

**Electoral rules and agricultural protectionism:
The case of Japan's participation in the Trans-Pacific Partnership Agreement**

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Abstract

This article aims to clarify the linkage between electoral rules and politicians' protectionist motives. Specifically, hypotheses on the positive impacts of the proportional representation formula and constituency size on candidates' attitudes toward the Trans-Pacific Partnership (TPP) are tested by estimating an ordered probit model using survey data on Japan's national elections in 2012, 2013, and 2016. By extending the coverage to the upper house elections, this article adds value to the previous literature. The estimation results confirm that proportional representation formula and constituency size have a positive impact on candidates' support for the TPP in the lower house election in 2012, but have no influence in the upper house elections in 2013 and 2016. Moreover, constituency size is no longer significant once the sample is limited to single-member district candidates even in the 2012 lower house election. It is therefore concluded that, contrary to the previous literature, constituency size that manifests electoral incentives is not a notable cause of candidates' protectionist bias. In contrast, it is found that candidates' political ideology, such as their affinity for agriculture and Asia as well as antipathy to small government and immigrants, is proved to be the main drivers of candidates' protectionist motives.

Key words: electoral formula, proportional representation district, majoritarian district, constituency size, policy preference

JEL codes: F13, Q17, C31

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1. Introduction

Trade protection in general, and agricultural protection in particular, poses a significant paradox for economics professions. The legitimacy of free trade underpinned by the “theory of comparative advantage” is almost unanimously endorsed by economists. Moreover, the majority of respondents in all 44 developed and developing countries think that “the growing trade and business ties with other countries” is a good thing for their country (Pew Research Center, 2014). Conversely, trade is rarely free in practice and this is particularly the case with agriculture trade. Global simple average bound tariff was 29 percent for industrial goods while 55 percent for agricultural goods in 2015 (WTO, 2016). The literature on the political economy of trade policy has struggled with this puzzling divergence between free trade in theory and protectionism in reality¹. While the earlier literature on the determinants of trade protection mainly addresses its demand side (i.e., electorates and lobby groups), the recent literature explicitly explores the supply side (e.g., preferences and ideologies of policymakers) and institutional factors (e.g., electoral systems and political regimes). Particularly, increased attention is placed among economists and political scientists on electoral rules as a determinant of protection because politicians in democracies should respect electorates’ preferences for trade policy to win votes and offices in elections² (Rickard, 2015, p.280).

This article contributes to this emerging literature by examining the implications of electoral rules on the attitudes of parliamentary candidates toward Japan’s participation in the Trans-Pacific Partnership (“TPP”) Agreement. While the paper aligns with Ito (2015) and Kagitani and Harimaya (2017) in terms of basic motivations and dataset, it has added value in several ways. First, an econometric analysis is extended to Japan’s House of Councilors (“upper house”) elections in 2013 and 2016 in addition to the House of Representatives (“lower house”) election in 2012 that was the sole subject of the previous studies. Second, this article improves the link between theory and empirics by introducing simple numerical examples that generate testable hypotheses. Third, it expands the coverage of control variables, including those representing candidates’ political ideology, which has been overlooked in the previous literature.

The structure of the paper is as follows. Section 2 describes the difference of attitudes toward free trade between policymakers and electorates by presenting survey data on Japan’s participation in the TPP as a case in point. Section 3 reviews the relevant empirical literature on the relationship between the electoral system and trade protectionism, and identifies drawbacks inherent in the previous studies. Section 4 presents hypotheses on the impact of electoral formulas on candidates’ protectionist motives based on simple numerical examples. Section 5 explains an empirical model to test the hypotheses and a dataset for estimation. Section 6 presents the estimation results and evaluates the validity of the hypotheses. Section 7 summarizes the main findings and concludes the paper.

¹ See Rodrik (1995) and McLaren (2016) for the comprehensive review of literature on the political economy of trade policy, and de Gorter and Swinnen (2002) and Swinnen (2010a and 2010b) for that on the political economy of agricultural policy.

² See Rickard (2015) for the recent review of literature on electoral rules and trade policy.

