# The Impact of Herding Effect on National Participation Decisions—Empirical Evidence from Belt and Road Participating Countries

Haozhe Tian

School of Economics, Anhui University, Hefei 230000, China
i22314049@stu.ahu.edu.cn

**Abstract.** Current research mostly explain outward foreign direct investment (OFDI) location selections from rational angles, for example, the economic aspects of the host nation. Nevertheless, the common occurrence of "clustering investment" and "collective setbacks" implies that irrational herding behavior might be quite significant. As the Belt and Road Initiative (BRI) progresses, the participation decisions of countries along the route show notable spatial agglomeration and sequential following features. Using panel data from 105 BRI - participating countries from 2013 to 2025, this paper creates a country - level "BRI Exposure" index and systematically studies the herding effect on national participation decisions with a lagged peer exposure variable. Empirical findings reveal that a country's BRI participation degree is notably and positively affected by its peer countries' previous participation levels, suggesting a significant "demonstration effect". To put it specifically, a 1% increase in the average exposure of peer countries results in an almost 0 increase in the domestic country's current exposure. 187%. Heterogeneity analysis indicates that this herding effect is more powerful in geographically near and low - income country groups. It implies that higher information asymmetry leads countries to depend more on observing neighbors' conduct for decision - making. This study adopts the perspective of behavioral finance. Its aim is to discover behavioral motivations beyond the "rational economic man" assumption, offering crucial practical warnings for policymakers in promoting regional cooperation and preventing investment risks.

**Keywords:** Behavioral Finance, Herding Effect, Two - way Fixed Effects.

## 1 Introduction

In 2013, China put forward the "Belt and Road Initiative" (hereinafter called BRI). As a grand idea for global connectivity and common development, it has quickly become one of the world's most extensive and large - scale international cooperation platforms. As of 2025, over a hundred countries have participated in various forms, including signing memorandums of cooperation, participating in infrastructure project construction, or receiving financing support, covering key areas such as infrastructure

© The Author(s) 2026
L. C. Yoong (ed.), *Proceedings of the 2026 2nd International Conference on Financial Innovation and Marketing Management (FIMM 2026)*, Advances in Economics, Business and Management Research 408,
https://doi.org/10.2991/978-94-6239-801-6_51

connectivity, unimpeded trade, and financial integration.Academic researchers as well as policy analysts have shown a large amount of attention to the development and implications of the BRI. The World Bank, starting from host country economic fundamentals, did an in - depth analysis of the key roles of static factors such as resource endowment, market potential, and infrastructure gaps in attracting BRI investment. The studies present important micro - foundation paradigms and empirical data to help understand the BRI's investment location selection and project performance appraisals [1].

A notable but often overlooked fact is that the participation choices of countries along the route show clear "following" or "clustering" features in time and space. For instance, the China–Laos Railway spurred cooperation on the China–Thailand Railway, showing how one demonstration project can start a chain - reaction and prompt more regional follow - up. That is, after one country announces its accession to or deeper involvement in the BRI, its geographic neighbors or partner countries with similar development characteristics often subsequently make comparable participation decisions, indicating that countries are not isolated, atomized decision-makers. Li, Y., & Bolton, P. argued relevant analysis, proposing that from the perspective of international political economy, especially in the early stage of advancing large international cooperation platforms like the BRI, participants face severe information asymmetry: the long-term benefits of the initiative are uncertain, the return cycle of projects is long, and complex geopolitical risks are hidden [2]. In this context, rational governments cannot make decisions solely based on their own information; observing and learning from the existing experience of countries with similar national conditions has become an effective strategy to reduce decision-making uncertainty and trial-and-error costs.

This behavioral pattern can theoretically be attributed to the "herding effect". There are two core mechanisms behind this: First, the information acquisition and learning mechanism, where a country observes that peer countries have gained tangible economic benefits after participating in the BRI without experiencing significant negative shocks, thereby revising its expectations of the initiative. Second, through a competitive imitation channel: concerned that delayed participation may place the home country at a structural disadvantage in regional economic competition, governments adopt a defensive strategy of follow-on participation. Although the herding effect has been widely confirmed in fields such as finance and sociology, there is still a lack of systematic empirical testing regarding its existence, intensity, and transmission channels in the provision of large international public goods and national participation decisions.

