



Full length article

# Individual preferences toward inward foreign direct investment: A survey experiment<sup>☆</sup>

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## ABSTRACT

In democratic societies, public attitudes toward foreign direct investment (FDI) can influence FDI policy as in other policy areas but have been largely ignored in FDI literature. To bridge this gap, we investigate individual preferences toward inward FDI. We employ a conjoint (vignette) survey experiment and analyze the determinants of preferences toward acquisitions by foreign firms. Conjoint survey experiments allow us to simultaneously estimate the effects of various attributes of foreign acquisitions, enabling us to analyze the complex causal relationships between various attributes of an acquisition project and people's antipathy toward it. The results of the experiment show that the nationality of the foreign firm, reciprocity, and the economic conditions of the location of the firm being acquired are important factors. The subgroup analysis shows that older respondents and women are more negative about inward FDI. We also employ the gravity equation and confirm that our survey results are in line with the actual pattern of inward FDI stock.

## 1. Introduction

In democratic societies, the public's attitude toward foreign direct investment (FDI) can influence policy. It is, therefore, important to investigate voters' policy preferences toward inward FDI. However, little is known about voters' FDI preferences. Investigating voters' preferences is important particularly in Japan because the inward FDI of Japan over its GDP (gross domestic product) is known to be the lowest among the developed countries. According to the Organization for Economic Co-operation and Development (OECD) statistics,<sup>1</sup> Japan's inward FDI stock accounted for only five percent of its GDP in 2020, well below the OECD average (55 percent) and the lowest among the OECD countries. However, the reasons for it have not yet been fully clarified (Hoshi & Kiyota, 2019). Several anecdotes indicate that the Japanese are resistant to inward FDI (Katz, 2021). The Japanese people are unwilling to accept foreign acquisitions, and politicians have often intervened in large foreign acquisitions such as the

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<sup>1</sup> OECD, *International Direct Investment Statistics* available at <https://data.oecd.org/fdi/fdi-stocks.htm>.

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Sharp acquisition by Hon Hai. Understanding the preferences of individuals towards inward FDI is crucial not only in Japan but also in various other Asian countries. This is because Asian countries have historically had stricter FDI regulations than other countries,<sup>2</sup> but liberalization reforms often face public opposition.<sup>3</sup>

Recently, Grossman and Helpman (2021) show that when voters' preferences over trade policy depend on both their own material self-interests and psychosocial component such as their identity, a psychosocial component can affect trade policies in a theoretical trade model. Similarly, preferences for FDI may also be influenced by psychosocial factors that do not depend on material self-interest. Our study identifies which psychosocial factors hinder inward FDI through survey experiments and derive policy implications to promote inward FDI.

Our study is the first study to use an experimental approach to analyze the factors that influence people's preferences toward inward FDI in Japan. In particular, we use a conjoint survey experiment to assess the multidimensional preferences of respondents. Employing a conjoint design can help not only quantify the causal effects of different attributes of an FDI project but also examine various hypotheses regarding respondents' preferences toward different attributes (Bansak, Hainmueller, Hopkins, & Yamamoto, 2021).

Although research on people's attitudes toward trade and immigration has progressed significantly over the past two decades, research on people's attitudes toward FDI is relatively scarce. Many studies have explored why people oppose trade and immigration. The pioneering works of Scheve and Slaughter (2001b) and Mayda and Rodrik (2005) indicate that factor endowment theory accounts for some of the individual trade-policy preferences. Similarly, several studies, such as (Scheve & Slaughter, 2001a) and Mayda (2006), illustrate that the predictions of factor endowment theory are consistent with individuals' preferences for immigration policy.

Harms and Schwab (2019) is one of the few exceptions that analyze people's attitudes toward FDI. They use data from a large international survey conducted by the International Social Survey Programme (ISSP) and reveal that both individual socioeconomic characteristics and macroeconomic and institutional factors shape people's attitudes toward multinational corporations. Daniels, Wang, and Wong (2016) also use data from the ISSP and find that women and the older tend to believe that the activities of multinational enterprises (MNEs) harm local businesses in their country, whereas higher-income, better-educated respondents do not tend to believe so. Both Harms and Schwab (2019) and Daniels et al. (2016) focus on people's views on MNEs' activities and do not explicitly analyze people's attitudes toward inward FDI or foreign acquisition. Using the survey data from the 2007 Pew Global Attitudes Project, Lee and Shin (2020) reveal that women view FDI more positively than men. Pandya (2010) use three years of public opinion data from eighteen Latin American countries and show that individual preferences for inward FDI are consistent with FDI's effects on income.

However, these prior studies have a major limitation in that they failed to estimate causal relationships, relying on non-experimental survey data. Our study contributes to the emerging literature on FDI preferences by identifying the causal relationship between various attributes of FDI projects and the aversion toward inward FDI with a survey experiment. Our study is close to that of Chilton, Milner, and Tingley (2020) in the sense that both studies employ vignette (conjoint) survey experiments, to identify multidimensional causal relationships. Chilton et al. (2020) use a conjoint survey experiment to analyze preferences toward inward FDI policy in the United States (US). They reveal that reciprocity is an important determinant of public opinion against FDI restrictions. Hence, we also examine whether reciprocity is at work in people's inward FDI preferences. However, our results suggest that aversion to certain countries, rather than reciprocity, is the more significant factor influencing preference for inward FDI. Furthermore, our study goes beyond Chilton et al. (2020) and other previous studies by employing state-of-the-art statistical methods. In particular, we utilize a novel estimator known as marginal means to test for subgroup differences. This allows us to provide a more nuanced understanding of the preferences toward inward FDI in different segments of the population. Additionally, we complement our survey findings by employing the gravity equation framework to examine the external validity of our results. This approach enhances the robustness and generalizability of our findings by analyzing the relationship between FDI preferences and actual FDI stocks. By incorporating these advanced statistical techniques, our study offers a significant methodological contribution to the field of FDI research. The methodology we employed is applicable to other countries where Inward FDI is generating controversy.

Our study employs an approach called the conjoint survey experiment developed in Hainmueller, Hopkins, and Yamamoto (2014).<sup>4</sup> Our experimental approach has significant advantages over the non-experimental survey method that Harms and Schwab (2019) and Daniels et al. (2016) use. Our approach can address problems such as multicollinearity and reverse causality problems, by randomly assigning the stimuli embedded in a survey. It can identify causal relationships between people's preferences for inward FDI and various factors responsible for those attitudes. Recently, research using experimental methods is increasing. Di Tella and

<sup>2</sup> The OECD's FDI Regulatory Restrictiveness Index (FDI Index) evaluates the legal limitations imposed on foreign direct investment across 69 countries, encompassing both OECD and G20 countries. This index is on a scale of 0 to 1, where 1 indicates the highest level of restrictions. Based on the FDI index, in 2020, Asian countries have an average FDI index of 0.168, whereas non-Asian countries have an average FDI index of 0.087, suggesting that Asian countries, on average, tend to impose stricter restrictions on inward FDI.

<sup>3</sup> For example, the Indonesian government has sought to ease FDI regulations but has faced opposition from voters. See Massola (2019) for more details.

<sup>4</sup> Strictly speaking, we use the "vignette" design rather than "conjoint" design. Some scholars distinguish a design that uses a randomly generated passage to convey hypothetical scenarios to respondents as in this study from a design that uses a table. The former is sometimes called a "vignette experiment" and is distinguished from a "conjoint experiment". However, in this paper, we tend to use both terms interchangeably. This is because the quantity of interest (i.e., the AMCE) is the same for both designs. Following Chilton et al. (2020), we used a vignette design, although Hainmueller, Hangartner, and Yamamoto (2015) show that, in terms of external validity, the conjoint design was superior to the vignette design.

