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Trade Exposure and Electoral Protectionism: Evidence from Japanese politician-level data*

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Abstract

This study empirically examines the effect of economic shocks of trade on trade policy preferences of candidates who run for national elections, using politician-level data of Japan during the period 2009-2014. The focus of this research is the examination of how the influence of trade shocks measured by import competition with China on politicians' trade policy preferences is related to election pressure. The results reveal that an increase in import exposure of goods for production use deters candidates from supporting trade liberalization even after considering offset by export exposure. Among other points, this protectionist effect is more pronounced for challengers than for incumbents, for candidates who run for the Lower House election and are exposed to stronger pressures of elections than those who run for the Upper House election, and for candidates with weak voter support than for those who are supported by a substantial majority. Taking these findings into account, politicians who face trade shocks tend to appeal to protectionist trade policies as the pressures of elections become stronger.

Keywords: Trade policy preferences, Protectionism, Election, Electoral competition
JEL Classifications: D72, F13

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1. Introduction

Why do politicians endorse protectionist trade policies during election campaigns? Prior literature in international economics has pointed out the role of economic conditions in constituencies in determining their trade policy preferences. Economic variables, such as constituencies' skill endowments and industry compositions, are motivated by theoretical predictions (Magee 1980; Irwin 1994; Kaempfer and Marks 1993; Baldwin and Magee 2000; Beaulieu 2002) as well as campaign contributions based on political economic considerations centered on the trade policy for sale model (Grossman and Helpman 1994; Baldwin and Magee 2000; Devault 2010). Recent studies have attempted to elucidate the impact of the rapidly increasing import from China on domestic policy formation (Feigenbaum and Hall 2015; Autor et al. 2016; Che et al. 2016; Jensen et al. 2016). Simultaneously, some studies have suggested that the pressure of elections is one of the causes of a politician's protectionism (Conconi et al. 2014; Ito 2015). A politician may change their policy stance when placed in a challenging situation in elections. This study attempts to contribute to the literature by empirically examining how the effect of trade shock on politician's trade policy preferences is related to electoral pressures, based on survey data of candidates who ran for national elections in Japan in the period 2009–2014.

Studies on the impact of rising import exposure from China on the labor market find significant job losses in manufacturing in the United States of America (the U.S.) (Autor et al. 2013; Acemoglu et al. 2016). Chinese import penetration also affects Congress' policy stance.

Autor et al. (2016) report that Chinese import shocks increased political polarization in the U.S. congressional districts from the analysis of 2002–2010 congressional elections. In addition, Autor et al. (2017) include the result that the exposure of local labor markets to increased import competition from China affected voting in the U.S. presidential race in 2016, indicating the positive effect of rising import competition on Republican vote share gains. Considering trade policy, Feigenbaum and Hall (2015) examine whether increased Chinese import exposure affects roll-call behavior and electoral outcomes in the U.S. House for the period 1990–2010. They provide evidence that local economic shocks from Chinese import penetration force legislators to vote for protectionist trade policies.

Similar to the U.S., in Japan, imports from China have increased dramatically after China joined the World Trade Organization (WTO), accounting a quarter of the total imports. Figure 1 shows Japanese imports from China over the past 10 years separately for production use and consumption based on RIETI Trade Industry Database 2015 which classified trade data at the goods level by consumer entity of importers. As is evident from the figure, the increase in imports for production use is more prominent than for consumption. Politicians may react sensitively to increased imports for production use that harm producers in their constituencies and may prefer protectionist trade policies. The primary objective of this empirical study is to evaluate the impact of import exposure on politicians' trade policy preferences separately for production use and consumption by following the measurement for import exposure per worker

by Autor et al. (2013). The protectionist effect may be mitigated by export exposure, as it is considered to have a positive economic impact on local labor market (Dauth et al., 2014). Therefore, the present study considers the offset effect of export exposure as well as import exposure. Secondly, this paper analyzes how the effect of trade exposure differs among politicians according to election pressures. There is limited empirical study on how trade shock and electoral pressure are related to each other. This study has an advantage over previous studies with respect to data. The vast majority of previous studies on this topic is based on data from the U.S. Congress and includes only election winners. Therefore, there is potential selection bias in the sense that only strong politicians are selected. The present study has the advantage of representing politicians' trade policy preferences and controlling for their attributes using candidate data of those who won and lost, retrieved from a survey conducted during a general election campaign. These unique data enable us to precisely observe the heterogeneity of electoral pressures among politicians and to examine the determinants of trade policy preferences.

The empirical results show that an increase in import exposure per worker in the constituency where candidates run deter them from supporting trade liberalization. This effect is not offset by export exposure per worker. However, it varies depending on the content of imported goods, which cannot be confirmed for imports of consumer goods, but is markedly confirmed in imports for production use represented by intermediate goods. Moreover, the

remarkable findings of this study are that the protectionist effect inspired by import exposure differs depending on the competition environment for elections. More specifically, non-incumbents respond more sensitively to trade shocks and tend to advocate protectionist trade policy than incumbent candidates. In addition, the influence varies depending on the election system. The protectionist effect of trade shock is more pronounced for candidates who run for elections for members of the House of Representatives, who are not aware when the election will take place during the 3-year term rather than candidates running for members of the House of Council, where the term of 6 years is guaranteed. The difference in electoral strength between the candidates also matters. There is a view that it is easier for politicians who gain the support of numerous voters in the election to appeal for partisan policies. The results of this study indicate that weak candidates in elections react sensitively to trade shocks in their constituencies and are more likely to support protectionism.

The remainder of this paper is organized as follows. Section 2 describes the analytical framework to examine the effect of trade shocks on trade policy preferences of Japanese politicians and presents the hypothesis to be tested. Section 3 explains the data and variables used in the empirical analysis. Section 4 presents the estimation results and Section 5 concludes.

2. Analytical framework

2.1. Hypotheses

This section presents the hypotheses to be tested by econometric analysis and Japanese

politicians' trade policy preferences data. The primary objective is to examine how candidates' trade policy preferences respond to trade shocks in constituencies. If industries competing with imports are concentrated within constituencies, candidates will be able to increase the probability of winning by placing a protectionist trade policy on commitments. Therefore, we can expect that candidates from constituencies with high import exposure tend to prefer protectionism policies for popularity. This argument is the first hypothesis to be tested in the empirical analysis. On the other hand, protectionist policy preferences may be restrained if export industries are intensively located within the constituencies. Therefore, the influence of import exposure may be offset when considering export exposure, it is an empirical issue whether the protectionist effect of the import exposure still remains in consideration of export exposure.