2. Attitudes toward the TPP

This section describes the difference of attitudes toward free trade between policymakers and electorates by presenting survey data on Japan's participation in the TPP as a case in point. Japan's participation to the TPP was highly contentious among its citizens. It took the Japanese government nearly two and a half years from its initial expression of interest in October 2010 to make a formal decision in March 2013. The main source of contention originates from the TPP's principle of "no-exclusion" from tariff elimination. If such a principle had been applied literally, then Japan would have been obliged to abolish all agricultural tariffs, representing a complete departure from its existing Economic Partnership Agreements in which politically sensitive agricultural products, such as rice, were broadly exempted from any commitments. Unsurprisingly, the agricultural lobby was the most vocal opponent of the TPP. It was only the Diet's agricultural committees that adopted the resolutions against the TPP repeatedly. To this end, the participation to the TPP was perceived to be synonymous with agricultural trade liberalization in Japan.

Japan's participation in the TPP is, therefore, a case in point to disentangle a puzzling divergence of attitudes toward free trade between politicians and electorates. I herein make use of the data from the University of Tokyo–Asahi Survey (UTAS) for Diet member candidates and electorates (Taniguchi, 2012, 2013a, 2013b, 2016a, 2016b). The survey is conducted prior to national elections for candidates and just after the elections for electorates. Queries about the TPP were made three times: the lower house election in December 2012, the upper house election in July 2013, and the upper house election in July 2016. The specific query in 2012 and 2013 is: "Do you agree with the notion that Japan should participate in the TPP?" On the other hand, the query in 2016 is modified to: "Do you agree with the notion that Japan should ratify the TPP?" In the surveys, respondents are asked to choose one from the following five options: (1) I agree; (2) I tend to agree; (3) I cannot say either; (4) I tend to disagree; and (5) I disagree.

Figures 1, 2 and 3 show the survey results in 2012, 2013, and 2016, respectively. A bold, dashed and narrow line represents the percentage of each reply for candidates, winners, and electorates, respectively. From a cross-sectional point of view among candidates, winners and electorates, the distribution of candidates' responses is U-shaped with the "I cannot say either" response being in the minority, whereas that of electorates is inversely U-shaped and is the majority. From a time-series perspective among the three elections, the divergence between candidates and electorate is seemingly widening: i.e., the candidates are increasingly divided into opposite positions, whereas the electorates are converging in the middle ground. In short, these results reaffirm the puzzle: politicians should, in theory, mirror the electorates' preferences to win an election; however, their attitudes toward the TPP are, in practice, divergent from those of their electorates. In particular, the consistent protectionism bias among the candidates is the most puzzling: the "I disagree" response is the largest among the candidates, whereas it is the smallest among the electorates throughout the surveys.

3. Previous literature

This section reviews the empirical literature on the relationship between the electoral system and trade protectionism to identify a gap in research to date. An electoral system is defined as a set of laws and

regulations that govern electoral competition between candidates or parties or both. These procedures comprise a multitude of items, such as the electoral formula, the ballot structure and district magnitude, and the electoral formula—the method by which vote totals translate into claims upon legislative seats—has received the most attention from trade scholars (Rickard, 2015, p.281). Table 1 classifies the literature based on three criteria: sectoral coverage (overall trade vs. agriculture), dependent variable on protection (*ex-post* measures such as tariff rates vs. *ex-ante* measures such as politicians’ preferences), and independent variable on electoral formulas. With respect to the last classification, previous studies normally test a hypothesis that the majoritarian formula with small single-member districts leads to higher protection than the proportional representation formula with large multi-member districts because politicians elected from small constituencies cater to narrow interests such as agricultural protection, whereas those elected from large constituencies cater to broad interests such as free trade. To this end, some studies adopt a dichotomous indicator to approximate electoral formulas while others employ a continuous variable to account for the number of electorates per constituency. Table 1 shows that the results are highly variable and inconclusive.

Table 1

Such inconclusive results may be due to the improper selection of indicators in the previous literature. One of the drawbacks lays in the *ex-post* protection measures as the dependent variable. Because *ex-post* trade protection levels are determined by an array of interactions among supply, demand, and institutional factors, identifying the causal link between electoral rules and trade protection through an econometric analysis is challenging. Conversely, *ex-ante* politicians’ preferences for trade policy, not *ex-post* protection measures, are more pertinent in articulating the impact of the electoral rules because the causality is more straightforward. Another weakness stems from a dichotomous indicator to approximate countries’ electoral formulas as the independent variable. Such a binary classification is too blunt to capture the diverse electoral formulas in the world. For example, Carey and Shugart (1995) classify both “single-member district plurality with party endorsement” in Britain and Canada and “closed-list proportional representation” in Israel and Spain into the same electoral formula that cultivates party, as opposed to personal, reputations most. Accordingly, such a dichotomy is highly misleading by failing to capture the actual incentives that electoral formulas provide for politicians.

