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To what degree does policy uncertainty affect foreign direct investment? Micro-evidence from Japan's International Investment Agreements*

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Abstract

This study proposes an empirical strategy to identify the impact of policy uncertainty (PU) at the sector level on foreign direct investment (FDI) by exploiting plausibly exogenous exemptions from certain obligations such as national treatment and most favored nation treatment in International Investment Agreements (IIAs). To this end, the study evaluates at the micro-data level how activities of Japanese multinational enterprises (MNEs) and their foreign affiliates are affected by Japan's forming 22 IIAs, including both Bilateral Investment Treaties (BITs) and Economic Partnership Agreements (EPAs) with investment provisions, during the period 1995-2016.Our empirical strategy relies on differences in the changes of PU that MNEs and their foreign affiliates face after an IIA entered into force, depending on whether their sectors are exempted from certain obligations in the IIA or not.We find evidence that PU actually matters for FDI. In particular, we find that signing an IIA stimulates FDI, which is measured by capital investment by foreign affiliates, through a reduction in PU, although the impact depends on the content of the IIA. We also find that an IIA may affect MNEs' FDI to the partner economy in their global FDI strategy.

Keywords: policy uncertainty; international investment agreements; foreign direct investment
JEL classification:F15, F21, F23

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1 Introduction

The impact of policy uncertainty (PU) on various economic activities has attracted considerable interest from both scholars and policymakers (Baker et al., 2016). PU is uncertainty regarding future policies implemented by governments. PU increases by, for example, a change of government, partisan policy disputes, discretionary operation of fiscal and monetary policies, and trade wars (Azzimonti, 2019; Baker et al., 2016; Handley, 2014; Handley and Limão, 2015; Julio and Yook, 2016). Various indexes of PU and methodologies to analyze the effects of PU on economic activities have been developed (Azzimonti, 2018, 2019; Baker et al., 2016; Davis, 2016). For example, Baker et al.'s (2016) index of Economic Policy Uncertainty (EPU) is based on the frequency of articles in major newspapers that contain specific words related to EPU.[1] Azzimonti (2019) develops a Trade Partisan Conflict Index (TPCI), which tracks the frequency of articles in newspapers that report political disagreement on trade policy. Davis (2016) constructs a monthly index of Global Economic Policy Uncertainty, which is a GDP-weighted average of national EPU indexes for 16 countries.

In the trade literature, a number of recent studies have investigated the effects of trade policy uncertainty (TPU) on firms' export behavior (Handley, 2014; Handley and Limão, 2015, 2017). Handley (2014) uses a dynamic, heterogeneous firm model to show that TPU delays the entry of exporters into new markets and makes them less responsive to reductions in applied tariffs. He uses the gap between applied tariffs and tariff bindings as the measure of TPU because tariffs may be increased to the binding levels. In addition, a number of studies have shown that the important role of trade agreements (TAs) is to facilitate trade by reducing TPU (Carballo et al., 2018; Handley and Limão, 2015, 2017; Limão and Maggi, 2015). TAs make the government's commitment to lower tariff levels credible and hence, reduce TPU. Using Portuguese firm-level export data, Handley and Limão (2015) find that Portugal's accession to the European Community (EC) removed uncertainty regarding future EC trade policy and helped to increase Portuguese firms' export entry and sales. Handley and Limão (2017) analyze the impact of China's WTO accession on its export boom to the United States (US) in the period 2000–2005. They find that the accession reduced the US threat of a trade war, which could account for over one-third of Chinese export growth in this period. Carballo et al. (2018) use US firm-level data in 2003–2011 and examine the impact of uncertainty about foreign income, trade protection, and their interaction on export investment. They find that uncertainty plays a key role in explaining the trade collapse in the 2008 financial crisis and partial recovery in its aftermath.

Since foreign direct investment (FDI) involves higher sunk costs than exports, FDI may be more affected by PU than exports (Azzimonti, 2019; Julio and Yook, 2016). Julio and Yook (2016) focus

[1]The EPU Index is released for more than 20 countries around the world. See https://www.policyuncertainty.com/. In Japan, RIETI constructs and releases the EPU Index at https://www.rieti.go.jp/jp/database/policyuncertainty/. For details, see Arbatli et al. (2017).

on FDI flows from US firms to their foreign affiliates and examine the effects of PU on FDI by using national election timing in host countries as a source of fluctuations in PU. They find that US firms' FDI drops significantly during the period just before an election and increases after the uncertainty is resolved. Their baseline results suggest that FDI flow rates from the US fall in election years by about 13% relative to non-election years, which is much higher than the average reduction in domestic corporate investment around election cycles (approx. 4–5%). Thus, "FDI is more sensitive to political uncertainty than is domestic investment" (Julio and Yook, 2016, p. 14). Azzimonti (2019) analyzes how partisan conflict about trade policy in the US affects FDI inflows to the US. She constructs a new indicator to measure the degree of partisan conflict about trade policy based on text from newspapers in the period 1985–2016 and finds that an increase in partisan conflict about trade policy lowers FDI inflows to the US. According to her estimation, a one-standard deviation increase in the TPCI in a given quarter results in a decline in FDI inflows in the following quarter by about 0.115 standard deviations, which corresponds to about a 9% decline in FDI inflows from the sample mean. Using data from the original questionnaire survey to managers of Japanese companies listed on the Tokyo and Osaka Stock Exchanges, Morikawa (2016) reports that 59.2% of the respondents of manufacturing companies chose the decisions to enter into or withdraw from overseas market as one of the two activities that are most significantly affected by policy uncertainty. This share is much higher than that of the respondents of non-manufacturing companies (33.3%). Another activity that is most significantly affected by policy uncertainty is equipment investment. 71.7% of the respondents of manufacturing companies chose it.[2] This result implies that, among various business operations, FDI and capital investment are most significantly affected by policy uncertainty.