Rodrik (2020) and Chatruc, Stein, and Vlaicu (2021) are influential studies that use experimental methods to explore the factors that influence people's preferences for trade policies.<sup>5</sup>

Experimental methods are used more extensively in international political economy than in international economics. Naoi (2020) reviews the literature and documents that non-experimental studies' findings on the backlash against globalization are inconsistent with those of survey experiments. The overwhelming majority of non-experimental studies, such as Dorn, Hanson, Majlesi, et al. (2020), support the economic interest hypothesis that the economic plight of voters is the driving force behind support for protectionism. However, most of the findings from survey experiments (e.g., Naoi & Kume, 2011) demonstrate that non-economic factors, such as nationalism and ethnocentrism, result in protectionism. One of the reasons why survey experiments have been widely used in the international political economy might be the development of statistical methods using survey experiments has progressed in the field of political science that has a strong research interest in voter preference. However, researchers in both fields have overlapping interests. We attempt to ensure the real-world validity of our results by using a combination of survey-experiment methods developed in the field of political science and gravity equations developed in the field of international economics.

We conduct a questionnaire survey of Japanese citizens to investigate their resistance to inward FDI in the form of acquisitions of domestic firms and provide quantitative analysis. We focus on cross-border M&A rather than greenfield FDI because the anecdotal evidence suggests that the Japanese have had a strong aversion to acquisitions by foreign firms rather than greenfield FDI (Katz, 2021). For example, Japanese media reports heated up about Sharp's acquisition by a Taiwanese company and Nissan's control by a French company in recent years. Acquisitions by foreign firms can differ in several dimensions, including foreign nationality and characteristics of the acquired Japanese firm. Our survey, therefore, asked each respondent whether they agreed or disagreed with various acquisitions of Japanese firms by foreign firms.

Given the Japanese government's recent focus on "economic security," we pay particular attention to the impact of the nationality of foreign firms on people's attitudes toward inward FDI.<sup>6</sup> Japan has territorial disputes with neighboring countries such as China, South Korea, and Russia, and inward FDI from these countries is relatively low as we explain below. In response to security concerns, the Japanese government introduced stricter restrictions on foreign firms' acquisition of Japanese firms in 2020. Our study finds that the nationality of a foreign firm is an important factor affecting FDI preferences as expected. While Japanese citizens tend to approve takeovers by firms from the US, they are reluctant to approve takeovers by Chinese, Korean, and Russian firms. This result corresponds to that in the US. Jensen and Lindstädt (2013) reveal that US citizens are more negative about inward FDI from China than from Japan or other countries.

Di Tella and Rodrik (2020) demonstrate that hypothetical reasons for economic distress affect respondents' attitudes toward support for protectionism in the US. By contrast, we find that the causes of economic distress do not change respondents' attitudes toward foreign acquisitions in Japan. We also find that respondents are positive about foreign firms' acquisition of Japanese firms located in areas with high unemployment. Finally, the results demonstrate that respondents are positive about the acquisition of Japanese firms by firms from countries open to Japanese FDI. This finding suggests that reciprocity is important for FDI preferences.

In addition, we examine whether our experimental results are consistent with real-world FDI. We use FDI stock data to estimate the gravity equation and find that inward FDI from China, Korea, and Russia is less than what would be expected from the gravity model. Furthermore, we show that people's attitudes toward inward FDI, i.e., estimates from the conjoint survey experiment improve the predictions of the gravity model. It indicates that including voters' preference toward FDI in the gravity models is an important research agenda.

The remainder of this paper is organized as follows. In Section 2, we provide an overview of the conjoint survey experiment. In Section 3, we explain the average marginal component effects (AMCE) and present the estimation results. In Section 4, we present analyses using marginal means. In Section 5, we employ the gravity equation and confirm that our survey results on the nationality of the foreign firm are in line with the actual pattern of inward FDI stock. In Section 6, we summarize our findings and discuss the implications for inward FDI policies.

## 2. Design of our vignette survey experiment

### 2.1. Vignette survey experiment

Inward FDI can vary with respect to various attributes, such as the nationality of the foreign firm and the characteristics of the acquired firm. Therefore, whether people agree or disagree with an FDI project depends on their assessment of its multidimensional attributes. Traditional causal inference methods, such as difference-in-differences analysis and propensity score matching, cannot reveal the multidimensional attributes to which people have a strong aversion. This is because they are limited to analyzing the average effect of one or two treatments.

<sup>5</sup> Unlike Di Tella and Rodrik (2020), who conducted a large online survey in the US using an ordinary approach to examine the impact of trade shocks on demand for protectionism, our paper utilizes a conjoint survey experiment to investigate preferences for FDI. In our study, respondents were presented with multiple hypothetical investment projects with randomly assigned profiles of attributes. This design allows us to estimate the Average Marginal Component Effect (AMCE) to assess the preferences for specific attributes of FDI projects. While Di Tella and Rodrik (2020) estimated the Average Treatment Effect on the Treated (ATT) by randomly assigning respondents to different treatment and control scenarios, our focus is on estimating the AMCE in the context of preferences for FDI.

<sup>6</sup> See Lewis and Slodkowski (2022) for Japan's recent FDI policy.

By contrast, vignette (conjoint) survey experiments allow us to estimate the effects of various attributes simultaneously, thus enabling us to analyze the complex causal relationships between the various attributes of an FDI project and the antipathy people have toward it.<sup>7</sup> In our vignette survey experiment, we present respondents with information about a hypothetical FDI project with various attributes. We, then, ask respondents to approve or disapprove of the hypothetical FDI project. Therefore, some readers may wonder about the external validity of our vignette survey experiment. The composition of the respondents in our vignette survey experiment followed census composition.<sup>8</sup> In addition, recent studies demonstrate that conjoint (vignette) survey experiments have external validity (Auerbach & Thachil, 2018; Hainmueller et al., 2015).

The attributes of the FDI projects faced by each respondent vary randomly. Randomization was performed independently for each respondent and attribute. Randomization allows us to quantify the attributes that causally increase or decrease the attractiveness of the FDI project, on average. Specifically, simple statistical methods, such as linear regression, can be employed to estimate causal effects, called the AMCE, to quantify the effects of attributes.

Another advantage of a conjoint (vignette) survey experiment is that it facilitates the quantification of the causal effects of socially sensitive attributes. Horiuchi, Markovich, and Yamamoto (2021) find that a conjoint survey experiment mitigates the bias of respondents to provide socially desirable answers. In our case, even if respondents dislike investment from China, they may hesitate to state their aversion honestly. However, by asking about the nationality of the foreign firm, along with several other attributes, the burden of answering the question is reduced.

## 2.2. Respondents

The Research Institute of Economy, Trade and Industry (RIETI) conducted an online survey on inward FDI from June 15–27, 2021, through a research agency, NTT Com Research. The survey targets were opt-in monitors registered with NTT Com Research and its partner companies.<sup>9</sup> It surveyed men and women aged 18–79 years, nationwide and designed the survey to align the gender, age, and residential area of respondents with the population structure of the 2015 Population Census by the Ministry of Internal Affairs and Communications. The total number of respondents to the survey was 2,423.<sup>10</sup> Statistical power in vignette experiments depends not only on the number of respondents but also on the number of tasks and the number of levels in each attribute. In this respect, our sample size is fairly comparable to those in past studies. Chilton et al. (2020), for example, conducted a vignette survey of a sample of 2,010 adults in the US. The number of tasks and the number of levels in each attribute in their study are similar to those in our study. In the Online Appendix, we present the number of respondents by region, age, and gender.

## 2.3. Experiment

After asking each respondent about their demographic characteristics, such as age and gender, we asked them whether they agreed or disagreed with the project of a foreign firm acquiring a Japanese firm. More specifically, each respondent was asked to approve or disapprove of five randomly selected projects out of 480 acquisitions with different attributes. Therefore, the number of observations was 12,115 (= 5 projects × 2,423 respondents). On average, 25.2 (= 12,115/480) respondents answered about a project.