Based on this, the core research question of this paper is: After effectively controlling for domestic economic fundamentals, is a specific country's degree of participation in the "Belt and Road" significantly influenced by the past participation behavior of its peer countries? To answer this question, this paper conducts a rigorous empirical design using balanced panel data of 105 countries along the route from 2013 to 2025. The core marginal contributions of this paper are: First, this study constructs a standardized "BRI Exposure" index, effectively eliminating the scale impact caused by differences in national economic size, making cross-country and cross-period comparisons possible;

Second, it innovatively constructs peer networks across three dimensions—geographical proximity, income level, and economic structure—systematically identifies the existence of the herding effect in BRI participation, and compares its heterogeneous performance in different contexts; Third, through a series of robustness checks, alternative explanations such as common shocks are ruled out, demonstrating that this following behavior is essentially rational institutional learning based on information updating, rather than irrational blind conformity.

## 2 Literature Review

In the context of cross-border e-commerce and OFDI decision-making, firms operating under conditions of incomplete information and environmental uncertainty frequently exhibit herding behavior. Chen Nan and Chen Yueyan established an evolutionary model of enterprise cross-border e-commerce adoption behavior based on the herding effect, used network simulation methods, adjusted network parameters to simulate the final evolutionary direction of the cross-border e-commerce market under different circumstances, and obtained corresponding development strategies implemented by enterprises in different evolutionary trends. Their findings suggest that selectively responding to the herding effect under different market evolutionary trends constitutes a rational decision-making strategy for enterprises [3]. Liu Haiyue, Huang Ling, Liu Shiyi, et al. reviewed OFDI events of 761 listed Chinese manufacturing companies from 2005 to 2015, matched them with host country characteristic data and listed company governance data, and investigated the existence of OFDI herding behavior among listed Chinese manufacturing companies from both host country and industry levels. Their research found that the investment decisions of listed Chinese manufacturing companies manifest as centralization of investment timing and convergence of investment destinations at both host country and industry levels [4]. Their further analysis showed that host country characteristics and corporate governance mechanisms are significantly correlated with investment herding behavior, and the influencing factors of host country and industry investment herding behavior are different: herding behavior in host country selection is mainly significantly influenced by host country characteristics such as resource endowment and labor costs, while industry investment herding behavior is significantly influenced by corporate governance mechanisms such as board size, proportion of independent directors, and executive shareholding.

In the differentiation between herding effect and peer effect, Zhao Baoguo and Gai Nian researched data on crowdfunding projects launched on several representative domestic crowdfunding websites—Zhongchou.com, JD Crowdfunding, and Modian.com, used STATA to analyze the characteristics of domestic crowdfunding investment behavior, discovered the existence of the herding effect in domestic crowdfunding investment behavior, and proposed management suggestions for innovative and entrepreneurial enterprises and individual entrepreneurs, crowdfunding websites, public investors, and regulatory authorities utilizing the existence of the herding effect in crowdfunding investment behavior. Given the high transparency of

the internet and the ease of observing other investors' behaviors, studying the important behavioral characteristics of public investors in crowdfunding helps small and medium-sized innovative and entrepreneurial enterprises and individuals obtain more financing opportunities to develop better; it also helps the public view their own behaviors more rationally and treat their investment choices more carefully [5]. Wang Yufeng and Zhang Siya drew on data from Chinese A-share listed companies over the period 2010–2019 to examine the industry-level convergence of corporate social responsibility (CSR) practices. Their research found that the industry convergence phenomenon of corporate social responsibility is a peer effect with the attribute of a social multiplier effect, rather than a herding effect [6]. Meanwhile, Zhang Yinong found that the industry convergence of multinational corporate social responsibility can promote the effective market value enhancement of the trade industry, further verifying the existence of the peer effect [7]. Additionally, subsequent research revealed that the significance of this peer effect varies across different CSR measurement dimensions.