Despite the importance of PU for FDI, empirical studies in this field are still scarce. The present study aims to contribute to the literature by investigating the impact of PU on FDI through a unique approach based on information about international investment agreements (IIAs). IIAs include bilateral investment treaties (BITs) and treaties with investment provisions (TIPs). IIAs are "one of the few policy instruments that countries can use to directly attract foreign investment" (Egger and Merlo, 2012, p. 1240). On the one hand, from the perspective of host countries, IIAs are expected to "promote FDI to signatory host countries by improving their investment climate" (Egger and Merlo, 2012, p. 1243). On the other hand, from the viewpoint of the home country of investors, IIAs provide "protection to foreign investments under international laws" and hence, "reduce the political risks of the foreign investor in the host country" (Egger and Merlo, 2012, p. 1243).

The main purpose of this study is to answer the following three research questions. (i) Does PU

[2]The other activities that are included in the choices in the questionnaire are (a) R&D investment, (b) ICT investment, (c) advertising expenditures, (d) organizational restructuring (M&A etc.), (e) hiring of regular full-time employees, and (f) hiring of non-regular employees. The respondents were asked to choose up to two activities from those alternatives.

discourage FDI? (ii) Does signing an IIA reduce PU for FDI? (iii) Does the impact of IIAs on PU depend on the content of IIAs? To answer those questions, we use micro data of Japanese multinational enterprises (MNEs) and their foreign affiliates as well as information about Japan's IIAs with host economies of Japanese MNEs. In particular, we exploit the information on the negative lists of sectors and obligations in IIAs that indicate which sectors are exempted from certain obligations in IIAs. The premise is that, after an IIA enters into force, those sectors included in the negative lists would face different degrees of PU from those of other sectors. In other words, after an IIA enters into force, Japanese MNEs would face different degrees of PU, depending on whether their sectors are exempt from certain obligations in the IIAs or not, whereas they would face the same degree of PU before the IIA enters into force. In addition, for firms in sectors included in the negative lists of the IIA, the degree of PU may still change (and possibly increase) even after the IIA enters into force. IIAs include two types of negative lists: (i) lists with "standstill/ratchet obligations" and (ii) lists "without standstill obligations" (METI, 2019). In this study, we call the first lists "current reservation" and the second lists "future reservation." For sectors included in the first lists, measures that exist at the time the IIA becomes effective, which do not conform to a certain obligation, may be maintained but cannot be revised to become more non-conforming to the IIA (UNCTAD, 2006). By contrast, for sectors included in the second lists, measures that do not conform to a certain obligation may be revised to become more non-conforming to the IIA in the future. As a result, sectors in the first lists experience a smaller reduction in the degree of PU than do sectors that are not included in the negative lists, and sectors in the second lists experience no change in the degree of PU or even an increase in PU after the IIA enters into force (see Sections 2.2 and 2.3 for more detail). In our study, we utilize these sectoral differences in the degree of PU.

We then implement a difference-in-differences (DID) estimation to capture the average treatment effect of the changes in PU due to IIAs on FDI. As the outcome variables, we use capital investment, a capital investment dummy, and forecast error of capital investment at the foreign affiliate level of estimations. In addition, we use the ratio of capital investment of all affiliates of a parent firm in the same sector of the same host economy to the total capital investment of all affiliates of the parent firm worldwide in the same sector. We use this ratio to investigate the impact of a change in PU on Japanese MNEs' FDI to the partner economy in their global FDI strategy.

The main findings of this study are as follows. First, we find evidence that PU negatively affects Japanese outward FDI. Second, signing an IIA stimulates FDI through a reduction in PU, but the impact depends on the content of the IIA. In particular, the impact may differ between national treatment (NT) and most favored nation (MFN) treatment in IIAs. It may also matter whether negative lists are current reservation or future reservation. We find that the current reservation of MFN decreases both capital investment and the amount of investment. By contrast, the future reservation of NT increases the forecast error of capital investment. Finally, we find that the future

reservation of MFN reduces an MNE's share of capital investment of affiliates in a given host economy in its global FDI strategy.

The main contributions of this study to the relevant literature are as follows. First, using micro data of Japanese MNEs and their foreign affiliates, this study proposes a unique empirical strategy to identify the impact of a reduction in PU at the sector level due to IIAs on FDI. To the best of our knowledge, this study is the first to exploit the information of the negative lists in IIAs to capture the differences in PU that foreign investing firms face in their host economies, depending on the sectors to which they belong. Our approach provides a new angle for exploring the relationship between PU and FDI at the sector level. Our method complements other approaches in existing empirical studies that mainly utilize national-level indexes, such as national election timing and partisan conflict.

Second, this study provides micro-evidence that IIAs stimulate FDI by reducing PU. In particular, we find that for foreign investors, important roles are played by PU in terms of the competitive environment with domestic rivals in the host economy (i.e., with regard to NT) and PU in terms of the competitive environment with other foreign investors (i.e., with regard to MFN), but these two types of PU may affect different aspects of FDI. This finding, which is new to the literature, suggests that the content of IIAs are important.

This study is also related to empirical studies on the impact of IIAs on FDI. Most existing studies in this field of literature have conducted analyses at the aggregated level of bilateral FDI (Busse et al., 2010; Egger and Merlo, 2007; Egger and Pfaffermayr, 2004; Falvey and Foster-McGregor, 2018; Frankel and Walter, 2019; Neumayer and Spess, 2005). An exception is Egger and Merlo (2012), who employ firm-level data of German MNEs and their foreign affiliates in the period 1996–2005 and examine the effects of BITs. They find that both a sign and a ratification of BIT increase the number of investing firms per country, the number of affiliates, the number of employees, and the number of investing sectors. However, their study does not address the issue of PU on FDI through IIAs. The present study aims to fill this gap in the research.

The rest of this paper is organized as follows. Section 2 provides an overview of recent trends of IIAs. Section 3 explains our empirical strategy. Section 4 introduces our data. Section 5 provides our estimation results and Section 6 discusses robustness checks. Then, Section 7 concludes.

2 International Investment Agreements

2.1 Trends

As explained in the introduction, IIAs include BITs and TIPs. Figure 1 shows the global trends of IIAs from 1958 to 2019, based on the United Nations Conference on Trade and Development (UNCTAD) database. The bar chart (measured by the left-hand vertical axis) indicates the number of IIAs entered

into force in each year. The green line (measured by the right-hand vertical axis) shows the cumulative number of IIAs in this period, while the blue line shows the total number of IIAs in force in the year. As shown in this figure, the number of IIAs gradually increased until the beginning of the 1990s. Then, the number of IIAs rapidly increased in the 1990s and the 2000s. In 1990, the cumulative number of IIAs was 244. However, in the late 1990s and the early 2000s, about 100 IIAs entered into force every year. In the peak year, 1997, 137 IIAs newly entered into force. The total number of IIAs in force reached 1,912 in 2015. Thereafter, the number has remained almost constant.