Respondents had to answer yes or no for each FDI project. An example of the questions respondents faced is as follows:

[China] has been [receiving significant investment] from Japanese firms. Would you favor a project in [your area] in which a [Chinese] firm buys a [large firm] that has [advanced technology] and has suffered from [the earthquake]?<sup>11</sup>

Yes or No.

The attributes enclosed in brackets are randomly changed. Respondents were asked to respond to five FDI projects that varied in terms of acceptance of FDI from Japan, source country of FDI, reasons for the poor performance of the acquired firm, the technology level of the acquired firm, a region in which the acquired firm is located, and the size of the acquired firm. Table 1 illustrates the list of all the attributes. We generally followed previous studies such as Chilton et al. (2020) and Jensen and Lindstädt (2013) in our choice of attributes but we have adapted the causes of the slump and the source country options to the Japanese reality. It is known that the interpretations of the results of conjoint experiments are highly conditional on the experimental design. We choose the attributes and their levels after immense discussions with policymakers responsible for Japan's policy toward inward FDI.

<sup>7</sup> Vignette and conjoint surveys experiments have been conducted to identify people's preferences for immigrants and election candidates with multidimensional attributes (Bansak et al., 2021).

<sup>8</sup> Having said that, we cannot completely rule out that the respondents participating in an online survey are a biased sample in terms of IT skills and other unobservable characteristics. It is unclear in our survey design how bias in unobservable attributes of respondents affects their preference for inward FDI. Ideally, future research should examine whether there are differences in responses by conducting both online and offline surveys.

<sup>9</sup> The survey was approved by the review committee of RIETI in March 2021. The authors have submitted a confidentiality pledge to RIETI and have been granted access to survey data held by RIETI in accordance with its guidelines.

<sup>10</sup> The "Internet Survey on Japan's Foreign Economic Policy" conducted by RIETI includes three types of surveys A to C and the total number of respondents is 7,291. This paper uses Survey A, which has 2,423 respondents, while Ito, Tanaka, and Jinji (2023) use Surveys B and C.

<sup>11</sup> More complete vignette is presented in our Online Appendix.

**Table 1**  
Total number of combinations.

Treatment (attribute)	Options (level)	N
Acceptance of FDI	(1) Countries that have not accepted Japan's FDI (2) Countries that have accepted Japan's FDI	2
Country of origin	(1) Foreign country (2) United States (3) Russia (4) China (5) Korea	5
Cause of slump	(1) Failure of the management team (2) Earthquake disaster (3) Covid-19 (4) Increased imports	4
Technology	(1) General-purpose technology (2) Advanced technology	2
Region	(1) Japan (2) Areas with the highest unemployment rate (3) The area where you live	3
Firm size	(1) Large firm (2) Small-and-medium-sized firms	2
Total		480

We used independent uniform distribution for all the attributes because many previous studies employ a uniform distribution that equalizes the weights of each profile. However, the actual distribution of profiles in the real world is often far from uniform. [De la Cuesta, Egami, and Imai \(2022\)](#), recently, show that AMCE is critically dependent on the distribution of other attributes used for averaging. According to [De la Cuesta et al. \(2022\)](#), the mismatch between the uniform distribution and that of the real world can undermine the external validity of the conjoint analysis. In this respect, we estimate what they call “uniform AMCE (uAMCE)” that can be different from the “population AMCE” (pAMCE) that is averaged over the distribution of profile attributes in the population of interest. We attempt to partly address this issue by testing whether our estimated AMCE is consistent with the actual FDI stock in Section 5.

Our hypothetical scenarios include false statements as a result of our use of uniform distribution. For example, there are some false scenarios that the US and China have not been receiving significant investments from Japanese firms.<sup>12</sup> Although we have explained in advance that the FDI projects presented in the experiment are fictitious, we cannot rule out the possibility that the spurious scenario may have confused respondents. Future studies should mitigate ethical issues by fully debriefing respondents after the experiment.

The number of FDI projects favored is 3,200, whereas the number of FDI projects opposed is 8,915. Therefore, the overall approval rate for foreign acquisition is 26.4%. Our online appendix presents the average approval rate by respondents' demographics. In summary, we find the following results. (i) Younger respondents are more likely to favor a takeover by a foreign firm. (ii) Respondents with higher incomes are more likely to support acquisitions by foreign firms. (iii) Men are more likely than women to approve of acquisitions by foreign firms. (iv) College graduates are more likely than non-college graduates to favor acquisitions by foreign firms. (v) Respondents in the Kanto region, including Tokyo, are most likely to approve of a takeover by a foreign firm. By contrast, respondents from Hokkaido and Shikoku regions are the least likely to favor a takeover by a foreign firm.

### 3. Results: AMCEs

#### 3.1. AMCEs

In this section, we present the AMCEs obtained from our vignette survey experiment. The AMCE is the treatment effect of some attribute level compared to the baseline “averaged over the joint distribution of the remaining attributes” ([Hainmueller et al., 2014](#), p.10), depending on which attributes and levels are implemented in conjoint tables or vignettes. In our study, AMCE measures the extent to which a change in one attribute of an FDI project increases or decreases respondents' support for the FDI project relative to the baseline, averaged across all respondents and other attributes. Therefore, AMCE is distinct from the average treatment effect (ATT) identified in ordinary survey experiments. In a typical survey experiment, the ATT is estimated by comparing the treatment

<sup>12</sup> The share of these false vignettes is 19.66%. To address the issue of the false statement, we estimate AMCEs using the sample of respondents who did not receive false information and obtain qualitatively similar results in [Fig. B.1](#) to the baseline results of [Fig. 1](#).

and control groups. For example, ATT will identify whether learning opportunities change support for FDI projects by comparing a treatment group with opportunities to learn about the benefits of inward FDI with a control group without opportunities to learn. Unlike such an ordinary experiment, our survey experiment does not divide respondents into treatment and control groups but instead presents each respondent with several potential FDI projects with varying attributes. We then estimate the AMCEs using the respondents' evaluation of FDI projects.

AMCEs have been used in many studies in the field of political science, as reviewed in [Bansak et al. \(2021\)](#). AMCEs reveal the relative influence of each attribute value on the resulting choice or rating. [Hainmueller et al. \(2014\)](#) demonstrate that identifying and estimating the AMCE from observed data is possible from a conjoint experiment because of the random assignment of the attributes. In our study, AMCEs represent the expected change in the approval rate of an FDI profile when a given attribute value is compared to the baseline. We can identify AMCEs nonparametrically if the attributes are independently randomized. This is called randomization of the profiles assumption in [Hainmueller et al. \(2014\)](#). Our experimental design satisfies this requirement.<sup>13</sup>

In our experiment, the outcome is a binary variable,  $approve_{ijk}$ , which takes the value of one if respondent  $i$  approves an FDI project  $j$  with various attributes in the  $k$ th question, and zero otherwise. We can estimate AMCEs by regressing the outcome variable on indicator variables for each attribute value. For example, we can obtain AMCEs for the nationality of foreign firms by running the following regression:

$$approve_{ijk} = \beta_0 + \beta_1 China_{ijk} + \beta_2 Korea_{ijk} + \beta_3 Russia_{ijk} + \beta_4 US_{ijk} + \epsilon_{ijk} \quad (1)$$

where  $China_{ijk}$ ,  $Korea_{ijk}$ ,  $Russia_{ijk}$ , and  $US_{ijk}$  are indicator variables for source country of foreign firms. We set "foreign country" as the reference category. [Hainmueller et al. \(2014\)](#) illustrate that we can obtain the equivalent estimates of AMCEs by running a single regression of  $approve_{ijk}$  on the combined sets of dummies for all FDI attributes. We adopt this estimation approach and cluster the standard errors by a respondent to address the possible non-independence of the evaluation from the same respondent.