To overcome these drawbacks inherent in the previous studies, a possible avenue is to employ the preferences of policymakers as the dependent variable and a continuous indicator on electoral rules as the independent variable. The existing literature to meet these conditions are, to my knowledge, limited to Karol (2007), Ehrlich (2009), Conconi *et al.* (2014), Ito (2015), and Kagitani and Harimaya (2017) in the middle column (B-II-ii) of Table 1. To ascertain the preferences of politicians, the former three studies use a dataset of roll-call votes on trade registration in the US Congress while the latter two studies rely on pre-election surveys on the attitudes of lower house candidates toward Japan’s participation in the TPP negotiations. Both approaches have strengths and weaknesses. Roll-call votes directly affect the trade policy while their link to electoral incentives of legislators may be weak because they are all election winners. On the other hand, pre-election surveys neatly represent the electoral incentives of Diet members while their linkage with the trade policy can be weak as they include election losers.

4. Hypothesis on electoral formulas and protectionism

This section presents hypotheses on the impact of electoral formulas on candidates' protectionist motives based on simple numerical examples³, given that there are few theories articulating the causal mechanism linking electoral formulas to trade policy (Rickard, 2015, p.287). Consider a country composed of nine electorates that choose three representatives by a majority vote cast by all of them. The sole point of contention is whether the country should participate in a free trade agreement called "TPP". The composition of electorates' preferences, C , is expressed in the set 1, where "Y" and "N" denote the proponents and opponents of the country's participation in the TPP, respectively:

$$C = \{Y, Y, Y, Y, Y, N, N, N, N\} \quad (1)$$

First, suppose that three representatives are elected by a party-list proportional representation formula with the country being a single constituency. There are only two parties, "pro-TPP party" and "anti-TPP party", and electorates are assumed to vote for either of them in accordance with their preferences. Under this setting, the pro-TPP party obtains two seats while the anti-TPP party obtains one seat if votes are translated into seats by the d'Hondt method adopted in Japan⁴. Thus, the proponents secure the majority among the representatives.

Next, suppose that three representatives are elected by a single-member district formula. This means that the country is divided into three small constituencies: C_1 , C_2 , and C_3 . The possible combination of electorates' distribution, if one ignores the order of constituencies and electorates in each constituency, is threefold: set 2 (proponents and opponents are spatially concentrated), set 3 (both are spatially dispersed), and set 4 (proponents are more spatially dispersed than opponents):

$$C_1 = \{Y, Y, Y\}, C_2 = \{Y, Y, N\}, C_3 = \{N, N, N\} \quad (2)$$

$$C_1 = \{Y, Y, N\}, C_2 = \{Y, Y, N\}, C_3 = \{Y, N, N\} \quad (3)$$

$$C_1 = \{Y, Y, Y\}, C_2 = \{Y, N, N\}, C_3 = \{Y, N, N\} \quad (4)$$

Among these three settings, the pro-TPP party wins in C_1 and C_2 constituencies while the anti-TPP party wins in the C_3 constituency in sets 2 and 3. Thus, the proponents secure the majority among the representatives. In contrast, the pro-TPP party wins in the C_1 constituency while the anti-TPP party wins in C_2 and C_3 constituencies in set 4. Thus, the opponents are turned to be the majority among the representatives, a situation termed the "tyranny of the minority".

These simple examples illuminate the impact of the electoral formula on candidates' preferences. Under

³ The basic idea stems from Taylor (1973), who identifies "the spatial distribution of the various party votes" and "the pattern of constituency boundaries" as two sources of electoral bias.

⁴ In this method, the total votes cast for each party in the constituency is divided first by 1, then by 2, then by 3, up to the total number of seats to be allocated for the constituency.

the proportional representation formula, the distribution of electorates has no influence on the translation of votes into seats. The expected number of seats for the pro-TPP party, $E(S_y^{PR})$, is 2 while that for the anti-TPP party, $E(S_n^{PR})$, is 1. Under the single-member district formula, in contrast, the votes–seats relationship is influenced by the distribution of electorates. The expected number of seats for the pro-TPP party, $E(S_y^{SMD})$, is $\frac{5}{3}$ ($= 2 \times \frac{1}{3} + 2 \times \frac{1}{3} + 1 \times \frac{1}{3}$) while that for the anti-TPP party, $E(S_n^{SMD})$, is $\frac{4}{3}$ ($= 1 \times \frac{1}{3} + 1 \times \frac{1}{3} + 2 \times \frac{1}{3}$). Thus, the probability for a pro-TPP party candidate to win is higher under the proportional representation formula than the single-member district formula as $E(S_y^{PR}) = 2 > \frac{5}{3} = E(S_y^{SMD})$. Conversely, the probability for an anti-TPP party candidate to win is higher under the single-member district formula than the proportional representation formula as $E(S_n^{PR}) = 1 < \frac{4}{3} = E(S_n^{SMD})$.