Another interest of this study is how the protectionist effect of trade shock will change depending on the pressure of elections. Recent empirical studies have shown that the pressure of winning the election is closely related to the politicians' preference for protectionism. For example, Conconi et al. (2014) who examine the determinants of legislators' votes on trade policy using the results of votes on major bills in the U.S. Congress since the 1970s show that senators are more likely to support free trade policy than the house representatives, except for those who are serving their final terms.[1] This result suggests that re-electoral incentives deter

[1] In the U.S. Congress, one-third of the senators are elected every 2 years together with the entire membership of the House of Representatives.

legislators from supporting free trade policies. Moreover, they report that the protectionist effect of election proximity is not observed for senators who hold safe seats defined by a given margin of victory in the previous election. Similarly, Ito (2015) shows that candidates who are projected to win the election by a narrow margin are more likely to favor protectionist trade policies than those who are projected to win by a substantial majority, using the data on trade policy preferences of candidates for the House of Representatives election in 2012. A series of these findings imply that the pressure of elections induces politicians into protectionist policies. Candidates facing competitive pressures in elections may have a stronger protectionist response to trade shocks. This idea is the second hypothesis to be tested; the effect of import exposure on trade policy preference will be more pronounced by electoral pressure.

Considering electoral pressure, this study focuses on three factors. The first trait is incumbency. It is well known that incumbents are more advantageous than freshmen candidates, both in terms of finance and degree of recognition and this has empirical evidence (Gelman and King 1990; Lee 2001). Non-incumbents are more exposed to the pressure of election than incumbents. It is expected that non-incumbents are more sensitive to trade shocks than incumbents and favor protectionist trade policies to take popular positions. One may expect that incumbents also advocate protectionism in response to trade shocks in their constituencies following non-incumbents, but incumbent candidates may not be able to flexibly change election promises compared to non-incumbents. It would be more natural to consider that non-

incumbents can more flexibly decide their policy stance than incumbents who are afraid to be labeled as "flip-floppers." Therefore, the present study assumes that a possible protectionist effect of import exposure on trade policy preference will be more pronounced for non-incumbents than incumbents whose election promises are rigid.[2]

As a second element, this research focuses on the difference between the candidates of the House of Representatives and House of Councilors. In Japan, there is a significant difference between the election system and the term of office between the houses. Although the term of office of the House of Representatives is 4 years, the election of expiring the term of office is extremely rare owing to the dissolution of the Congress. On the other hand, the House of Councilors' term of office is 6 years and the term of office is guaranteed as the parliament is not dissolved. The members of the House of Representatives are considered to be more sensitive to voices of voters owing to the tension that they do not know when the election will take place.[3] In addition, even in the election system, the House of Representatives has a single-seat constituency electoral system with small-sized electoral districts, but the electoral district of the Upper House is at the prefecture-level, and thus relatively large with two or more

[2] Feigenbaum and Hall (2015) who examine the effects of localized economic shocks on voting on trade bills in the U.S. House show contradictory results to this view. Under the assumption that incumbents can flexibly change policy positions according to the economic conditions, they report that incumbents tend to vote by favoring protectionism in response to trade shocks and this effect is more pronounced in districts where the incumbents are most worried about re-election. However, as their data captured voting behavior in the U.S. Congress, the subjects are limited to incumbents, winners in elections.

[3] In Japan, the Prime Minister who has the authority to dissolve the House of Representatives often exercise their power within 2 to 3 years and elections have not been held at the expiration of terms of office since 1976.

seats of Diet members. The difference in seats may also affect electoral pressures. These factors can be controlled for in the empirical analysis.

The third factor is electoral strength that may also affect policy positions. Some empirical studies examine the relationship between electoral strength and political stance for general policies. For example, Lee et al. (2004) examine whether voters affect politicians' policy preferences or politicians merely select existing policies using various voting score data from the U.S. Congress during the period 1946 to 1995. In the former causal relationship, candidates who are elected with a large majority are likely to select partisan policies, whereas electoral competition leads candidates to select more moderate policies. In the context of trade policy, politicians in close elections are expected to advocate protectionism as protectionist trade policies are considered moderate owing to the fact that they maintain the status quo, whereas free trade policy is likely to be partisan as it leads to structural changes. Conconi et al. (2014) report that the protectionist effect from election proximity is not observed for senators who hold safe seats defined by a given margin of victory in the previous election. This evidence implies that the effect of electoral pressure on trade policy preferences is heterogeneous among politicians. In this analysis, it is expected that the protectionist effect of trade shocks is larger for candidates with unsafe seats than those with safe seats.

2.2. Empirical strategy

Consistent with the previous literature, the model is specified based on a binary choice model.

A binary variable is constructed and takes one if a candidate supports protectionist trade policies and zero otherwise. The obtained variable, y_{ij} is expressed as follows:

$$y_{ij} = \begin{cases} 1: \text{ Protectionist trade policy if } y_{ij}^* > 0 \\ 0: \text{ Trade liberalization if } y_{ij}^* \leq 0 \end{cases}$$

where suffix *i* denotes the candidate and *j* denotes the constituency. y_{ij}^* is a latent variable defined as an observable binary variable that equals one if candidate *i*, who runs from constituency *j*, supports a protectionist trade policy and zero otherwise. The latent variable is assumed to be linearly related to the independent variables. The key variables in this analysis are proxy variables for trade shocks of the constituency and competitive pressures of elections. As the impact of trade shocks on policy preference is expected to be more pronounced as competition is more intense, this paper also examines the interaction relationship between trade shocks and variables indicating competitive pressures.

$$y_{ij}^* = \beta_1 IM_j + \beta_2 EP_{ij} + \beta_{12}(IM_j \times EP_{ij}) + \gamma Z_{ij} + u_{ij} \quad (1)$$

where IM_j is the import exposure in constituency *j*, EP_{ij} is a variable indicating electoral pressures, and Z_{ij} is a set of other control covariates. The equation is specified as a logit model, assuming that the error term u_{ij} is distributed as a logistic function. The equation is estimated

by maximum likelihood estimation. The magnitude of the interaction effect in non-linear models is not equal to the marginal effect of the interaction term. The econometric issue is that even if β_{12} is equal to zero, the interaction effect may be nonzero depending on other covariates (Ai and Norton, 2003). The correct interaction effect is computed as follows when EP_{ij} is a continuous variable.

$$\frac{\partial^2 E\left[y_{ij}\middle|IM_j, EP_{ij}, Z_{ij}\right]}{\partial IM_j \partial EP_{ij}} = \beta_{12}\{F(u)(1-F(u))\} + (\beta_1 + \beta_{12}EP_{ij})(\beta_2 + \beta_{12}IM_j) \{F(u)(1-F(u))(1-2F(u))\} \quad (2)$$

where $F(u) = 1/\{1+\exp[-(\beta_1 IM_j + \beta_2 EP_{ij} + \beta_{12}(IM_j \times EP_{ij}) + \gamma Z_{ij})]\}$ is the cumulative density function of the logit specification. When EP_{ij} is a binary variable, the interaction effect on the probability of choosing protectionism is calculated as the discrete difference with respect to the incumbent dummy of the single derivative with respect to the import exposure per worker. In this case, the interaction effect is computed as follows:

$$\frac{\Delta(\partial E[y_{ij}|IM_j, EP_{ij}, Z_{ij}]/\partial IM_j)}{\Delta EP_{ij}} = (\beta_1 + \beta_{12})\Big(F\{(\beta_1 + \beta_{12})IM_j + \beta_2 + \gamma Z_{ijt}\}(1 - F\{(\beta_1 + \beta_{12})IM_j + \beta_2 + \gamma Z_{ijt}\})\Big) - \beta_1[F(\beta_1 IM_j + \gamma Z_{ijt})\{1 - F(\beta_1 IM_j + \gamma Z_{ijt})\}] \quad (3)$$