### 3.2. Baseline results

[Fig. 1](#) depicts the estimated AMCEs and 95% confidence intervals for each attribute value.<sup>14</sup> [Fig. 1](#) illustrates how the approval rate for acquisitions by foreign firms varies with the attributes of the FDI project. First, [Fig. 1](#) shows that respondents change their attitudes toward acquisition projects depending on the location of the firm being acquired by the foreign firm. The respondents tend to be positive about foreign acquisitions of firms located in areas with high unemployment. The approval rate for foreign firms to acquire firms in regions with high unemployment rates is approximately 8 percentage points higher than that in Japan as a whole. The impact of "Your town" is not statistically significant. One possible interpretation for it is whether the acquired firm is located in the region where the respondent lives have little effect on the rate of approval for the acquisition project. However, if respondents imagined that the acquired firm would come to their town, based on the vague baseline information "Japan," this interpretation does not necessarily hold.

As evident from [Fig. 1](#), the country of origin matters significantly for inward FDI preferences. Respondents are more likely to oppose Chinese, Korean, and Russian firms acquiring Japanese firms. Compared with the approval rate for acquisitions by foreign firms in general, the approval rates for acquisitions by Chinese, Korean, and Russian firms are 17, 13, and 12 percentage points lower, respectively. On the contrary, respondents are positive about acquisitions by US firms. The percentage in favor of acquisitions by US firms is 5.6 percentage points higher than that in favor of acquisitions by foreign firms in general.

Respondents are more likely to favor acquisitions by firms from countries that have been open to Japanese FDI. The approval rate for acquisitions by firms from countries that have actively accepted FDI from Japan is 3.6 percentage points higher than that for acquisitions by firms from countries that have not received much FDI from Japan. This result suggests that reciprocity is important and is consistent with the existing research in the US ([Chilton et al., 2020](#)). Behavioral economists have found that humans act on the basis of reciprocity in some cases rather than pure self-interest alone ([Fehr & Gächter, 2000](#); [Fehr & Schmidt, 2006](#); [Malmendier, te Velde, & Weber, 2014](#); [Sobel, 2005](#)). We need to consider the possibility of deviation of real-world FDI from the standard self-interest models of FDI because our findings reveal that reciprocity matters even in international economic relationships.

We also find that respondents tend to be more opposed to foreign acquisitions of firms with advanced technology than those of firms with general-purpose technology. The approval rate for foreign acquisitions of firms with advanced technology was 1.7 percentage points lower than that for foreign acquisitions of firms with general-purpose technology. The 95% confidence interval for the foreign acquisitions of firms with advanced technology is away from zero in [Fig. 1](#).

The reason for the deterioration in the acquired firm's performance does not change the respondents' approval rate for foreign acquisitions. More specifically, we set "earthquake" as our baseline because a geological natural disaster is an exogenous and unpredictable one-shot event for a firm, and compare the AMCEs for each reason. The results indicate that respondents' attitudes toward foreign acquisitions do not significantly change because the 95% confidence interval overlaps with zero in [Fig. 1](#), regardless of whether the cause of the acquired firm's poor performance is "coronavirus disease 2019 (COVID-19)," "increased imports," or

<sup>13</sup> [Hainmueller et al. \(2014\)](#) show that the additional two assumptions are required for the identification of AMCEs. The first assumption is the "stability and no carryover effects assumption" that potential outcomes remained stable over time across tasks, and treatments given to a respondent on other tasks did not affect that respondent's outcome on the current task. The second assumption is the "no profile-order effects" assumption that the order of profiles within a task does not affect responses.

<sup>14</sup> [Table A.1](#) shows estimation results for [Fig. 1](#).

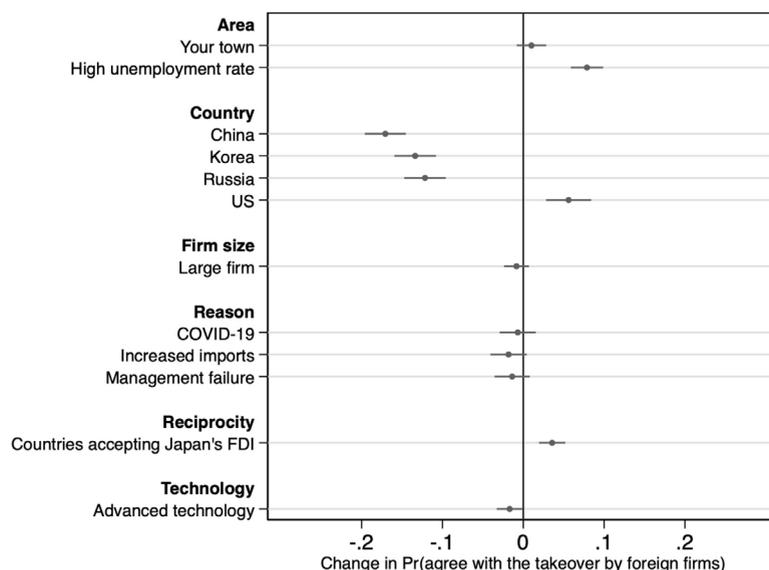


Fig. 1. Average marginal component effects (AMCEs) of inward FDI project attributes in the conjoint experiment.

Note: The dots show how much a change in a category causes a change in the probability to agree with a foreign takeover. The dots are point estimates of AMCEs and the lines from the dots indicate 95% confidence intervals. The reference category of each attribute is Japan for “Area,” foreign country for “Country,” small-and-medium-sized firms for “Firm size,” Earthquake disaster for “Reason (cause of slump),” countries that have not accepted Japan’s FDI for “Reciprocity,” and general-purpose technology for “Technology.”

“management failure.” This result contrasts with the findings of Di Tella and Rodrik (2020) that trade shocks increase support for protectionism in the US.

Differences in the size of the acquired firm also had no significant effect on respondents’ approval rate for foreign acquisitions. In recent years, according to media reports, the Japanese government has been reluctant to allow foreign firms to acquire giant manufacturing firms, such as Sharp and Toshiba (Dooley, 2021). However, the hypothesis that respondents are more negative toward foreign acquisitions of large firms than toward foreign acquisitions of small firms has no statistically significant evidence because the 95% confidence interval crosses zero.

### 3.3. Robustness check

One of the necessary assumptions for identifying the AMCE is that there are no carryover effects (Hainmueller et al., 2014). However, this assumption might be violated in our experiment for at least two reasons. First, some respondents could have received contradictory information in answering questions about the five hypothetical FDI projects, which might have confused their judgment. For example, the first vignette could say China has been receiving significant investment from Japanese firms, while the second one could say China has not been receiving significant investment from Japanese firms. It results in the violation of the no-carryover-effects assumption.

Second, the vague information design in our experiment might result in the violation of the no-carryover-effects assumption because our study’s conjoint design included attributes whose levels are not mutually exclusive. Specifically, the level “foreign country” in the attribute “country of origin” includes the possibility of countries specified as other levels. That is, some respondents who received the “foreign country” treatment could imagine that the “foreign country” in question is, for example, the US. This design may be responsible for the violation of the no-carryover-effects assumption because respondents who first received concrete information might be influenced by that information when they received vague information in subsequent tasks.

To address the possibility that our experiment might violate the no-carryover-effects assumption, we estimate the AMCEs using the data only from the first task of each respondent, as (Hainmueller et al., 2014) recommended. The results of this robustness analysis are shown in Fig. 2. Figs. 1 and 2 show similar tendency but the 95% confidence intervals tend to be wider in Fig. 2. As a result, the impact of reciprocity is no longer statistically significant. While the positive impact of the US is no longer statistically significant, the negative impact of China, Korea, and Russia remains statistically significant. The results clearly indicate that respondents’ negative attitudes toward investment by Chinese, Korean, and Russian firms are quite persistent.