Therefore, the following hypothesis can be formed:

Hypothesis 1: Politicians running in single-member districts are, on average, less likely to support participation in the TPP, *ceteris paribus*, than those running in proportional representation districts.

An electoral bias in the votes–seats relationship stems from the two features of the single-member district formula. One of them is that a country is divided into a small pieces (constituencies) and the other is that constituency size–the number of electorates per constituency–is considerably smaller. These are the flip-side of the same coin. It is evident from the above examples that the “tyranny of the minority” is more likely to occur as the number of constituencies increases and as constituency size becomes smaller because these make it more likely for the minority at the national level to be the majority at the constituency level. Even under the same electoral formula, therefore, candidates’ preference for the TPP can be influenced by constituency size. Thus, the additional hypothesis can be formed:

Hypothesis 2: Politicians running in small constituencies are, on average, less likely to support participation in the TPP, *ceteris paribus*, than those running in large constituencies.

Despite these hypotheses, I do not necessarily intend to verify them. An actual election deviates from the above assumptions: the TPP is not the only point of contention, there are more than three political parties, and their attitudes toward the TPP may be vague. An electorate opposing the TPP may, therefore, vote for a party in favor of the TPP if the electorate puts more emphasis on other issues than the TPP. Furthermore, the actual electoral rules in Japan combining majoritarian and proportional representation formulas in both houses are divergent from the above settings. In the lower house, proportional representation districts are divided into 11 regions, as opposed to a nation-wide single district in the upper house. In the upper house, meanwhile, the number of seats per constituency, demarcated on a prefectural basis, is more than two in 13 out of 47 prefectures as opposed to a genuine single-member district in the lower house. In sum, these hypotheses are presented to provide a theoretical basis of the “constituency-size argument” in the previous literature, which may not be supported through subsequent empirical analyses.

5. Estimation model and data

This section introduces an empirical model to test the hypotheses and a dataset for estimation. The equation to be estimated is the following:

$$Y_i = a + bX_i + c_iZ_i + e_i \quad (5)$$

where suffix i denotes the candidate, Y_i is a measure of candidate's preferences for Japan's participation in or ratification of the TPP, X_i is a measure of electoral rules, Z_i is a vector of control variables, e_i is an error term with mean zero, and a , b , and c_i are coefficients to be estimated.

The definition of variables and sources of data are summarized in Table 2. As a source of the dependent variable Y_i , I use candidates' response to pre-election surveys on Japan's participation in the TPP (Taniguchi, 2012, 2013a, 2016a) as explained in Section 2. I construct the dependent variable, *Anti-TPP*, which assigns from a 1–5 in accordance with five options: (1) I agree; (2) I tend to agree; (3) I cannot say either; (4) I tend to disagree; and (5) I disagree, to the query that “Do you agree with the notion that Japan should participate in the TPP (2012 and 2013) or ratify the TPP (2016)?⁵”

Table 2

On the independent variable X_i , I use three types of indicators to test the hypotheses⁶. The first indicator, *PR*, is a dummy variable to test Hypothesis 1, which takes 1 if a candidate runs in a proportional representation district⁷. Although such a dichotomous indicator falls short in capturing the relationship between electoral formulas and politicians' preferences, I include it to double-check the previous studies. Nevertheless, a mixed electoral system combining majoritarian and proportional representation formulas in both houses in Japan has its own merit by providing a *quasi*-natural experiment environment to compare two different electoral formulas simultaneously by controlling time-variant factors. The second indicator, *Electorate*, is the logarithm of the number of electorates in each constituency. This measure aims to test Hypothesis 2. The third indicator, *Droop Quota*, is the logarithm of the total number of electorates divided by the number of seats plus 1 in each constituency⁸. The Droop quota, first proposed by Droop (1881), is

⁵ The construction of the dependent variable is different from the previous studies. Ito (2015) aggregates the responses of (3) to (5) as “anti-TPP” to produce binomial variables, whereas Kagitani and Harimaya (2017) combine (1) and (2) as “pro-TPP” and (4) and (5) as “anti-TPP” to construct trinomial variables. I did not follow either approach because such a treatment is somewhat arbitrary and diminishes the information that the original dataset embodies. Note, on the other hand, that candidates who did not reply are excluded from the sample like the previous studies.