For both Eq (2) and (3), as the interaction effect varies according to other covariates, there are

variations in the magnitude and statistical significance of the interaction effect. As pointed by Greene (2010), graphical presentations are useful and informative to examine interaction effects in non-linear models. We can graphically show how the interaction effect varies depending on the other variables in addition to descriptive statistics of the interaction effect. However, evaluating the interaction effect would be difficult when the model contains many explanatory variables. Following Mitchell and Chen (2005), the present study examines whether the main result of interaction effect does not change depending on other covariates by considering the aggregate covariate contribution which is the linear combination of the remaining explanatory variables multiplied by their corresponding estimated parameters of the logistic regression. Hence, in this analysis, suppose the definition of covariate contribution is $\hat{\gamma}Z_{ij}$. The interaction effect is estimated at the mean value, one standard deviation above the mean, and one standard deviation below the mean of the covariate contribution to check the consistency of the interaction effect.

3. Data and variables

3.1. Trade policy preferences of Japanese politicians

This study used data retrieved from the University of Tokyo-Asahi Survey (UTAS) for politicians' trade policy preferences, which is collected when a national election takes place in Japan.[4] The results of the survey were released at the candidate-level and party-level promptly

[4] The UTAS is conducted by Masaki Taniguchi of the Graduate Schools for Law and Politics, University of Tokyo and the *Asahi Shimbun*.

before the election date by *Asahi Shimbun*, one of Japan's major daily newspapers. The response rate of this survey is extremely high. For example, the effective response rate for the election of the House of Representatives in 2014 was 95%. The survey obtained data on various policy preferences, including trade policies from candidates running for the Diet, and the data includes both election winners and losers. This survey is the only method to identify politicians' political stances in the Japanese parliament where the principle of "one party for one person" is typical. The data show the political stances of candidates on each policy for every constituency.

The present study used the results of the House of Representatives elections in 2009, 2012, and 2014, and the results of the Upper House elections in 2010 and 2013. The survey comprised of two questions on trade policy preferences. The first was a general question on trade liberalization: "*Which policy do you support: (a) trade liberalization or (b) protection of domestic industries?*" The answers were as follows: 1. "*support (a)*," 2. "*somewhat support (a)*," 3. "*not sure*," 4. "*somewhat support (b)*," 5. "*support (b)*," and not answered. Figure 2 shows the results for each year as a bar chart. It appears that most politicians tend to prefer protectionism or to not clarify their attitudes.

3.2. Explanatory variables

Trade shocks

This study applies a change in import per worker to proxy for import exposure in the

constituency IM_j, similar to Feigenbaum and Hall (2015). More specifically, following Autor et al. (2013), the measurement for the import exposure per worker is defined as follows:

$$\Delta IMW_{jt} = \sum_k \left(\frac{L_{jkt}}{L_{kt}}\right)\left(\frac{\Delta M_{kt}^C}{L_{jt}}\right) \quad (4)$$

where suffix *j* denotes the constituency and *k* denotes the industry. L_{jkt} is the number of workers in constituency *j*, industry *k*, and year *t*. L_{kt} is the total number of workers in industry *k* and year *t*. L_{jt} is the total number of workers in constituency *j* and year *t*. ΔM_{kt}^C are the changes in imports from China of industry *k* and year *t*. Similar to several studies using this index, this study also focuses on import competition from China, which is Japan's largest importing partner, accounting for a quarter of the total imports. On the other hand, the effect of import exposure can be offset by local export exposure. To consider the potential of offset, in the same manner as the import exposure, the measurement for the export exposure per worker is formed as follows:

$$\Delta EXW_{jt} = \sum_k \left(\frac{L_{jkt}}{L_{kt}}\right)\left(\frac{\Delta X_{kt}^C}{L_{jt}}\right) \quad (5)$$

where ΔX_{kt}^C are the changes in exports to China of industry *k* and year *t*. Regarding the constituency-level variables, there are no official statistics though prefectural-level data can be

applied for the House of Councilors. One challenge is to allocate data obtained from censuses by municipalities to constituencies for the candidates of the House of Representatives. This study constructs data at the constituency-level by aggregating data from the 2010 national census disaggregated into the “cyocyo”-level, which is the smallest unit of address in a municipality similar to a “street”-level. Trade volume is retrieved from RIETI-TID trade data, which can be decomposed into 13 industries (SITC Rev.3) and five production processes (materials, processed goods, parts and components, capital goods, and consumption goods) based on Broad Economic Categories (BEC) codes. The import and export price indexes retrieved from the Bank of Japan are used to deflate the trade volume. A disadvantage in constructing the import and export exposure measurement is that the industry classification is irregular due to data constraints of the census. Eventually, the industrial classification is limited to four industries; agriculture, forestry, and fishery, mining, manufacturing, and service, while maintaining consistency of industry categories between the census and trade data. The advantage of this study is that trade volume can be disaggregated into each production process, and thereby enables the examination of whether the effect of ΔIMW_{jt} on trade policy preferences differs according to the difference of imported goods. More specifically, the possible different effects between the two types of imported goods; consumption goods, and goods for production use (materials, processed goods, parts and components, and capital goods) are examined in the present study. To examine this in the estimation, the import exposure per

worker is constructed for the following three cases; ΔIMW_{jt} based on the total import from China, ΔIMW_C_{jt} based on import of consumption goods, and ΔIMW_P_{jt} based on import of goods for production use. The export exposure for consumption goods ΔEXW_C_{jt} and goods for production use ΔEXW_P_{jt} are constructed in the same manner.

Electoral pressures

As mentioned in Section 2.1, this study focuses on three factors of electoral pressures. The first variable is a dummy variable indicating whether the candidate is incumbent or not (*Incumbent*). The UTAS survey also provides information on candidates' basic characteristics, including careers. The dummy variable for an incumbent member is defined as a value of one if candidates are incumbent and zero otherwise. The differences in experience between the incumbents are controlled by the number of experienced terms served as a member of the Diet (*Terms*) added to the right-hand side of the model.[5] Second, based on the idea that the House of Representatives is more competitive than the House of Councilors, the difference between the two is examined. The dummy takes a value of one if candidates run for the House of Councilors and zero otherwise (*Upper*). The third proxy variable for electoral pressures is electoral strength measured by the number of votes gained in the election. Assuming that all candidates can estimate the number of possible votes they will obtain in the election with

[5] In the case of a member of the House of Councilors, as the term of office is long, the number of experienced terms is doubled.

accuracy based on opinion polls in the election campaign, the difference in actual votes over competitors can be considered a proxy for the level of electoral strength. More specifically, a victory margin or loss (*Vote Margin*) is constructed. For winners, the margin is defined as the share of the votes obtained over the votes of the second-place candidate, whereas for those placed second or lower, it is defined as the share of the votes obtained over the votes of the first-place candidate.