## 4. Marginal means

### 4.1. Relation between marginal means and AMCEs

So far, we have estimated AMCEs using the full sample of respondents. Our respondents, as already noted, varied in age, gender, and place of residence to be representative of the Japanese population as a whole. It is an interesting question whether respondents’

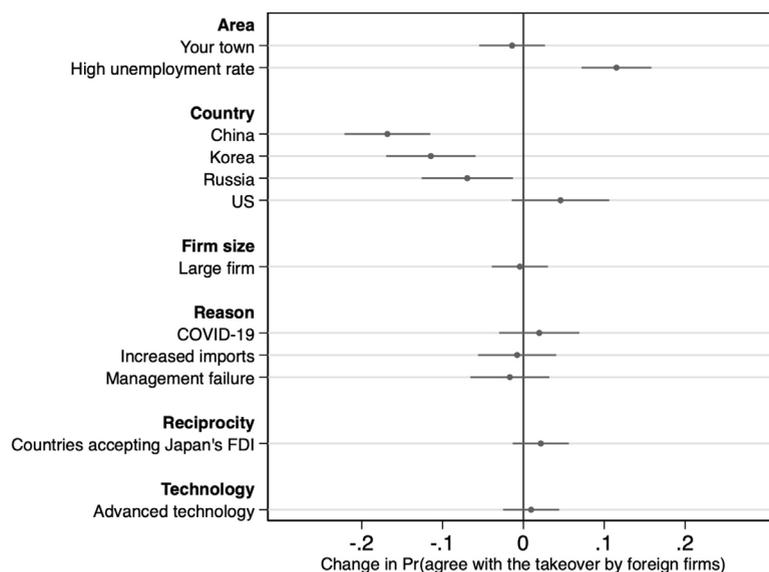


Fig. 2. Average marginal component effects (AMCEs) of inward FDI project attributes in the conjoint experiment: First task only.

Note: The dots show how much a change in a category causes a change in the probability to agree with a foreign takeover. The dots are point estimates of AMCEs and the lines from the dots indicate 95% confidence intervals. The reference category of each attribute is Japan for “Area,” foreign country for “Country,” small-and-medium-sized firms for “Firm size,” Earthquake disaster for “Reason (cause of slump),” countries that have not accepted Japan’s FDI for “Reciprocity,” and general-purpose technology for “Technology.”

preferences for inward FDI differ according to their demographics. In the previous literature using conjoint survey experiments, most studies have attempted to answer these questions by estimating conditional AMCEs (Bansak et al., 2021). Conditional AMCEs are obtained by estimating AMCEs for each subgroup of respondents divided according to their attributes.

However, Leeper, Hobolt, and Tilley (2020) show that using conditional AMCEs to describe the degree of subgroup differences can be misleading because regression interactions are sensitive to the reference categories used in the analysis.<sup>15</sup> A positive AMCE means that the approval rate is relatively high for the baseline reference category. Thus, AMCEs do not provide information on the absolute level of approval rates for investment projects with each characteristic. Therefore, AMCEs do not allow us to directly understand the differences in approval rates between groups. Instead of conditional AMCEs, Leeper et al. (2020) advocated using marginal means to analyze differences in preferences among subgroups.

The marginal means of one variable is the means for that variable averaged across every level of the other variable. In forced-choice conjoint designs, the marginal mean is defined as an average of 0.5, with values above 0.5 indicating features that increase the approval of an FDI project and values below 0.5 indicating features that decrease the approval of an FDI project. However, our study’s design is not a forced-choice design and the average rate of approval of fictitious FDIs is 0.264, as shown in the vertical line in Figure Fig. 3. Before analyzing the subgroup differences, we present a descriptive plot of marginal means in Fig. 3. For example, we again see the negative attitudes toward investment from China, Korea, and Russia compared to the US. Overall, we find a similar tendency for marginal means in Fig. 3 and AMCEs in Fig. 1. This is because, in a fully randomized design, AMCEs have a close relationship with the marginal means in the sense that AMCEs equal the difference between the marginal mean of each feature level and the marginal mean of the reference category. Therefore, AMCEs depend only on marginal means. It should be noted, however, that while marginal means convey information about respondents’ preferences for all attribute levels, AMCEs by definition limit AMCEs in the reference category to zero. In this respect, the marginal means have an advantage over AMCEs because the marginal means are free from the reference categories.

#### 4.2. Subgroup differences

To formally test the subgroup differences, Leeper et al. (2020) propose the use of an F-test that compares the restricted and unrestricted models.<sup>16</sup> The restricted model assumes that there are no subgroup differences, imposing the same coefficients of each level of FDI attributes. The unrestricted model assumes that there are subgroup differences and that the coefficients of each level of FDI attributes vary across subgroups. If the F-test rejects the null hypothesis that there are no subgroup differences, we can conclude that the impacts of each level of the FDI attributes on the approval of the project are likely to vary across subgroups.

<sup>15</sup> We appreciate the anonymous referee for his/her suggestion on this issue. Thanks to his/her guidance, we include this section.

<sup>16</sup> Specifically, we calculate the F statistic as follows:

$$F = \frac{(SSR_{\text{Restricted}} - SSR_{\text{Unrestricted}})/r}{SSR_{\text{Unrestricted}}/(n - k - 1)},$$

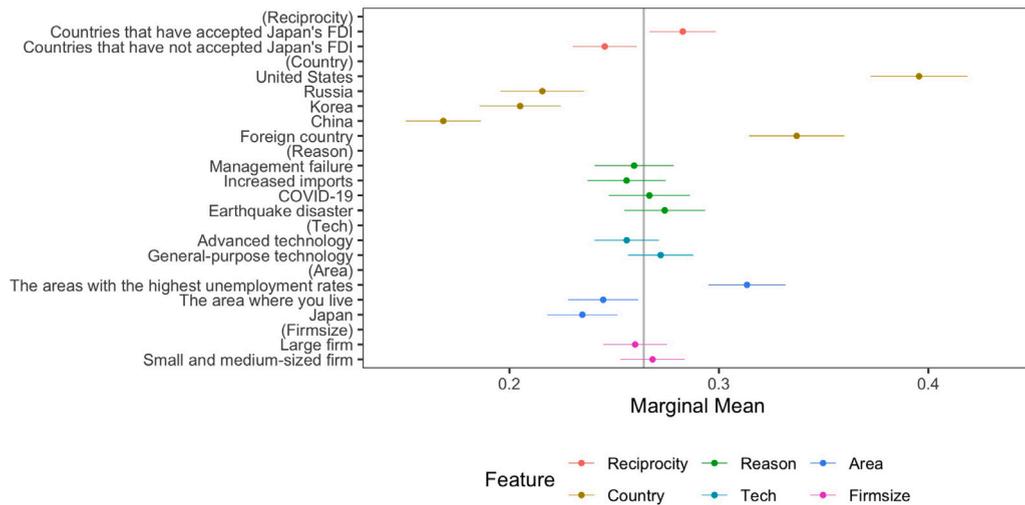


Fig. 3. Marginal means: factors affecting approval for inward FDI. Note: The vertical line indicates the overall average rate of approval (0.264).