(Insert Figure 1 here.)

Among the 2,240 BITs that were signed by 2018, 55% were signed between OECD and non-OECD countries. Those signed by non-OECD countries account for 43%. Only 2% of all BITs were signed by pairs of OECD countries. Thus, many BITs were signed between high-income and low-income countries.

BITs in the early years were intended to protect investment from source countries by "reducing the risk of 'expropriation' by host countries' governments" (Bergstrand and Egger, 2013, p. 108). More recently, BITs have increasingly emphasized the promotion of investments (Bergstrand and Egger, 2013).

Although their contents vary across countries, IIAs cover four main areas: admission of foreign investments, treatment, expropriation, and dispute settlement (Egger and Merlo, 2012). The principal general standards that foreign investments receive in the host country include (a) fair and equitable treatment, (b) NT, and (c) the MFN standard (UNCTAD, 2007). Provisions regarding the free transfer of payments, conditions under which an expropriation is considered lawful, and compensation in cases of expropriation, armed conflict, or internal disorder are also included (Egger and Merlo, 2012). Dispute settlement provisions ensure the effective implementation and enforcement of the treaty "to reduce uncertainty to foreign investors" (Egger and Merlo, 2012, p. 1244) and "constitute one of the key elements in diminishing the country risk and thus encourage investors of one contracting party to invest in the territory of the other" (UNCTAD, 2007, p. 99). Prohibition of performance requirements is also one of the main obligations in IIAs. Performance requirements include (i) an export requirement, (ii) restriction of local sales, (iii) technology transfer requirement, (iv) nationality requirement of board members, and (v) local employment requirement.

2.2 Negative lists

Many IIAs include negative lists in the annex of their legal texts which specify which sectors are exempt from which obligations of the treaty for each signatory. Reservation of the obligations may be at the

stage of (a) pre-establishment, or (b) post-establishment. In our study, we mainly focus on reservations at the stage of pre-establishment. Furthermore, IIAs may include two types of negative lists: (i) lists with standstill/ratchet obligations and (ii) lists without standstill obligations (METI, 2019). For the former lists, "(1) measures that do not conform to the agreement cannot be newly introduced; (2) measures that do not conform to NT, MFN and PR [performance requirement] obligations that existed at the time the agreement became effective may be 'maintained,' but cannot be revised in a way that makes them more non-conforming to the agreement; and (3) once measures are revised to make them more consistent with the agreement, they cannot be made more inconsistent again (this is called as a 'ratchet' obligation to indicate changes can only be made in one direction)" (METI, 2019, p. 585). By contrast, the latter lists (i.e., lists without standstill obligations) are not subject to those obligations. In many IIAs, Annex I indicates lists with standstill/ratchet obligations and Annex II indicates lists without standstill obligations. In this study, we call negative lists with standstill/ratchet obligations "current reservation" and those lists without standstill obligations "future reservation."[3]

2.3 Conceptual framework of this study

Figure 2 summarizes our conceptual framework of a reduction in PU due to current and future reservations in IIAs. As the figure shows, we assume that PU can be measured at the level and the possible range on a line. On this line, we normalize the mean level of PU before an IIA's entry into force to zero.

When an IIA enters into force, sectors that are not included in the negative lists benefit fully from the IIA, whereas those included in the negative lists benefit only partially or not at all. Thus, sectors that are not included in the negative lists enjoy a deterministic reduction in PU but those included in the negative lists experience, at best, a stochastic reduction in PU. In Figure 2, the deterministic reduction in PU experienced by sectors that are not included in the negative lists is indicated by a solid arrow to the left with an open circle at zero.

We also distinguish between current reservation and future reservation in the negative lists by including Annex I sectors and Annex II sectors separately. On the one hand, sectors included in Annex I (i.e., current reservation) face the same level of regulations regarding the exempted obligations (e.g., NT and MNF) even after the IIA entered into force. Although firms in the Annex I sectors can expect that regulations will not become more stringent in the future, these firms do not know whether or when regulations will be liberalized. In this sense, compared with sectors that are not included in the annex, the Annex I sectors experience a stochastic reduction in PU at the time of the IIA's entry into force. In Figure 2, this is illustrated by a broken arrow to the left with a closed circle at zero.

[3]UNCTAD (2006) calls the former list "reservations for existing measures and liberalization commitments" and the latter list "reservations for future measures" (UNCTAD, 2006, pp. 25–26).

On the other hand, sectors included in Annex II (i.e., future reservation) may face more stringent regulations in the future. Thus, the degree of PU for those sectors remains the same or may even increase stochastically after an IIA enters into force. In Figure 2, this is shown by broken arrows to both the left and right with a closed circle at zero.

(Insert Figure 2 here.)

In this way, investors face different PU after an IIA enters into force depending on the sectors to which they belong. In the next section, we explain how we utilize these sectoral differences in PU due to IIAs to investigate the impact of PU on FDI.

3 Empirical Strategy

We analyze the effect of establishing negative lists in IIAs on FDI. Specifically, we focus on the reservation of NT and MFN at the stage of pre-establishment because NT and MFN are popularly included in IIAs and there is an ambiguous effect of prohibition of performance requirements, which include various provisions. In addition, provisions at the stage of pre-establishment are regarded as liberalization of FDI.

