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Economic and political impacts of the Belt and Road Initiative on Western nations in infrastructure investment competition

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Abstract

China's Belt and Road Initiative (BRI) has led to a global proliferation of large-scale infrastructure projects. From the perspective of Western nations, the impacts of BRI infrastructure investments on economic, political, and security interests pose significant concerns. This paper examines the effects of the BRI on Japanese overseas infrastructure projects and diplomatic relations between Japan and BRI countries. Using a staggered difference-in-differences research design with a panel dataset covering 138 low- and middle-income countries from 2001 to 2020, we find that the BRI crowded out Japanese infrastructure projects and reduced political leaders' visits from BRI countries to Japan. These effects are particularly pronounced for nations in the East Asia and the Pacific and South Asia regions, where the Japan–China competition for infrastructure investments is most intense. Furthermore, we identify the expansion of Chinese overseas infrastructure projects, particularly aid-based rather than debt-financed projects, as a key mechanism driving these effects.

Keywords: Belt and Road Initiative; Overseas infrastructure investments; Diplomatic relations; China; Japan

JEL codes: F21; P00

1. Introduction

In 2013, Chinese President Xi Jinping introduced the Belt and Road Initiative (BRI), which aims to foster global connectivity and cooperation through large-scale infrastructure projects and investments.[1] The BRI encompasses two main components: the "Silk Road Economic Belt," which connects China to Europe via Central Asia,[2] and the "21st Century Maritime Silk Road," which links China with Southeast Asia, Africa, and Europe through maritime routes. By December 2023, 151 countries had joined the BRI (Nedopil, 2024). Between 2013 and 2021, China extended official lending of US$ 1.4 trillion to support BRI infrastructure projects (Custer et al., 2023), and this amount was 22% and 30% greater than the total amount of official financing provided by the Development Assistance Committee member countries of the Organization for Economic Co-operation and Development (OECD) and multilateral organizations during the same period, respectively.[3] While these projects are anticipated to deliver economic benefits to host countries—such as increased trade, investments, and economic growth—they have also sparked concerns regarding unsustainable debt burdens, inflated costs, widespread corruption, and environmental degradation (World Bank, 2019; Kumar, 2023).

From the perspective of Western nations, BRI infrastructure investments pose significant concerns to their economic, political, and security interests (Banejee and Dutta, 2023; Schüller, 2023). The BRI may create unfair competition in host countries by subsidizing Chinese firms, offering lenient lending terms, and establishing technical standards for industrial processes and telecommunications (United States Government Accountability Office, 2024). The heavy reliance

[1] For a comprehensive overview of the BRI, see Huang (2016) and Sjöholm (2023).
[2] The Silk Road Economic Belt comprises six economic corridors: the China–Mongolia–Russia Economic Corridor, the New Eurasian Land Bridge, the China–Central Asia–West Asia Economic Corridor, the China–Indochina Peninsula Economic Corridor, the China–Pakistan Economic Corridor, and the Bangladesh–China–India–Myanmar Economic Corridor.
[3] The total of official financing includes official development assistance (ODA), other official flows (OOFs), and export credits.

on infrastructure developments backed by Chinese official financing could also strengthen political ties with China to secure debt relief or additional funding. Moreover, the initiative provides avenues for the Chinese military to expand its global reach by securing access to foreign strategic resources and locations, such as ports, military bases, and energy supplies.[4] In response, Western nations have launched alternatives to the BRI with an emphasis on transparency, debt sustainability, and high-quality technologies and standards; these include Japan's Partnership for Quality Infrastructure (Katada, 2020), the Build Back Better World of the United States (US) (Savoy and McKeown, 2022), and the Global Gateway of the European Union (EU) (Tagliapietra, 2024).

Despite the substantial policy implications of the BRI, its economic and political effects on Western nations in the context of overseas infrastructure competitions remain understudied. Existing research predominantly examines the impacts of the BRI, or Chinese official financing more broadly, on economic outcomes in recipient or BRI countries, such as inward foreign direct investments (FDIs) (Du and Zhang, 2018; Kang et al., 2018; Chen and Lin, 2020; Nugent and Lu, 2021; Todo et al., 2025), international trade (de Soyres et al., 2019; Baniya et al., 2020; Bastos, 2020; Foo et al., 2020), and economic growth (Bird et al., 2020; Jiang et al., 2021; Dreher et al., 2021).[5] This study bridges this gap using comprehensive Japanese data on overseas infrastructure investments and diplomatic activities.

This paper addresses three central questions: (i) Does the BRI decrease overseas infrastructure

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[4] One popular case is Hambantota's deep-water port in Sri Lanka, situated near one of the world's busiest maritime routes connecting Europe and Asia. China was granted a major ownership stake and a 99-year lease to operate the port in exchange for US$ 1.1 billion in debt relief.

[5] Previous research has also examined the effects of Chinese official financing on other outcomes in recipient countries, including local corruption (Isaksson and Kotsadam, 2018), debt (Horn et al., 2021; Bandiera and Tsiropoulos, 2020), aid effectiveness (Dreher et al., 2021), and population health (Dreher et al., 2022).

projects by Japanese firms? (ii) Does the BRI weaken diplomatic relations between Japan and BRI countries? (iii) What mechanisms explain the effects of the BRI? Japan serves as an appropriate context for this research, given its long-standing competition with China over infrastructure investments, particularly in Asia (Jiang, 2019; Wang, 2023; Yoshimatsu, 2023). However, the extent of the BRI's impacts remains unclear, especially after the 2018 memorandum on third-party market cooperation between Japan and China, which aimed to leverage the strengths of both countries for joint infrastructure projects in BRI countries (Zhang, 2019; Zhang 2024). Additionally, the economic growth facilitated by the BRI may generate increased infrastructure demand.

We adopt a staggered difference-in-differences (DD) research design that utilizes variations in the timing of BRI participation across countries. To account for potential heterogeneous treatment effects, we employ the methodology proposed by Callaway and Sant'Anna (2021) throughout the analysis. Our analysis draws on panel data from 138 low- and middle-income countries spanning from 2001 to 2020. We investigate five outcome variables: Japanese overseas infrastructure projects, Japanese ODA commitments, overseas visits by Japanese political leaders, foreign political leaders' visits to Japan, and Chinese overseas infrastructure projects. To more thoroughly understand the BRI's effects on these outcome variables, we also examine their spatial and temporal variations.

Our findings reveal that the BRI crowded out Japanese overseas infrastructure projects and reduced political leaders' visits from BRI countries to Japan. These effects are particularly pronounced in the East Asia and the Pacific and South Asia regions, where Japan–China competition for infrastructure investments is most intense. Specifically, the BRI decreased Japanese overseas infrastructure projects and political leaders' visits to Japan in these regions by

41% and 30%, respectively, compared with the counterfactual scenarios without the BRI. Additionally, we identify the expansion of Chinese overseas infrastructure projects, primarily aid-based rather than debt-financed projects, as a primary mechanism driving these effects. Our findings highlight that Chinese firms may outcompete Japanese firms in securing contracts and also align with the argument that China strategically utilizes aid as a tool to advance its foreign policy objectives (Dreher et al., 2022).

This paper contributes to the growing body of literature analyzing the BRI's economic effects and differs in two critical ways. First, as summarized in Section 2, prior studies have focused primarily on the BRI's effects on inward FDI, international trade, and economic growth in BRI countries. This study provides the first empirical evidence of the BRI's impact on overseas infrastructure investments by Western firms and diplomatic relations between Western and BRI countries. Second, a staggered DD research design is used to estimate the BRI's effects, accounting for the varied timing of BRI participation across countries (see Figure 1) and employing newly developed techniques in the DD literature (de Chaisemartin and D'Haultfoeuille, 2020; Callaway and Sant'Anna; 2021; Goodman-Bacon, 2021). With the exception of Todo et al. (2025), prior studies have relied on a 2×2 DD framework that overlooks multiple treatment timings, potentially resulting in biased estimates.

The remainder of this paper is structured as follows. Section 2 reviews the related literature. Section 3 describes the data and presents initial evidence of the BRI's effects on the outcome variables. Section 4 outlines the staggered DD approach used to estimate the effects of the BRI. Section 5 presents the results, and Section 6 concludes.

2. Related literature

The first strand of literature, which is most relevant to this study, explores the economic benefits for BRI countries, including China, associated with the BRI, focusing on FDI, international trade, and economic growth. Adopting a gravity model with three-dimensional panel data covering seven source countries and 127 host countries from 2011 to 2015, Du and Zhang (2018) find that the BRI's FDI-promoting effects are more pronounced in continental BRI countries. Analyzing panel data covering 216 host countries and regions from 2010 to 2015, Kang et al. (2018) report that the BRI increased Chinese FDI outflows to BRI countries, finding that this increase was driven primarily by maritime Silk Road countries, in contrast to the findings of Du and Zhang (2018). Nugent and Lu (2021) use a triple DD approach with three-dimensional panel data covering 35 sectors across 152 host countries from 2009 to 2018 and find that while the BRI reduced Chinese FDI outflows to its member countries, it increased Chinese FDI in overcapacity- and pollution-related sectors. Todo et al. (2025) reveal that the BRI promoted inward FDI in BRI countries not only from China but also from Western nations, including the US and Japan.

Using geographical data covering 1,818 cities worldwide and network algorithms to compute reductions in shipping times between city pairs, de Soyres et al. (2019) find that implementing all BRI transport infrastructure projects would reduce trade costs for BRI countries by 1.5–2.8%, exceeding the world average reduction of 1.1–2.2%. Using similar methodologies, Baniya et al. (2020) find that the BRI increased the trade flows among 71 participating countries by 2.5–4.1%, with effects tripling, on average, if trade reforms complemented infrastructure upgrades. Analyzing product-level bilateral trade data from 2000 to 2015, Bastos (2020) observes that the growth in Chinese exports in sectors initially similar to those of BRI countries negatively impacted export growth in BRI countries, whereas demand shocks from rising Chinese imports positively influenced their overall export growth. Similarly, Foo et al. (2020), using data on bilateral trade between ASEAN countries and China from 2000 to 2016, demonstrate the BRI's trade-promoting effects.

Developing a computational spatial equilibrium model of Central Asia, Bird et al. (2020) find that aggregate real income gains from the BRI range from 1.4–1.9% of regional income under conventional adjustment mechanisms to 2.1–2.7% under localization economies of scale and labor mobility. Combining a DD approach with propensity score matching, Jiang et al. (2021) report that the BRI reduced energy intensity and carbon emissions in BRI countries by 42% and 45%, respectively, highlighting the BRI's contribution to green economic growth. Dreher et al. (2021) analyze the relationship between Chinese official financing and economic growth in 150 developing countries and find that one additional Chinese project increases growth by 0.41–1.49 percentage points.

The second strand of literature, although less extensive, examines the risks associated with the BRI and Chinese official financing, such as local corruption, debt, and aid effectiveness. Analyzing 227 Chinese project sites across 29 African countries from 2002 to 2013, Isaksson and Kotsadam (2018) find that compared with individual living farther away, individuals living near Chinese project sites are 3.5 percentage points more likely to have paid a bribe when dealing with the police. Horn et al. (2021), compiling data on Chinese international lending to 146 countries from 1949 to 2017, find that as of 2017, China had become the world's largest official creditor, surpassing the World Bank and the IMF, with 50% of its lending to developing countries being unreported in widely used debt statistics. Dreher et al. (2021) investigate whether China's development finance undermines the effectiveness of Western development finance but find no conclusive evidence to support this hypothesis.

In summary, prior research has significantly advanced our understanding of the BRI's benefits and risks in BRI or recipient countries. However, there remains a knowledge gap regarding the BRI's influence on the economic, political, and security interests of Western nations. This study addresses this gap by focusing on infrastructure investment competitions, with Japan as the case study.

3. Data

3.1. Measurements, data sources and sample

The scale of Japanese overseas infrastructure investments was measured by the total number of infrastructure projects in a host country contracted to Japanese firms in each contractual year. Data on these projects were sourced from the Annual Report on Plant Exports, compiled by the Heavy & Chemical Industries News Agency Co., Ltd. (HCINA) in Japan. The HCINA dataset provides details on project plans (e.g., hydrogen power plant construction), the contract year and duration, the project site (country), the contractee, the contractor, the services provided, and the project value for 5,038 projects in 181 countries between 2001 and 2020. In most cases, the contractees are public entities, whereas the contractors are private firms. The services offered by contractors encompass equipment procurement, engineering, construction, operation, technical support, and design.

There are limitations to the HCINA data. Ideally, aggregating individual project values would provide a more accurate measure of the investment scale; however, many project values are unavailable. Additionally, the HCINA dataset lacks a consistent classification scheme, making it challenging to disaggregate data by project type and services provided.