Other covariates

Other characteristics at the constituency-level are expected to affect candidates' trade policy preferences. The issue of trade liberalization in Japan is also a matter of importance as agriculture is provided a high protection level.[6] Therefore, not only does the import exposure per worker affect candidates' trade policy preferences, the presence of existing farmers may also influence the preferences. In this analysis, the share of agricultural workers (*Agri*) is also included in the model. Politicians in large constituencies face relatively low pressures from special interest groups or specific sectors as voters are more diverse. Politicians would rather support free trade policies relying on votes from a large number of voters who benefit from tariff reduction. Therefore, it has been argued that constituency size is negatively correlated

[6] According to the *World Tariff Profiles 2014*, Japan's simple average most favored nation applied a tariff rate of 19% on agricultural products, which is higher than that of the European Union (EU) (13.2%) and the U.S. (5.3%). In particular, the tariff rate on some commodities is extremely high. For example, the tariff on rice is equivalent to 778% and the tariff on butter is 360%. However, the average tariff rate on non-agricultural products in Japan is 2.6%, which is lower than that of the EU (4.2%) and the U.S. (3.1%).

with support for protectionist trade policies (Baldwin 1985; Rogowski 1987; Irwin and Kroszner 1999; Nielson 2003). To measure the size of a constituency, the number of total votes is employed (*Size*). Simultaneously, policy stances could be affected by the number of candidates in a constituency. Although ideological positions converge at the median voter's preference when there are two candidates as described by the Hotelling–Downs median voter theorem, Cox (1987, 1990) argues that the ideological position of each candidate is scattered as the number of candidates in a constituency increases as a candidate realizes that the likelihood of winning is influenced by few votes and attempts to differentiate their political stance from those of competitors to secure votes from a specific group. To control for the possible policy divergence due to the broadness of a constituency, the Cox threshold defined as the number of seats divided by the number of candidates in the constituency is employed (*Cox*).

The UTAS compiles candidates' basic characteristics, such as gender and party affiliation. Previous studies on the determinants of individuals' trade policy preferences consistently show that in comparison to males, females are more likely to prefer import restrictions (Scheve and Slaughter 2001; Mayda and Rodrik 2005; Blonigen 2011; Ito et al. 2015; Tomiura et al. 2016). The model includes gender dummy variable that takes a value of one if candidates are female and zero otherwise. The affiliation of a political party is likely to significantly affect their policy preferences. In the case of the U.S. Congress, Democrats tend

to be more protectionist than Republicans, as shown by Conconi et al. (2014). Table 1 illustrates several political parties in Japan and shows the distribution of candidates' trade policy preferences by political party. Candidates' policy preferences differ according to party affiliation, and this suggests that party dummy variables are highly significant. One may consider that we should take into account political contributions from special interest groups; however, Japanese law prohibits donations from corporations to individual politicians, but allows corporate donations to political parties and donations from individuals to politicians. Owing to the restriction of corporate donations to politicians, political contributions are expected to have a limited effect on candidates' policy preferences.[7] Table 1 displays the descriptive statistics for candidate characteristics running for election and their constituencies' characteristics.

4. Empirical results

4.1. Baseline results

Table 2 displays the basic results estimated by the logit model for the choice of trade liberalization or protection of domestic industries. The results show the estimated coefficients of logistic regression and robust standard errors clustered at the prefectural-level in brackets to account for the correlation between candidates within a prefecture. For all the models, political

[7] Politicians can receive donations from corporations owing to the law that allows free movement of money between a political party and politicians. To some extent, party dummy variables are expected to control for the possible effects of political contributions through this legal loophole.

party fixed effects and year fixed effects are controlled, but the results of coefficients are omitted from the table. Column 1 shows the model that includes only the key variables for testing the protectionist effect of import exposure per worker. As predicted, the sign of the coefficient is positive, suggesting the protectionist effect of import exposure. As shown in columns [2], [3] and [4], it is remarkable that the result is invariant, even when the export exposure per worker and the other constituency attributes are added. Moreover, when examined separately for consumer goods and goods for production use in columns [5]-[10], the protectionist effect of import exposure is still not offset by the export exposures. Only the import exposure of goods for production use ΔIMW_P_{jt} has a statistically significant positive effect, indicating that protectionist policies are preferred for candidates in constituencies with large import exposure on production side. As shown in Figure 1, this result seems to reflect that the rapid increase in imports from China is remarkable in the production goods.

The presence of farmers also has relevance to protectionism. The share of agricultural workers is strongly and positively correlated with the choice of protectionism. It was predicted that the attributes of constituencies such as Cox threshold and constituency size correlate with protectionism preferences, but these are not statistically significant. Regarding candidates' attributes concerning competitive pressures of elections, the focus of this paper, the incumbent dummy and upper house dummy show statistically significant negative signs, while the victory margin over the second-place candidate or loss margin over the first-place candidate (*margin*)

is not statistically significant. The number of experienced terms served as a member of Diet also indicates a statistically insignificant sign. Consistent with the results of previous studies on the preference of voter's trade policy preferences, although the results are at the 10% significance level, female candidates appear to prefer protectionist trade policies.

4.2. Cross relationship between trade shocks and election pressures

This subsection reports the results on interaction effects of the import exposure per worker and proxies for election pressures to examine whether the protectionist effect of trade shocks is more for candidates who are exposed to severe election pressures. It is pointed out that incumbents have advantages both in terms of finance and degree of recognition. Therefore, non-incumbent candidates are considered to adopt a policy that is more popular against trade shocks. In other words, they adopt a protectionist attitude. The inter-cameral difference in election pressure is driven by the difference in term length. In Japan, members of the House of Representatives are not aware when the election will take place during the 3-year term because the prime minister has the right to dissolve Congress while the term of 6 years is guaranteed for members of the House of Council. The election pressure is likely to be severe for candidates for members of the House of Representatives. As described in Eq. (2), the interaction effect on the probability of choosing protectionism is calculated as the discrete difference with respect to the incumbent dummy or upper house dummy of the single derivative with respect to the import exposure per worker. The election pressure is also proxied by the ratio of win or loss

vote margin. In this case, the interaction effect of the two continuous variables is computed as the cross derivative with respect to the import exposure and vote margin as displayed in Eq. (3). Although the estimation results are omitted, the coefficients of the interaction terms of the incumbent dummy or vote margin and the import exposure per worker are statistically significant at the 1% level and negative as predicted, and the interaction term of upper house dummy also shows a negative sign and significant at the 10% level. However, the coefficient on the interaction term is not equal to the interaction effect in the case of non-linear model as discussed in Section 2.2. As the interaction effect varies according to the value of other covariates, descriptive statistics of the interaction effect for every observation in the sample are informative. Table 3 displays the descriptive statistics of the estimated interaction effects of ΔIMW_P_{jt} and the interest variables. As can be seen from z-value in parentheses, the interaction effect of vote margin and import exposure is statistically significant for every observation in the sample. As for the incumbency and upper house dummy, although there are a certain number of observations for which the interaction effect with respect to the import exposure is not significantly different from zero, the sign of the effect is consistently negative in line with the prediction.