Our empirical strategy is to implement a DID estimation:

$$\begin{aligned}\hat{\beta}_{DID} = &\{E[y_{1ijkct}^{\text{affected}}|j,k,c,t,\boldsymbol{X}_{it},\boldsymbol{Z}_{kct},\boldsymbol{D}_{kct}] - E[y_{0ijkct}^{\text{affected}}|j,k,c,t,\boldsymbol{X}_{it},\boldsymbol{Z}_{kct},\boldsymbol{D}_{kct}]\} \\ &- \{E[y_{1ijkct}^{\text{unaffected}}|j,k,c,t,\boldsymbol{X}_{it},\boldsymbol{Z}_{kct},\boldsymbol{D}_{kct}] - E[y_{0ijkct}^{\text{unaffected}}|j,k,c,t,\boldsymbol{X}_{it},\boldsymbol{Z}_{kct},\boldsymbol{D}_{kct}]\}, \qquad (1)\end{aligned}$$

where $E[y_{1ijkct}^{\text{affected}}|\cdot]$ denotes the conditional expectation of outcome variables in affected sectors after an IIA became effective; and $E[y_{0ijkct}^{\text{unaffected}}|\cdot]$ indicates the conditional expectation of outcome variables in non-affected sectors before an IIA became effective. *Affected* in our analysis comprises sectors in the negative lists while *unaffected* comprises sectors not included in the negative lists. i is the subsidiary; j is the parent firm; k is the subsidiary's sector; c is the host economy; and t is the year. $\boldsymbol{X}_{it}$ represents time-varying controls of affiliate i, which include sales, employment, and R&D intensity. $\boldsymbol{Z}_{kct}$ is the sector-level GDP and number of workers in host economy c. $\boldsymbol{D}_{kct}$ denotes a vector of treatment variables.

To implement the DID estimation, we estimate the following equation:

$$\begin{aligned}Y_{ijkct} &= \alpha + \beta Negative\_List_{kc} * Post_{ct} + \boldsymbol{X}_{it} + \boldsymbol{Z}_{kct} \\ &\quad + \lambda_j + \lambda_k + \lambda_{ct} + \epsilon_{ijkct}, \qquad (2)\end{aligned}$$

where Y_{ijkct} is an outcome variable; $Negative\_list_{kc}$ is an indicator variable that takes the value one if sector k (created from the Survey on Overseas Business Activities, SOBA, four-digit sector) is

included in the negative lists in an IIA between Japan and the host economy c; $Post_{ct}$ is an indicator variable that takes the value one for years after an IIA becomes effective. $\boldsymbol{D}_{kct}$ in (1) corresponds to $Negative\_List_{kc} * Post_{ct}$.

Y_{ijkct} includes (a) capital investment, (b) a capital investment dummy, and (c) forecast error of capital investment. The capital investment dummy, $1_{invest>0}$, takes the value one if an affiliate makes a positive amount of capital investment and zero otherwise. Moreover, we follow Morikawa (2019) to measure forecast errors in capital investment. Let inv_t and $E(inv_t)$ be the amount of capital investment in t and the forecast amount of inv_t. The forecasts are reported by foreign affiliates in the previous year (i.e., $t-1$). Then, we measure the forecast error of capital investment, inv_error, by

$$\text{inv\_error} = |\log(inv_t) - \log(E(inv_t))|.$$

As for $Negative\_list_{kc}$, we distinguish between negative1 (current reservation) and negative2 (future reservation). We analyze (i) the total of the reservation in NT and MFN and (ii) the reservation in NT and MFN separately.

The expected sign of β is $\beta < 0$ because sectors included in the negative list experience a smaller reduction in PU than other sectors, or even an increase in PU by the entry of IIAs.

Moreover, a reduction in PU through an IIA with a partner economy may affect the global strategy of Japanese MNEs. To investigate this possibility, we conduct further analyses at the Japanese parent firm level.

In this analysis, we estimate the following equation:

$$\begin{aligned} inv_{jkct}/totinv_{jkt} &= \alpha + \beta Negative\_List_{kc} * Post_{ct} + \boldsymbol{X}_{jt} + \boldsymbol{Z}_{kct} \\ &\quad + \lambda_j + \lambda_k + \lambda_{ct} + \epsilon_{jkct}, \end{aligned} \tag{3}$$

where inv_{jkct} is capital investment. The numerator is the total of all affiliates in the same sector k in economy c for parent j and the denominator is the total of all affiliates worldwide in sector k for parent j. $\boldsymbol{X}_{jt}$ in this specification includes parent's sales, employment, and R&D intensity. The summary statistics of key variables are shown in Table 1.

Finally, our DID estimator is unbiased under the following assumption: the trend of capital investment is parallel between treatment and control groups in the absence of IIAs. This parallel trend assumption is expressed by the following conditional expectation:

$$\begin{aligned} E[y_{0ijkct}^{\text{affected}} | j, k, c, t, \boldsymbol{X}_{it}, \boldsymbol{Z}_{kct}, \boldsymbol{D}_{kct}] &= E[y_{0ijkct}^{\text{unaffected}} | j, k, c, t, \boldsymbol{X}_{it}, \boldsymbol{Z}_{kct}, \boldsymbol{D}_{kct}] \\ &= \lambda_j + \lambda_k + \lambda_{ct} + \boldsymbol{X}_{it} + \boldsymbol{Z}_{kct}. \end{aligned} \tag{4}$$

where $y_{0ijkct}^{\text{affected}}$ and $y_{0ijkct}^{\text{unaffected}}$ denote capital investment in affected and unaffected sectors, respectively, in the pre-treatment periods (i.e., years before an IIA became effective). This expectation is invalid

when there is less capital investment in sectors included in the negative list where foreign investors already have discouraged capital investment; this would result in a bias toward a positive effect of PU on capital investment.

To deal with the identification problem, we check whether IIAs induce a deviation from the parallel trend by estimating the following equation:

$$Y_{ijkct} = \alpha + \sum_{s=-6}^{6} \beta_{t+s} Negative\_List_{kc} * Year_{c,t+s} + \boldsymbol{X}_{it} + \boldsymbol{Z}_{kct} + \lambda_j + \lambda_k + \lambda_{ct} + \epsilon_{ijkct}. \quad (5)$$

Y_{jkct} includes (a) capital investment and (b) forecast error of capital investment. $Year_{ct}$ denotes a year dummy.