The scale of Japanese ODA commitments was measured by the total value of ODA provided by Japan to recipient countries annually, expressed in constant US$ (2020 prices). Data were obtained from the Creditor Reporting System (CRS) of the OECD.

The frequency of overseas visits by Japanese political leaders was measured by counting the trips made by Japanese prime ministers and ministers. Similarly, the frequency of visits to Japan by foreign political leaders was measured by counting the trips made by foreign prime ministers, presidents, and ministers. These data were sourced from the Diplomatic Bluebook, compiled by the Ministry of Foreign Affairs of Japan (MOFA). The MOFA dataset includes information on the destination and origin, visitor identities and positions (e.g., prime minister, president, minister), the length of stay, and the purpose of each visit for all Japanese and foreign dignitaries.

The scale of Chinese official financing was measured by the total number of projects financially backed by Chinese official institutions in a host country in each commitment year. Data on Chinese overseas infrastructure projects were extracted from the Global Chinese Development Finance Dataset (Version 3.0), compiled by Custer et al. (2023). This dataset covers 20,985 projects across 165 countries supported by loans and grants from 791 Chinese official sector institutions between 2000 and 2021. Approximately 40% of the observations lack project value data; thus, the scale of Chinese overseas infrastructure projects was not monetized in this analysis.

A key feature of the Global Chinese Development Finance Dataset is the classification of Chinese official financing into "aid" and "debt," corresponding to ODA and OOF, respectively, on the basis of OECD definitions.[6] This classification is crucial for this study, as aid and debt can have distinct economic and political implications. China's foreign policy interests influence its allocation of aid but are less significant for the allocation of debt (Dreher et al., 2022). As a result, we analyze the specifications separately, using the number of aid-based and debt-financed projects as outcome variables. We return to this point in Section 5.4.

[6] ODA activities are defined as those offered on highly concessional terms, requiring a minimum grant element of 25%, and intended to promote economic development and welfare in recipient countries. OOF refers to activities provided on less concessional terms, with a grant element below 25%, and/or without development intent, focusing instead on commercial or representational objectives. For further details, see Custer et al. (2023).

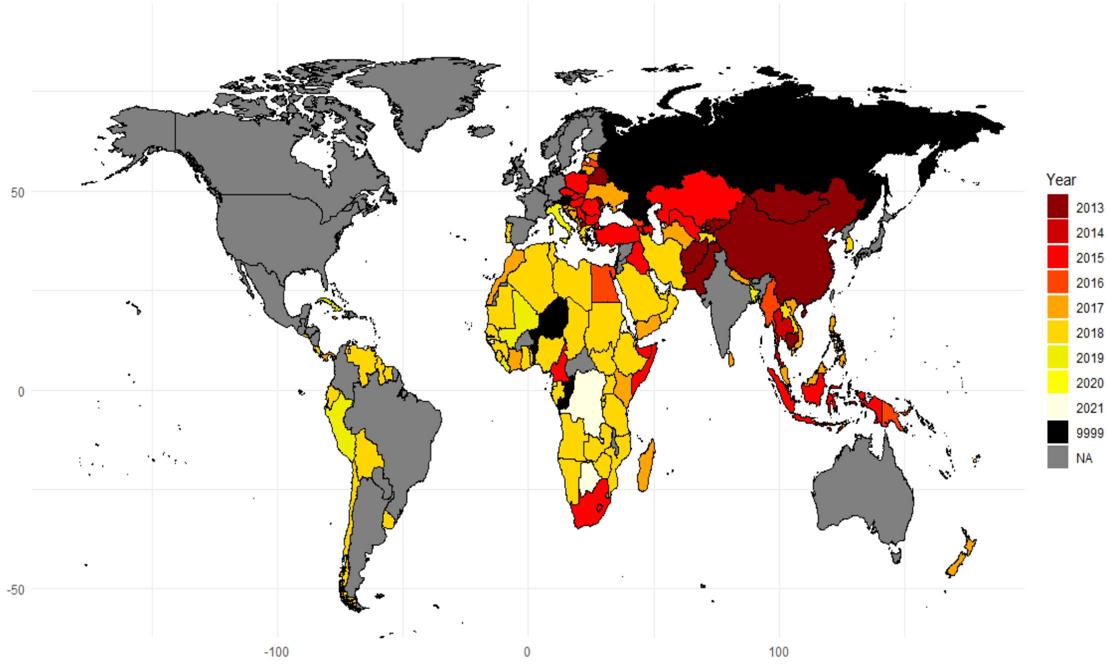
Using Nedopil (2024), we constructed a time–space-varying BRI participation variable, which takes the value of one for periods after a country signed a memorandum of understanding (MoU) with China.[7] By December 2021, 146 countries had signed an MoU. As no country withdrew from the BRI during the sample period, the variable remains consistent once assigned.

Figure 1 illustrates the time–space variation in BRI participation across countries. Panel A shows the geographic distribution of BRI countries by the year in which they signed a BRI MoU with China, with "9999" indicating that the signing year was unavailable (e.g., Russia). Countries in gray had not signed a BRI memorandum by December 2021. Western nations generally did not participate in the BRI, except for Italy and South Korea. Notably, participation has expanded to the Latin America and the Caribbean region, which was not part of the original BRI. Panel B depicts the distribution of signing years, emphasizing the need for an estimation model that accounts for multiple treatment periods (Todo et al., 2025). This point is revisited in Section 4.

We obtained data on GDP per capita, measured in current US$, from the World Development Indicators compiled by the World Bank and adjusted it to 2023 US$. Data on bilateral and multilateral ODA values from official donors, measured in constant US$ (2020 prices) and commitments, were sourced from the CRS. We extracted democracy-level data, measured by the electoral democracy index (ranging from 0 to 1, with 1 being the most democratic), from V-Dem (2024), as provided by Our World in Data.

[7] Prior studies have assigned treatment to countries that belong to the BRI plan (Du and Zhang, 2018; Kang et al., 2018; Foo et al., 2020; Jiang et al., 2021), participated in the BRI Forum in 2017 (Yu et al., 2019), or are officially designated as BRI partners by the Chinese government (Nugent and Lu, 2021). In this regard, the treatment assignment in our study aligns most closely with that in Nugent and Lu (2021).

Panel A. Map of the year of signing a BRI MoU by country



Panel B. Distribution of years of signing a BRI MoU

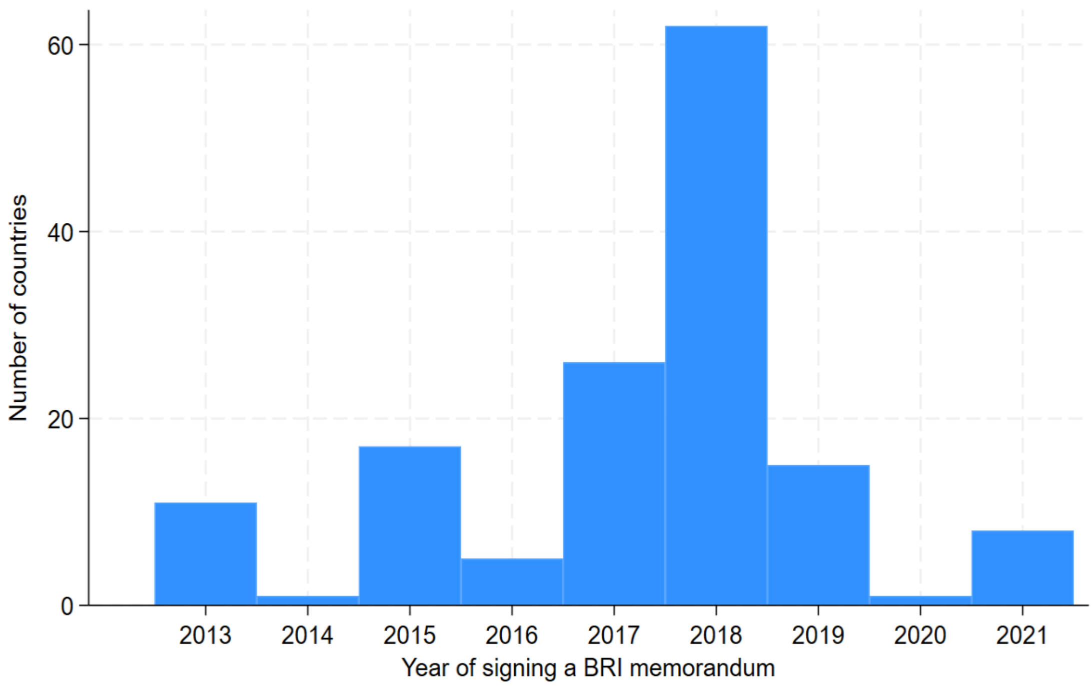


Fig. 1. Time–space variation in BRI participation

Notes: For Panel (a), 9999 indicates that the year of signing a BRI MoU is not available for the country. Countries in gray have not yet signed a BRI MoU.
Source: Authors created using Nedopil (2024).

Using the information above, we constructed a two-dimensional panel dataset covering 138 low- and middle-income countries from 2001 to 2020, resulting in 2,760 observations. Appendix A provides the list of countries included in our sample. High-income countries were excluded, as developed nations (e.g., the US, European countries, and Japan) that did not participate in the BRI during the sample period are not suitable for use as a control group. The treatment group comprises 102 countries that signed an MoU to join the BRI with China between 2013 and 2020, whereas the control group includes 36 countries that had not signed by the same period.

3.2. Descriptive statistics

Table 1 presents the sample averages for all variables used in the estimations. The mean number of Japanese overseas infrastructure projects across countries is 1.2 projects per year, whereas the mean annual Japanese ODA commitment is US$ 105 million. The average numbers of overseas visits by Japanese political leaders and visits to Japan by foreign political leaders are 0.3 and 0.6, respectively. The mean number of Chinese overseas infrastructure projects is 6.7 per year, which exceeds the number of Japanese overseas infrastructure projects. Aid-based projects are more prevalent than are debt-financed projects. The sample averages for covariates such as GDP per capita, official donor ODA commitments, and democracy levels are similar between the treatment and control groups, indicating their comparability.

Figure 2 illustrates the annual trends for the outcome variables, with vertical, red-dotted lines marking 2013, the year in which the BRI was announced. Panel (a) shows that the total number of Japanese overseas infrastructure projects increased steadily from the mid-2000s, peaking at 375 in 2012, but declined thereafter, suggesting potential crowding-out effects of the BRI. In contrast, no significant changes in annual trends are evident before and after the BRI for Japanese ODA commitments, overseas visits by Japanese political leaders, or visits to Japan by foreign political leaders (Panels (b)–(d)). Notably, face-to-face meetings between Japanese and foreign political leaders dropped sharply in 2020, largely because of the COVID-19 pandemic. Panel (e) reveals a continuous increase in the total number of Chinese overseas infrastructure projects in the sample over time.

Table 1
Descriptive statistics

	All	Treatment group	Control group
Outcome variables			
Japanese overseas infrastructure projects	1.22	1.33	0.89
Japanese ODA commitments, million US$	105	110	92
Overseas visits by Japanese political leaders	0.35	0.35	0.34
Foreign political leaders' visits to Japan	0.60	0.64	0.50
Chinese overseas infrastructure projects	6.68	7.47	4.42
Aid-based projects	4.55	5.15	2.83
Debt-financed projects	1.58	1.79	0.98
Covariates			
GDP per capita, US$	3,416	3,311	3,725
Official donors' ODA commitments, million US$	883	891	860
Democracy levels (0–1)	0.44	0.43	0.45

Notes: This table presents the sample averages for all variables used for estimations based on a two-dimensional panel dataset covering 138 countries from 2001 to 2020. The treatment group comprises 102 low- and middle-income countries that signed an MoU to participate in the BRI, and the control group consists of 36 countries that did not sign.

When interpreting these trends, caution is warranted, as the timing of BRI participation varies across countries, spanning from 2013 to 2020, as shown in Figure 1. Furthermore, Figure 2 conceals the temporal variations in the outcome variables across countries. For example, Figure 3 highlights that the East Asia and the Pacific region and lower-middle-income countries experienced significant declines in Japanese overseas infrastructure projects before and after the BRI, whereas only modest declines were observed in other regions and income groups. To address these complexities, we carefully analyze the effects of the BRI on the outcome variables.

