resource support. This effect is particularly pronounced among state-owned enterprises and in host countries with high regulatory standards, suggesting that the BRI guides firms to effectively overcome the liability of foreignness and acquire international legitimacy through non-market strategies. Furthermore, quantitative analysis by De Soyres et al. (2020) indicates that while hard infrastructure significantly lowers transport costs, the realization of its economic welfare effects relies heavily on complementary institutional reforms, such as trade facilitation. In addition, within the cultural dimension, the BRI effectively enhances opportunity recognition and individual entrepreneurial intention by fostering a positive entrepreneurial culture, bridging cultural distances, and promoting cross-cultural integration (Li et al., 2019; Mohsin et al., 2021).

From an investment and trade perspective, the BRI stimulates entrepreneurial vitality in participating countries by deepening Outward Foreign Direct Investment (OFDI) and expanding trade networks, which generate technology spillovers and market access effects (Du & Zhang, 2018; Yu, Zhao, Niu, & Lu, 2020). Zhang, Zhang, Jin, Tu, and Liu (2024) find that by lowering institutional barriers and strengthening policy communication, the BRI significantly amplifies the positive innovation spillovers of OFDI on host countries. Sutherland, Anderson, Bailey, and Alon (2020) further point out that BRI policies significantly increase the willingness of Chinese firms to enter countries

characterized by high institutional risk. This unique flow of capital fills the institutional voids left by global capital in underdeveloped regions, fundamentally activating the entrepreneurial ecosystems of peripheral markets. Notably, high-level political mutual trust plays a pivotal role in this process. Using large-sample industry data from 84 countries spanning 2005-2017, Shao (2020) empirically demonstrates that close international political cooperation under the BRI framework significantly increases the level of Chinese OFDI. This investment growth, driven by top-level design, not only supplies scarce capital factors to host countries but also creates abundant market opportunities for local entrepreneurs through upstream and downstream industrial linkages.

From an infrastructure and technology perspective, the BRI is evolving from traditional connectivity in transportation and energy toward digital empowerment, thereby providing both the physical foundation and technological bedrock for entrepreneurial activities. Regarding physical infrastructure, improvements in transportation and energy facilities directly lower the operational barriers for start-ups (Liu, Schindler, & Liu, 2020; Wang, Lim, Zhang, Zhao, & Lee, 2020; Alves, Gong, & Li, 2023). Thüser et al. (2020) emphasize that BRI infrastructure projects significantly shorten cross-border transport lead times and reduce logistics complexity. An assessment by the Eurasia Group (2020) notes that BRI projects offer participating countries the opportunity to bridge infrastructure gaps at costs below the market average. This cost advantage is expected to translate into long-term dividends in the form of future trade growth, FDI inflows, and improvements in social welfare. Furthermore, technology spillovers and digitalization are emerging as new drivers of growth. An exploratory study by Senadjki, Awal, Hui Nee, and Ogbeibu (2022), based on data from six countries including Algeria, Malaysia, and Indonesia, finds that BRI projects directly promote the digital transformation of host-country enterprises by integrating modern technologies into industrial infrastructure development. This technological empowerment not only enhances the efficiency of traditional industries but also establishes the necessary conditions for new forms of entrepreneurship grounded in digital technologies.

In summary, while existing research highlights the direct and indirect impacts of the BRI from various angles, most studies treat the initiative merely as a contextual background rather than identifying a causal relationship with entrepreneurial behavior. Furthermore, research has focused heavily on short-term macro-effects, leaving a void in empirical discussions of long-term impacts. Compared to previous studies, the marginal contribution of this paper is threefold: first, we use a long-cycle panel dataset (2010-2019) from the GEM and the World Bank to examine entrepreneurial effects from a dynamic perspective; second, we employ a staggered DID method to isolate the causal impact of the BRI; and third, we shift to a micro-individual perspective, using the entrepreneurial participation rate as the dependent variable to more accurately measure actual entrepreneurial behavior and activity levels.

3. Empirical Methods and Data

3.1 Econometric Model Specification

The BRI is characterized by its expansive geographical reach and significant cross-regional cooperation framework. Spanning from the Pacific Ocean in the east to the Baltic Sea in the west, the initiative traverses the continents of Asia, Europe, and Africa, encompassing diverse regions such as Central Asia, West Asia, North Africa, Southeast Asia, South Asia, and Central and Eastern Europe.

Treating the launch of the Belt and Road Initiative as a quasi-natural experiment, this study adopts a staggered difference-in-differences (staggered DID) framework to systematically evaluate the initiative's catalytic effect on entrepreneurial activities across various nations. Unlike conventional single-period DID that imposes a uniform policy shock year for all treated units, our model assigns country-specific policy timing based on the official BRI memorandum signing year of each participating economy. To isolate and identify the impact of the BRI, we designate countries that have officially joined the initiative as the treatment group, while countries and regions that have not participated serve as the control group. The baseline econometric specification is constructed as follows:

$$bstart_{it} = \alpha + \beta (Treat_i \times Post_{it}) + \gamma X_{it} + \lambda_i + \delta_t + \epsilon_{it}$$

Where:

1. $bstart_{it}$ denotes the nascent entrepreneurial participation rate of country i in year t , the core dependent variable;

2. $Treat_i$ is a time-invariant binary indicator for the treatment group:

$Treat_i = 1$ if country i signed a formal BRI cooperation MoU within the sample window (2010–2019); otherwise $Treat_i = 0$ (control group);

3. $Post_{it}$ is a country-time varying dummy variable capturing differentiated policy implementation timing, defined by each country's official BRI signing year $joinyear_i$:

$Post_{it} = \begin{cases} 1, & year_i - joinyear_i \geq 0 \\ 0, & year_i - joinyear_i < 0 \end{cases}$; For each treated country, $Post_{it}=1$ starting from its own BRI signing year and all subsequent years, and 0 for all pre-signing periods. Control group countries maintain $Post_{it}=0$ across the entire sample period;

4. The interaction term $Treat_i \times Post_{it}$ is our core policy variable. Its coefficient β captures the average treatment effect of BRI participation on entrepreneurial activity after accounting for staggered policy rollout across different nations;

5. X_{it} represents the vector of country-year macroeconomic and institutional control variables;

6. λ_i represents country fixed effects (absorbing all time-invariant national characteristics); δ_t represents year fixed effects (absorbing global common annual shocks);

7. ϵ_{it} is the idiosyncratic error term, with standard errors clustered at the country level to address serial correlation within panels.