4 Data

We obtain our data from various sources. The data on Japanese MNEs' outward FDI and activities of foreign affiliates are obtained from the Survey on Overseas Business Activities (SOBA), or *Kaigai Jigyo Katsudo Kihon Chosa*, conducted by the Ministry of Economy, Trade and Industry (METI). Foreign affiliates covered by this survey include (a) a foreign affiliate in which a Japanese corporation has invested capital of 10% or more, (b) a foreign affiliate in which a "subsidiary," funded more than 50% by a Japanese corporation, has invested capital of more than 50%, and (c) a foreign affiliate in which a Japanese corporation and a subsidiary, funded more than 50% by a Japanese corporation, have invested capital of more than 50%. Detailed information is included in this dataset, such as sales, purchases, employment, and capital investment. Japanese parent firms and their foreign affiliates are matched in the dataset. Our observation period is 1995–2016. We select our sample so that observations with reporting non-negative values of capital investment are retained.

Since the information on Japanese parent firms in the SOBA is limited, we also obtain Japanese parent firm-level data from the Basic Survey of Japanese Business Structure and Activities (BSJBSA), or *Kigyo Katsudo Kihon Chosa*, conducted by the METI. The BSJBSA is a mandatory survey for all firms with 50 or more employees and whose paid-up capital or investment fund is over 30 million yen. The BSJBSA covers the mining, manufacturing, wholesale and retail trade, and service industries. Approximately 26,000 firms responded to the survey in 1995 and the number of respondents increased to about 30,000 in the 2010s. From this survey, information on parent firms' time-varying characteristics, such as sales, employment, and capital–labor ratio, as well as their FDI patterns are obtained.

To understand our main data, it is informative to illustrate Japanese firms' FDI patterns using BSJBSA data. Figure 3 indicates the number of firms among the respondents of the BSJBSA that

have at least one foreign affiliate (i.e., MNEs) and the share of those firms in all respondents of the BSJBSA in our observation period (1995–2016). There were about 3,200 MNEs in 1995, increasing to about 5,900 firms in 2016. The share of MNEs also increased from 12% in 1995 to 20% in 2016. Figure 4 illustrates the shares of firms that have foreign affiliates in Asia, Europe, and North America among all MNEs in the BSJBSA dataset. In 1995, 77% of Japanese MNEs had foreign affiliates in Asia and almost half (49%) of Japanese MNEs had foreign affiliates in North America. The share of firms with foreign affiliates in Europe was 26%. Since then, the share of firms with foreign affiliates in Asia increased but the shares of firms with foreign affiliates in North America and Europe decreased. In 2016, 92% of Japanese MNEs had foreign affiliates in Asia but only 34% (19%) of Japanese MNEs had foreign affiliates in North America (Europe).

(Insert Figures 3 and 4 here.)

The data on Japanese IIAs are from the legal text of individual treaties. We focus on 22 IIAs (i.e., BITs and EPAs with an investment chapter), which were signed by Japan and entered into force by the end of 2016.[4] Detailed information on the negative lists is extracted from the legal text of each treaty.

5 Empirical Results

5.1 Main results

In this section, we report our estimation results. Summary statistics of the main variables are reported in Table 1.

(Insert Table 1 here.)

We first examine the affiliate level to establish whether PU has any impact on investment by foreign affiliates by observing the effects of *negative*1 (current reservation) and *negative*2 (future reservation). The results are reported in columns (1) and (2) of Table 2. As shown, there are no significant effects. As reported in column (3), we find that only the future reservation (i.e., *negative*2) significantly increases the forecast error of investment in the next period.

[4]The partners of those 22 IIAs are Mongolia, Colombia, Australia, Mozambique, Myanmar, Kuwait, Taiwan, India, Peru, Switzerland, Uzbekistan, the Philippines, Laos, Brunei, Cambodia, Indonesia, Chile, Malaysia, Mexico, Vietnam, South Korea, and Singapore.

Second, we distinguish reserved provisions by NT and MFN. The results are reported in Table 3. As shown in columns (1) and (2), the current reservation of MFN significantly reduces investment by foreign affiliates. By contrast, only the future reservation of NT increases the forecast error of investment (see column (3)), although the coefficient of $MFN2 * after$ is not properly estimated in column (3).

(Insert Tables 2 and 3 here.)

We next examine the parent level to determine the impact of PU on the global strategy of Japanese MNEs. Column (4) of Tables 2 and 3 reports the results. Table 2 reports the results with $negative1 * after$ and $negative2 * after$ being explanatory variables while Table 3 reports the results with NT and MFN variables separately. The outcome variable is the share of capital investment in the partner economy in total capital investment by all foreign affiliates worldwide in the same sector. Table 2 shows no significant results. In Table 3, by contrast, only $MFN2 * after$ has a significantly negative coefficient. Thus, the result suggests that the future reservation in MFN has a negative impact on the activities of foreign affiliates in the partner economy in the MNE's global strategy.

In summary, from the affiliate-level estimations, we find that current reservation of MFN discourages capital investment and decreases the amount of investment. By contrast, future reservation of NT increases the forecast error of investment, whereas current reservation does not affect its error.

Moreover, from the parent firm-level estimations, we find that only future reservation of MFN reduces the share of the affected sector-country (economy) in the global FDI activities in terms of affiliate's investment.

5.2 Identification assumption and checks

In Figure 5, we plot the set of estimated coefficients from the DID estimation of Eq. (5) for $MFN1 * Year_{ct}$ (left panel) and $NT2 * Year_{ct}$ (right panel), showing the differences in capital investment (and its forecast error) between affected and unaffected sectors over time. The coefficients in the pre-treatment period are generally small and insignificant. By contrast, in the post-treatment period, although the changes are rather gradual, the coefficients tend to decline in capital investment and to rise in forecast error. This finding indicates that the trends in the treatment and control groups are likely to be parallel in the pre-treatment period but divergent gradually in the post-treatment period. Those results imply that our DID estimations generally satisfy the parallel trend assumption.

(Insert Figure 5 here.)

6 Robustness Checks

To check the robustness of the results presented in the previous section, we address the following issue. The "unaffected" group in our framework may contain various types of affiliates. Some sectors are excluded from the reserved provisions because the host economy may want to attract FDI quite actively. By contrast, some other excluded sectors may attract very little FDI and hence, might not need to be protected. To address this issue, we adopt the following strategy. We exclude observations with a low Japanese capital share or a small amount of capital, because in such cases, a parent company might not respond sensitively to a change in the investment environment. Excluding observations with those characteristics helps to control possible heterogeneity in the response to changes in PU among those in the "unaffected" group.