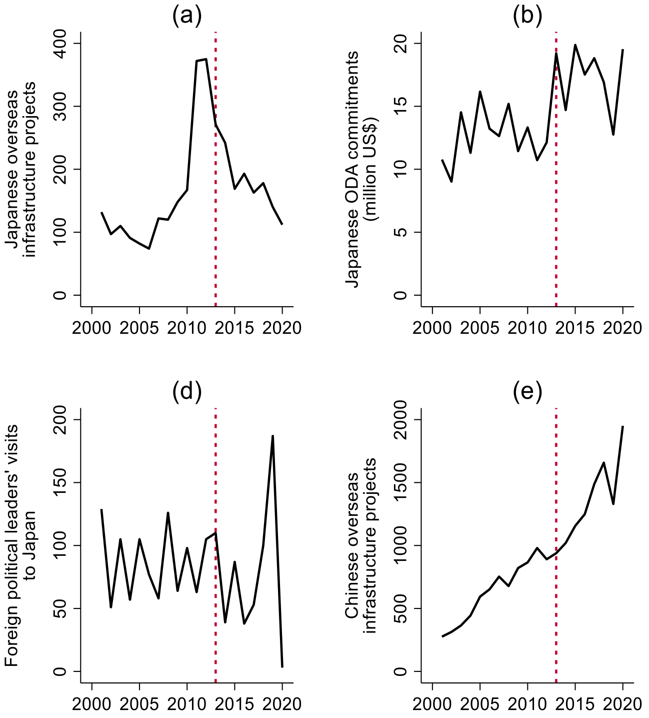
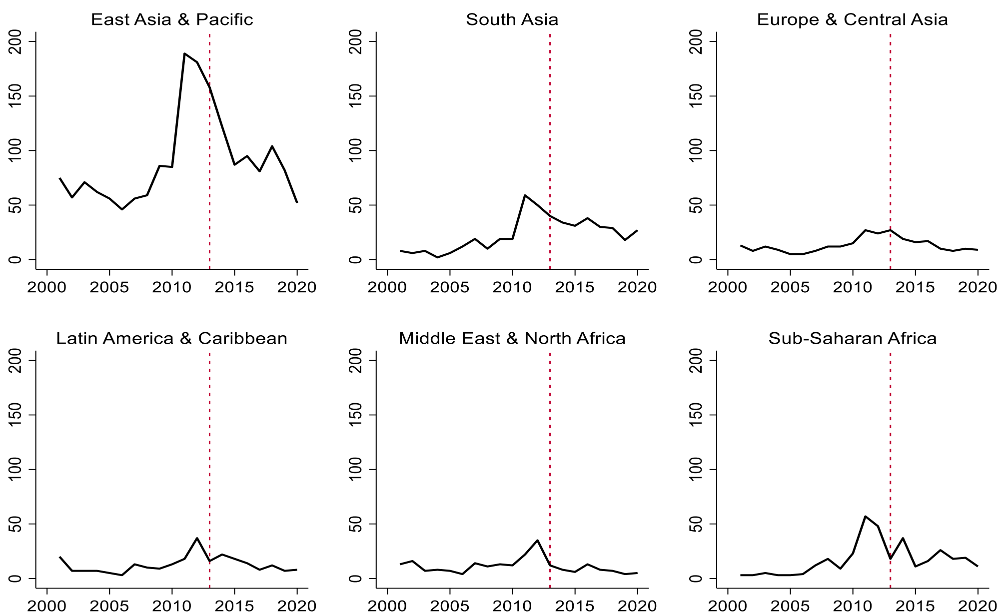


Fig. 2. Temporal trends of the outcome variables

Notes: The figures display the annual trends of (a) Japanese overseas infrastructure projects, (b) Japanese ODA commitments, (c) overseas visits by Japanese political leaders, (d) foreign political leaders' visits to Japan, and (e) Chinese overseas infrastructure projects for 138 low- and middle-income countries from 2001 to 2020. The vertical, red-dotted lines mark the year 2013, when the BRI was announced.

Panel A. By region



Panel B. By income group

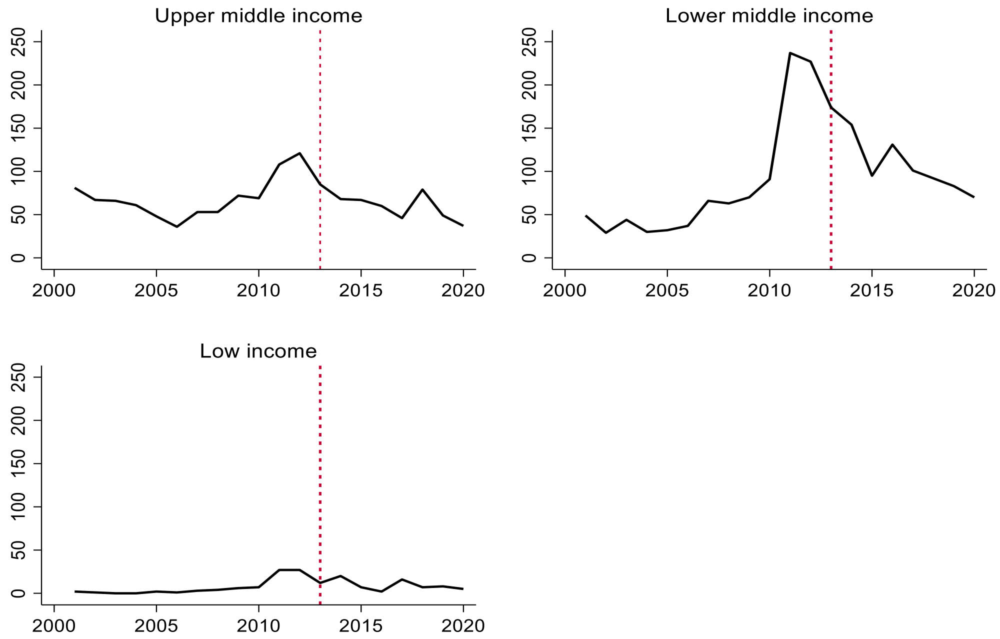


Fig. 3. Japanese overseas infrastructure projects by region and income group

Notes: The figures display the annual trends of Japanese overseas infrastructure projects by region and by income group from 2001 to 2020. The vertical, red-dotted lines mark the year 2013, when the BRI was announced.

4. Empirical approach

Our analysis involves DD estimation with multiple periods and variation in the treatment timing. The standard approach to estimating a staggered DD setup is to adopt two-way fixed effects (TWFE) regression specifications as follows:

$$Outcome_{c,y} = \alpha_c + \omega_y + BRI_{c,y}\beta + \varepsilon_{c,y} \qquad (1)$$

$$Outcome_{c,y} = \alpha_c + \omega_y + \sum_{r \neq -1} 1[t - G_c = r]\beta_r + \varepsilon_{c,y} \qquad (2)$$

where *c* is the country and *y* represents the year. As already mentioned, in this study, we examine five outcome variables: (a) Japanese overseas infrastructure projects, (b) Japanese ODA commitments, (c) overseas visits by Japanese political leaders, (d) foreign political leaders' visits to Japan, and (e) Chinese overseas infrastructure projects. α and ω represent country and year fixed effects, respectively. BRI is an indicator of whether country c is already participating in the BRI in year y. In the static TWFE specification (1), β can be interpreted as the overall BRI effect on each outcome variable across countries and years.

In the dynamic TWFE specification (2), G_c is the year in which country c participates in the BRI for the first time, and r indicates the year relative to the first BRI participation. For example, $r = 0$ represents the first post-treatment year, whereas $r = -2$ indicates two years before the first BRI participation. The summation runs over all possible values of r except $r = -1$, as the first pre-BRI participation year is set as the reference period. $\beta_{r \geq 0}$ captures the dynamic effect of BRI participation on each outcome variable over time, indicating whether the impact increases, diminishes, or remains stable during post-treatment years.

A key estimation issue is that the TWFE regression coefficients in a staggered DD setup may reflect both comparisons between treated and not-yet or never-treated groups and those between already treated groups (de Chaisemartin and d'Haultfoeuille, 2020; Goodman-Bacon, 2021). The latter can lead to significant drawbacks, such as coefficients having incorrect signs due to negative weighting problems, particularly when treatment effects are heterogeneous across cohorts. To address this identification concern, we employ Callaway and Sant'Anna's (2021) approach, which accounts for treatment heterogeneity. First, we estimate the average treatment effects for all group-years ($ATT(g, y)$) using a 2×2 DD estimation. This compares the expected change in each outcome variable for the cohort treated in year g between years $g - 1$ and y to that for the never-treated cohort in year y

$$ATT(g,y) = \mathrm{E}\left[Outcome_{c,y} - Outcome_{c,g-1} | G_c = g\right]$$
$$- \mathrm{E}\left[Outcome_{c,y} - Outcome_{c,g-1} | G_c = g'\right], \text{for any } g' > y \quad (3)$$

The reference period is the year before BRI participation. For example, for the cohort participating in the BRI in 2016, the reference period is 2015. This gives us fourteen 2×2 DD estimates for the pre-treatment (2001–2015, 2002–2015, 2003–2015, 2004–2015, 2005–2015, 2006–2015, 2007–2015, 2008–2015, 2009–2015, 2010–2015, 2011–2012, 2013–2015, and 2014–2015) and five for the post-treatment (2015–2016, 2015–2017, 2015–2018, 2015–2019, and 2015–2020). With 8 treated cohorts in our sample, we obtain a total of one hundred and fifty-two 2×2 DD estimates. Finally, we aggregate these estimates into a simple weighted average and event-study estimates by years to BRI participation, placing greater weight on estimates with larger observation sizes.

The use of a two-dimensional panel dataset raises concerns that model errors may be serially correlated over time. Failure to adjust for within-cluster correlations may lead to misleadingly small standard errors. Hence, we report robust standard errors clustered at the country level throughout the analyses. The number of clusters is 138, which is sufficient for the standard cluster adjustment to be reliable.

To check the robustness of our baseline specification, we examine two alternative specifications. In the first, we use both never- and not-yet-treated countries as a control group rather than just never-treated countries. In the second, we condition the specification on covariates, including log GDP per capita, log official donors' ODA commitments, and democracy levels, and we implement a doubly robust DD estimator on the basis of inverse probability weighting and ordinary least squares (Callaway and Sant'Anna, 2021). We also explore the heterogeneous BRI effects on each outcome variable across regions and income groups, holding the control group fixed. For example, for the East Asia and the Pacific region, we estimate Eqs. (1) and (2), excluding treated countries in the South Asia, Europe and Central Asia, Latin America and the Caribbean, Middle East and North Africa, and Sub-Saharan Africa regions.

5. Results

5.1. BRI effects on Japanese overseas infrastructure projects

Table 2 presents the results of estimating Eq. (1) using a two-dimensional panel dataset and the Callaway and Sant'Anna (2021) approach. Column 1 reports the baseline specification, which includes only never-treated countries as the control group and excludes covariates. Column 2 adds not-yet-treated countries to the control group, while Column 3 incorporates covariates, including log GDP per capita, log official donors' ODA commitments, and democracy levels. The results indicate that BRI participation reduced the number of infrastructure projects awarded to Japanese firms by 0.48–0.55 during the post-treatment period for BRI countries relative to non-BRI countries. However, these estimates are not statistically significant at the 10% level.

Figure 4 illustrates the evolution of the BRI's effects on Japanese overseas infrastructure projects over time, estimating Eq. (2) on the basis of the baseline specification. The trends in overseas infrastructure projects awarded to Japanese firms were approximately parallel prior to BRI participation, with no significant evidence of pre-BRI effects, which increases confidence in the parallel trends assumption. Post-BRI participation, there is evidence of divergent trends between BRI countries and non-BRI countries, particularly in the later post-treatment periods. The results indicate that the number of infrastructure projects awarded to Japanese firms declined by 3.36 seven years after a country joined the BRI. This finding is robust to alternative specifications, as shown in Appendix B.