3.2 Samples and Data

3.2.1 List of Treated & Control Countries

Table 1. Treated Group

Country	Country ID	BRI Signing Year
Russia	7	2015
Greece	30	2018
Italy	39	2018
Poland	48	2015
Peru	51	2019
Argentina	54	2017
Brazil	55	2019
Chile	56	2018
Malaysia	60	2015
Thailand	66	2014
Korea	82	2015
China	86	2013
Turkey	90	2015
Iran	98	2016
Portugal	351	2018
Latvia	371	2016
Croatia	385	2017
Slovenia	386	2017
Slovakia	421	2015
Panama	507	2017
Ecuador	593	2018
Uruguay	598	2018

Table 2. Control Group

Country	Country ID	BRI Signing Year
United States	1	/
South Africa	27	/
Netherlands	31	/
France	33	/
Spain	34	/
Switzerland	41	/
United Kingdom	44	/
Sweden	46	/
Germany	49	/
Mexico	52	/
Colombia	57	/
India	91	/
Ireland	353	/
Guatemala	502	/
Israel	972	/

Given the profound and widespread shock of the COVID-19 pandemic on the global economic system since early 2020, combined with the inherent time lags in policy transmission, this study limits the research period to 2010-2019. This

timeframe is designed to mitigate the interference of major exogenous events on estimation results. Furthermore, this period encompasses the proposal and early implementation phases of the BRI, providing a relatively clear and stable macroeconomic backdrop for assessing policy effects. Based on data availability and sample representativeness, the final panel comprises 37 countries, consisting of 22 BRI participating countries and 15 non-participating countries.

The core explanatory variables for this study are sourced from the Global Entrepreneurship Monitor (GEM) database. Jointly initiated by Babson College and London Business School in 1999, GEM has evolved into one of the world's most extensive and widely cited platforms for entrepreneurship research, covering nearly 100 economies and partnering with over 300 academic and research institutions. To construct the key independent variable for assessing policy impact, we categorize the sample based on the official list of BRI partner countries released by the Ministry of Commerce of the People's Republic of China. Countries that have signed cooperation documents with China are classified as the treatment group, while those that have not are classified as the control group.

To control for country-level heterogeneity that may affect entrepreneurial activity, we introduce a series of control variables. Macro-level variables including GDP per capita, total population, and urbanization rate are primarily derived from the World Bank database to reflect national economic and social development. Variables related to the entrepreneurial environment are drawn from the GEM database to capture the institutional and cultural foundations of entrepreneurship. Finally, following standard practices in the literature, we winsorize all continuous variables at the 1st and 99th percentiles to minimize the influence of outliers and enhance the robustness of the regression estimates.

3.3 Variable Specifications

3.3.1 Dependent Variable

The dependent variable $bstart_{it}$ measures the intensity of early-stage entrepreneurial activity for country i in year t , sourced from the Global Entrepreneurship Monitor (GEM) Adult Population Survey. This indicator corresponds to the share of the adult population actively launching new ventures in a given economy-year, which captures real entrepreneurial behavioral output rather than mere subjective entrepreneurial intention.

Compared with alternative proxies such as the number of registered enterprises, the GEM nascent entrepreneurship rate can timely reflect short-run policy responses to the BRI and avoids measurement bias caused by cross-country differences in enterprise registration systems. All continuous variables including $bstart_{it}$ are winsorized at the 1st and 99th percentiles to mitigate the disturbance of extreme outliers.

3.3.2 Core explanatory Variable

The core explanatory variable of the staggered DID framework is the interaction term $Treat_i \times Post_{it}$, which captures the heterogeneous average treatment effect of BRI participation. The two components of this interaction are defined rigorously as follows:

3.3.2.1 Time-invariant Group Dummy

$Treat_i$: $Treat_i = 1$ if country i signed a formal bilateral BRI cooperation Memorandum of Understanding (MoU) within the sample period 2010-2019 (classified as the treatment group); $Treat_i = 0$ if no official BRI cooperation document was signed before 2020 (classified as the control group).

3.3.2.2 Country-time Varying Policy Dummy

We set $joinyear_i$ as the exact official signing year of the BRI MoU for each treated country (detailed in Table 1). For each panel observation (i, t) :

$$Post_{it} = \begin{cases} 1, & year_t - joinyear_i \geq 0 \\ 0, & year_t - joinyear_i < 0 \end{cases}$$

For all control-group countries without BRI cooperation agreements, $Post_{it}$ equals 0 throughout the entire sample window regardless of time.

This differentiated construction of $Post_{it}$ distinguishes our staggered DID from traditional single-period DID that imposes a unified policy shock year for all treated units. The coefficient of $Treat_i \times Post_{it}$ reflects the incremental change in nascent entrepreneurship after a country formally participates in the BRI, relative to non-participating economies with identical pre-existing trends.

3.3.3 Mediating Variables

This study identifies two potential transmission channels, namely digital infrastructure development and total factor productivity (TFP). The construction procedures of the two mediating indicators are elaborated in detail below to ensure full transparency of empirical measurement.

3.3.3.1 Digital Infrastructure Development Index (infra)

Drawing on the methodology employed by Wang Lan, Chen Ying, and Cheng Zhizhou (2025) in their extended analysis, this paper measures the level of digital infrastructure development in various countries in terms of telecommunications network penetration, internet access, and network service reliability. Specifically, four indicators are selected: fixed-line telephone subscriptions, fixed-broadband subscriptions, mobile cellular subscriptions, and the number of secure web servers. The entropy method is used to determine the weights of each indicator, and a weighted calculation is performed to derive a national-level digital infrastructure development index, denoted as *infra*. All relevant raw data are sourced from the World Bank's World Development Indicators database. A higher value of this index indicates that a country has greater digital communications network coverage, stronger internet access capabilities, and higher levels of network service reliability, signifying more comprehensive digital infrastructure development.

Because the selected indicators differ in their units of measurement and numerical scales, they are first normalized using the min–max normalization method. Since all four indicators are positively associated with digital infrastructure development, the normalized value is calculated as follows:

$$z_{jit} = \frac{x_{jit} - \min(x_j)}{\max(x_j) - \min(x_j)}$$

Where x_{jit} denotes the original value of indicator j for country i in year t , and z_{jit} denotes the corresponding normalized value. The terms $\max(x_j)$ and $\min(x_j)$ represent the maximum and minimum values of indicator j , respectively, across all country-year observations in the sample.

Next, the share of each country-year observation in indicator j is calculated as follows:

$$p_{jit} = \frac{z_{jit}}{\sum_i \sum_t z_{jit}}$$

The information entropy of indicator j is then computed as:

$$e_j = -\frac{1}{\ln(NT)} \sum_i \sum_t p_{jit} \ln(p_{jit})$$

where N denotes the number of countries and T denotes the number of years in the sample. When $p_{jit} = 0$, the term $p_{jit} \ln(p_{jit})$ is defined as zero.

The weight assigned to indicator j is subsequently determined by:

$$w_j = \frac{1 - e_j}{\sum_j (1 - e_j)}$$

Finally, the Digital Infrastructure Development Index for country i in year t is constructed as:

$$infra_{it} = \sum_j w_j z_{jit}$$

where $infra_{it}$ represents the overall level of digital infrastructure development in country i in year t . A larger value of $infra_{it}$ indicates a higher level of digital infrastructure development.

3.3.3.2 Total Factor Productivity (TFP)

Total factor productivity is estimated using the Solow residual method. This method measures the portion of output that cannot be explained by observable factor inputs, such as capital and labor, and therefore reflects changes in overall production efficiency. The data required for the estimation are obtained from the EconMap database.