Regarding the expansion of the herding effect mechanism in financial markets, Helen Toxopeus et al. aimed to explore how different types of investors interact in investment crowdfunding (such as equity crowdfunding) activities, and how these interactions (especially herding behavior and collective action) shape the process and outcome of the entire financing process [8]. Xiaofeng Quan used a unique dataset of mutual fund site visits to companies listed on the Shenzhen Stock Exchange in China from 2013 to 2021, and found that companies with visits (or more frequent visits) have lower mutual fund herding effects than companies without visits (or fewer visits), that is, more adequate information acquisition improves the independence of fund decision-making, thereby reducing herding tendencies. In addition, by verifying hard information (e.g., the company's technology, innovation, accounting, and financial information) and acquiring soft information (e.g., management's risk appetite, employee morale, and corporate culture), he proved that public mutual funds' visits to companies drive changes in their herding behavior tendencies [9]. Sherrihan Radi, Bartosz Gebka, and Vasileios Kallinterakis aimed to explore investor herding and anti-herding behaviors in the US stock market and corporate bond market, and analyze how these two behaviors jointly act on stock-bond return correlations. The study found that herding behavior is prevalent in the corporate bond market, while the stock market exhibits anti-herding behavior [10].

# 3 Empirical Research Design

## 3.1 Theoretical Mechanisms and Research Hypotheses

The emergence of the herding effect is mainly based on two mechanisms. Information acquisition and learning mechanism: When a country observes that peer countries accept BRI investment without triggering a debt crisis and brings economic growth, it will update its Bayesian posterior probability of the BRI, thereby increasing participation.

The second is the competitive imitation mechanism: concerns that peer countries may gain a comparative advantage through infrastructure improvements compel the domestic country to engage in defensive participation to avoid being left behind.

Based on this, this paper proposes the core hypothesis: After controlling for domestic economic fundamentals, a country's degree of participation in the "Belt and Road" is significantly positively correlated with the degree of participation of its peer countries.

### 3.2 Data Sources and Sample Selection

This paper covers the period 2013–2025, excluding countries afflicted by armed conflict or with severe data deficiencies, and ultimately constructs a balanced panel dataset for 105 countries. BRI investment data are drawn from the American Enterprise Institute (AEI) China Global Investment Tracker, which encompasses both fully completed investment projects and partially committed investments. Macroeconomic data comes from the World Bank World Development Indicators (WDI) database. Figure 1 visually reflects the changes in the annual investment scale of the BRI from 2015 to 2025. Figure 2 visually shows that BRI investments are highly concentrated in the Asian continent (especially Central Asia, Southeast Asia, South Asia), Africa, and Central and Eastern Europe, forming a radiating network centered on China.

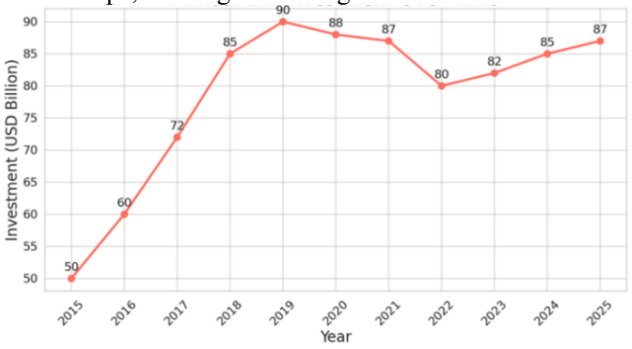



**Fig. 1.** Temporal Trend in Annual Investment Scale of BRI (2015–2025) (photo credit: Original)

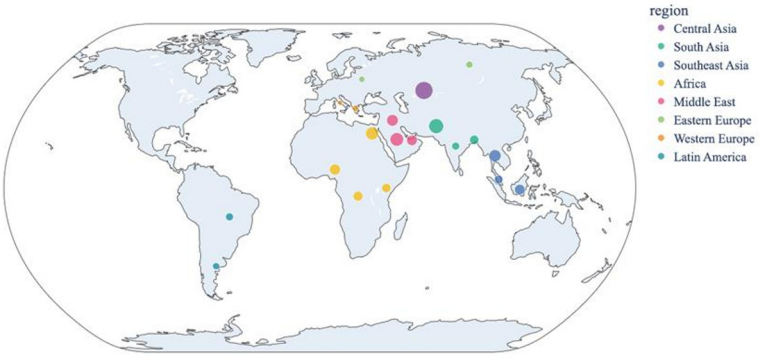



**Fig. 2.** Global Distribution of BRI Investments (photo credit: Original)

### 3.3 Variable Definitions

**Dependent Variable.** Belt and Road Exposure (Exposurei,t).Referring to existing literature, this paper defines country-level "Belt and Road" exposure as the proportion of BRI investment and financing received in that year to the country's GDP:

$$Exposure_{i,t} = \frac{BRIInvestment_{i,t}}{GDP_{i,t}} \times 100 \quad (1)$$

This indicator measures the relative significance of BRI investment within the host country's overall economy.