In addition to the descriptive statistics, graphical devices are much more informative to understand interaction effects (Greene, 2010). For example, Figure 3 visually shows the results for both non-incumbents and incumbents, where the vertical axis shows the predicted

probability on supporting protectionist trade policy and the horizontal axis indicates export exposure per worker in units of 100 USD. The interaction effect is measured for the case where the covariate contribution is low and the case where it is high, and then the consistency of the results is verified. In this estimation, we could interpret an interaction effect as the change in the distance between the two set of predicted probabilities. There is a clear difference between the two, while incumbents are neutral to import exposure, non-incumbent candidates show a steep upward slope. This tendency is invariant according to the values of other variables. As shown in Figure 4, similar results are detected in the differences between the House of Representatives and House of Councilors. A steeper slope is found for candidates of the House of Representatives than those of the House of Councilors. Candidates who run for the election of members of the House of Representatives who are exposed to severe pressures due to irregular election timing are more sensitive to import exposure in their constituencies. It is a remarkable finding that this inter-cameral difference continues to remain even if the size of the constituency is considered. The impact of trade shock dramatically varies with the strength of the election proxied by the ratio of win or loss vote margin. In this case, the interaction effect is computed as the cross derivative with respect to the import exposure and vote margin. As shown in Figure 5, the result appears to be that candidates who are strong in elections such as "double score winner (Vote margin=2)" or "triple score winner (Vote margin=3)" who won the election by a substantial majority with more than twice or triple number of votes of the

second-placed candidates may not choose ambiguous attitude or protectionism even if they face a trade shock in their constituency. On the other hand, as opposed to strong candidates in elections, candidates who face a close race in elections (Vote margin=1), are more inclined to protectionism than the candidates with safe seats as the import exposure per worker increases. To summarize these results, candidates with severe election pressures are more likely to advocate protectionist trade policies if they face trade shocks in their constituencies. These base results are not changed even when candidates who answered “unsure” regarding the questionnaire as shown in Table 4.

5. Conclusions

There is growing interest on the impact of trade shock on domestic policy formation. This study attempted to contribute to the literature of this context by empirically examining the determinants of their policy preferences using candidate-level data of general elections in Japan, paying attention to the link between trade shocks and electoral pressures. Unlike several previous studies in this field that have relied on data of the U.S. Congress, the data used in this study include both election winners and losers in elections, and therefore enable us to avoid possible sample selection bias. As we predict, it has become clear that the increase in import exposure in constituencies that are likely to involve job replacement prevents politicians from favoring free trade. This protectionist effect is particularly noticeable in the import of goods

for production use that have dramatically increased in the last two decades. Moreover, the results of this study provide evidence that the protectionist effect of trade shocks is sensitive to electoral pressure. The results suggest that as the election pressure increases, politicians attempt to acquire votes by placing trade shocks as a legitimate reason to advocate protectionist trade policies.

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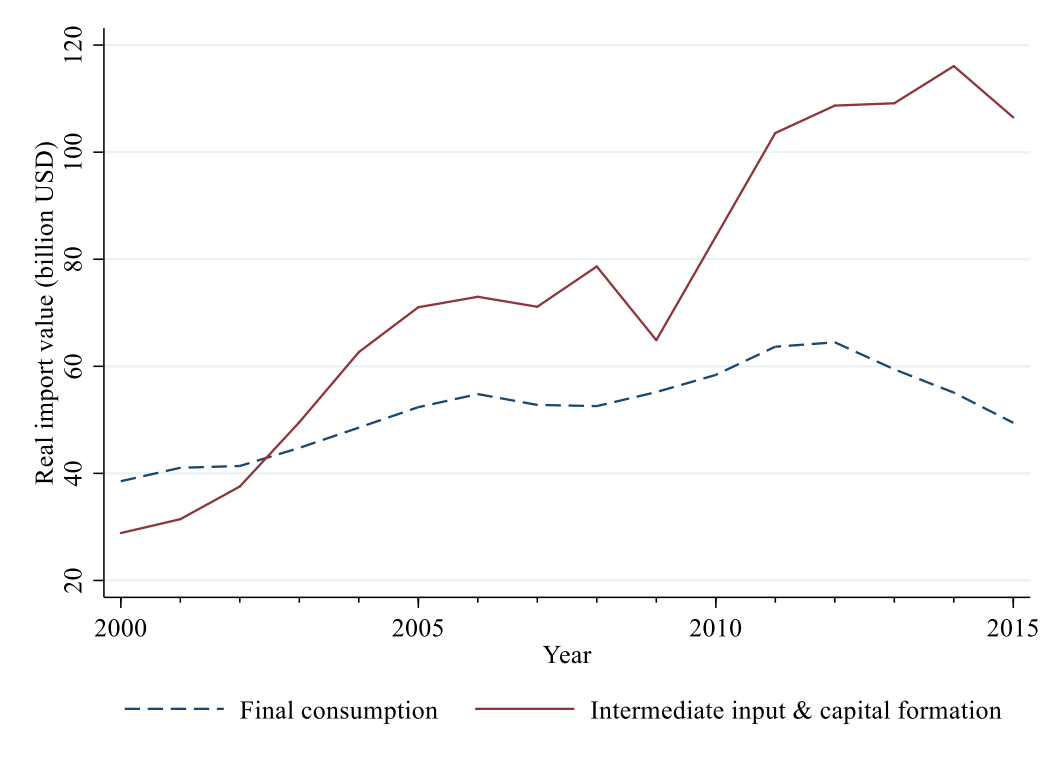
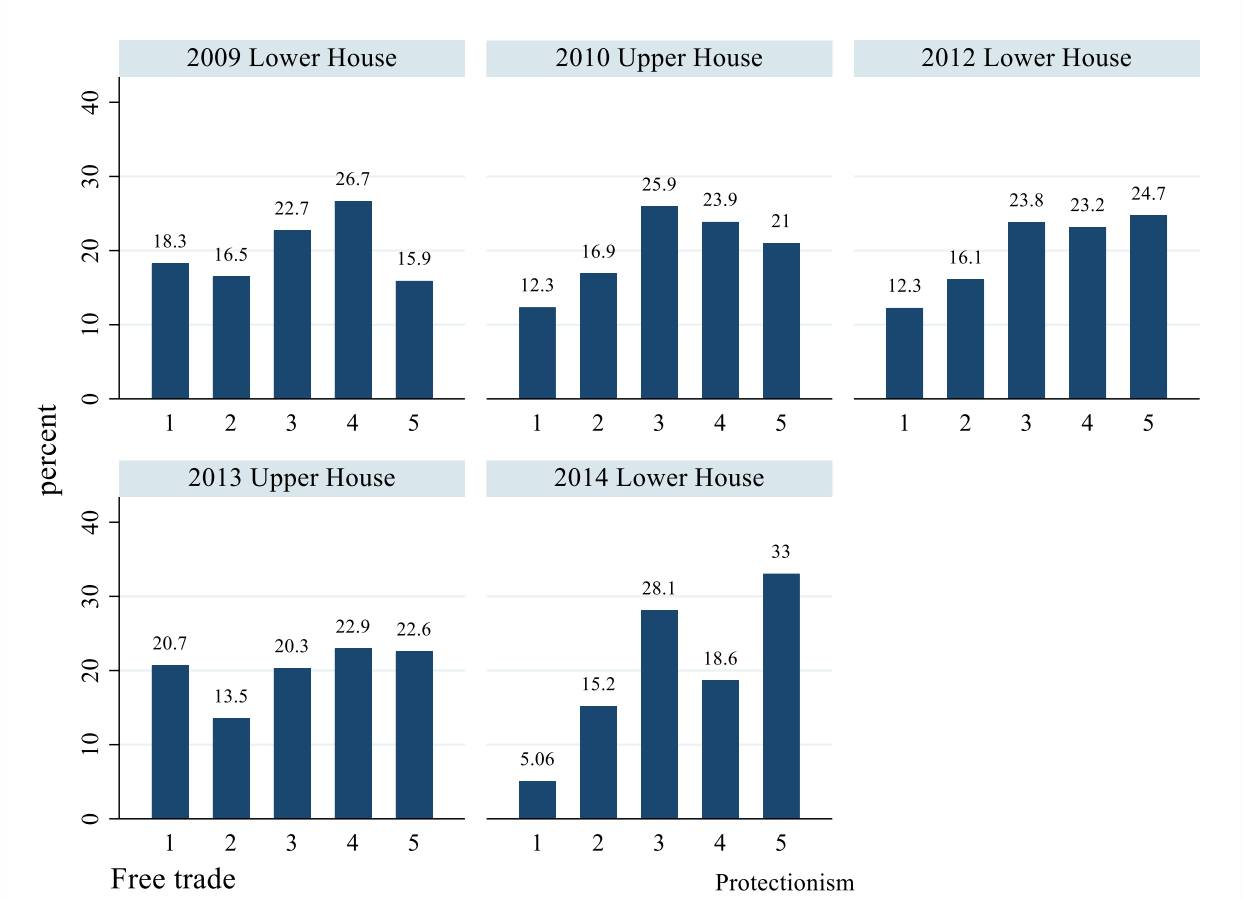
Fig 1. Japanese imports from China