3.3.4 Control Variables

To mitigate omitted variable bias and improve the reliability of regression estimation, this study incorporates a set of country-year characteristic variables. The measurement, economic implication and data source of each control variable are specified as follows:

lpop: natural logarithm of total national population. It reflects the scale of potential market and labor supply, two fundamental preconditions for entrepreneurial activities.

sub: proportion of adults with entrepreneurial intention within the next three years, sourced from GEM surveys. This indicator captures latent entrepreneurial culture and subjective willingness to start businesses across economies.

lgni: natural logarithm of gross national income per capita, serving as a proxy for a country's overall economic

development stage, which determines residents' capacity to identify and exploit entrepreneurial opportunities.

urban: urban population share. Higher urbanization corresponds to agglomerated infrastructure, human capital and information flow, which jointly shape the local entrepreneurial ecosystem.

birth: birth rate (per thousand residents). It reflects long-term demographic trends and the future supply of labor force, which exerts persistent influences on entrepreneurial potential.

HHI: industrial concentration index of secondary and tertiary industries. It mirrors the degree of market competition, which further restricts or stimulates the emergence of new startups.

Table 3 reports the descriptive statistics for the main variables. Overall, the summary statistics suggest that differences across variable distributions are modest, indicating that the data are well-suited for subsequent regression analysis.

Table 3. Variable Descriptions and Descriptive Statistics

Variable Name	Data Source	Sample Size	Mean	Min	Max
bstart	The NES of the GEM	370	14.704	1.667	45.788
treat_post	China's Ministry of Commerce	370	0.356	0.000	1.000
TFP	Econmap	370	0.709	0.387	1.133
infra	the World Bank	370	0.091	0.013	0.177
lgni	the World Bank	370	9.652	7.108	11.375
lpop	the World Bank	370	3.408	0.642	7.243
sub	The NES of the GEM	370	17.237	1.852	60.753
urban	the World Bank	370	71.966	30.930	95.500
birth	the World Bank	370	13.996	7.900	27.525
HHI	the World Bank	370	0.490	0.120	0.710

4. Empirical Results Analysis

4.1 Baseline Regression Results

This section examines the causal impact of participation in the Belt and Road Initiative (BRI) on national entrepreneurial activity. The baseline estimation results, reported in column (1) of Table 4, show that in the absence of any control variables, the implementation of the BRI is positively and significantly associated with higher levels of entrepreneurial activity, with an estimated coefficient of 2.51 that is significant at the 1 percent signi level. As additional control variables and fixed effects are progressively introduced (columns (2) to (5) of Table 4), the estimated effect remains stable and statistically significant at the 5 percent level. Overall, the empirical evidence indicates that participation in the BRI significantly promotes entrepreneurial activity in participating countries. This positive effect persists after controlling for both country and time fixed effects, suggesting that the pro-entrepreneurship impact of the policy is robust and sustained over time.

Table 4. Baseline Regression Analysis

	(1)bstart	(2)bstart	(3)bstart	(4)bstart	(5)bstart
treat_post	2.51***	0.714**	0.677**	0.812**	0.887**
lpop		-0.172	1.916	-0.180	1.930
sub		0.796***	0.785***	0.794***	0.780***
lgni		-0.287	-0.540	-0.168	-0.463
urban		0.0467	-0.140***	0.0544	-0.143***
birth		0.0616	-0.328	0.0910	-0.291
HHI		-7.623*	-9.024	-8.550	-11.63
Control Variables	No	Yes	Yes	Yes	Yes
Country Fixed Effects	No	No	Yes	Yes	Yes
Time Fixed Effects	No	No	No	Yes	Yes
Clustering at the national level	No	No	Yes	No	Yes
Sample size	370	370	370	370	370

Note: (1) ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively. The same convention applies to the tables hereafter.

4.2 Parallel Trend Assumption and Dynamic Effects

The validity of staggered DID estimation relies critically on the parallel trend assumption, which requires that entrepreneurial activity in treatment and control groups would follow identical evolutionary trajectories absent the BRI policy shock. Following the methodology of Liu and Qiu (2016), we examine whether the treatment and control groups exhibited similar evolutionary trends before the policy intervention. To visually examine this prerequisite, we plot dynamic policy coefficients over relative time windows. For intuitive graphic presentation, we take the year 2014 as a unified reference benchmark on the horizontal axis of Figure 1, yet this single reference year is never set as a uniform

policy cutoff in any regression estimation, consistent with staggered DID identification logic (Sun and Qin, 2018).

All baseline, heterogeneity, mechanism and robustness regressions adopt country-specific BRI signing years ($joinyear_i$) to construct the time-varying $Post_{it}$ dummy, consistent with the staggered DID specification laid out in Section 3.1. As illustrated in Figure 1, all coefficient estimates for years prior to the benchmark are close to zero and statistically insignificant at conventional levels. This confirms no systematic pre-existing divergence in entrepreneurial trends between BRI participants and non-participants, so the parallel trend assumption holds.

After the reference benchmark year, the estimated coefficients turn positive and gradually rise with statistical significance. This dynamic pattern demonstrates that the BRI exerts a sustained, growing pro-entrepreneurship effect after countries formally sign cooperation memorandums. Collectively, the graphical evidence supports the credibility of our staggered DID causal identification strategy.

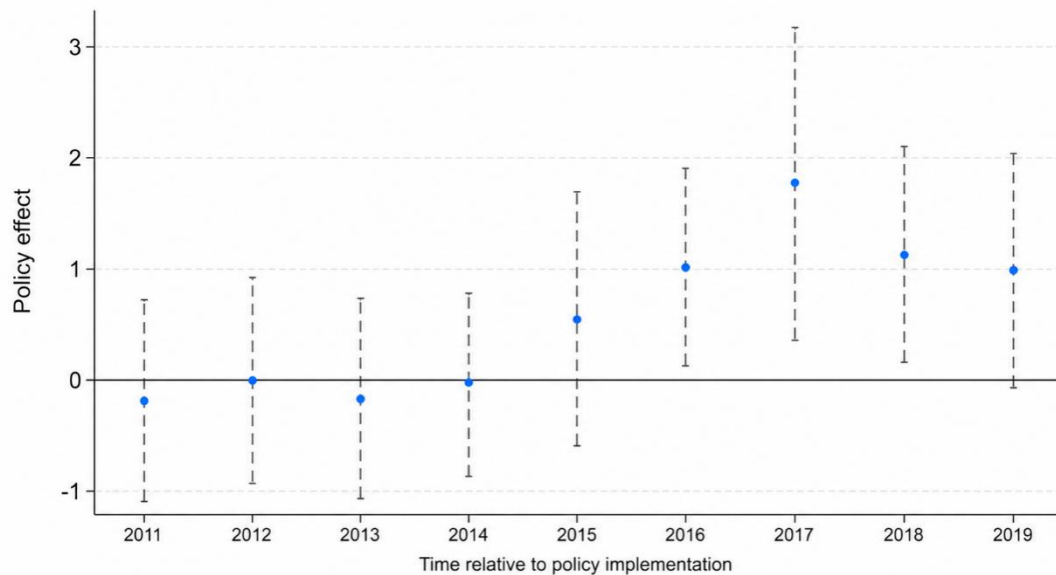


Figure 1. Parallel Trend Assumption and Dynamic Impact

4.3 Robustness Test

4.3.1 Placebo Tests

To ensure that the observed changes in entrepreneurial activity are indeed driven by the BRI rather than other unobserved factors, we conduct two types of placebo tests to verify the internal validity of our results.