Table 2
BRI effects on Japanese overseas infrastructure projects

Specifications:	Baseline	Both never- and not-yet-treated countries	Conditional on covariates
	(1)	(2)	(3)
Average treatment effects	–0.478	–0.482	–0.551
	(0.402)	(0.393)	(0.424)
Countries	138	138	123
Years	2001–2020	2001–2020	2001–2020
Observations	2,760	2,760	2,453
Mean Japanese overseas infrastructure projects during the pre-treatment period		1.15	

Notes: This table presents the results of estimating Eq. (1) via a two-dimensional panel dataset and the Callaway and Sant'Anna (2021) approach. Column 1 reports our baseline specification, including only never-treated countries as a control group and excluding covariates. Column 2 adds not-yet-treated countries to the control group. Column 3 reports specification conditional on covariates including log GDP per capita, log official donors' ODA commitments, and democracy levels. Standard errors are robust to heteroscedasticity and clustered at the country level.
***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

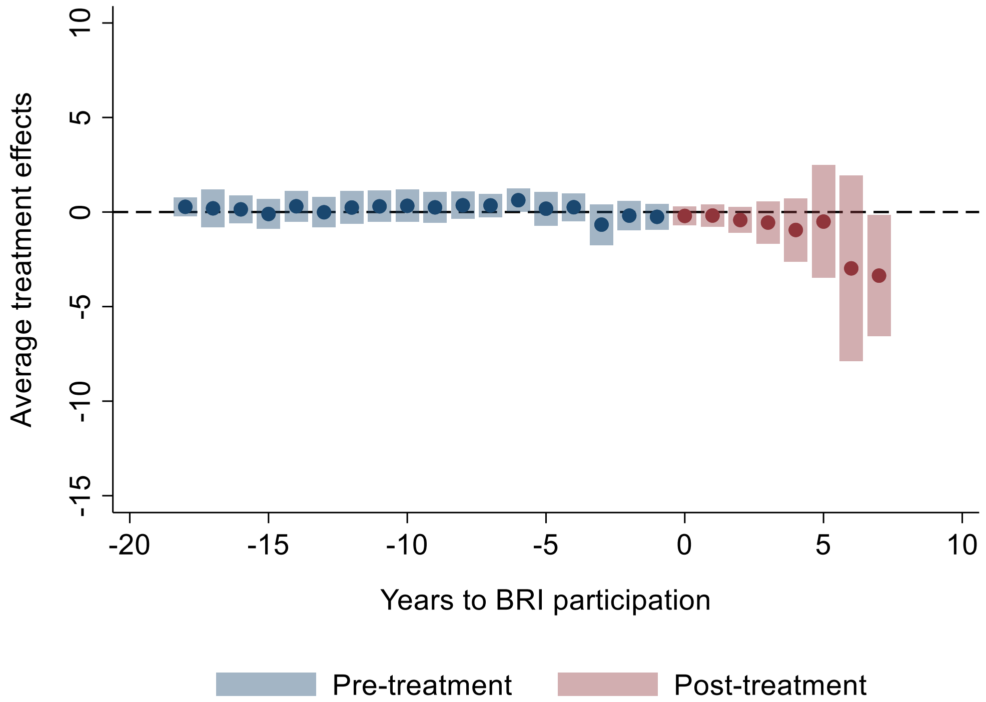


Fig. 4. Dynamic effects of the BRI on Japanese overseas infrastructure projects

Notes: This figure presents the event-study results of estimating Eq. (2) using the two-dimensional panel dataset covering 138 countries from 2001 to 2020 and the Callaway and Sant'Anna (2021) approach and based on the baseline specification, including only never-treated countries as the control group and excluding covariates. The number of observations is 2,760. The circles show the point estimates of the average treatment effects, and the vertical bands represent the 95% confidence intervals. Standard errors are robust to heteroscedasticity and clustered at the country level.

Table 3 reports the heterogeneous effects of the BRI on Japanese overseas infrastructure projects across regions and income groups. Significant variation in the average treatment effects among regions, ranging from –3.03 for East Asia and the Pacific to 0.28 for Latin America and the Caribbean, is observed. The BRI's crowding-out effects in the East Asia and the Pacific region are particularly substantial. The pre-treatment mean number of overseas infrastructure projects by Japanese firms in BRI countries in this region was 3.55, implying that the BRI led to an average reduction of approximately 85%. Similarly, the average treatment effects are negative across all income groups, although these effects, as in the baseline estimates in Table 2, are not precisely estimated.

Table 3
BRI effects on Japanese overseas infrastructure projects by region and income group

	Average treatment effects	Standard errors	Countries	Observations
By region				
East Asia and the Pacific	–3.031**	1.460	55	1,100
South Asia	0.288	0.807	41	820
Europe and Central Asia	0.290	0.315	55	1,100
Latin America and the Caribbean	0.283**	0.142	50	1,000
Middle East and North Africa	–0.064	0.391	46	920
Sub-Saharan Africa	0.121	0.196	71	1,420
By income group				
Upper middle income	–0.628	0.729	76	1,520
Lower middle income	–0.420	0.492	81	1,620
Low income	–0.175	0.252	53	1,060

Notes: This table presents the results of estimating Eq. (1) by region and by income group, holding the control group fixed. All specifications are based on the baseline specification, including only never-treated countries as the control group and excluding covariates. Standard errors are robust to heteroscedasticity and clustered at the country level.
***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Figure 5 shows the dynamic effects of the BRI on Japanese overseas infrastructure projects across regions and income groups. Panel A shows that the BRI's crowding-out effects intensify over time in the East Asia and the Pacific and South Asia regions. Specifically, infrastructure projects awarded to Japanese firms declined by 8.36 and 4.36, respectively, seven years after the countries in these two regions joined the BRI. The mean event-study estimates during the post-treatment period are –4.19 for East Asia and the Pacific and –0.77 for South Asia, distinguishable from zero. In other regions, the changes in Japanese overseas infrastructure projects during the post-treatment period are moderate or negligible. Panel B reveals that the crowding-out effects on Japanese overseas infrastructure projects also increase over time for lower-middle-income countries. Conversely, no significant effects for upper-middle- or low-income countries are observed.

5.2. BRI effects on Japanese diplomatic outcomes

Table 4 presents the results of estimating Eq. (1) when the three diplomatic outcomes are used as dependent variables, whereas Figure 6 shows the event-study results of estimating Eq. (2) by region. Owing to space limitations, the event-study results by income level are reported in Appendix C. All specifications are based on the baseline model, which includes only never-treated countries as the control group and excludes covariates.[8] Overall, the findings indicate that the BRI may weaken Japan's diplomatic presence, particularly in the East Asia and the Pacific and South Asia regions, as evidenced by decreased visits from BRI countries' political leaders to Japan. Similar patterns in lower-middle-income and low-income countries are observed.

Columns 1 and 2 of Table 4 show that, on average, the BRI decreased Japanese ODA commitments and increased Japanese political leaders' visits to BRI countries. However, the effects are mixed across regions and income levels, and none of these estimates are statistically significant at the 10% level. Similarly, Panels A and B of Figure 6 provide no significant evidence of the BRI's effects, even when dynamic trends are examined. Event-study analyses by income level, reported in Panels A and B of Appendix C, yield consistent findings. As a result, the

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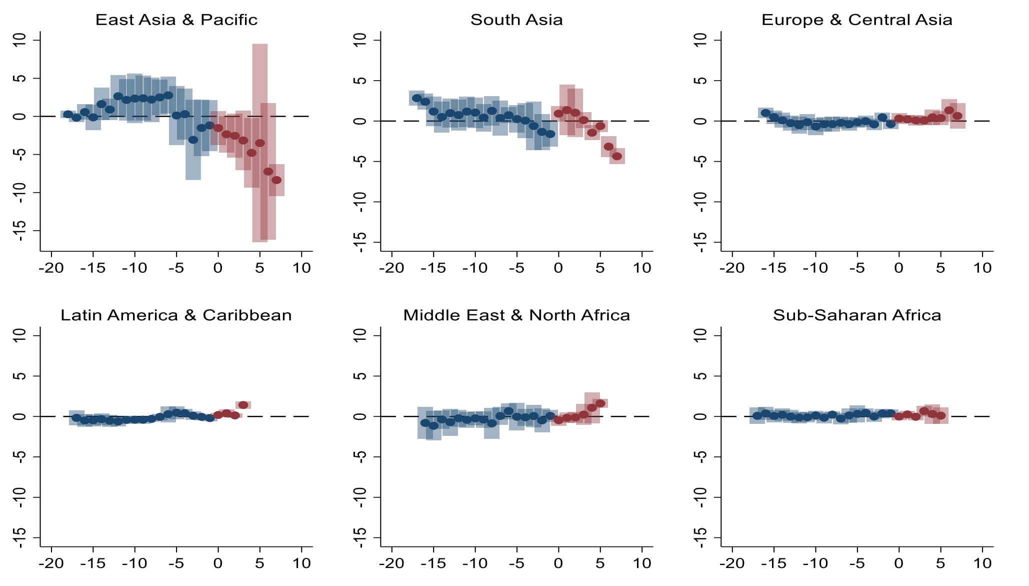
[8] We also obtain similar results based on alternative specifications, adding countries that are not yet treated to the control group, or including covariates (log GDP per capita, log official donors' ODA commitments, and democracy levels). These results can be provided upon request.

diplomatic effects of the BRI through Japanese ODA commitments and political leaders' overseas trips remain inconclusive.

Panel A. By region



Panel B. By income group

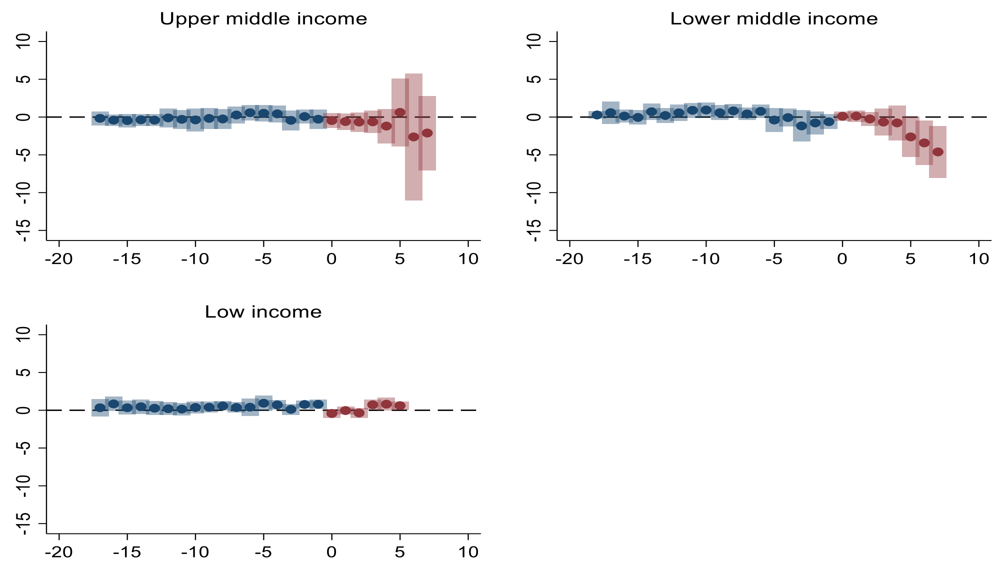


Fig. 5. Dynamic BRI effects on Japanese overseas infrastructure projects by region and income group

Notes: The figures present event-study results of estimating Eq. (2) by region and by income group, holding the control group fixed. All specifications are based on the baseline specification, including only never-treated countries as the control group and excluding covariates. The vertical and horizontal axes for all figures show the average treatment effects and years to BRI participation, respectively. The circles show the point estimates of the average treatment effects, and the vertical bands represent the 95% confidence intervals. Standard errors are robust to heteroscedasticity and clustered at the country level.

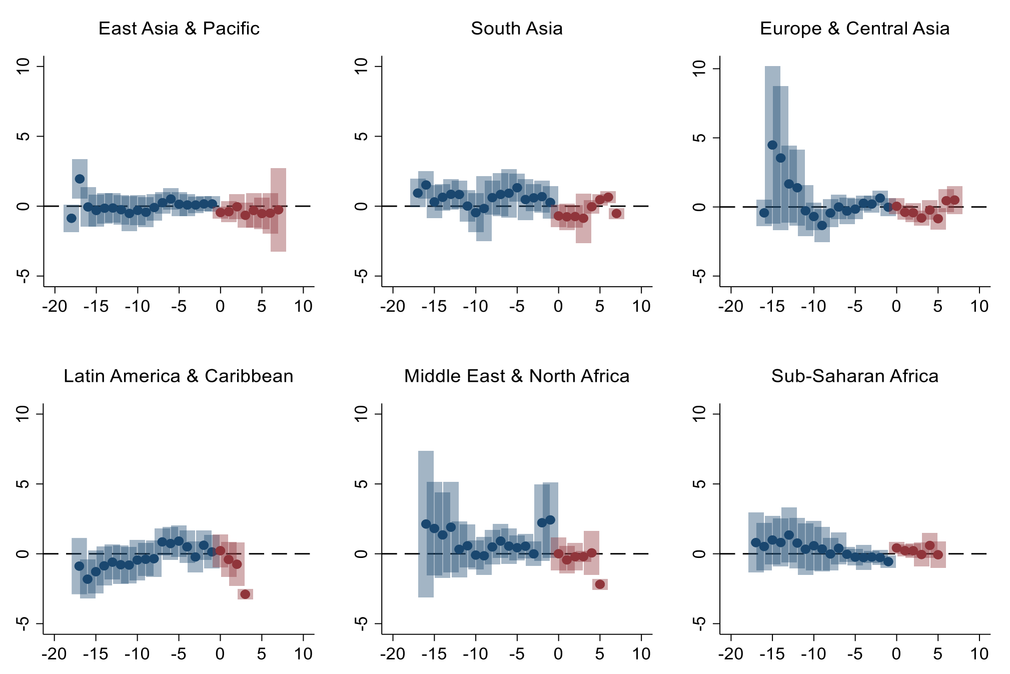
Table 4
BRI effects on Japanese diplomatic outcomes