⁶ These three dependent variables are identical to Kagitani and Harimaya (2017).

⁷ In the lower house election, candidates for single-seat constituencies can also be nominated on their parties' proportional representation lists and, thus, even defeated candidates in the former formula have a chance of winning seats under the latter formula. In this article, a proportional representation candidate that takes the value of one means that the person runs solely in a proportional representation district.

⁸ Ito (2015) employs the number of votes divided by the number of candidates in each constituency as an independent variable for the “broadness” of each constituency. This is misleading, however, because the numerator is influenced by the level of voter participation and the denominator by the intensity of

the minimum number of votes that a candidate must receive, a sufficient condition to be elected when all electorates cast a ballot. Candidates' preferences are thus conditioned not by the number of electorates per constituency but by the minimum number of votes to win; hence, the number of electorates need to be adjusted by the number of seats if there are more than two in a constituency⁹. The hypotheses imply that the expected signs of these independent variables are all negative.

I include three broad groups of control variables, Z_i , to account for the candidates' attitudes toward the TPP. The first is industrial attributes of the constituency (i.e., demand side factor). If workers cannot move across industries, as assumed by the Ricardo–Viner model, then industry composition is expected to be correlated with candidates' trade policy preferences (Ito, 2015, p.249). The specific indicators are *Agriculture Share* and *Manufacturing Share*, the share of agricultural and manufacturing workers in the total population in each constituency, respectively¹⁰. In view of Japan's trade balance, the former represents an import-competing industry while the latter broadly represents an export-oriented industry.

The second group of control variables is political ideology of candidates (i.e., supply side factor). The dataset of Taniguchi (2012, 2013a, and 2016a) includes responses to queries revealing candidates' ideology on economic and diplomatic policies that may condition their attitudes toward the TPP. *Pro-agriculture* is a categorical variable ranging from 0 to 3: 3, 2, and 1 denote that a candidate places the first, second, and third highest priority, respectively, on agricultural policy in the election while 0 denotes that agricultural policy is not included in the top three policy areas for a candidate. *Anti-small government* is a categorical variable on the candidate's reply to the query: "Do you agree with the notion that, even if government services such as social welfare get worse, a small government without costing money is better?" Its response range is from 1 to 5: 1 is the most and 5 is the least supportive of this notion. *Anti-public works* is a categorical variable on the candidate's reply to the query: "Do you agree with the notion that securing employment by public works is necessary?" It ranges from 1 to 5: 1 is the most and 5 is the least supportive of this notion. *Anti-immigrants* is a categorical variable on the candidate's reply to the query: "Do you agree with the notion that Japan should proceed with accepting foreign workers?" It ranges from 1 to 5: 1 is the most and 5 is the least supportive of this notion. *Pro-Asia*, is a categorical variable on the candidate's reply to the query: "Should the highest priority of Japanese diplomacy in the coming years be placed on (A) the US or (B) Asia?" It ranges from 1 to 5: 1 is the most supportive of the notion A (i.e., pro-US) while 5 is the most supportive of the notion B (i.e., pro-Asia). Finally, *Pro-liberalization* is a categorical variable on the candidate's reply to the query: "Which of your thoughts is closer to (A) Japan should protect the

electoral competition in each constituency as rightly argued by Kagitani and Harimaya (2017).

⁹ In Japan, this is applicable to the proportional representation districts in both houses and multi-member districts in the upper house.

¹⁰ Because the national census survey, the source of these data, is conducted only once every five years, the shares in 2010 are matched with the lower house election in 2012 and the upper house election in 2013, and those in 2015 with the upper house election in 2016, respectively. Furthermore, as for the single-member districts with 300 constituencies in the lower house, 31 constituencies divide the smallest unit of 24 municipalities into two or three and, thus, the accurate data on the shares in each constituency are not available for the election in 2012. I therefore classified the number of workers into a constituency that occupies the largest area of a municipality.

domestic industry or (B) Japan should promote liberalization of trade and investment?¹¹ It ranges from 1 to 5: 1 is the most supportive of the notion A (i.e., pro-protection) while 5 is the most supportive of the notion B (i.e., pro-liberalization).