(1) Counterfactual Policy Timing: Time-based Placebo

We construct a counterfactual policy shock by artificially advancing the implementation date of the BRI by three years. We create a pseudo-interaction term, $treat_post_3$, to test whether the treatment effect exists in a period where no such policy was present. As reported in Column (1) of Table 5, the estimated coefficient for $treat_post_3$ is statistically insignificant at the 10% level. This non-significant result indicates that the baseline findings are not driven by pre-existing trends or anticipation effects, further reinforcing the robustness of our primary regression.

(2) Random Assignment of Treatment Group: Space-based Placebo

By conducting this spatial and mixed placebo simulation (Cao & Chen, 2022), we observe that the pseudo-coefficients are centered around zero as shown in figure 2-4, suggesting that our baseline results are not the product of random chance. These findings collectively confirm the stability and reliability of the estimated policy effects.

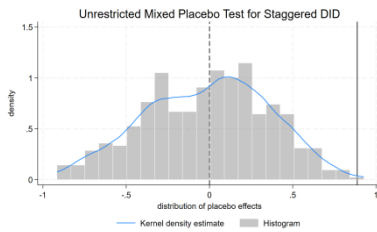


Figure 2. Mixed Placebo
(Non-Restricted)

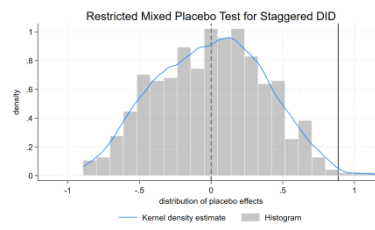


Figure 3. Mixed Placebo (Restriction)

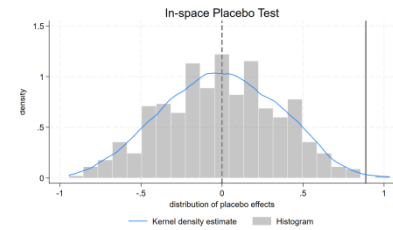


Figure 4. Spatial Placebo

4.3.2 Eliminate the Influence of China as the Initiative's Sponsor

Given that China, as the architect of the BRI, possesses unique characteristics in terms of policy implementation intensity, resource mobilization capacity, and institutional environment, its inclusion might introduce structural bias into the overall estimation. Specifically, the policy effects observed in China may differ significantly in magnitude and mechanism from those in other participating countries. To address this concern and ensure the external validity of our findings, we re-estimate the baseline model by excluding the China sample. The results, reported in Column (2) of Table 5, demonstrate that the promotional effect of the BRI on entrepreneurial activity remains positive and statistically significant. This confirms that our primary conclusions are not driven by the idiosyncratic national conditions of China, but rather reflect a broader policy impact across the participating economies. This sensitivity test further strengthens the robustness of our core results.

4.3.3 Alternative Estimator: Random Effects Model

In addition to the fixed effects specification, we re-estimate the relationship using a RE model. The results, presented in Column (3) of Table 5, confirm that the BRI continues to exert a statistically significant positive impact on entrepreneurial activity. The consistency of results across different model specifications alleviates concerns regarding the potential bias associated with specific estimator choices.

4.3.4 Sample Expansion Test

To enhance the external validity and generalizability of our conclusions, we extend the research sample to include a more diverse set of economies. This expanded dataset incorporates developed European economies (e.g., Ireland, Finland, Norway, Hungary), key Middle Eastern and Asian nations (e.g., Egypt, UAE, Saudi Arabia, Qatar, Indonesia, Kazakhstan), as well as representative countries from Oceania and Latin America (e.g., Australia, Canada, Jamaica, Morocco). The estimation results for this broader sample are reported in Column (4) of Table 5. The positive correlation between the BRI and entrepreneurial activity remains robust within this expanded context. This finding reinforces the explanatory power of our baseline results, demonstrating that the policy effect is not artifacts of a specific sample selection or data composition. By holding true across a wider array of institutional and economic environments, the research underscores the broader applicability and policy relevance of the initiative's impact on global entrepreneurship.

Table 5. Robustness Tests

Variable name	bstart			
	(1)Counterfactual Timing	(2)Excluding Subsample	(3)Alternative Estimator	(4)Sample Expansion
treat_post_3	0.541	0.802**	0.812***	0.453*
Control Variables	Yes	Yes	Yes	Yes
Country Fixed Effects	Yes	Yes	Yes	Yes
Time Fixed Effects	Yes	Yes	Yes	Yes
Clustering at the national level	Yes	Yes	Yes	Yes
Sample size	370	360	370	580

4.4 Heterogeneity Analysis

4.4.1 Heterogeneity Across Regions

The BRI spans countries across multiple regions worldwide, each characterized by distinct geographical locations, resource endowments, and regional contexts. These heterogeneity factors jointly shape the effectiveness and transmission mechanisms of the policy. From a geographic distance perspective, countries neighboring China typically face lower transportation and communication costs, facilitating smoother cooperation mechanisms and, consequently, a greater likelihood of benefiting from the policy. In contrast, countries located farther away may encounter higher

logistics costs and greater coordination challenges, which could impede policy implementation and attenuate its effects. To investigate the differential impacts of the policy across regions, this study categorizes the sample countries into five major regions (North America, Asia, South America, Europe, and Africa) and conducts a series of difference-in-differences regressions for each group. The results, reported in Table 6, reveal significant regional heterogeneity in policy effects. In Asian and African countries, the coefficient on *treat_post* is positive and statistically significant, indicating that the policy effectively stimulated entrepreneurial activity in these regions. This outcome likely reflects that these countries are better positioned to benefit from BRI-induced infrastructure investments, capital inflows, and strengthened regional cooperation, which collectively improve the entrepreneurial environment. Most of these countries are still in the developmental stage and therefore exhibit higher dependence on external resources and institutional support, making them more responsive to policy interventions.

By contrast, the estimated effects in North America and Europe are not statistically significant. This may be because these regions already possess relatively mature entrepreneurial ecosystems, well-developed institutional frameworks, robust capital markets, and innovation mechanisms, leaving limited scope for marginal gains from external policy interventions. Similarly, the regression results for South American countries are insignificant, which could be attributed to relatively unstable domestic economic systems, weak policy enforcement, and less efficient entrepreneurial environments. These factors likely constrain the implementation and diffusion of the BRI, preventing it from substantially stimulating local entrepreneurial potential.

4.4.2 Heterogeneity Across Development Stages

Countries at different stages of economic development exhibit notable differences in the drivers, mechanisms, and policy responsiveness of entrepreneurial activity. In developed economies, well-established infrastructure, mature market mechanisms, and abundant capital accumulation create a relatively favorable entrepreneurial environment. Institutional barriers are relatively low, and entrepreneurs typically have easier access to financing, information, and other resources, which implies that external policy interventions yield limited marginal incentives.