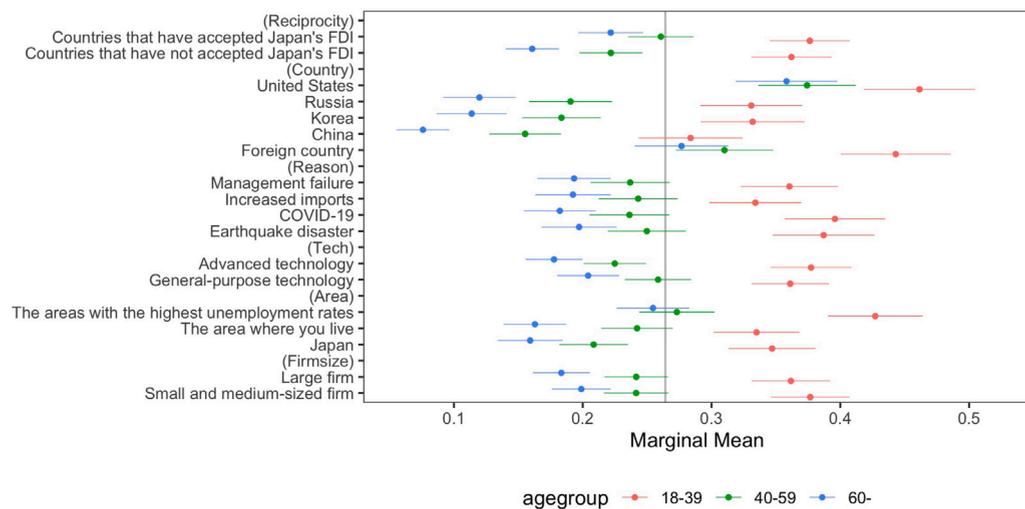


Fig. 4. Marginal means by age group: factors affecting approval for inward FDI. Notes: The vertical line indicates the overall average rate of approval (0.264). Test of the null hypothesis of no subgroup differences:  $F = 2.356, p = 0.0002$ .

The F-tests cannot reject the null hypothesis that there is no subgroup difference in terms of education level, and income level, while they reject the null hypothesis in terms of gender and age group. It suggests that non-economic demographic factors are important determinants rather than the social and economic characteristics of respondents. Fig. 4 compares the marginal means across age groups. It shows that older groups tend to have more negative attitudes toward inward FDI projects. The oldest group over 60 has the lowest marginal means, while the youngest group aged 18 to 39 has the highest marginal means. The result that older adults who have exited or will soon exit the labor market are rather negative about foreign firms entering the market may be related to the fact that the job opportunities that foreign firms bring are meaningless to them. Conversely, the younger generation may benefit from the new job opportunities that foreign firms bring and may be less resistant to the entry of foreign firms. However, since we are asking for or against acquisitions, not greenfield investments by foreign firms, it is ambiguous whether job opportunities will increase. Given this, the results in Fig. 4 may suggest that young people are less resistant to changes brought about by foreign firms than old people because they have less accumulated Japan-specific human capital.

where  $SSR_{\text{Restricted}}$  indicates the sum of squared residuals from the restricted model and  $SSR_{\text{Unrestricted}}$  indicates the sum of squared residuals from the unrestricted model.  $r$  is the number of restrictions,  $n$  is the number of observations, and  $k$  is the total number of feature levels in the unrestricted model. The original equation of Leeper et al. (2020) does not include the fixed effect for subgroups in the restricted model, but we include it to follow the anonymous referee's suggestion.

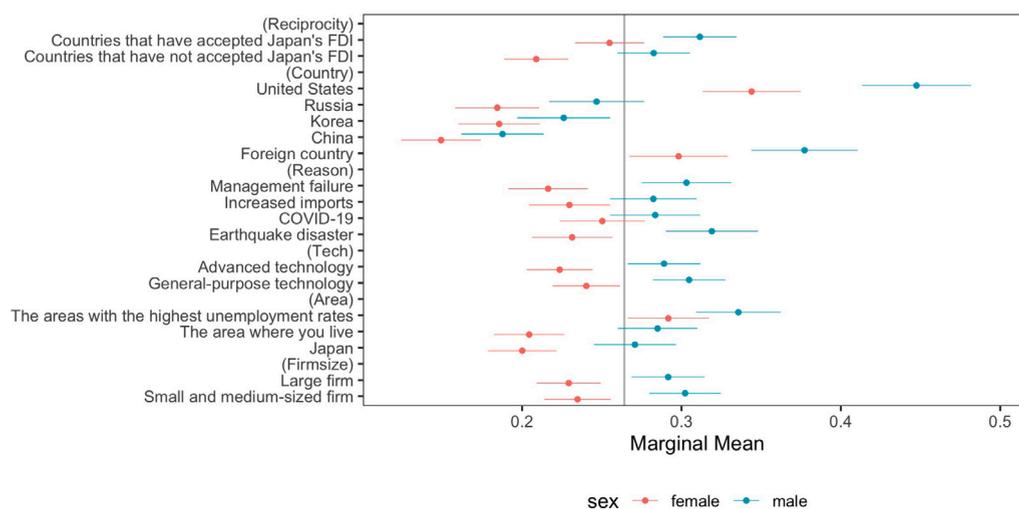


Fig. 5. Marginal means by gender: factors affecting approval for inward FDI.

Note: The vertical line indicates the overall average rate of approval (0.264). Test of the null hypothesis of no subgroup differences:  $F = 1.895$ ,  $p = 0.030$ .

Fig. 5 shows that there are gender differences in the preference toward inward FDI projects. The marginal means indicate that women are more negative about inward FDI projects than men. The F-tests reject the null hypothesis that there are no gender differences with  $p = 0.030$ . The overall tendency regarding the level of each attribute is similar for both men and women. For example, regardless of gender, the marginal means for approval rates for investments from Russia, Korea, and China, are much smaller than the marginal means for investments from the US.

## 5. Gravity estimates and relevance of our survey results

We conduct an analysis using FDI stock data to check the relevance of the AMCE results on the nationality of the foreign firm.<sup>17</sup> We obtain data on inward FDI stock for the year 2015–2019 from Japan's Ministry of Finance (the MOF's FDI data). We use it because it includes recent Chinese investment in Japan for multiple years, whereas the other major databases such as the OECD's FDI stock data and UNCTAD's Bilateral FDI Statistics do not. Based on the MOF's FDI data, Fig. 6 reveals that the top three source countries for Japanese inward FDI are the US (USA), France (FRA), and Singapore (SGP). Compared to these top countries, inward FDI from Korea (KOR), China (CHN), and Russia (RUS) are relatively small in Japan. This evidence is consistent with the respondents' negative attitudes toward inward FDI from Korea, China, and Russia.

The MOF's FDI data includes 30 source countries for each year between 2015 and 2019. Therefore, there are 150 observations ( $30 \times 5$ ). After dropping the negative FDI stock values, the number of observations becomes 134.<sup>18</sup> Using the resulting FDI data, we estimate the gravity equation of FDI stocks from 26–28 source countries ( $s$ ) to Japan ( $h$ ). We obtain data on GDP and GDP per capita data, *percapitaGDP*, from Penn World Table. We obtain data on the distance between two countries, *Distance*, from the CEPII's Gravity database (Head & Mayer, 2014; Head, Mayer, & Ries, 2010).

Rose (2016) estimate a gravity model of bilateral exports with “soft power” and finds that a country's exports are higher if it is perceived by the importer to be exerting a more positive global influence. We conduct a similar analysis based on the results from our conjoint survey. Using the above AMCEs, we define a new variable, *Preference*. This variable, for example, takes a value of  $-0.17$  for investment from China to Japan and a value of  $0.056$  for investment from the US to Japan. Similarly, this variable takes a value of  $-0.13$  for investment from Korea to Japan and a value of  $-0.12$  for investment from Russia to Japan. Otherwise, this variable takes a value of zero. Here, we need to make the assumption that respondents receiving the “foreign country” treatment for the attribute “country of origin” presume the firm was from somewhere other than the four countries. This assumption may be strong when we consider the vague information treatment of the “foreign country.” In this respect, we need to interpret the following results with caution, taking into account the limitation of our experimental design.