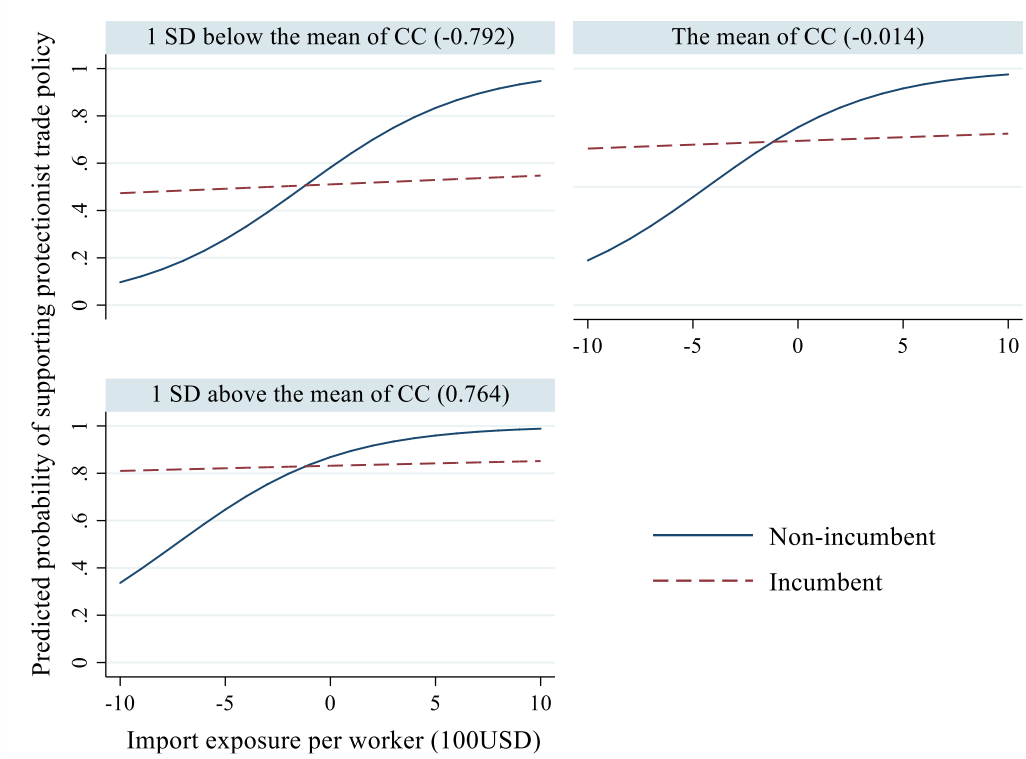
Source: Author's calculation based on the RIETI-TID database for imports and BOJ data for import price index.