By contrast, developing countries often face structural constraints such as underdeveloped institutions, weak infrastructure, and restricted financing channels. In this context, external policy interventions, particularly those associated with the Belt and Road Initiative (BRI), including infrastructure investment, cross-border capital flows, and strengthened regional cooperation can exert more direct and significant effects on entrepreneurial ecosystems. Prior studies indicate that supportive policies not only reduce entry barriers but also stimulate potential entrepreneurs' opportunity recognition and behavioral translation, serving as critical mediating mechanisms for promoting entrepreneurial activity. In environments where entrepreneurship receives strong social and governmental endorsement, entrepreneurs are motivated not only by subsistence-driven factors such as poverty alleviation and income enhancement but also by status-driven incentives, including social recognition and participation, which encourages proactive opportunity identification and creation. Therefore, the policy environment plays a particularly pivotal role in shaping entrepreneurial behavior in developing countries. Building on the country development stage classification, this paper further categorizes the sample into developed and developing countries and conducts separate regression analyses. As reported in Table 6, the coefficient on *treat_post* is positive and statistically significant for developing countries, indicating that the BRI has indeed exerted a positive effect in these contexts, substantially stimulating entrepreneurial activity. These findings confirm the theoretical expectation that developing countries are more responsive to the initiative and demonstrate its practical impact in alleviating development constraints and unlocking entrepreneurial potential. In contrast, the regression results for developed countries are not significant, suggesting that the BRI's entrepreneurial incentives are relatively limited in these economies, likely due to the presence of mature entrepreneurial ecosystems and institutional frameworks, which constrain the incremental effectiveness of external policy interventions.

4.4.3 National Financial Openness

Following the methodology of Li and Wu (2022), this study classifies the Belt and Road Initiative (BRI) partner countries into high and low capital openness groups based on the median value of each country's capital account openness index. Group-specific regressions are then conducted to examine the heterogeneity of the initiative's effects under different institutional settings. The empirical results, reported in Table 6, indicate that in countries with relatively low capital openness, the coefficient on the *treat_post* variable is 1.194 and statistically significant at the 5% level. This finding suggests that the BRI effectively stimulates entrepreneurial activity in institutional environments where capital mobility is constrained. Compared to countries with higher openness, entrepreneurs in low-openness economies face more pronounced limitations in financing channels, institutional support, and cross-border resource allocation. In this context, the BRI's infrastructure investments, inflows of foreign capital, and institutional coordination provide critical resources and environmental support, generating a substantial short-term incentive effect on entrepreneurial behavior. These results further confirm the theoretical expectation that the initiative's marginal effects are stronger in

countries with weaker institutional foundations: external interventions tend to be more effective in environments where institutional development is limited. By contrast, in countries with high capital openness, although the *treat_post* coefficient remains positive (0.238), it is not statistically significant. This non-significance may reflect that in economies with relatively mature entrepreneurial ecosystems, well-developed financing systems, and efficient resource allocation, the marginal incentives from the initiative are comparatively limited. Furthermore, high-openness countries may experience more complex institutional coordination, greater information asymmetries, overlapping policies, or diluted effects, which can interfere with the transmission mechanisms of the BRI at the entrepreneurial level and reduce the observable impact and effectiveness of the initiative.

Table 6. Heterogeneity Analysis: Regression Results

	Regional				Development Stages		Financial Openness	
	(1)North America	(2)Asia & Africa	(3)South America	(4)Europe	(1)Developing Countries	(2)Developed Countries	(1)Openness Low	(2)Openness High
<i>treat_post</i>	0.878	3.230*	0.774	0.081	1.373**	0.004	1.194**	0.238
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Clustering at the national level	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sample size	30	100	80	160	180	190	167	156

5. Mechanism Analysis

5.1 Digital Infrastructure Development

Following the approach of Wang et al. (2025), a composite Digital Infrastructure Development Index is constructed to capture the overall digital capacity of BRI partner countries. This index integrates multiple dimensions, including network penetration, digital communication capabilities, and information service provision, thereby reflecting not only the hardware foundation but also the information service ecosystem and technology access capabilities. As such, it provides a comprehensive measure of the external spillover effects of the initiative in the digital domain. The results reported in Column (1) of Table 7 indicate that the effect of *treat_post* on digital infrastructure (*infra*) is positive and statistically significant at the 5% level, with a coefficient of 0.0752. This suggests that the BRI has substantially enhanced investment intensity and cooperation depth in digital initiatives across participating countries. The finding implies that increased cross-border digital connectivity, network coverage, and technology sharing under the initiative have materially improved information access, technological adoption, and data service capabilities. Such improvements contribute to narrowing the regional “digital divide” and inject new growth momentum into BRI partner countries, supporting the development of a “Digital Silk Road” and promoting more inclusive and sustainable regional development.

Further, the study examines regional heterogeneity in the mediating pathway by categorizing the sample into four geographic groups: North America, Asia & Africa, South America, and Europe. Columns (2) through (5) of Table 7 report the estimated effects of the BRI on digital infrastructure development (*infra*) for each region. In Asia & Africa and South America, the coefficients on *treat_post* are 0.867 and 1.186, respectively, and both are positive and statistically significant at the 5% level, indicating that the initiative significantly improves the technological and informational environment critical to entrepreneurship in these regions through enhanced digital infrastructure investment. By contrast, the mediating effect is not significant in North America and Europe and is even negative in Europe, suggesting that in regions with relatively advanced infrastructure, the marginal scope for policy-driven digital improvements is limited, thereby weakening the indirect effect of infrastructure development on entrepreneurial activity.

Extant literature emphasizes that robust digital infrastructure not only reduces information asymmetries and transaction costs in the entrepreneurial process, but also enhances the efficiency of entrepreneurial resource allocation and market reach by expanding market boundaries, strengthening platform connectivity, and facilitating data circulation (Li, Yang, Shao, Yang, & Liu, 2024; Wei, Zhao, Cai, Chen, & Lu, 2025). Under the BRI, initiative-driven digital investments are

likely to generate stronger marginal incentives, particularly in countries with relatively weaker institutional foundations. In these contexts, digital infrastructure development provides entrepreneurs with essential external support and technical empowerment, thereby objectively enhancing entrepreneurial activity.