**Core Explanatory Variable.** Peer Exposure Variable (PeerExposurei,t−1).To identify the herding effect and alleviate endogeneity, this paper constructs a first-order lagged peer exposure variable. This variable reflects the average participation level of the peer group in the previous period that a country can observe when making current decisions:

$$\text{PeerExposure}_{i,t-1} = \frac{1}{N_{g(i)-1}} \sum_{j \in g(i) j \neq i} \text{Exposure}_{j,t-1} \quad (2)$$

Where g(i) represents the peer group to which country I belongs, and Ng(i) is the number of countries in the group.

**Construction of Peer Groups.** This paper constructs three types of peer group matrices: This paper constructs three types of peer group matrices: Regarding regional peers, this paper is based on United Nations (UN) geographic subregions (e.g., Central Asia, Southeast Asia, Sub-Saharan Africa).Regarding income peers, this paper is based on World Bank income classifications (low income, lower-middle income, upper-middle income).Regarding structural peers, this paper is based on the export structure similarity index.

**Control Variables (Xi,t).** Control Variable include logarithm of per capita GDP (ln PGDP), trade openness (Open), external debt to GDP ratio (Debt), and institutional quality (Inst, using the World Governance Indicators (WGI) Rule of Law index).

### 3.4 Model Specification

This paper adopts a two-way fixed effects model for estimation:

$$\text{Exposurei,t} = \alpha + \beta 1 \text{PeerExposurei,t-1} + \beta 2 \text{Xi,t} + \mu i + \lambda t + \varepsilon i,t \quad (3)$$

Where μi controls for country individual fixed effects, and λt controls for year fixed effects. β1 reflects the marginal impact intensity of the peer participation level on the domestic country's participation decision; if $\beta 1 > 0$ and is significant, it verifies the existence of the herding effect.

# 4 Empirical Results Analysis

## 4.1 Descriptive Statistics and Variable Correlation Analysis

Table 1 reports the summary statistics for the main variables. During the sample period, the average BRI exposure of the 105 countries was 1.24%, but the standard deviation reached 1.89%, indicating significant differences in participation levels among countries, which provides a basis for studying the heterogeneity of peer effects. The mean peer exposure of 1.18% closely mirrors the distribution of domestic exposure, providing preliminary evidence of a positive co-movement between the two variables. Regarding control variables, the distribution ranges of indicators such as the logarithm of per capita GDP and trade openness are reasonable and align with economic intuition. Variance inflation factor (VIF) tests confirm that all VIF values fall below 5, indicating that severe multicollinearity is not a concern in the estimation.

**Table 1.** Baseline Regression of Peer Effects in Belt and Road Participation

| Variables | (1) Regional Peer Group | (2) Income Peer Group | (3) Structural Peer Group |
|---|---|---|---|
| L.PeerExposure | 0.187*** | 0.142** | 0.098* |
| | (0.045) | (0.056) | (0.051) |
| Ln PGDP | -0.213** | -0.198** | -0.205** |
| | (0.098) | (0.101) | (0.099) |
| Openness | 0.056*** | 0.054*** | 0.058*** |
| | (0.012) | (0.013) | (0.012) |
| Debt Ratio | 0.003 | 0.004 | 0.002 |
| | (0.005) | (0.005) | (0.005) |
| Institution | 0.112* | 0.105 | 0.118* |
| | (0.065) | (0.067) | (0.064) |
| Country FE | YES | YES | YES |
| Year FE | YES | YES | YES |
| Obs | 1,050 | 1,050 | 1,050 |
| R-squared | 0.345 | 0.312 | 0.298 |

Note: Robust standard errors clustered are in parentheses; ***, **, * indicate significance at the 1%, 5%, and 10% levels, respectively.p

### 4.2 Baseline Regression Results

Table 1 additionally shows the baseline regression results from the two - way fixed effects model. Columns (1) up to (3) relate to geographical, income, and structural peer grouping methods respectively.