Fig 2. Trade policy preferences of Japanese politicians



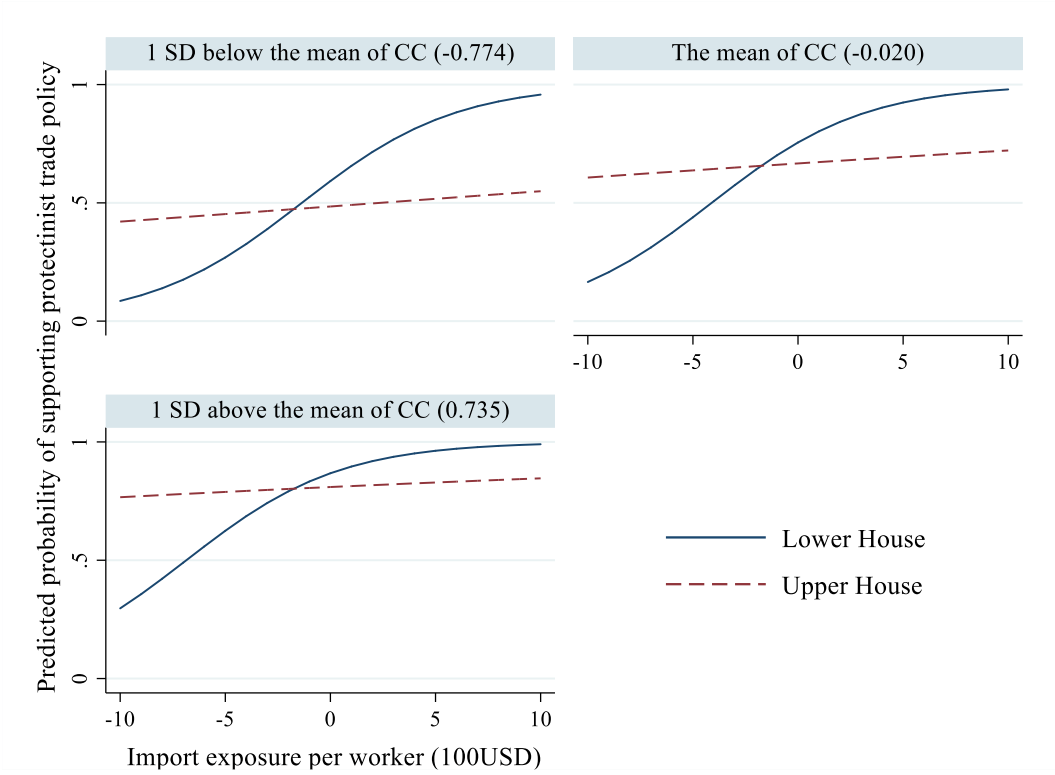
Source: Author's calculation based on the UTAS data.

Fig 3. Interacted relationship between incumbency and import exposure



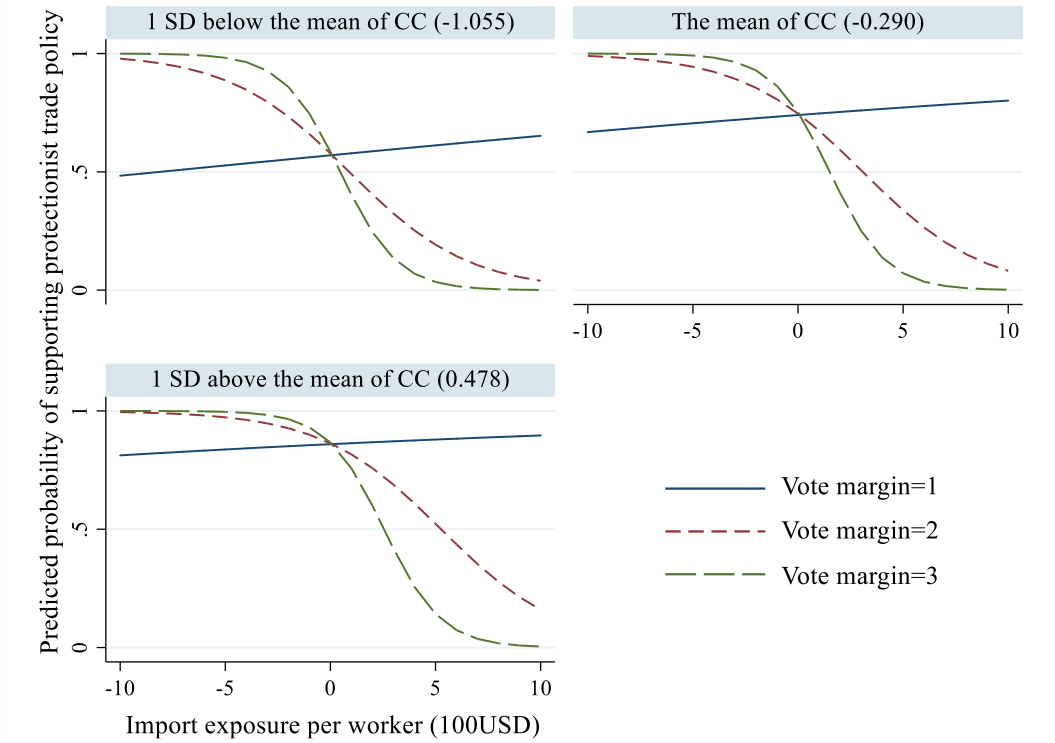
Source: Author's estimation.

Fig 4. Interacted relationship between Lower/Upper House and import exposure



Source: Author's estimation.

Fig 5. Interacted relationship between electoral strength and import exposure



Source: Author's estimation. CC indicates the covariate contribution, the remaining explanatory variables multiplied by their corresponding estimated parameters

Table 1. Descriptive statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Protection=1	3,775	0.713	0.452	0	1
Protection=1 excluding "unsure"	2,853	0.620	0.485	0	1
ΔIMW_jt (100USD)	3,775	-0.054	1.522	-6.489	5.617
ΔIMW_C_jt (100USD)	3,775	-0.071	0.554	-1.743	1.283
ΔIMW_P_jt (100USD)	3,775	0.042	1.638	-7.227	4.769
ΔEXW_jt (100USD)	3,775	-0.730	2.259	-4.378	10.051
ΔEXW_C_jt (100USD)	3,775	0.109	0.241	-0.128	0.999
ΔEXW_P_jt (100USD)	3,775	-0.840	2.055	-4.278	9.052
Agri_jt (%)	3,775	3.814	3.803	0.040	19.256
Cox_jt (0-50)	3,775	26.699	6.773	11.111	50.000
Size_jt (10,000 votes)	3,775	41.360	78.859	10.418	607.715
Margin_ijt	3,775	0.691	0.724	0.001	7.108
Incumb_ijt	3,775	0.337	0.473	0	1
Upper_ijt	3,775	0.135	0.342	0	1
Term_ijt	3,775	1.328	2.255	0	16
Female_ijt	3,775	0.166	0.372	0	1