<sup>17</sup> The approval rate of inward FDI projects in the survey experiment is not simply linked to the real inward FDI stock for at least two reasons. First, our survey experiment specifically asked for approval or disapproval of hypothetical investment projects, while the gravity equation uses the realized value of FDI stocks. It is important to note that the realized FDI data do not cover all potential investment projects, including failed ones. Second, in this survey experiment, respondents were asked whether they were for or against FDI projects, which resulted in binary (0/1) data, while the FDI stock data used in the gravity equation is continuous. Therefore, in this section, we use the gravity equation to relate the AMCEs from the survey experiment to the actual FDI stock through estimation.

<sup>18</sup> As a robustness check, we follow the practice of Kox and Rojas-Romagosa (2020) to convert negative FDI stocks in 16 observations to zeros for the regression analysis and obtain almost similar results.

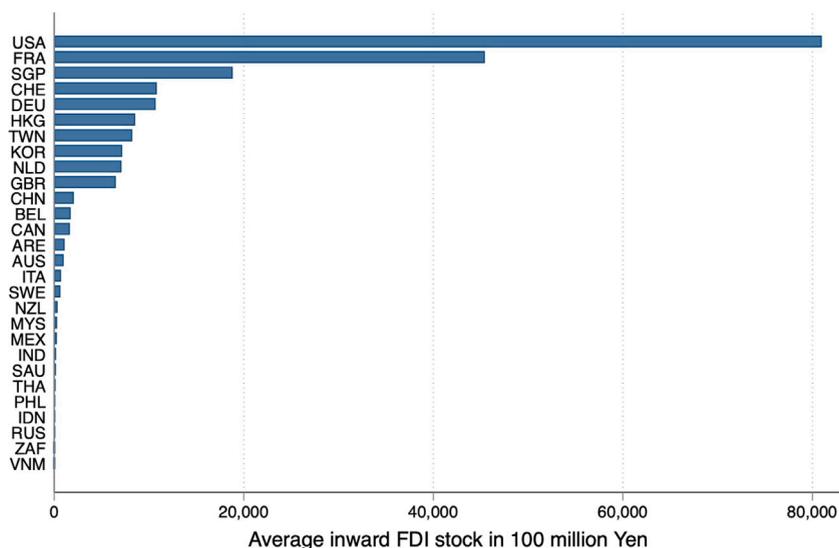


Fig. 6. Major source countries of Japan’s Inward FDI: 2015–2019.

**Table 2**  
FDI gravity regressions using inward FDI stocks.

Host country	(1) Japan	(2) Japan
ln GDP	0.758*** [0.0485]	0.706*** [0.0412]
ln percapita GDP	2.630*** [0.366]	2.292*** [0.292]
ln Distance	-0.234 [0.166]	-0.452* [0.205]
Preference		5.285*** [1.560]
Year Fixed Effects	YES	YES
N	134	134

Notes: The table shows the PPML estimation results of Eq. (2). The dependent variable is Japan’s inward FDI stock for the years: 2015–2019. The first column presents the result of the model excluding the preference variable, while the second column presents the result of the model including it. \*  $p < 0.05$ , \*\*\*  $p < .001$ . Robust standard errors in brackets.

In addition to the standard gravity variables, we include the variable, *Preference*, in the gravity equation:

$$FDIstock_{s,t} = \exp[\beta_1 \ln GDP_{s,t} + \beta_2 \ln percapitaGDP_{s,t} + \beta_3 \ln Distance_s + \beta_4 Preference_s + YEAR_t] + \eta_{s,t}, \tag{2}$$

where  $\eta_{s,t}$  is an error term. Unlike Anderson, Larch, and Yotov (2019) and Kox and Rojas-Romagosa (2020), we do not include vectors of source country fixed effects but include source countries’ GDP and GDP per capita and year fixed effects  $YEAR_t$  since source country fixed effects prevent us from including the preference variables that is our primary interest of variable. Following the previous studies (Anderson et al., 2019; Kox & Rojas-Romagosa, 2020), we estimate the gravity equation of FDI by Poisson Pseudo Maximum Likelihood (PPML) method.

The baseline estimation results without the preference variable are shown in Column (1) of Table 2. As expected, the coefficients of GDP and per capita GDP are positively significant. The coefficient of distance is negative but insignificant. The estimated results in Column (2) of Table 2 indicate that the *Preference* variable is statistically significantly positive. In other words, inward FDI from countries where respondents are negative about accepting FDI is actually low.

We compute the predicted FDI stock from the gravity equation estimates of Columns (1) and (2) of Table 2. Fig. 7 compares the predicted and actual values of FDI stock. The label, “Actual,” represents the actual FDI stocks. “Preference\_notcontrolled” represents the predicted FDI stocks based on the PPML estimation of the gravity Eq. (2) without preference variables. “Preference\_controlled” represents the predicted FDI stocks based on the PPML estimation of the gravity Eq. (2) that includes the preference variable.

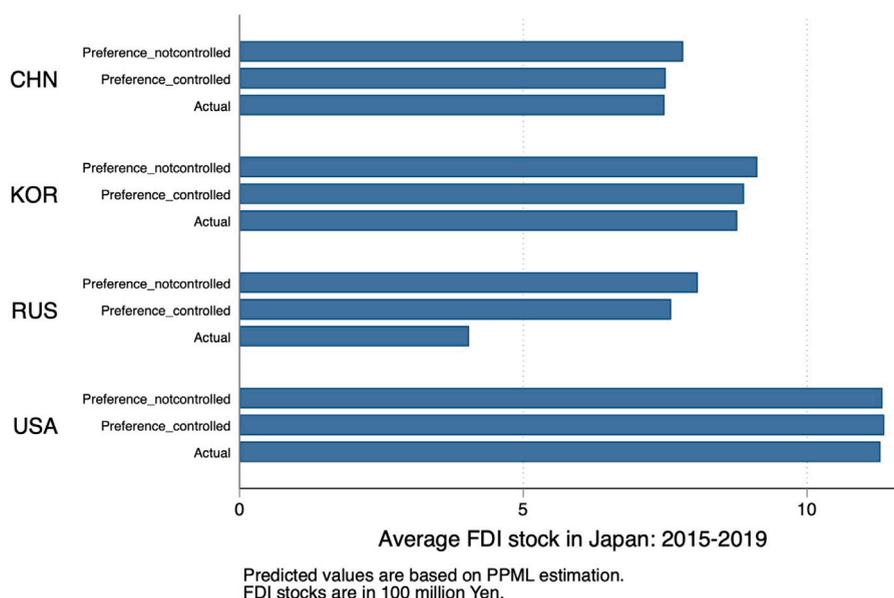


Fig. 7. Actual versus predicted FDI stock in Japan.

Notes: CHN stands for China, KOR for Korea, RUS for Russia, and the USA for the United States. “Preference\_notcontrolled” represents the predicted FDI stocks based on the PPML estimation of the gravity Eq. (2) without preference variables. “Preference\_controlled” represents the predicted FDI stocks based on the PPML estimation of the gravity Eq. (2) that includes the preference variable. “Actual” represents the actual FDI stocks.

Fig. 7 shows that the actual value of Chinese, Korean, and Russian investment in Japan is lower than the predicted ones without controlling for the preference. Controlling for the preference, the predicted values become closer to their actual values. This comparison suggests that Chinese, Korean, and Russian investment in Japan is underinvested relative to the standard gravity model’s predictions that do not take into preference consideration. This result is also consistent with the results of our survey experiment because, in our experiment, we find that the approval rates for acquisitions by Chinese, Korean, and Russian firms are 17, 13, and 12 percentage points lower, respectively. The actual value of US investment in Japan is akin to the predicted ones presumably because the status of the US as the outstanding top source country masks the difference between the actual and predicted values.

For Chinese, Korean, and Russian investment, Fig. 7 shows that the predicted FDI stocks based on the gravity equation with the preference variable are closer to the actual FDI stocks than the predicted FDI stocks based on the gravity equation without the preference variable. The preference variable significantly reduces the predicted Chinese, Korean, and Russian FDI stock. Overall, the results from the gravity equations suggest that the findings on the nationality of source countries from our survey experiment are consistent with the pattern of real-world FDI stocks.