We then select observations in the following way. For a given economy and sector, we exclude (i) those whose Japanese capital share is among the lowest 5% in the distribution and (ii) those whose capital is among the lowest 5% in the distribution.

(Insert Tables 4 and 5 here.)

The estimated results using a selected sample are reported in Tables 4 and 5. The results in those tables are qualitatively similar to the results reported in Tables 2 and 3, suggesting that our findings in the previous section are robust.

7 Conclusions

In this study, we examine the impact of PU on FDI by using micro data of Japanese MNEs and their foreign affiliates. We focus on IIAs that Japan signed and entered into force in 2002–2016. Based on the information included in the negative lists in each IIA regarding which obligations are reserved for which sectors, we implement DID estimations to analyze causal effects of PU on FDI. We find evidence that PU matters for Japanese outward FDI. In particular, we find that signing an IIA stimulates FDI, which is measured by capital investment by foreign affiliates, through a reduction in PU, although the impact depends on the content of the IIA. The impact may differ between NT and MFN. It may also matter whether sectors are subject to current reservation or future reservation. We find that the current reservation of MFN decreases both capital investment and the amount of investment. By contrast, the future reservation of NT increases the forecast error of capital investment. Finally, we find that the future reservation of MFN reduces the share of the affected sector-country (economy) in the MNE's global FDI activities in terms of affiliate's investment.

The policy implications of the findings in this study are straightforward. PU in host economies discourages inward FDI. Signing an IIA helps to reduce PU. However, the content of an IIA also matters. Thus, to encourage outward FDI, it is important for the government to sign an effective IIA with potential host economies. Meanwhile, from the perspective of the host economies of FDI, policies that reduce PU, including the formation of IIAs with potential source economies of FDI, should be implemented to attract FDI.

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Data Appendix

A. Gross Domestic Product (GDP)

The following sources have been used to obtain sector-level GDP:

Chile: DataChile (https://es.datachile.io/geo/chile).
Colombia: The National Administrative Department of Statistics (https://www.dane.gov.co/index.php/en/).
Mexico: National Institute of Statistics and Geography (https://www.inegi.org.mx/).
Mozambique: Mozambique National Institute of Statistics (http://www.ine.gov.mz/estatisticas/estatisticas-economicas/contas-nacionais/anuais-1).
Peru: Peru National Institute of Statistics and Informatics (http://webapp.inei.gob.pe:8080/sirtod-series/).
Switzerland: Federal Statistical Office (https://www.bfs.admin.ch/bfs/en/home.html).
Uzbekistan: the State Committee of the Republic of Uzbekistan on statistics (https://stat.uz/).
The others: APO productivity database (https://www.apo-tokyo.org/).

B. Number of workers

Number of workers at the sector level are obtained from International Labour Organization Data Explorer (https://www.ilo.org/shinyapps/bulkexplorer26/?lang=en&segment=ref_area&id=TWN_A).

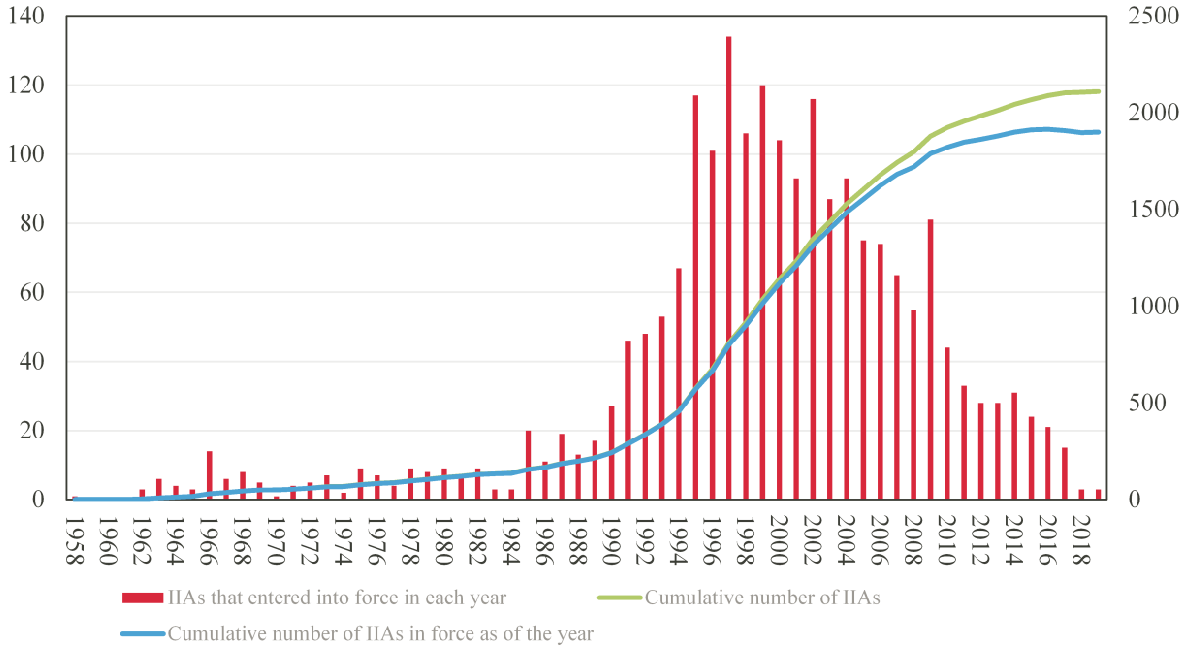

Figure 1: The number of IIAs in the world, 1958–2019

Source: Authors' calculation from UNCTAD database.