Table 2. Results for determinants of politicians' protectionism

	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]
ΔIMW_jt	0.175***	0.191***	0.0658***	0.119*						
	[0.0231]	[0.0284]	[0.0253]	[0.0619]						
ΔEXW_jt		-0.0187		-0.037						
		[0.0176]		[0.0400]						
ΔIMW_C_jt					-0.0612	-0.112	-0.142	-0.147	-0.147	-0.164
					[0.113]	[0.125]	[0.118]	[0.196]	[0.121]	[0.184]
ΔEXW_C_jt						0.362		-0.313		-0.391
						[0.222]		[0.676]		[0.636]
ΔIMW_P_jt							0.106***	0.130**	0.107***	0.131**
							[0.0306]	[0.0550]	[0.0306]	[0.0561]
ΔEXW_P_jt								0.0096		0.0167
								[0.0812]		[0.0744]
Agri_jt			0.0719***	0.0703***	0.0741***	0.0734***	0.0802***	0.0836***	0.0803***	0.0845***
			[0.0125]	[0.0125]	[0.0129]	[0.0125]	[0.0133]	[0.0161]	[0.0145]	[0.0171]
Cox_jt			0.00116	0.00125					0.00131	0.00236
			[0.00843]	[0.00834]					[0.00827]	[0.00805]
Margin_ijt			0.0528	0.0523					0.0485	0.0482
			[0.138]	[0.138]					[0.138]	[0.139]
Size_jt			-7.97E-05	-0.0000946					1.39E-04	0.000138
			[0.000302]	[0.000302]					[0.000318]	[0.000324]
Incumb_ijt	-0.255**	-0.254**	-0.301**	-0.303**	-0.306**	-0.305**	-0.304**	-0.304**	-0.305**	-0.305**
	[0.121]	[0.121]	[0.122]	[0.123]	[0.122]	[0.122]	[0.122]	[0.124]	[0.122]	[0.123]
Upper_ijt	-0.494***	-0.470***	-0.937***	-0.939***	-0.864***	-0.822***	-0.886***	-0.930***	-0.901***	-0.954***
	[0.0828]	[0.0848]	[0.121]	[0.121]	[0.0999]	[0.0949]	[0.0927]	[0.144]	[0.114]	[0.158]
Term_ijt	0.0139	1.45E-02	0.0018	0.00204	0.00563	0.00629	6.19E-03	5.73E-03	0.00259	0.00197
	[0.0208]	[0.0207]	[0.0222]	[0.0223]	[0.0216]	[0.0219]	[0.0221]	[0.0221]	[0.0225]	[0.0227]
Female_ijt	0.244*	0.245*	0.268*	0.267*	0.262*	0.265*	0.264*	0.263*	0.266*	0.264*
	[0.143]	[0.143]	[0.143]	[0.144]	[0.145]	[0.145]	[0.145]	[0.145]	[0.142]	[0.143]
Constant	1.831***	1.816***	1.996***	2.008***	2.055***	1.886***	1.872***	1.949***	1.769***	1.829***
	[0.206]	[0.207]	[0.380]	[0.371]	[0.253]	[0.257]	[0.241]	[0.306]	[0.381]	[0.394]
Observations	3,775	3,775	3,775	3,775	3,775	3,775	3,775	3,775	3,775	3,775
ll	-2084	-2083	-2035	-2034	-2036	-2035	-2033	-2033	-2033	-2033
df_m	10	11	16	17	13	14	14	16	17	19
chi2	214.3	220.4	577.6	572.1	482.3	545.8	502.9	533.1	591	591

Note: Logit coefficients are reported. Robust standard errors clustered at the prefecture level in brackets; ***

p<0.01, ** p<0.05, * p<0.1.

Table 3 Interaction effect of the import exposure and a proxy for election pressures

Proxy for election pressures	Mean	Std. Dev.	Min	Max
Incumb_ijt	-0.044	0.013	-0.063	-0.007
	(-4.077)	(0.775)	(-6.864)	(-1.504)
Upper_ijt	-0.020	0.007	-0.031	-0.003
	(-0.882)	(0.378)	(-2.301)	(-0.264)
Margin_ijt	-0.062	0.023	-0.124	0.021
	(-5.150)	(1.541)	(-9.661)	(4.121)

Note: Interaction effects on the probability of supporting the protectinist trade policy based on the results from model [10] in Table2 with its coresponding interaction term are reported. Z-value in brackets; *** p<0.01, ** p<0.05, * p<0.1.

Table 4 Results from the sub-sample excluding “unsure”

	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]
ΔIMW_jt	0.201***	0.232***	0.0910***	0.188**						
	[0.0271]	[0.0347]	[0.0284]	[0.0766]						
ΔEXW_jt		-0.0359*		-0.0674						
		[0.0198]		[0.0475]						
ΔIMW_C_jt					-0.0691	-0.136	-0.186	-0.133	-0.177	-0.133
					[0.138]	[0.151]	[0.143]	[0.202]	[0.146]	[0.194]
ΔEXW_C_jt						0.452*		-0.336		-0.422
						[0.255]		[0.703]		[0.685]
ΔIMW_P_jt							0.149***	0.203***	0.148***	0.203***
							[0.0363]	[0.0744]	[0.0360]	[0.0747]
ΔEXW_P_jt								-0.0139		-0.00761
								[0.0791]		[0.0728]
Agri_jt			0.0900***	0.0872***	0.0945***	0.0939***	0.103***	0.105***	0.101***	0.103***
			[0.0133]	[0.0135]	[0.0144]	[0.0140]	[0.0146]	[0.0174]	[0.0154]	[0.0184]
Cox_jt			0.00281	0.00294					0.00306	0.00418
			[0.00988]	[0.00965]					[0.00964]	[0.00956]
Margin_ijt			0.0329	0.0296					0.0255	0.0231
			[0.149]	[0.150]					[0.150]	[0.150]
Size_jt			-4.70E-04	-0.000496					-1.85E-04	-0.000221
			[0.000387]	[0.000387]					[0.000393]	[0.000396]
Incumb_ijt	-0.411**	-0.415**	-0.456***	-0.463***	-0.470***	-0.467***	-0.465***	-0.467***	-0.465***	-0.468***
	[0.161]	[0.162]	[0.165]	[0.167]	[0.165]	[0.165]	[0.166]	[0.168]	[0.166]	[0.168]
Upper_ijt	-0.641***	-0.591***	-1.065***	-1.067***	-1.030***	-0.976***	-1.060***	-1.108***	-1.022***	-1.074***
	[0.0920]	[0.0935]	[0.142]	[0.141]	[0.106]	[0.103]	[0.0985]	[0.153]	[0.134]	[0.177]
Term_ijt	0.00681	7.71E-03	-0.00934	-0.00933	-0.00791	-0.00636	-6.26E-03	-7.01E-03	-0.00822	-0.00908
	[0.0302]	[0.0304]	[0.0346]	[0.0345]	[0.0328]	[0.0330]	[0.0331]	[0.0332]	[0.0347]	[0.0349]
Female_ijt	0.269*	0.268*	0.319**	0.317**	0.313**	0.316**	0.315**	0.314**	0.317**	0.315**
	[0.155]	[0.155]	[0.156]	[0.156]	[0.157]	[0.156]	[0.156]	[0.156]	[0.154]	[0.155]
Constant	1.268***	1.242***	1.378***	1.409***	1.462***	1.244***	1.197***	1.307***	1.088**	1.187**
	[0.242]	[0.243]	[0.463]	[0.449]	[0.306]	[0.306]	[0.291]	[0.351]	[0.469]	[0.467]
Observations	2,853	2,853	2,853	2,853	2,853	2,853	2,853	2,853	2,853	2,853
ll	-1730	-1729	-1672	-1671	-1675	-1674	-1670	-1669	-1670	-1669
df_m	10	11	16	17	13	14	14	16	17	19
chi2	437.9	439.8	982.1	966.2	783.6	799.2	756.9	779.2	959.4	955.7

Note: Logit coefficients are reported. Robust standard errors clustered at the prefecture level in brackets; ***

p<0.01, ** p<0.05, * p<0.1.