Outcome variables:	Japanese ODA commitments (in log)	Overseas visits by Japanese political leaders	Foreign political leaders' visits to Japan
	(1)	(2)	(3)
Average treatment effects	–0.180	0.034	–0.044
	(0.145)	(0.100)	(0.099)
By region			
East Asia and the Pacific	–0.370	0.498	–0.297
	(0.354)	(0.312)	(0.206)
South Asia	–0.597	0.230	–0.364
	(0.446)	(0.165)	(0.524)
Europe and Central Asia	–0.353	–0.199	0.004
	(0.247)	(0.188)	(0.150)
Latin America and the Caribbean	–0.331	0.047	–0.222
	(0.600)	(0.196)	(0.151)
Middle East and North Africa	–0.249	–0.111	0.065
	(0.387)	(0.207)	(0.194)
Sub-Saharan Africa	0.270	–0.078	0.179
	(0.183)	(0.145)	(0.165)
By income group			
Upper middle income	–0.326	0.116	0.017
	(0.206)	(0.149)	(0.105)
Lower middle income	–0.195	–0.047	–0.060
	(0.214)	(0.161)	(0.148)
Low income	0.340	0.036	–0.193
	(0.280)	(0.116)	(0.266)

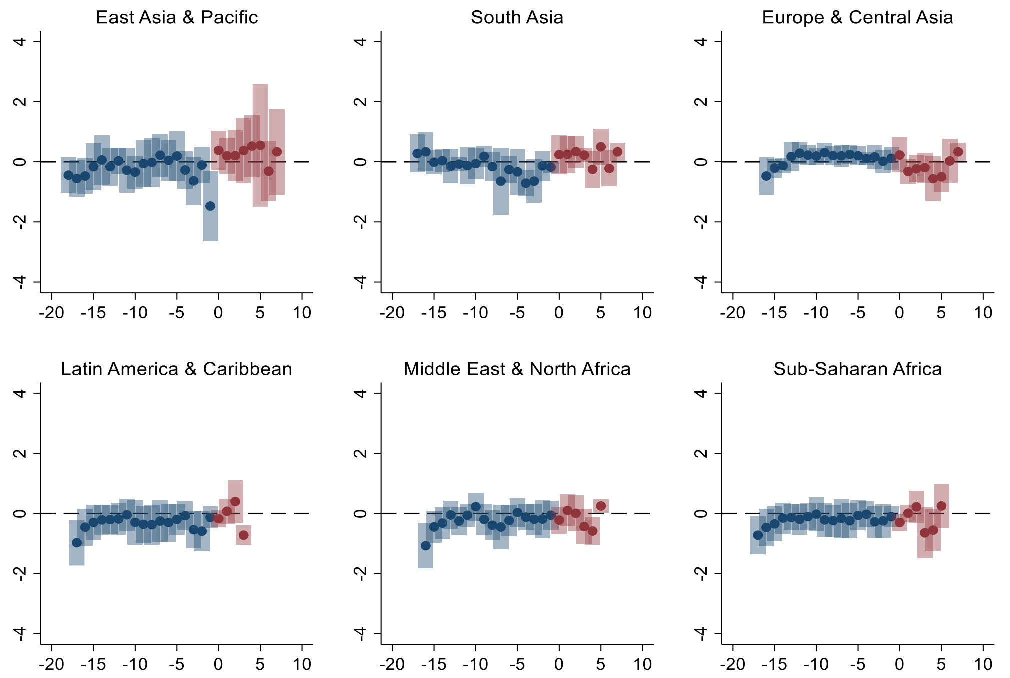
Notes: This table presents the results of estimating Eq. (1) when the log of Japanese ODA commitments, the number of overseas visits by Japanese political leaders, and the number of foreign political leaders' visits to Japan, are used as the outcome variables. All specifications are based on the baseline specification, including only never-treated countries as the control group and excluding covariates. Standard errors are robust to heteroscedasticity and clustered at the country level.
***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

In contrast, evidence suggests that the BRI significantly reduced visits from political leaders of BRI countries to Japan, particularly in the East Asia and the Pacific and South Asia regions. Column 3 of Table 4 highlights larger declines in visits from political leaders in these regions, by 0.30 and 0.36, respectively, although these estimates are imprecise. Panel C of Figure 6 reveals that the average event-study estimates for the post-treatment period are –0.41 for East Asia and the Pacific and –0.80 for South Asia, both of which are statistically significant at the 10% level. For the South Asia region, the results suggest that visits from political leaders of BRI countries to Japan decreased by 1.41, on average, four to seven years after BRI participation. A similar decline in political leaders' visits during the post-treatment period in lower-middle- and low-income countries is observed, as shown in Panel C of Appendix C.

Panel A. Japanese ODA commitments (in log)



Panel B. Overseas visits by Japanese political leaders



Panel C. Foreign political leaders' visits to Japan

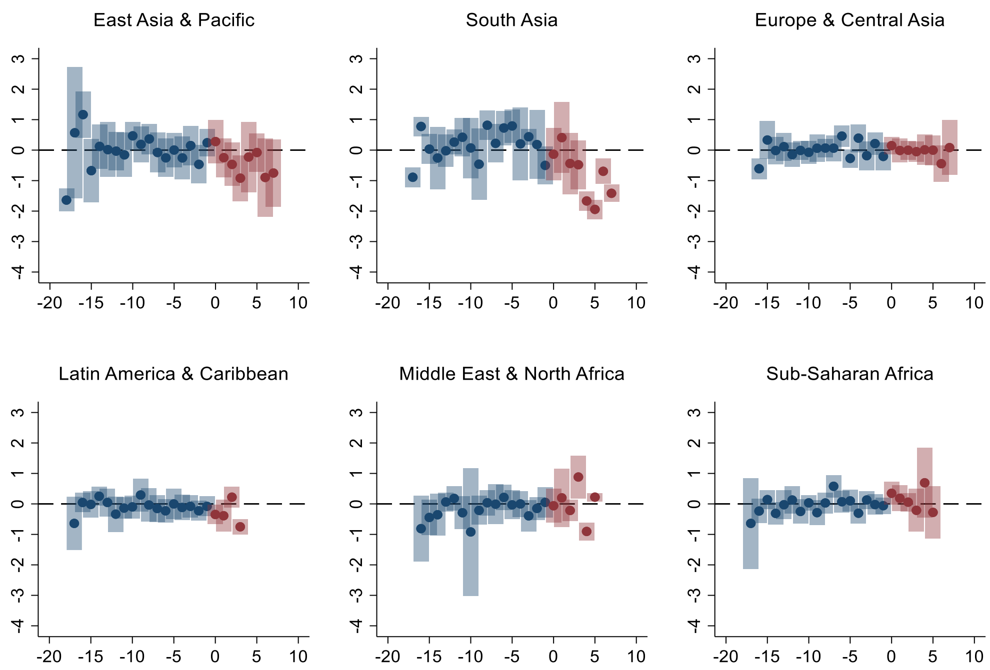


Fig. 6. Dynamic effects of the BRI on Japanese diplomatic outcomes by region

Notes: The figures present the event-study results of estimating Eq. (2) when the three diplomatic outcomes are used as the outcome variables. For additional information, see the notes in Figure 5.

5.3. Quantifying the BRI's effects

We quantified the BRI's effects on Japanese overseas infrastructure projects and visits by foreign political leaders to Japan in the East Asia and the Pacific and South Asia regions as follows. First, we focused on the treatment group within these regions after BRI participation. Second, we added the mean event-study estimates during the post-treatment period to the actual outcomes for each observation to construct the counterfactual outcomes that would have occurred in the absence of the BRI. Third, we calculated the difference between the actual and counterfactual outcomes. Finally, we aggregated these differences at the country level.

Table 5 presents the results. The actual number of Japanese overseas infrastructure projects in the East Asia and the Pacific and South Asia regions was 522, which is 369 fewer than the counterfactual figure (891). This finding suggests that the BRI crowded out Japanese overseas infrastructure projects by 41%. The effect was more pronounced in East Asia and the Pacific (43%) than in South Asia (24%). In absolute terms, Japanese overseas infrastructure projects experienced significant reductions in Cambodia, China, Mongolia, Thailand, and Indonesia.

Table 5
Quantifying the BRI's effects

	Japanese overseas infrastructure projects			Foreign political leaders' visits to Japan		
	Actual	Counterfactual	Diff.	Actual	Counterfactual	Diff.
East Asia and the Pacific						
Cambodia	42	76	–34	10	13	–3
China	133	167	–34	3	6	–3
Fiji	0	13	–13	3	4	–1
Indonesia	69	94	–25	11	13	–2
Kiribati	0	4	–4	0	0	0
Lao PDR	1	14	–13	9	10	–1
Malaysia	10	27	–17	3	5	–2
Micronesia	0	13	–13	6	7	–1
Mongolia	9	43	–34	18	21	–3
Myanmar	60	81	–21	2	4	–2
Papua New Guinea	4	25	–21	4	6	–2
Philippines	31	48	–17	7	9	–2
Samoa	1	14	–13	3	4	–1
Solomon Islands	1	9	–8	0	1	–1
Thailand	73	102	–29	14	17	–3
Timor-Leste	0	17	–17	1	3	–2
Tonga	1	14	–13	1	2	–1
Vanuatu	1	14	–13	1	2	–1
Vietnam	32	49	–17	9	11	–2
Regional total	468	820	–352	105	139	–34
South Asia						
Bangladesh	15	17	–2	2	4	–2
Maldives	0	3	–3	5	8	–3
Nepal	7	10	–3	2	5	–3
Pakistan	26	32	–6	2	8	–6
Sri Lanka	6	9	–3	5	8	–3
Regional total	54	71	–17	16	34	–18
Total	522	891	–369	121	173	–52

The actual number of visits by political leaders from BRI countries in these regions to Japan was 121, which is 52 fewer than the counterfactual number of visits (173). This finding indicates that the BRI reduced political leaders' visits to Japan by 30%. The weakening effect on diplomatic relationships between Japan and BRI countries was more pronounced in the South Asia region (52%) than in the East Asia and the Pacific region (25%). The BRI had the most significant impact on reducing visits from political leaders in Pakistan, with a decrease of six visits.

5.4. Mechanisms

As highlighted in the previous sections, the BRI crowded out Japanese overseas infrastructure projects and reduced visits by political leaders from BRI countries to Japan, particularly in the East Asia and the Pacific and South Asia regions. This section investigates Chinese overseas infrastructure projects as a potential mechanism driving the effects of the BRI. To explore this mechanism, we estimate Eq. (1) and Eq. (2) with the total number of Chinese overseas infrastructure projects as the outcome variable. Given the competitive dynamics in infrastructure exports, Chinese firms, which have advantages in cost and efficiency, may outcompete Japanese firms in securing contracts. Moreover, increased Chinese infrastructure projects might foster political alignment between BRI countries and the Chinese government, consequently weakening diplomatic ties with Western nations, including Japan.

There is a critical distinction between the implications of aid-based and debt-financed Chinese projects. Similar to Western donors, China is likely to employ aid rather than debt to achieve its foreign policy objectives, as financial transfers on favorable terms, including grants, can generate reciprocal political goodwill (Dreher et al., 2022). Chinese cultural and educational exchange initiatives, funded through aid, may also build goodwill and align local elites with Chinese perspectives (Li and Xue, 2024). To examine these dynamics, we also estimate Eq. (1) and Eq. (2) separately for aid-based and debt-financed projects as outcome variables.

Table 6 presents the results. Column 1 indicates that BRI participation increased the number of Chinese projects by 3 during the post-treatment period in BRI countries compared with non-BRI countries.[9] The impact of the BRI is particularly significant in the East Asia and the Pacific (5.1) and South Asia (9.27) regions, as well as in lower-middle-income countries (3.88). Columns 2 and 3 show that the BRI generally promoted both aid-based and debt-financed projects, with notable variations across regions and income groups. In East Asia and the Pacific, only aid-based projects increased, whereas both aid-based and debt-financed projects rose in South Asia, albeit without statistically significant results. For upper-middle-income countries, the BRI's effect is more pronounced for debt-financed projects, whereas for lower-middle-income countries, aid-based projects experienced a greater impact.

Figure 7 illustrates the event-study results by region. Panel A shows that the post-treatment effects in East Asia and the Pacific fluctuated over time, with an average event-study estimate of 5.19. The South Asia region exhibited more notable trends: after moderate initial increases, total Chinese projects rose significantly four to seven years after BRI participation, ranging from 25 to 60 projects annually. Panel B demonstrates similar dynamics for aid-based projects. Panel C, however, shows that the BRI's impact on debt-financed projects in the East Asia and the Pacific region is neither statistically nor economically significant. In contrast, the South Asia region experienced a sharp rise in debt-financed projects three to seven years after BRI participation, mirroring the trend observed with aid-based projects.[10] These large inflows of Chinese projects to South Asia may reflect the development of the China–Pakistan Economic Corridor, a flagship project of the BRI linking China's Xinjiang region to Pakistan's Gwadar Port that is regarded as one of the most advanced corridors within the BRI framework (World Bank, 2019).