Table 7. Regression Results for the Mediating Analysis of Digital Infrastructure Development

	infra				
	(1)All	(1)North America	(2)Asia & Africa	(3)South America	(4)Europe
treat_post	0.0752**	-0.562	0.867**	1.186**	-1.413*
lpop	0.200	-3.642***	-3.831***	-4.771***	-5.488***
sub	0.001	-0.00212	-0.00347	-0.00181	-0.00275
lgni	0.049	-0.148	-0.128	-0.191	-0.111
urban	0.018**	-0.0191	-0.0371**	-0.0123	-0.0159
birth	0.008	-0.0763	-0.0929	-0.0664	-0.086
HHI	0.0003	5.504***	5.317***	4.955***	5.081***
Control Variables	Yes	Yes	Yes	Yes	Yes
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes
Time Fixed Effects	Yes	Yes	Yes	Yes	Yes
Clustering at the national level	Yes	Yes	Yes	Yes	Yes
Sample size	370	30	100	80	160

5.2 Total Factor Productivity

In a further mediation analysis, this paper introduces Total Factor Productivity (TFP) as another key mediating variable to examine whether the Belt and Road Initiative indirectly promotes entrepreneurial activity growth by enhancing production efficiency. As a core indicator measuring the comprehensive efficiency of an economic system, TFP reflects not only technological progress but also the synergistic improvement in resource allocation efficiency, organizational management capabilities, and institutional enforcement capacity. It represents the potential output capacity of a nation or region's economic operations. This study employs the Solow residual method to estimate TFP across countries, systematically assessing the Belt and Road Initiative's potential impact on production efficiency. Empirical results, as shown in Column (1) of Table 8, reveal that the regression coefficient for treat_post on TFP is 0.053 and significantly positive at the 5% significance level. To further identify regional heterogeneity in the productivity-enhancing pathway of the Belt and Road Initiative, this study conducts geographically grouped regression on the mediation effect model. As shown in columns (2) to (5) of Table 8, the regression coefficient of treat_post on TFP is 1.523 and 2.421 for Asia-Africa and South America, respectively, and is significantly positive at the 5% significance level. This indicates that in these developing regions, the initiative has effectively enhanced overall productivity by optimizing resource allocation, promoting technology diffusion, and fostering institutional coordination, thereby providing a more robust macroeconomic foundation for entrepreneurial activities. In contrast, this coefficient is insignificant in North America and Europe, suggesting that in developed regions, the mechanism through which policies improve the entrepreneurial environment via efficiency pathways has relatively limited effects.

Furthermore, extensive research has demonstrated that increases in total factor productivity provide a more favorable practical foundation for entrepreneurial activities (Vukenkeng & Akumbom, 2021). On one hand, higher productivity means that more output can be generated per unit of resources, thereby reducing entrepreneurial costs and enhancing project feasibility and expected returns. On the other hand, efficiency gains are often accompanied by industrial structure optimization and the expansion of emerging industries, creating more entry opportunities and innovation space for entrepreneurs. Moreover, improvements in production efficiency usually enhance supply chain coordination, infrastructure utilization, and labor allocation efficiency, thereby further alleviating operational bottlenecks and uncertainties during the entrepreneurial process. From the perspective of entrepreneurial incentive mechanisms, increases in TFP not only improve the macroeconomic environment but also strengthen potential entrepreneurs' confidence in market prospects and profit expectations. When economic systems operate more efficiently, entrepreneurs find it easier to identify viable market opportunities and take action. Particularly in developing economies with relatively weak institutional foundations, productivity gains can partially compensate for institutional shortcomings, providing crucial external support for entrepreneurship. Thus, by driving TFP growth, the Belt and Road Initiative improves the entrepreneurial ecosystem at the macro level, fostering a more dynamic and viable environment for innovation and business creation.

Table 8. Regression Results of Total Factor Productivity Mediation Analysis

Variable name	TFP				
	(1)All	(1)North America	(2)Asia & Africa	(3)South America	(4)Europe
treat_post	0.053**	2.038	1.523**	2.421**	-0.1631
lpop	0.378	-4.118***	-3.783***	-4.289***	-3.793***
sub	-0.0003	-0.00214	-0.00252	-0.000617	-0.00217
lgni	-0.049	-0.142	-0.126	-0.110	-0.151
urban	0.005	-0.0201	-0.0227	-0.0226	-0.0192
birth	-0.0203*	-0.0607	-0.0821	-0.0600	-0.0759
HHI	-0.822**	5.386***	5.893***	5.852***	5.425***
Control Variables	Yes	Yes	Yes	Yes	Yes
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes
Time Fixed Effects	Yes	Yes	Yes	Yes	Yes
Clustering at the national level	Yes	Yes	Yes	Yes	Yes
Sample size	370	30	100	80	160

6. Discussion

The baseline regressions show that the Belt and Road Initiative significantly raises the nascent entrepreneurship participation rate in participating countries, and this effect exhibits a sustained upward trend in dynamic tests. This finding aligns with the institutional perspective that external policy interventions stimulate entrepreneurship by reducing transaction costs and improving market access (Li, Liu, & Qian, 2019; Casas-Klett & Li, 2022). Unlike prior firmlevel studies focusing on OFDI or exports (Du & Zhang, 2018; Yu et al., 2020), our analysis captures aggregate entrepreneurial behaviour at the national level, thus reflecting the broad-scale impact of the policy. The dynamic event-study plots indicate that the effect is not a short-lived shock but gradually unfolds, consistent with the view that infrastructure and institutional improvements take time to translate into entrepreneurial activity (De Soyres et al., 2020; Yang et al., 2020). Placebo tests rule out pre-existing trends, reinforcing the causal interpretation.

The heterogeneity analysis reveals that the pro-entrepreneurship effect is significantly stronger in developing countries, economies with low capital openness, and regions such as Asia and Africa. This supports the “institutional void” argument (Sutherland et al., 2020): in economies with weak institutions and underdeveloped factor markets, externally supplied capital, technology, and infrastructure yield higher marginal returns. This is consistent with Shao (2020), who finds that political cooperation under the BRI increases Chinese OFDI by reducing policy uncertainty and political risks in host countries, and evidence (Senadjki et al., 2022) that the initiative promotes digital transformation in emerging economies. In developed economies, however, mature entrepreneurial ecosystems and efficient financial systems leave limited room for additional policy stimulus, so the effect is insignificant. In countries with low capital openness, the BRI substitutes for traditional cross-border capital flows through project-based financing and policy-backed lending, stimulating entrepreneurship, which complements the discussion (Li and Wu, 2022) on capital account openness and resource allocation. Regional heterogeneity reflects geographic proximity, historical trade ties, and the concentration of infrastructure projects along the Eurasian landmass and Maritime Silk Road (Zou et al., 2015; Zhou et al., 2023), translating locational advantages into tangible entrepreneurial incentives.

The mediation analysis identifies two distinct transmission channels. First, digital infrastructure development plays a significant mediating role in Asia, Africa, and South America. This supports the “Digital Silk Road” literature (Wang, Gao, & Wang, 2024; Tian & Zhang, 2025), indicating that digital connectivity reduces information asymmetry and coordination costs, providing critical support for resource-constrained start-ups (Li et al., 2024; Wei et al., 2025). The mediating effect is insignificant in developed regions, where digital penetration is already high. Second, total factor productivity growth also serves as a mediator. The BRI enhances production efficiency through technology diffusion and better resource allocation, thereby creating new entrepreneurial opportunities (Vukenkeng & Akumbom, 2021). In developing countries, productivity gains partially compensate for institutional weaknesses and provide a more robust macroeconomic foundation for entrepreneurship. Regional breakdowns confirm that this pathway is significant in Asia and South America but not in North America and Europe, again reflecting baseline differences. The two mechanisms reinforce each other: digital infrastructure facilitates knowledge spillovers, which in turn boost productivity, forming a virtuous cycle consistent with the “ecosystem” perspective (Miao, Gast, & Laouiti, 2022).