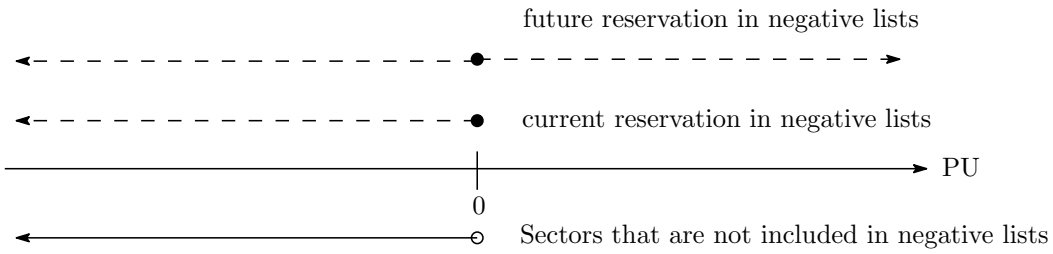

Figure 2: Conceptual framework of a change in PU due to current and future reservation

Note: A solid arrow denotes deterministic change of PU while a broken arrow denotes stochastic change. An open circle does not include zero but a closed circle does.

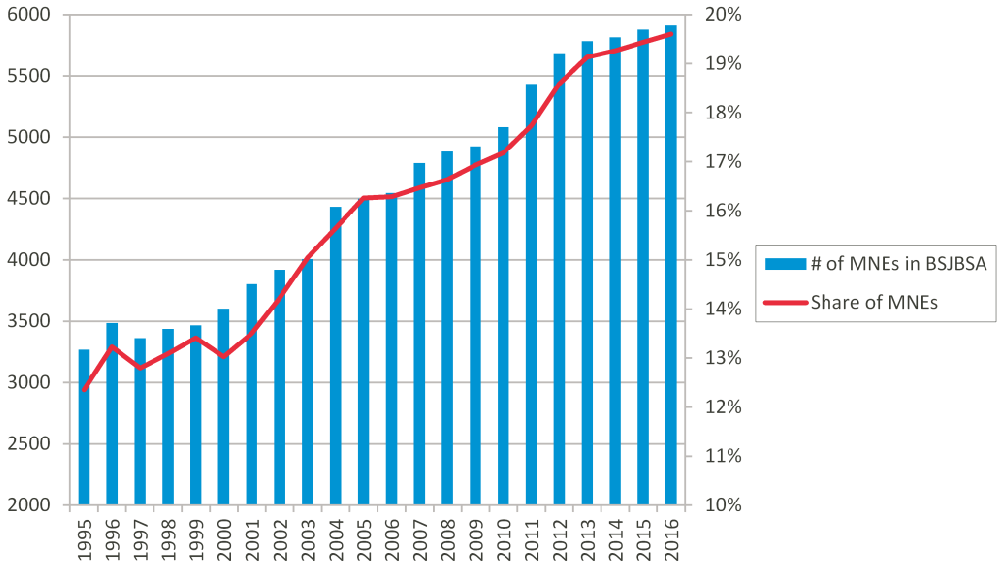

Figure 3: Japanese firms with foreign affiliates

Source: Authors' calculation from BSJBSA (METI).

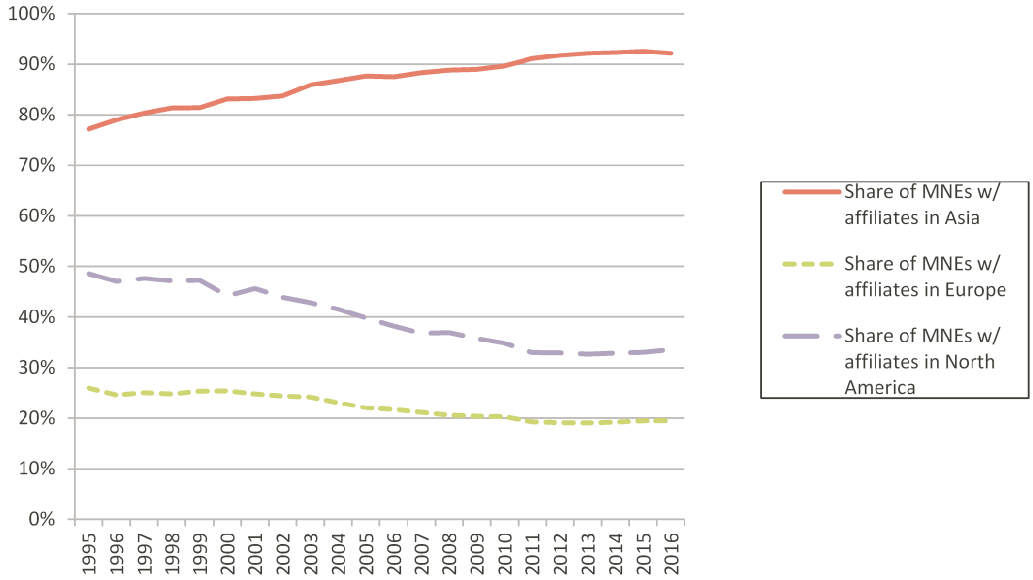

Figure 4: The shares of Japanese MNEs with foreign affiliates in Asia, Europe, and North America

Source: Authors' calculation from BSJBSA (METI).