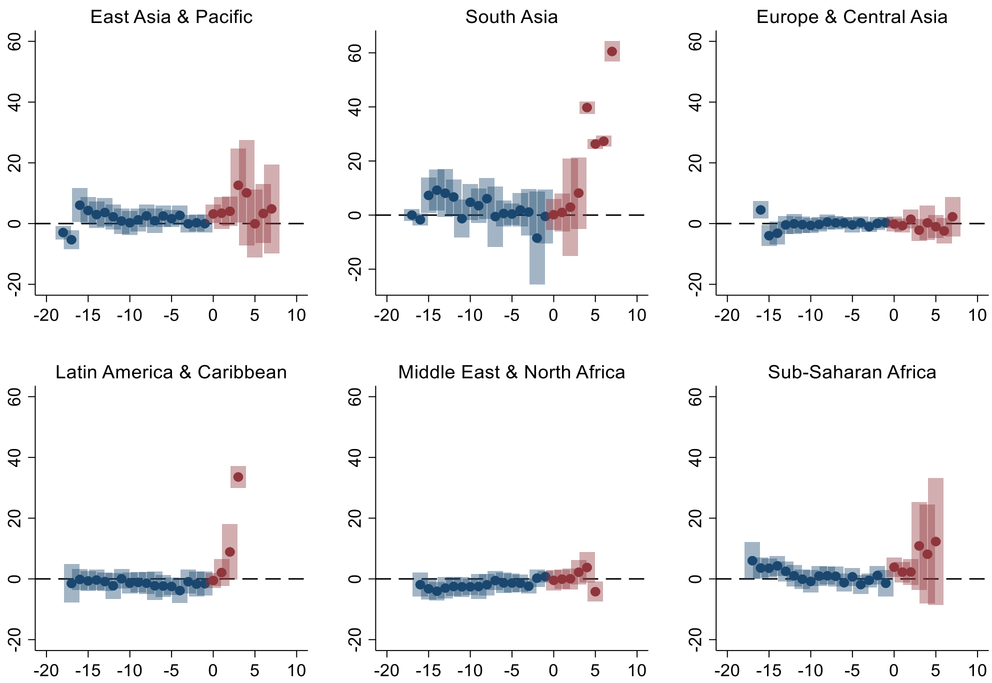
[9] This finding is robust to the alternative specifications. The results can be provided upon request.
[10] Appendix D provides dynamic analyses by income group.

Table 6
BRI effects on Chinese overseas infrastructure projects

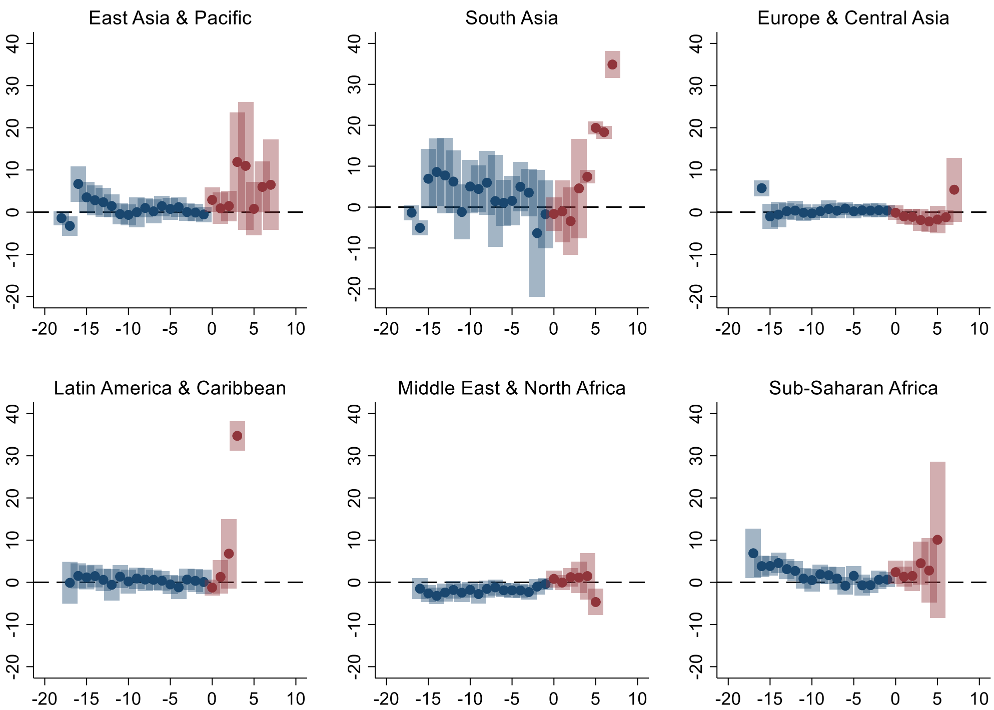
Outcome variables:	All projects	Aid-based projects	Debt-financed projects
	(1)	(2)	(3)
Average treatment effects	2.925**	1.725**	1.123**
	(1.186)	(0.846)	(0.551)
By region			
East Asia and the Pacific	5.096*	4.189**	0.687
	(2.639)	(1.935)	(1.010)
South Asia	9.271	3.220	5.470
	(8.086)	(4.361)	(3.518)
Europe and Central Asia	–0.345	–1.010	0.736
	(1.311)	(0.906)	(0.893)
Latin America and the Caribbean	3.698*	2.651	0.491
	(2.237)	(2.047)	(0.529)
Middle East and North Africa	0.244	0.630	0.382
	(1.557)	(0.909)	(0.753)
Sub-Saharan Africa	3.812*	2.249*	1.430
	(1.999)	(1.230)	(1.058)
By income group			
Upper middle income	2.517	0.964	1.533*
	(1.536)	(0.983)	(0.793)
Lower middle income	3.883**	2.699**	1.143
	(1.935)	(1.300)	(0.870)
Low income	1.118	1.009	–0.281
	(1.306)	(1.110)	(0.653)

Notes: This table presents the results of estimating Eq. (1) when the number of all Chinese overseas infrastructure projects, the number of Chinese aid-based projects, and the number of Chinese debt-financed projects, are used as the outcome variables. All specifications are based on the baseline specification, including only never-treated countries as the control group and excluding covariates. Standard errors are robust to heteroscedasticity and clustered at the country level.
***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Panel A. All projects



Panel B. Aid-based projects



Panel C. Debt-financed projects

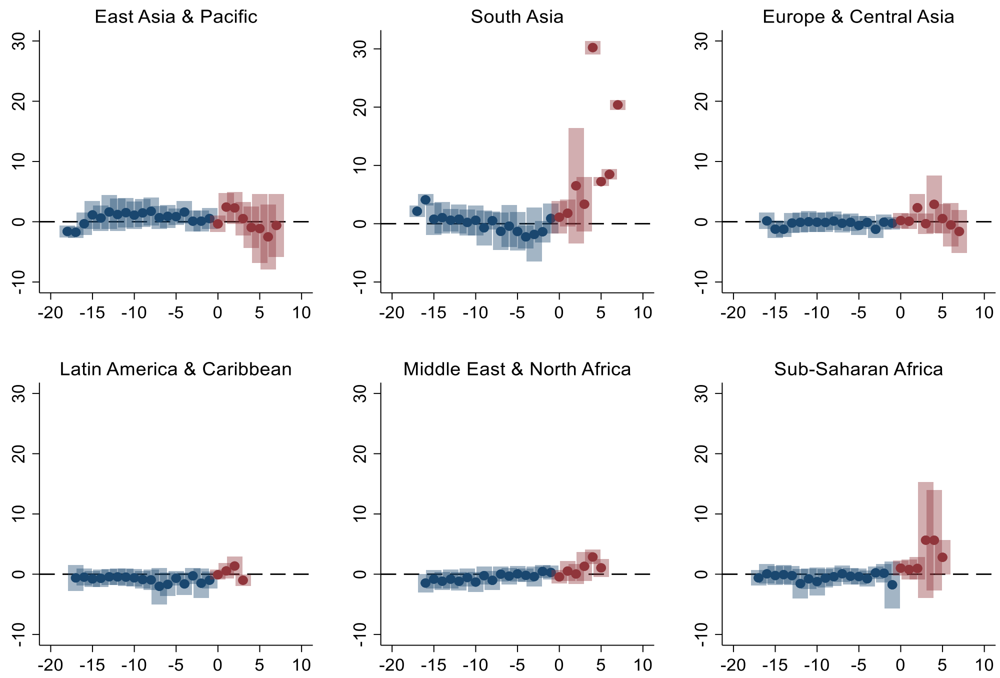


Fig. 7. Dynamic BRI effects on Chinese overseas infrastructure projects by region

Notes: The figures present the event-study results of estimating Eq. (2) by region when the number of all Chinese overseas infrastructure projects, the number of Chinese aid-based projects, and the number of Chinese debt-financed projects are used as the outcome variables. For additional information, see the notes in Figure 4.

Finally, we examine the direct link of Chinese overseas projects with Japanese overseas infrastructure projects and with foreign political leaders' visits to Japan. To do so, we estimate fixed effects models, incorporating covariates such as log GDP per capita and log population. The sample period is restricted to 2013–2020 to focus on the post-BRI participation period while retaining the 138 sample countries. Appendix E presents the results. Column 1 reveals a statistically significant negative association between Japanese overseas infrastructure projects and the number of aid-based Chinese projects, whereas no significant relationship for debt-financed projects is observed. Column 2 shows that foreign political leaders' visits to Japan are negatively associated with aid-based projects but positively associated with debt-financed projects, although these results are not statistically significant. This suggestive evidence lends support to the notion that China strategically employs aid as a tool to advance its foreign policy objectives.

6. Conclusion

This paper aimed to examine the impact of the BRI on Japanese overseas infrastructure investments and diplomatic relations with BRI countries. Using a staggered DD research design and a panel dataset covering 138 low- and middle-income countries from 2001 to 2020, we find that the BRI displaced Japanese overseas infrastructure projects and reduced visits by political leaders from BRI countries to Japan. These effects were most pronounced in the East Asia and the Pacific and South Asia regions, where competition between Japan and China for infrastructure investments is particularly intense. Moreover, we identify the expansion of Chinese overseas infrastructure projects—primarily aid based rather than debt financed—as a key driver of these outcomes.

We find no substantial evidence that the BRI influenced Japanese ODA commitments or overseas visits by Japanese political leaders to BRI countries. This result suggests that Japan did not fully leverage its foreign policy tools in response to the BRI. Since ODA and political leaders' overseas visits are effective in advancing Japanese overseas infrastructure investments (Nishitateno and Umetani, 2023; Nishitateno, 2024a, 2024b), enhancing these diplomatic efforts could prove beneficial for protecting Japan's economic, political, and security interests amid the country's infrastructure investment competition with China.

Generalizing these findings requires caution. Owing to data limitations, our analysis used project counts rather than values to measure the scale of Japanese and Chinese overseas infrastructure projects. Given the varying time trends and cross-sectional variations, it is uncertain whether value-based data would yield similar conclusions. Moreover, the applicability of the case of Japan to other Western nations remains unclear, as their economic and foreign policies differ significantly. For example, while Japan adopts a balanced approach of engagement with China, the US takes a more confrontational stance, focusing on competition and deterrence. Additionally, our analysis did not account for the operation and maintenance phases of infrastructure projects, which limits its ability to capture the entire value chain. These limitations underscore the need for further research.