The most important findings are as follows:

The geographical peer effect shows the highest significance ($\beta$=0. 187, $p<0.01$). This shows that countries with close geographical positions act as the main and most influential means of transmitting the demonstration effect. In particular, a one - unit increase in the average BRI exposure of neighboring regions is related to a 0. There is an 187 - unit increase in the domestic country's current exposure. This outcome validates hypothesis H1, showing that the participation behavior of "close neighbors" has notable information externalities and competitive spill - over effects.

The income peer effect is significant, still its force is weaker ($\beta$ = 0. 142$, $p<0.05$). Even if the following behavior of countries with similar income levels is there, its intensity is lower than that of geographically close - by countries. Maybe there's more competition than complementary relations among such countries.

The income peer effect is notable yet less strong ($\beta$ = 0. 142$, $p<0.05$). Even if the following behavior is present in countries with similar income levels, its intensity is less than that of geographically close - by countries. It might be because competition is stronger rather than complementary relations among these countries.

Regarding control variables, per capita GDP is significantly negatively correlated with BRI exposure, aligning with the infrastructure gap theory; trade openness is significantly positive, indicating that open economies are easier to integrate into the BRI cooperation framework; the coefficient for institutional quality is positive but not consistently significant across specifications, suggesting that the institutional environment may play a role through moderating effects rather than direct effects.

### 4.3 Heterogeneity Analysis and Dynamic Trend Visualization

The grouped regression results in Table 2 show significant asymmetry:

Grouping by Income Level: The peer effect coefficient for low-income countries is as high as 0.256 ($p<0.01$), while it is not significant for upper-middle-income countries. This indicates that the "following strategy" of developing countries is more obvious, consistent with information asymmetry theory—countries with weaker evaluation capabilities and risk resilience rely more on the experience signals of peer countries.

Grouping by Institutional Quality: The coefficient for countries with lower institutional quality is 0.211 ($p<0.01$), significantly higher than that for countries with higher institutional quality (0.103, $p<0.1$). This indicates that countries with weaker institutional frameworks are more likely to substitute informal observational learning for formal institutional guidance, treating peer behavior as a decision-making heuristic to navigate uncertainty.

**Table 2.** Heterogeneous Peer Effects under Different Country Characteristics

| Variables(L.PeerExposure) | Coefficient (β1) | Standard Error | Conclusion |
|---|---|---|---|
| Grouped by Income Level | | | |
| Low-income countries | 0.256*** | 0.256*** | Strong peer effect |
| Upper-middle-income countries | 0.084 | 0.084 | Effect not significant |
| Grouped by Institutional Quality | | | |
| Lower institutional quality (below median) | 211*** | .211***<br>(0.054) | |
| Higher institutional quality (above median) | 0.103* | 0.103*<br>(0.058) | Weak peer effect |

In terms of visualization, Figure 3 shows the time trend of the two groups of countries with high exposure and low exposure. From 2013 to 2015, the BRI exposure of the two groups of countries increased slowly with little difference; after 2016, the participation of the high exposure group increased rapidly, while the participation of the low exposure group increased slowly. This "divergence" can be visually verified by the self-reinforcing mechanism of the peer effect: there is an existing difference in the initial participation of the two groups of countries, and then the peer effect further amplifies this difference.

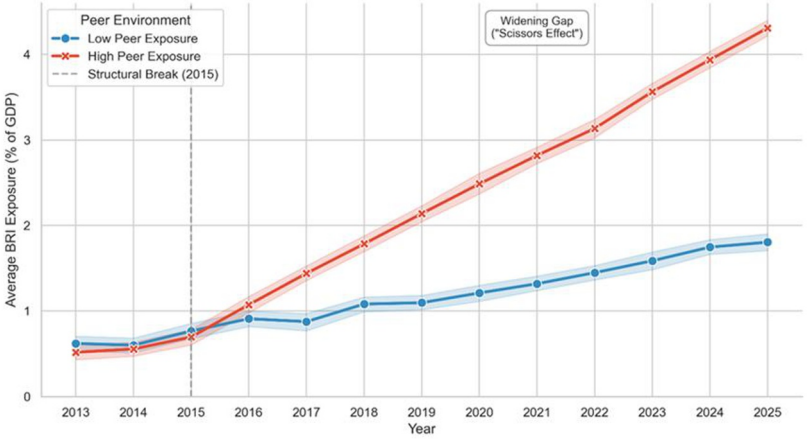



**Fig. 3.** Temporal Trend of Average Engagement in High- and Low-Exposure Groups (2013-2025) (photo credit: Original)

# 5 Conclusion

## 5.1 Research Conclusion

Based on the balanced panel data of 105 countries along the "Belt and Road" from 2013 to 2025, this paper systematically studied the peer effect in the national decision to participate in the BRI by establishing a two-way fixed effects model. The empirical results are as follows:

First, the herding effect exists and has a robust positive impact in BRI participation decisions. As shown in the baseline regression, when the average BRI exposure of geographical neighbors increases by 1 unit, the domestic country's current exposure will significantly increase by 0.187 units ($p<0.01$). This result shows that countries are not isolated decision-making units in international cooperation, but exert strategic interactions through observation, learning, and competitive imitation.

Second, the transmission channels of the herding effect are obviously heterogeneous. Geographical proximity is the most prominent transmission channel, and the effect is much larger than those of income grouping and structural grouping. This shows that geopolitical factors and expectations of regional economic integration play a dominant role in decision-making.

Third, the degree of information asymmetry moderates the intensity of the peer effect. Heterogeneity analysis reveals that the herding effect is significantly stronger in low-income countries and countries with lower institutional quality, supporting the rational learning hypothesis—when countries face high decision-making uncertainty, they tend to reduce trial-and-error costs by imitating peer behavior.

## 5.2 Theoretical Contributions and Innovative Value

The marginal contributions of this paper are mainly reflected in three aspects: First, by constructing a standardized BRI exposure index, it overcomes the measurement errors caused by differences in country size, providing methodological innovation for cross-country comparative research; Second, it systematically identifies the existence of peer effects and their transmission mechanisms in BRI participation for the first time, enriching the theoretical research on state decision-making behavior in international political economy; Third, through a rigorous empirical design, it distinguishes between rational learning and irrational blind conformity, providing new micro-evidence for understanding strategic interactions in large-scale international cooperation.

## 5.3 Policy Implications

First, regional cooperation strategies should be optimized to fully leverage the demonstration effect of strategically positioned 'node countries'. Policymakers should focus on cultivating "benchmark projects" in key regions with geostrategic significance. For example, deepening the cooperative effectiveness of the Jakarta-Bandung High-Speed Railway in Indonesia in Southeast Asia, and strengthening the connectivity effect of the China-Kyrgyzstan-Uzbekistan Railway in Central Asia. By creating these regional demonstration projects, a "lighthouse effect" radiating from points to areas is formed, that is, a diffusion mechanism where demonstration projects

drive the participation of surrounding countries, stimulating the participation enthusiasm of neighboring nations. The dynamic trend in Figure 1 shows that the participation of high-exposure group countries accelerated in the later observation period, verifying the self-reinforcing mechanism of the demonstration effect.

.Second, implement differentiated advancement strategies and pay attention to the special needs of developing countries. In response to the stronger imitation tendency of low-income countries and countries with weak institutions, it is recommended to adopt a gradient advancement strategy: first achieve breakthroughs in middle-income countries with relatively complete institutional environments, and then expand to low-income countries after forming successful cases. At the same time, the debt sustainability assessment and risk management system construction should be strengthened to avoid debt accumulation caused by blind conformity. As shown in Table 2, the peer effect coefficient for low-income countries is as high as 0.256, which not only reflects their willingness to participate but also highlights the importance of risk control.

Third, policymakers should develop more effective information dissemination mechanisms—such as establishing a standardized disclosure and risk assessment platform—to reduce decision-making uncertainty for participating countries. It is recommended to establish a standardized assessment and disclosure mechanism for BRI cooperation effectiveness and regularly publish project socio-economic impact reports. By enhancing information transparency, such mechanisms would lower the information acquisition costs for participating countries, thereby facilitating a shift from informal imitation toward evidence-based decision-making. This approach is not only consistent with the theoretical logic of information acquisition and learning mechanisms but would also enhance the international transparency and credibility of BRI cooperation.

Limitations of the Research Work and Future Research Orientations. This study has some limitations. First, the division of peer groups may not fully capture the complexity of the interactions between different countries. Second, it has not effectively separated the relative contributions of learning and competition effects. Future research can conduct more in-depth exploration on using network analysis methods to construct more precise peer relationship weights. In addition, it can use natural experiment methods to find out the causal mechanisms of peer effects and then move on to strategic interaction research in other international cooperation scenarios.

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