## 6. Conclusion and policy discussion

Although several studies have explored the factors that determine people’s attitudes toward trade and immigration, little is known about the factors that determine people’s attitudes toward inward FDI. In this study, we conducted a vignette survey experiment to investigate whether people agree or disagree with inward FDI projects with different attributes. We asked about the pros and cons of inward FDI, particularly regarding the acquisition of Japanese firms by foreign firms. In our survey design, the attributes of the FDI projects were randomly assigned. Hence, we could estimate the AMCE regarding people’s preferences for foreign acquisitions and compare the relative importance of one attribute with that of another.

We found that our respondents’ approval rates for takeovers by US firms are higher than those for the takeovers by the baseline “foreign firms” and that those for takeovers by Chinese, Korean, and Russian firms are lower. Historically, Japan’s relations with those neighboring countries have sometimes been strained, and nationalism can be a barrier to inward FDI from these neighboring countries. Another potential reason for the aversion to inward FDI from these countries is Japanese citizens’ lingering stereotypes that the products or services of companies in these countries are of poor quality. Unfortunately, our survey design cannot identify the cause of the aversion. A future study can investigate the cause using the method of Acharya, Blackwell, and Sen (2018) that manipulates a mediator to evaluate the causal mechanism.

Our results also suggest that reciprocity and the employment situation in the region where the acquired firm is located can affect people’s acquisition preferences. People are more likely to favor inward FDI from countries that have accepted significant Japanese FDI. In other words, reciprocity matters for FDI preference. People are also more likely to support foreign firms taking over firms in areas with high unemployment. Surprisingly, the size of the acquired firm does not affect people’s attitudes toward the acquisition project. By contrast, their high level of technology slightly increases opposition to takeovers, although this tendency is not robust.

**Table A.1**  
AMCE for the Change in Probability to Agree with the Takeover by Foreign Firms.

Attribute	Level	Estimate	Std. Err
Area	(Baseline = Japan)		
	The area where you live	0.01	[0.009]
Country	The areas with the highest unemployment rates	0.079***	[0.010]
	(Baseline = Foreign country)		
	China	-0.171***	[0.013]
	Korea	-0.134***	[0.013]
	Russia	-0.122***	[0.013]
Firm size	United States	0.056***	[0.014]
	(Baseline = Small and medium-sized firm)		
Reason	Large firm	-0.008	[0.008]
	(Baseline = Earthquake disaster)		
	COVID-19	-0.007	[0.011]
Reciprocity	Increased imports	-0.018	[0.011]
	Management failure	-0.014	[0.011]
	(Baseline = Countries that have not accepted Japan's FDI)		
Tech	Countries that have accepted Japan's FDI	0.036***	[0.008]
	(Baseline = General-purpose technology)		
	Advanced technology	-0.017*	[0.008]
	Constant	0.313***	[0.017]
	Number of Obs. = 12,115		
	Number of respondents = 2,423		

Notes: \*  $p < .05$  \*\*,  $p < .01$ , \*\*\*  $p < .001$ .

Japan's inward FDI relative to GDP is very low and the Japanese government has been aiming to increase inward FDI. Our findings in this study suggested that it may be easier to gain the Japanese public's understanding about inviting FDI from the US or countries that have been accepting FDI from Japan. Our findings demonstrated a positive attitude toward inward FDI in regions with high unemployment. Therefore, converting specific regions with high unemployment rates into special economic zones for inward M&A, and relaxing inward FDI restrictions there may be worth considering.

To check how our survey results on the nationality of the foreign firm reflect real-world FDI, we analyzed FDI stock data. Using the data, we confirm that our survey results are in line with the actual pattern of inward FDI stock. Our analysis indicated that the actual FDI values from China, Korea, and Russia in Japan are lower than the gravity model's predictions. We found that people's low approval rate for inward FDI from these countries is indeed relevant to the gravity equation.

What affects the public sentiment toward inward FDI is a vital question for researchers and policymakers not only in Japan but also in other countries. This is especially true in Asian countries because FDI regulations tend to be stricter in Asian countries than in other countries, but FDI liberalization has been slow to take off due to public opposition. The methodology we have employed, including the survey experiment and the analysis of preferences using the AMCEs and marginal means, can be adapted and applied to other countries to gain insights into their specific contexts and preferences regarding FDI. To enhance our understanding of inward FDI preferences on a global scale and investigate the differences among countries, it will be beneficial to conduct similar studies in other countries.

Finally, we highlight the limitations of our study and the direction for future studies. Our study did not analyze the reasons why respondents' approval rates toward inward FDI from China, Korea, and Russia are lower. Our survey design does not allow us to distinguish whether respondents perceive a security threat to these countries or whether, as workers, they have concerns about FDI from these countries. As we discussed, causal mediation analysis (Acharya et al., 2018) might be useful to identify the cause of the aversion over inward FDI from these countries. The general public can indirectly influence inward FDI through their governments as voters but is not directly involved in inward FDI decision-making in business. Corporate executives are directly involved in inward FDI through their management decisions. Getting these executives to participate in a survey experiment is evidently difficult. However, studying corporate executives' inward FDI preferences is a promising avenue for future research.

#### Declaration of competing interest

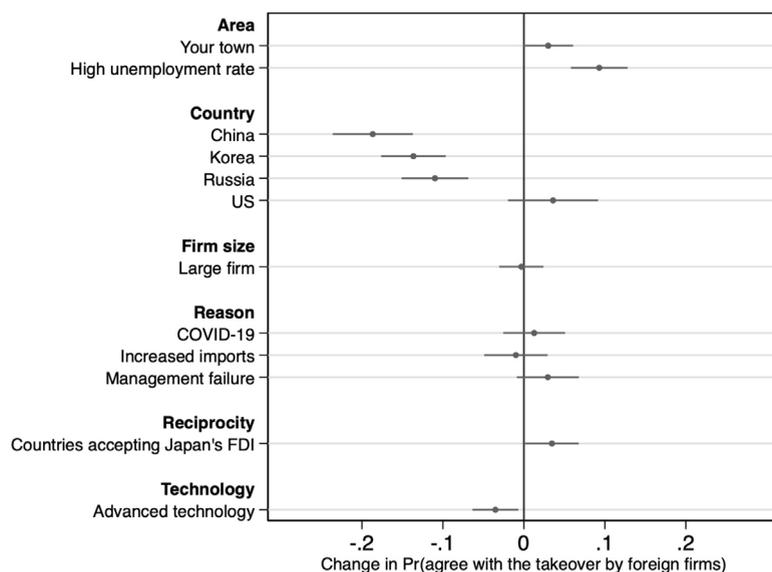
The authors certify that they have NO affiliations with or involvement in any organization or entity with any financial interest or non-financial interest in the subject matter or materials discussed in this manuscript.

#### Appendix A. Estimation results

See Table A.1.

#### Appendix B. Respondents not receiving false information

See Fig. B.1.



**Fig. B.1.** Average marginal component effects of inward FDI project attributes in the conjoint experiment (Respondents not receiving false information). Notes: The figure displays the outcomes of estimating AMCEs (Average Marginal Component Effects) using a subset of respondents who were not exposed to false information. The dots show how much a change in a category causes a change in the probability to agree with a foreign takeover. The dots are point estimates of AMCEs and the lines from the dots indicate 95% confidence intervals. The reference category of each attribute is Japan for “Area”, foreign country for “Country”, small-and-medium-sized firms for “Firm size”, Earthquake disaster for “Reason (cause of slump)”, countries that have not accepted Japan’s FDI for “Reciprocity”, and general-purpose technology for “Technology”.

## Appendix C. Supplementary data

Supplementary material related to this article can be found online at <https://doi.org/10.1016/j.asieco.2023.101644>.

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