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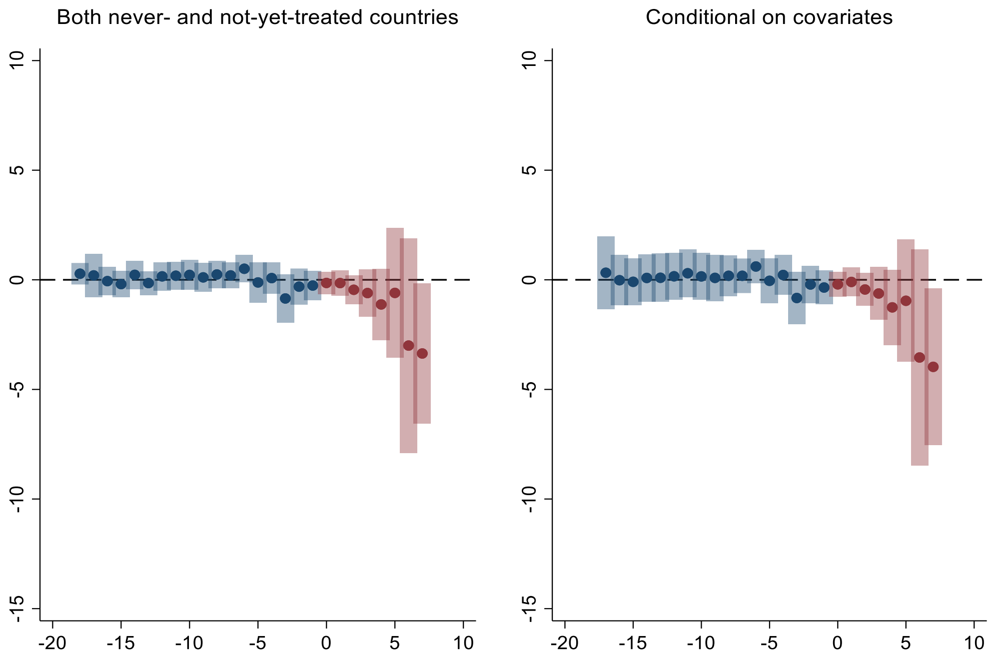
Appendix A. List of countries in our sample

	Country	Region	Income group	Year of participating BRI
1	Belarus	Europe & Central Asia	Upper middle income	2013
2	Cambodia	East Asia & Pacific	Lower middle income	2013
3	China	East Asia & Pacific	Upper middle income	2013
4	Kyrgyz Republic	Europe & Central Asia	Lower middle income	2013
5	Moldova	Europe & Central Asia	Upper middle income	2013
6	Mongolia	East Asia & Pacific	Lower middle income	2013
7	North Macedonia	Europe & Central Asia	Upper middle income	2013
8	Pakistan	South Asia	Lower middle income	2013
9	Thailand	East Asia & Pacific	Upper middle income	2014
10	Armenia	Europe & Central Asia	Upper middle income	2015
11	Azerbaijan	Europe & Central Asia	Upper middle income	2015
12	Bulgaria	Europe & Central Asia	Upper middle income	2015
13	Cameroon	Sub-Saharan Africa	Lower middle income	2015
14	Comoros	Sub-Saharan Africa	Lower middle income	2015
15	Indonesia	East Asia & Pacific	Lower middle income	2015
16	Iraq	Middle East & North Africa	Upper middle income	2015
17	Kazakhstan	Europe & Central Asia	Upper middle income	2015
18	Romania	Europe & Central Asia	Upper middle income	2015
19	Serbia	Europe & Central Asia	Upper middle income	2015
20	Somalia	Sub-Saharan Africa	Low income	2015
21	South Africa	Sub-Saharan Africa	Upper middle income	2015
22	Turkey	Europe & Central Asia	Upper middle income	2015
23	Uzbekistan	Europe & Central Asia	Lower middle income	2015
24	Egypt	Middle East & North Africa	Lower middle income	2016
25	Georgia	Europe & Central Asia	Upper middle income	2016
26	Myanmar	East Asia & Pacific	Lower middle income	2016
27	Papua New Guinea	East Asia & Pacific	Lower middle income	2016
28	Albania	Europe & Central Asia	Upper middle income	2017
29	Bosnia and Herzegovina	Europe & Central Asia	Upper middle income	2017
30	Côte d'Ivoire	Sub-Saharan Africa	Lower middle income	2017
31	Kenya	Sub-Saharan Africa	Lower middle income	2017
32	Lebanon	Middle East & North Africa	Upper middle income	2017
33	Madagascar	Sub-Saharan Africa	Low income	2017
34	Malaysia	East Asia & Pacific	Upper middle income	2017
35	Maldives	South Asia	Upper middle income	2017
36	Montenegro	Europe & Central Asia	Upper middle income	2017
37	Morocco	Middle East & North Africa	Lower middle income	2017
38	Nepal	South Asia	Lower middle income	2017
39	Panama	Latin America & Caribbean	Upper middle income	2017
40	Philippines	East Asia & Pacific	Lower middle income	2017
41	Sri Lanka	South Asia	Lower middle income	2017
42	Timor-Leste	East Asia & Pacific	Lower middle income	2017
43	Turkmenistan	Europe & Central Asia	Upper middle income	2017
44	Ukraine	Europe & Central Asia	Lower middle income	2017
45	Vietnam	East Asia & Pacific	Lower middle income	2017
46	Yemen	Middle East & North Africa	Low income	2017
47	Algeria	Middle East & North Africa	Lower middle income	2018
48	Angola	Sub-Saharan Africa	Lower middle income	2018
49	Benin	Sub-Saharan Africa	Lower middle income	2018
50	Bolivia	Latin America & Caribbean	Lower middle income	2018
51	Burundi	Sub-Saharan Africa	Low income	2018
52	Cabo Verde	Sub-Saharan Africa	Lower middle income	2018
53	Chad	Sub-Saharan Africa	Low income	2018
54	Costa Rica	Latin America & Caribbean	Upper middle income	2018
55	Djibouti	Middle East & North Africa	Lower middle income	2018

56	Dominica	Latin America & Caribbean	Upper middle income	2018
57	Ecuador	Latin America & Caribbean	Upper middle income	2018
58	El Salvador	Latin America & Caribbean	Lower middle income	2018
59	Ethiopia	Sub-Saharan Africa	Low income	2018
60	Fiji	East Asia & Pacific	Upper middle income	2018
61	Gabon	Sub-Saharan Africa	Upper middle income	2018
62	Ghana	Sub-Saharan Africa	Lower middle income	2018
63	Grenada	Latin America & Caribbean	Upper middle income	2018
64	Guinea	Sub-Saharan Africa	Low income	2018
65	Guyana	Latin America & Caribbean	Upper middle income	2018
66	Iran	Middle East & North Africa	Lower middle income	2018
67	Lao PDR	East Asia & Pacific	Lower middle income	2018
68	Libya	Middle East & North Africa	Upper middle income	2018
69	Mauritania	Sub-Saharan Africa	Lower middle income	2018
70	Micronesia	East Asia & Pacific	Lower middle income	2018
71	Mozambique	Sub-Saharan Africa	Low income	2018
72	Namibia	Sub-Saharan Africa	Upper middle income	2018
73	Nigeria	Sub-Saharan Africa	Lower middle income	2018
74	Rwanda	Sub-Saharan Africa	Low income	2018
75	Samoa	East Asia & Pacific	Lower middle income	2018
76	Senegal	Sub-Saharan Africa	Lower middle income	2018
77	Sierra Leone	Sub-Saharan Africa	Low income	2018
78	South Sudan	Sub-Saharan Africa	Low income	2018
79	Sudan	Sub-Saharan Africa	Low income	2018
80	Suriname	Latin America & Caribbean	Upper middle income	2018
81	Tajikistan	Europe & Central Asia	Lower middle income	2018
82	Tanzania	Sub-Saharan Africa	Lower middle income	2018
83	The Gambia	Sub-Saharan Africa	Low income	2018
84	Togo	Sub-Saharan Africa	Low income	2018
85	Tonga	East Asia & Pacific	Upper middle income	2018
86	Tunisia	Middle East & North Africa	Lower middle income	2018
87	Uganda	Sub-Saharan Africa	Low income	2018
88	Vanuatu	East Asia & Pacific	Lower middle income	2018
89	Venezuela	Latin America & Caribbean	Upper middle income	2018
90	Zambia	Sub-Saharan Africa	Lower middle income	2018
91	Zimbabwe	Sub-Saharan Africa	Lower middle income	2018
92	Bangladesh	South Asia	Lower middle income	2019
93	Cuba	Latin America & Caribbean	Upper middle income	2019
94	Dominican Republic	Latin America & Caribbean	Upper middle income	2019
95	Equatorial Guinea	Sub-Saharan Africa	Upper middle income	2019
96	Jamaica	Latin America & Caribbean	Upper middle income	2019
97	Lesotho	Sub-Saharan Africa	Lower middle income	2019
98	Liberia	Sub-Saharan Africa	Low income	2019
99	Mali	Sub-Saharan Africa	Low income	2019
100	Peru	Latin America & Caribbean	Upper middle income	2019
101	Solomon Islands	East Asia & Pacific	Lower middle income	2019
102	Kiribati	East Asia & Pacific	Lower middle income	2020
103	Afghanistan	South Asia	Low income	
104	American Samoa	East Asia & Pacific	Upper middle income	
105	Argentina	Latin America & Caribbean	Upper middle income	
106	Belize	Latin America & Caribbean	Lower middle income	
107	Bhutan	South Asia	Lower middle income	
108	Botswana	Sub-Saharan Africa	Upper middle income	
109	Brazil	Latin America & Caribbean	Upper middle income	
110	Burkina Faso	Sub-Saharan Africa	Low income	
111	Central African Republic	Sub-Saharan Africa	Low income	
112	Colombia	Latin America & Caribbean	Upper middle income	
113	Congo	Sub-Saharan Africa	Lower middle income	

114	Dem. People's Rep. Korea	East Asia & Pacific	Low income
115	Dem. Rep. Congo	Sub-Saharan Africa	Low income
116	Eritrea	Sub-Saharan Africa	Low income
117	Eswatini	Sub-Saharan Africa	Lower middle income
118	Guatemala	Latin America & Caribbean	Upper middle income
119	Guinea-Bissau	Sub-Saharan Africa	Low income
120	Haiti	Latin America & Caribbean	Lower middle income
121	Honduras	Latin America & Caribbean	Lower middle income
122	India	South Asia	Lower middle income
123	Jordan	Middle East & North Africa	Upper middle income
124	Kosovo	Europe & Central Asia	Upper middle income
125	Malawi	Sub-Saharan Africa	Low income
126	Marshall Islands	East Asia & Pacific	Upper middle income
127	Mauritius	Sub-Saharan Africa	Upper middle income
128	Mexico	Latin America & Caribbean	Upper middle income
129	Nicaragua	Latin America & Caribbean	Lower middle income
130	Niger	Sub-Saharan Africa	Low income
131	Paraguay	Latin America & Caribbean	Upper middle income
132	Russia	Europe & Central Asia	Upper middle income
133	São Tomé and Principe	Sub-Saharan Africa	Lower middle income
134	St. Lucia	Latin America & Caribbean	Upper middle income
135	St. Vincent and the Grenadines	Latin America & Caribbean	Upper middle income
136	Syrian Arab Republic	Middle East & North Africa	Low income
137	Tuvalu	East Asia & Pacific	Upper middle income
138	West Bank and Gaza	Middle East & North Africa	Lower middle income

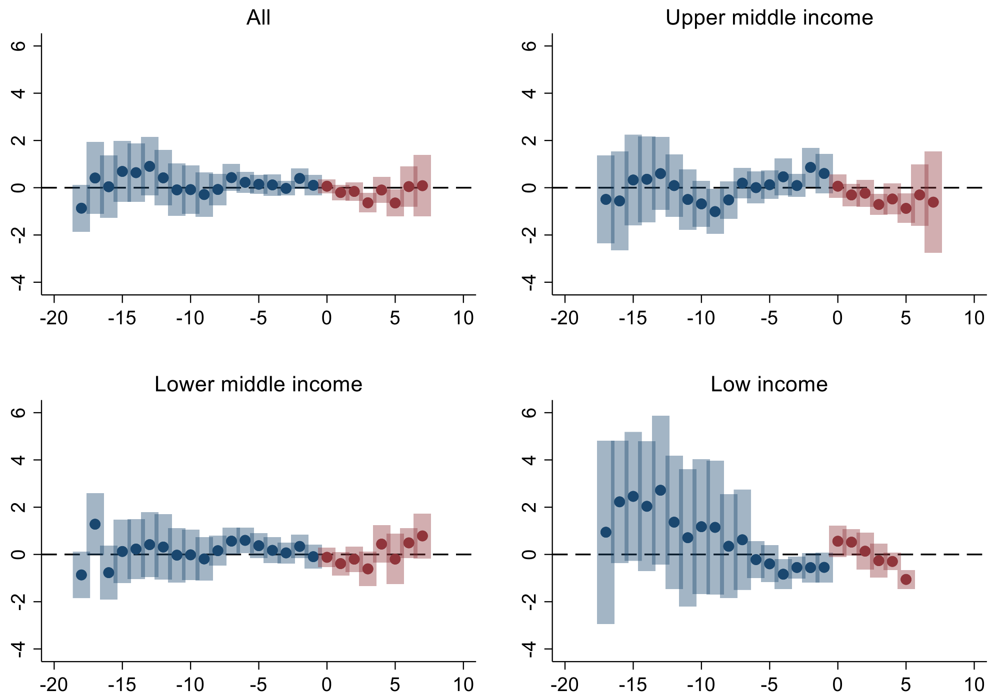
Appendix B. Dynamic BRI effects on Japanese overseas infrastructure projects using alternative specifications