7. Conclusion

Using a panel of 22 BRI participating countries and 15 non-participating countries from 2010 to 2019, this study treats the timing of formal BRI participation as a staggered policy intervention. The results show that participation is associated with a statistically significant increase in nascent entrepreneurial activity. The estimated relationship survives the reported parallel-trend assessment, placebo exercises, exclusion of China, an alternative estimator, and sample expansion. The effect is most evident in the combined Asia and Africa group, developing economies, and countries with

relatively low capital openness. The mechanism analyses also show that BRI participation is positively associated with digital infrastructure development and TFP, identifying two plausible pathways through which the initiative may improve conditions for entrepreneurship.

The study makes three theoretical contributions. First, it broadens research on the economic consequences of the BRI by placing realized early-stage entrepreneurial participation, rather than only trade, investment, or aggregate growth, at the center of the analysis. Second, it connects the literature on international policy initiatives with entrepreneurial -ecosystem reasoning: the results indicate that policy-induced changes in connectivity and productive efficiency may shape entrepreneurial behavior at the country level. Third, the heterogeneity findings specify boundary conditions for this relationship by showing that the estimated entrepreneurial response is stronger in settings characterized by greater development and capital-access constraints. Together, these contributions help explain why an external cooperation framework may generate uneven entrepreneurial outcomes across national contexts.

The findings imply that entrepreneurship should be treated as an explicit development objective within BRI cooperation rather than as an assumed by-product of infrastructure investment. Digital connectivity projects should be linked to practical access for entrepreneurs, including reliable and affordable network services and interoperable cross-border platforms. Because the estimated gains are concentrated in developing and lower-openness economies, support should be differentiated rather than uniform, with these countries receiving priority in efforts to remove infrastructure and resource-allocation bottlenecks. Policies intended to raise productive efficiency through technology diffusion and industrial cooperation should also be coordinated with transparent and predictable domestic institutions so that improvements in connectivity and productivity can translate into viable entry opportunities for new firms.

Several limitations qualify these conclusions and point to future research. The sample contains 37 countries and ends in 2019, so the estimates describe the initiative's pre-pandemic and relatively early implementation period; future studies should extend the panel to more countries and later years and examine whether the effects persist as the BRI evolves. The GEM indicator captures the rate of nascent entrepreneurial participation but not venture survival, innovation quality, employment creation, or firm productivity. Linking country-level policy exposure to individual- and firm-level longitudinal data would permit a richer assessment of entrepreneurial quality and distributional effects. Although the staggered DID design, fixed effects, and robustness checks strengthen identification, unobserved time-varying country shocks and heterogeneous treatment timing may still affect the estimates; future work could apply estimators designed for heterogeneous staggered treatment, alternative comparison groups, or project-level identification strategies. Finally, the current mechanism tests do not estimate the full causal chain from BRI participation through digital infrastructure or TFP to entrepreneurship. Formal causal-mediation tests, stronger measures of institutional change, and larger subgroup samples are needed to distinguish the relative importance of these channels and to test whether the reported regional differences are stable.

Acknowledgments

We would like to thank the anonymous reviewers and the editorial team of Business and Management Studies for their constructive feedback and thorough evaluation. We are also grateful to colleagues who provided helpful comments and feedback during the development of the manuscript.

Author contributions

Yunling Liang conceived and initiated the study idea, developed the research concept, and critically reviewed the manuscript. Xinuo Yan and Qi Xu were responsible for data collection, drafted the manuscript and revised it. All authors contributed to the revision of the manuscript, read and approved the final version. The authors contributed equally to this study.

Funding

Not applicable.

Competing interests

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Informed consent

Obtained.

Ethics approval

The Publication Ethics Committee of the Redfame Publishing.

The journal's policies adhere to the Core Practices established by the Committee on Publication Ethics (COPE).

Provenance and peer review

Not commissioned; externally double-blind peer reviewed.

Data availability statement

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

Data sharing statement

No additional data are available.

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References

- Alves, A. C., Gong, X., & Li, M. (2023). The BRI: A new development cooperation paradigm in the making? Unpacking China's infrastructure cooperation along the Maritime Silk Road. *World Development*, 169, 106280. <https://doi.org/10.1016/j.worlddev.2023.106280>
- Cao, Y., & Chen, S. (2022). Rebel on the Canal: Disrupted Trade Access and Social Conflict in China, 1650-1911. *American Economic Review*, 112(5), 1555-1590. <https://doi.org/10.1257/aer.20201283>
- Casas-Klett, T., & Li, J. (2022). Assessing the Belt and Road Initiative as a narrative: Implications for institutional change and international firm strategy. *Asia Pacific Journal of Management*, 39(3), 857-873. <https://doi.org/10.1007/s10490-021-09757-x>
- Cuntz, A., & Peuckert, J. (2023). From hackers to start-ups: Innovation commons and local entrepreneurial activity. *Research Policy*, 52(2), 104675. <https://doi.org/10.1016/j.respol.2022.104675>
- Davidsson, P., & Honig, B. (2003). The role of social and human capital among nascent entrepreneurs. *Journal of Business Venturing*, 18(3), 301-331. [https://doi.org/10.1016/S0883-9026\(02\)00097-6](https://doi.org/10.1016/S0883-9026(02)00097-6)
- De Soyres, F., Mulabdic, A., & Ruta, M. (2020). Common transport infrastructure: A quantitative model and estimates from the Belt and Road Initiative. *Journal of Development Economics*, 143, 102415. <https://doi.org/10.1016/j.jdeveco.2019.102415>
- De Soyres, F., Mulabdic, A., Murray, S., Rocha, N., & Ruta, M. (2019). How much will the Belt and Road Initiative reduce trade costs? *International Economics*, 159, 151-164. <https://doi.org/10.1016/j.inteco.2019.07.003>
- Du, J., & Zhang, Y. (2018). Does One Belt One Road initiative promote Chinese overseas direct investment? *China Economic Review*, 47, 189-205. <https://doi.org/10.1016/j.chieco.2017.05.010>
- Eurasia Group (2020). *The Digital Silk Road: Expanding China's digital footprint*. Retrieved from <https://www.eurasiagroup.net/files/upload/Digital-Silk-Road-Expanding-China-Digital-Footprint.pdf>
- Hasan, I., Kobeissi, N., Wang, H., & Zhou, M. (2017). Bank financing, institutions and regional entrepreneurial activities: Evidence from China. *International Review of Economics & Finance*, 52, 257-267. <https://doi.org/10.1016/j.iref.2017.01.013>
- Hoppmann, J., & Vermeer, B. (2020). The double impact of institutions: Institutional spillovers and entrepreneurial activity in the solar photovoltaic industry. *Journal of Business Venturing*, 35(3), 105960. <https://doi.org/10.1016/j.jbusvent.2019.105960>
- Li, J., Liu, B., & Qian, G. (2019). The belt and road initiative, cultural friction and ethnicity: Their effects on the export performance of SMEs in China. *Journal of World Business*, 54(4), 350-359. <https://doi.org/10.1016/j.jwb.2019.04.004>
- Li, Q. Y., & Wu, Z. R. (2022). Capital account openness and resource allocation: Evidence from the industrial sector in the world. *China Industrial Economics*, 8, 82-98. (In Chinese).
- Li, X., Yang, G., Shao, T., Yang, D., & Liu, Z. (2024). Does digital infrastructure promote individual entrepreneurship? Evidence from a quasi-natural experiment on the "Broadband China" strategy. *Technological Forecasting and Social Change*, 206, 123555. <https://doi.org/10.1016/j.techfore.2024.123555>