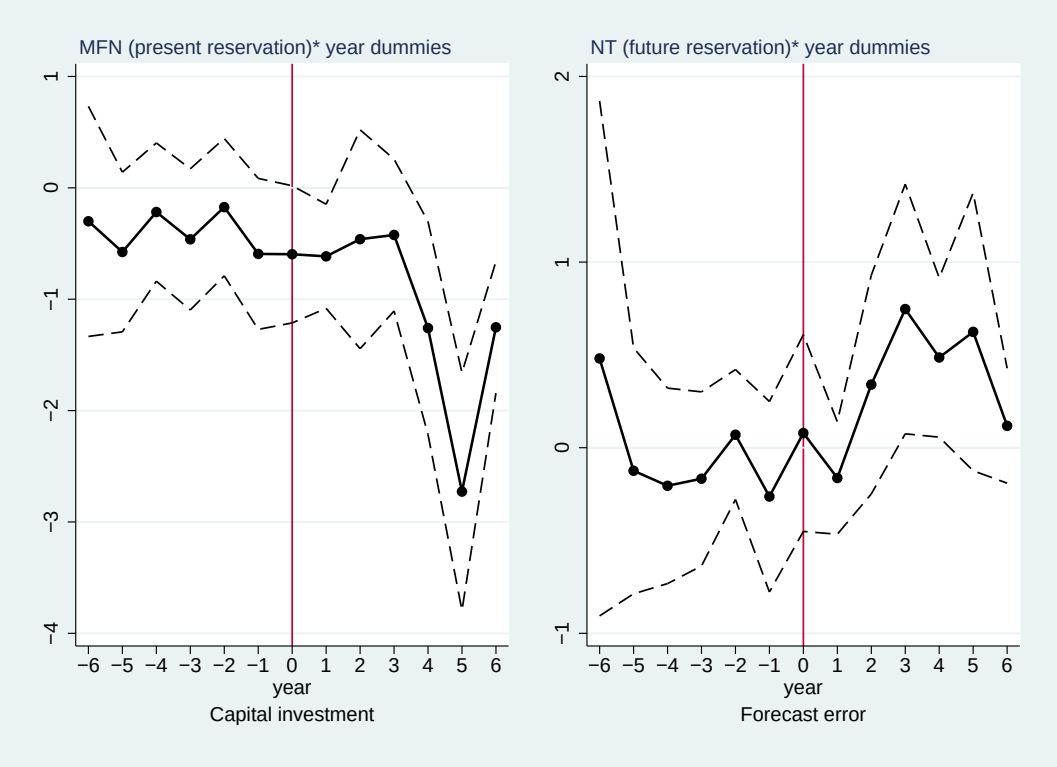

Figure 5: Estimated coefficients of the interactions between affected sectors and year dummies

Note: The solid line is the trend of capital investment difference between affected sectors (treatment group) and no-change sectors (control group) for the specification (5). The dashed lines represent the 95% confidence interval of the estimated effect.

Table 1: Summary statistics

Panel A. Affiliate-level variables					
Variables	Obs.	Mean	Std. dev.	Min.	Max.
Log(inv)	42,121	2.572	2.425	0.000	11.548
$1_{invest>0}$	42,121	0.667	0.471	0.000	1.000
inv_error	14,939	0.777	0.837	0.000	7.622
Panel B. Parent firm-level variables					
Variables	Obs.	Mean	Std. dev.	Min.	Max.
inv/totinv	30,876	0.333	0.399	0.000	1.000

Note: The sample period covers 1995–2016. This table reports the number of observations, and the means and standard deviations for the following variables: log of capital investment, capital investment dummy, forecast error, and inv/totinv.

Table 2: Baseline estimations

	Affiliate-level			Parent firm-level
	(1)	(2)	(3)	(4)
Dep. Var.	Log(invest)	$1_{invest>0}$	inv_error	inv/totinv
negative1*after	−0.180	−0.008	−0.019	−0.018
	(0.114)	(0.015)	(0.045)	(0.015)
negative2*after	0.182	−0.013	0.248**	−0.014
	(0.191)	(0.040)	(0.124)	(0.032)
R^2	0.533	0.410	0.080	0.550
N. of Obs.	42,121	42,121	14,939	30,876

Notes: ***, **, and * denote 1%, 5%, and 10% significance levels, respectively. Standard errors are clustered by sector in parentheses. Estimations include time-varying controls at the affiliate level and parent firm, sector, and country(economy)-year fixed effects as well as host economy's sector GDP and number of workers.

Table 3: Reservation level estimations

	Affiliate-level			Parent firm-level
	(1)	(2)	(3)	(4)
Dep. Var.	Log(invest)	$1_{invest>0}$	inv_error	inv/totinv
NT1*after	−0.160	−0.004	−0.025	−0.018
	(0.123)	(0.016)	(0.047)	(0.016)
MFN1*after	−0.499**	−0.098*	0.202	0.010
	(0.235)	(0.054)	(0.200)	(0.036)
NT2*after	0.175	−0.016	0.253**	−0.009
	(0.195)	(0.041)	(0.123)	(0.032)
MFN2*after	−0.191	−0.012	0.000	−0.257***
	(0.510)	(0.105)	(.)	(0.066)
R^2	0.533	0.410	0.080	0.550
No. of Obs.	42,121	42,121	14,939	30,876

Notes: ***, **, and * denote 1%, 5%, and 10% significance levels, respectively. Standard errors are clustered by sector in parentheses. Estimations include time-varying controls at the affiliate level and parent firm, sector, and country(economy)-year fixed effects as well as host economy's sector GDP and number of workers.

Table 4: Baseline estimations: selected sample

	Affiliate-level			Parent firm-level
	(1)	(2)	(3)	(4)
Dep. Var.	Log(invest)	$1_{invest>0}$	inv_error	inv/totinv
negative1*after	−0.193	−0.010	−0.017	−0.021
	(0.121)	(0.017)	(0.047)	(0.016)
negative2*after	0.136	−0.016	0.247*	−0.013
	(0.188)	(0.042)	(0.137)	(0.030)
R^2	0.539	0.414	0.080	0.553
N. of Obs.	39,783	39,783	14,224	29,401

Notes: ***, **, and * denote 1%, 5%, and 10% significance levels, respectively. Standard errors are clustered by sector in parentheses. Estimations include time-varying controls at the affiliate level and parent firm, sector, and country(economy)-year fixed effects as well as host economy's sector GDP and number of workers.

Table 5: Reservation level estimations: selected sample

	Affiliate-level			Parent firm-level
	(1)	(2)	(3)	(4)
Dep. Var.	Log(invest)	$1_{invest>0}$	inv_error	inv/totinv
NT1*after	−0.172	−0.006	−0.023	−0.021
	(0.131)	(0.018)	(0.048)	(0.017)
MFN1*after	−0.491**	−0.095*	0.199	0.015
	(0.244)	(0.052)	(0.201)	(0.036)
NT2*after	0.126	−0.019	0.252*	−0.008
	(0.193)	(0.043)	(0.136)	(0.029)
MFN2*after	−0.139	−0.007	0.000	−0.254***
	(0.514)	(0.106)	(.)	(0.063)
R^2	0.539	0.414	0.080	0.553
N. of Obs.	39,783	39,783	14,224	29,401

Notes: ***, **, and * denote 1%, 5%, and 10% significance levels, respectively. Standard errors are clustered by sector in parentheses. Estimations include time-varying controls at the affiliate level and parent firm, sector, and country(economy)-year fixed effects as well as host economy's sector GDP and number of workers.