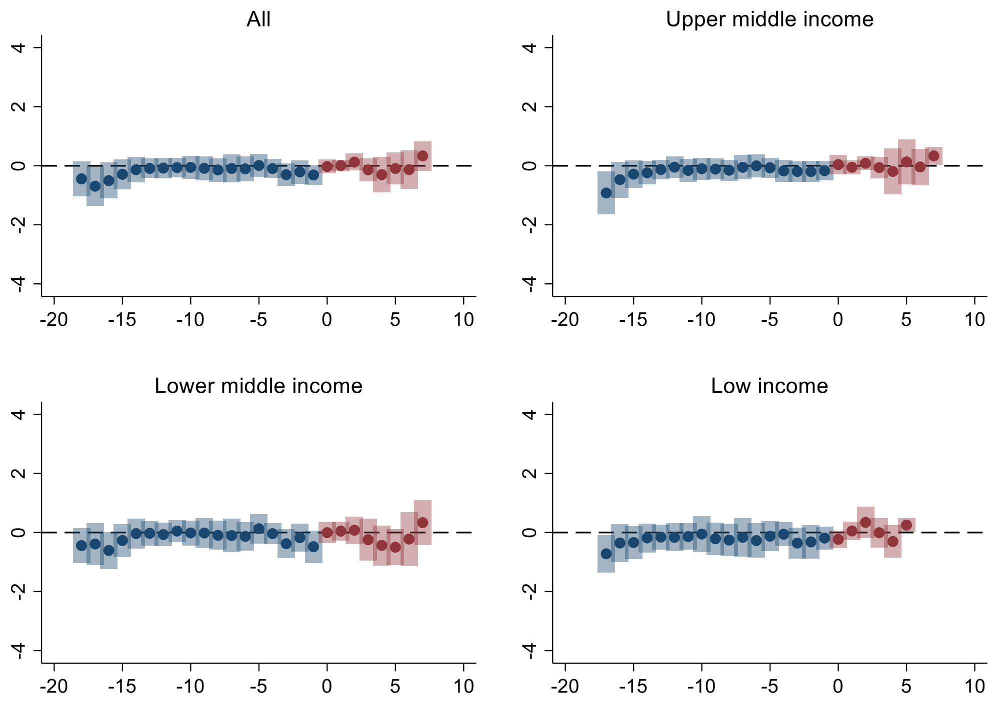
Notes: The figures present the event-study results for Eq. (2) on the basis of alternative specifications. For additional information on the alternative specifications, see the notes in Table 2.

Appendix C. Dynamic BRI effects on Japanese diplomatic outcomes by income group

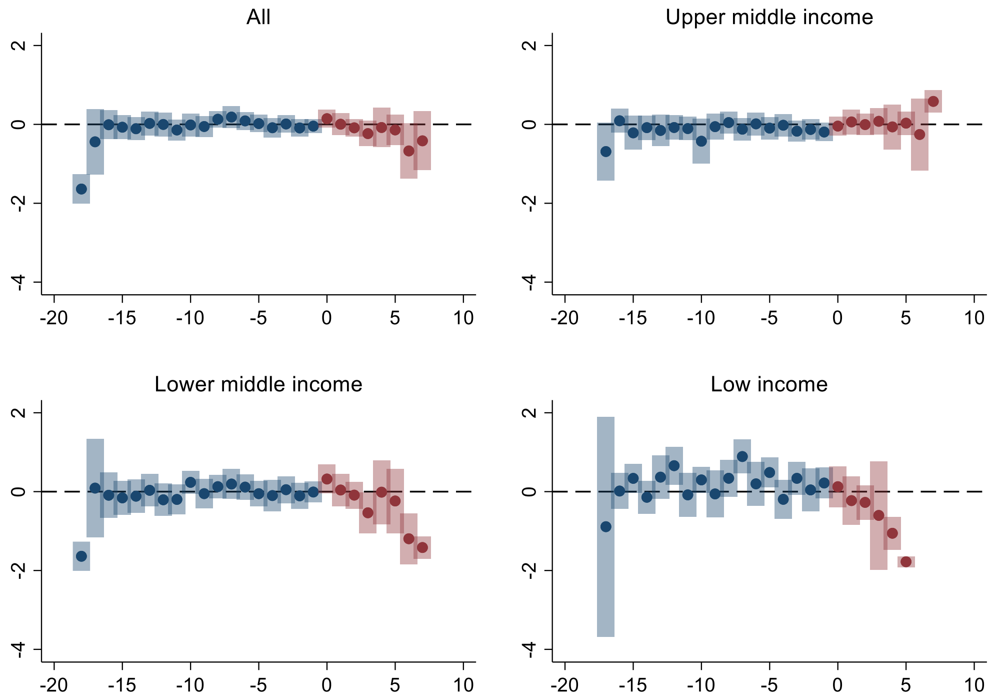
Panel A. Japanese ODA commitments



Panel B. Overseas visits by Japanese political leaders



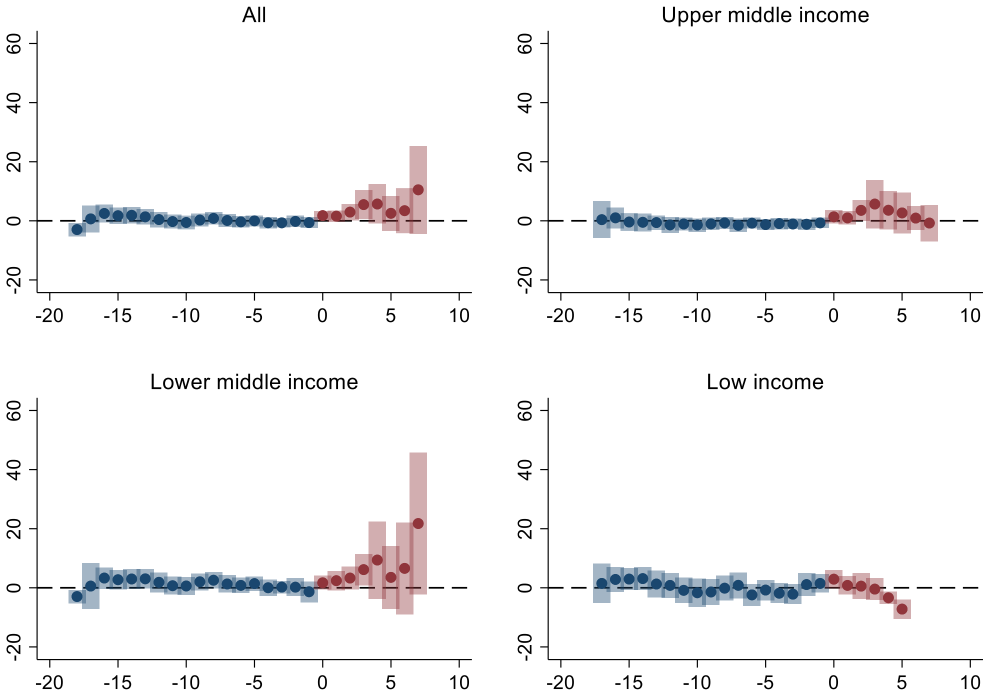
Panel C. Foreign political leaders' visits to Japan



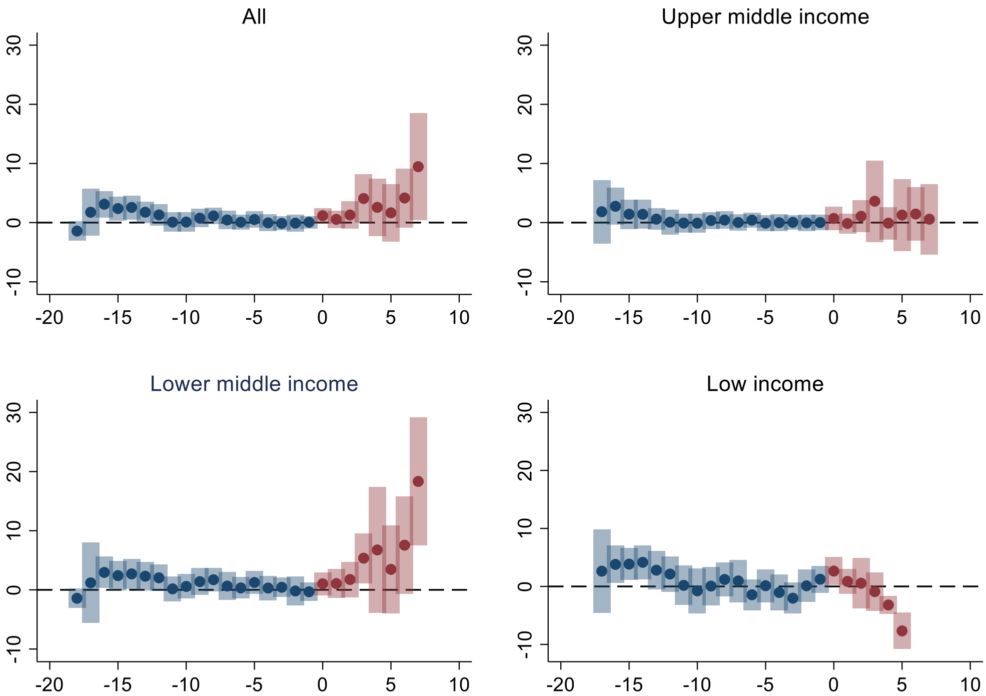
Notes: The figures present the event-study results for Eq. (2) by income group where Japanese ODA commitments, overseas visits by Japanese political leaders, and foreign political leaders' visits to Japan are used as the outcome variables. For additional information, see the notes in Figure 5.

Appendix D. Dynamic BRI effects on Chinese overseas projects by income group

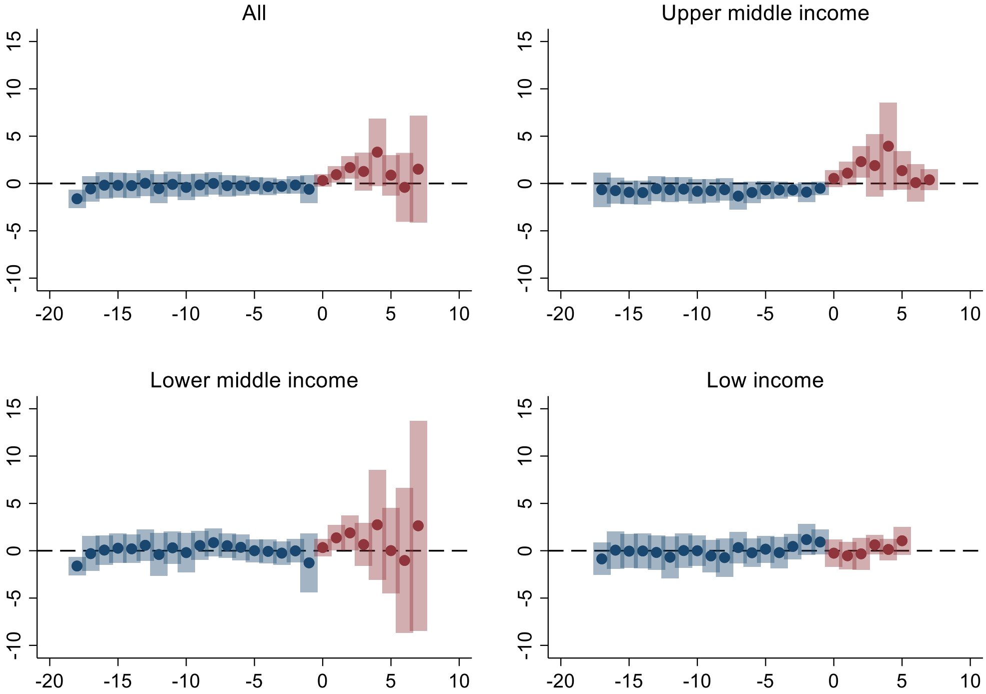
Panel A. All Chinese projects



Panel B. Aid-based projects



Panel C. Debt-financed projects



Notes: The figures present the event-study results for Eq. (2) by income group where Chinese overseas projects, aid-based projects and debt-financed projects are used as the outcome variables. For additional information, see the notes in Figure 5.

Appendix E. Effects of Chinese overseas projects

Outcomes:	Japanese overseas infrastructure projects	Foreign political leaders' visits to Japan
	(1)	(2)
All Chinese projects	−0.016	0.002
	(0.010)	(0.003)
R^2	0.752	0.492
Aid-based projects	−0.023*	−0.001
	(0.013)	(0.004)
R^2	0.752	0.492
Debt-financed projects	0.002	0.001
	(0.018)	(0.006)
R^2	0.751	0.492
Year fixed effects	Yes	Yes
Country fixed effects	Yes	Yes
Covariates	Yes	Yes
Countries	138	138
Years	2013–2020	2013–2021
Observations	1,096	1,096

Notes: This table presents the results of estimating fixed effects models, where Japanese overseas infrastructure projects and foreign political leaders' visits to Japan are used as the outcome variables. The covariates include log GDP per capita and log population. Standard errors are robust to heteroscedasticity and are clustered at the country level.
***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.