- Liu, Q., & Qiu, L. D. (2016). Intermediate input imports and innovations: Evidence from Chinese firms' patent filings. *Journal of International Economics*, 103, 166-183. <https://doi.org/10.1016/j.jinteco.2016.09.009>
- Liu, Z., Schindler, S., & Liu, W. (2020). Demystifying Chinese overseas investment in infrastructure: Port development, the Belt and Road Initiative and regional development. *Journal of Transport Geography*, 87, 102812. <https://doi.org/10.1016/j.jtrangeo.2020.102812>
- Mathur, G., & Nathani, N. (2020). The Belt and Road Initiative: An entrepreneurial perspective. In *Belt and Road Initiative—Collaboration for success* (pp. 39–49). Springer Singapore. https://doi.org/10.1007/978-981-15-1525-5_3
- Miao, C., Gast, J., & Laouiti, R. (2022). Institutional factors, religiosity, and entrepreneurial activity: A quantitative examination across 85 countries. *World Development*, 149, 105695. <https://doi.org/10.1016/j.worlddev.2021.105695>
- Mohsin, A. K. M., Lei, H., Tushar, H., Hossain, S. F. A., Hossain, M. E., & Sume, A. H. (2021). Cultural and Institutional Distance of China's Outward Foreign Direct Investment Toward the “Belt and Road” Countries. *The Chinese Economy*, 54(3), 176-194. <https://doi.org/10.1080/10971475.2020.1848468>
- Nguyen, N., Hideg, I., & Engel, Y. (2024). Benevolent Sexism and the Gender Gap in Startup Evaluation. *Entrepreneurship Theory and Practice*, 48(2), 506-546. <https://doi.org/10.1177/10422587231178865>
- Radović, M. M., & Vučković, M. (2024). Belt and Road Initiative in Serbia: An impact on entrepreneurship development. *Employment, Education and Entrepreneurship 2024 - zbornik radova*, 628-636. <https://doi.org/10.5937/eee24058r>
- Senadjki, A., Awal, I. M., Hui Nee, A. Y., & Ogbeibu, S. (2022). The belt and road initiative (BRI): A mechanism to achieve the ninth sustainable development goal (SDG). *Journal of Cleaner Production*, 372, 133590. <https://doi.org/10.1016/j.jclepro.2022.133590>
- Shao, X. (2020). Chinese OFDI responses to the B&R initiative: Evidence from a quasi-natural experiment. *China Economic Review*, 61, 101435. <https://doi.org/10.1016/j.chieco.2020.101435>
- Sun, Y. L., & Qin, F. (2018). Does the “Belt and Road” Initiative reduce firm-level foreign direct investment risk? *Journal of International Trade*, 6, 67-79. (In Chinese).
- Sutherland, D., Anderson, J., Bailey, N., & Alon, I. (2020). Policy, institutional fragility, and Chinese outward foreign direct investment: An empirical examination of the Belt and Road Initiative. *Journal of International Business Policy*, 3(3), 249-272. <https://doi.org/10.1057/s42214-020-00056-8>
- Thürer, M., Tomašević, I., Stevenson, M., Blome, C., Melnyk, S., Chan, H. K., & Huang, G. Q. (2020). A systematic review of China's belt and road initiative: implications for global supply chain management. *International Journal of Production Research*, 58(8), 2436-2453. <https://doi.org/10.1080/00207543.2019.1605225>
- Tian, H., & Zhang, J. (2025). Effect of the Belt and Road Initiative on the development of the digital economy of countries along the route. *Economic Geography*, 45(10), 49-57. (In Chinese).
- Vukenkeng, A. W., & Akumbom, P. (2021). Total factor productivity and the level of entrepreneurship development in Cameroon. *International Journal of Economics, Commerce and Management*, 9(5), 1-20.
- Wang, C., Lim, K. M., Zhang, X., Zhao, L., & Lee, P. T. W. (2020). Railway and road infrastructure in the Belt and Road Initiative countries: Estimating the impact of transport infrastructure on economic growth. *Transportation Research Part A: Policy and Practice*, 134, 288-307. <https://doi.org/10.1016/j.tra.2020.02.009>
- Wang, L., Chen, Y., & Cheng, Z. Z. (2025). Domestic market size, digital inputs and global value chain risk: Based on supply-side shock perspective. *World Economy Studies*, 2, 105-119, 137. (In Chinese).
- Wang, Y., Gao, H., & Wang, H. (2024). The digital silk road and trade growth – A quasi-natural experiment based on silk road E-commerce. *Research in International Business and Finance*, 67, 102140. <https://doi.org/10.1016/j.ribaf.2023.102140>
- Wei, B., Zhao, C., Cai, W., Chen, B., & Lu, Y. (2025). The entrepreneurial effect of digital infrastructure development: micro evidence from China. *Information Technology for Development*, 31(3), 604-634. <https://doi.org/10.1080/02681102.2024.2403143>
- Yang, G., Huang, X., Huang, J., & Chen, H. (2020). Assessment of the effects of infrastructure investment under the belt and road initiative. *China Economic Review*, 60, 101418. <https://doi.org/10.1016/j.chieco.2020.101418>
- Yang, N., Wang, J., Liu, X., Huang, L., & Wu, G. (2022). Home-country institutions and corporate social responsibility

- of emerging economy multinational enterprises: The belt and road initiative as an example. *Asia Pacific Journal of Management*, 39(3), 927-965. <https://doi.org/10.1007/s10490-020-09740-y>
- Yu, L., Zhao, D., Niu, H., & Lu, F. (2020). Does the belt and road initiative expand China's export potential to countries along the belt and road? *China Economic Review*, 60, 101419. <https://doi.org/10.1016/j.chieco.2020.101419>
- Zhang, Y., Zhang, Z., Jin, H., Tu, W., & Liu, Y. (2024). Innovation and OFDI along the Belt and Road. *Technological Forecasting and Social Change*, 200, 123136. <https://doi.org/10.1016/j.techfore.2023.123136>
- Zhao, H., Seibert, S. E., & Lumpkin, G. T. (2010). The Relationship of Personality to Entrepreneurial Intentions and Performance: A Meta-Analytic Review. *Journal of Management*, 36(2), 381-404. <https://doi.org/10.1177/0149206309335187>
- Zhou, M., Wu, J., Li, Y., & Li, D. (2023). The joint construction of the Belt and Road Initiative and deepening interconnection: Based on the perspective of interconnections among countries along the route. *Journal of Management World*, 39(11), 1-21, 93, 22. (In Chinese).
- Zou, J. L., Liu, C. L., Yin, G. Q., & Tang, Z. P. (2015). Spatial patterns and economic effects of China's trade with countries along the Belt and Road. *Progress in Geography*, 34(5), 598-605. <https://doi.org/10.11820/dlkxjz.2015.05.008>