The third set of control variables is attributes of candidates themselves. Again, the dataset of Taniguchi (2012, 2013a, and 2016a) includes various properties of candidates that may affect their attitudes toward the TPP. *DPJ*, *LDP*, and *NKP*, which denote the Democratic Party of Japan, Liberal Democratic Party, and New Komeito Party, respectively, are dummy variables that take 1 if candidates belong to the respective parties. The former was the ruling party during the lower house election in 2012 while the latter two were the ruling parties during the upper house elections in 2013 and 2016. These variables intend to assess the influence of party affiliation on politicians' preferences. *Terms* is a continuous variable on the number of terms that a candidate has served in the Diet, *Incumbent* is a dummy variable that equals 1 if a candidate is an incumbent at the time of election. *Female* is a dummy variable that equals 1 if a candidate is female. Finally, *Win* is a dummy variable that equals 1 if a candidate wins the election. The descriptive statistics of all variables are presented in Table 3¹².

Table 3

6. Estimation results and discussion

This section presents estimation results and evaluates the validity of the hypotheses. Because *Anti-TPP* is a polychotomous dependent variable, an ordered probit regression is employed to estimate Equation (5). Tables 4, 5, and 6 show the results for the lower house election in 2012, the upper house election in 2013, and the upper house election in 2016, respectively. In each table, the first three columns report the results for all candidates while the last two columns present those for majoritarian district candidates only.

In Table 4, the coefficients of the independent variables on electoral formulas are statistically significant with an expected negative sign for all candidates but insignificant for single-member district candidates. The performance of control variables is fairly satisfactory. On the attribute of the constituency, the coefficients of *Agriculture Share* are highly significant with a positive sign in all cases, whereas those of *Manufacturing Share* are statistically significant with a negative sign in most cases. On the ideology of candidates, the coefficients of all variables except *Anti-public works* are statistically significant. On the attribute of candidates, the coefficients of *DPJ* are statistically significant with a negative sign, meaning that its candidates were supportive of the TPP. In contrast, the coefficients of *LDP* are statistically significant with a positive sign, showing that its candidates tended to oppose the TPP. In addition, the coefficients of *Incumbent* are statistically significant with a positive sign for all samples, whereas those of *Win* are statistically significant with negative sign only for single-member district candidates. In sum, Hypothesis 1 and 2 are verified by the sample of all candidates, whereas Hypothesis 2 is not verified by the sample of single-member district candidates for the 2012 lower house election.

¹¹ This query is not included in the survey of the upper house election in 2016.

¹² Multicollinearity is of little concern because the Variance Inflation Factor (VIF) values based on the correlation coefficients between the independent variables are all well below 10.

Table 4

The results are remarkably different in Table 5. The coefficients of the independent variables on electoral formulas are statistically insignificant in all five cases. The validity of control variables is also divergent from Table 4. On the attribute of constituency, the coefficients of *Agriculture Share* and *Manufacturing Share* are both insignificant in all specifications. On the ideology of candidates, the coefficients of *Pro-agriculture*, *Anti-small government*, *Pro-Asia*, and *Pro-liberalization* are statistically significant for all candidates, whereas those of all variables except *Pro-agriculture* turn to be statistically significant for majoritarian district candidates. On the attribute of candidates, the coefficients of party affiliation variables are insignificant irrespective of the candidates' coverage except those of *DPJ* being statistically significant with a negative sign for majoritarian district candidates. Furthermore, the coefficients of *Female* are statistically significant with a positive sign for all candidates while those of *Incumbent* are statistically significant with a positive sign for majoritarian district candidates. In summary, neither Hypothesis 1 nor Hypothesis 2 is verified by the sample of candidates for the 2013 upper house election.

Table 5

The results in Table 6 are similar to those in Table 5. The coefficients of the independent variables on electoral formulas are statistically insignificant in all five cases. The validity of control variables are as follows. On the attribute of constituency, the coefficients of *Agriculture Share* are statistically significant only for majoritarian district candidates while those of *Manufacturing Share* are insignificant in the all specifications. On the ideology of candidates, the coefficients of all five variables are statistically significant for all candidates, whereas only those of *Anti-small government*, *Anti-immigrants*, and *Pro-Asia* are statistically significant for majoritarian district candidates. On the attribute of candidates, the coefficients of *LDP* and *NKP* are statistically significant with a negative sign for all samples while those of *DPJ* are statistically significant with a positive sign only for majoritarian district candidates. Moreover, the coefficients of *Incumbent* turn to be statistically significant with a negative sign for majoritarian district candidates. To sum up, neither Hypothesis 1 nor Hypothesis 2 is verified by the sample of candidates for the 2016 upper house election.

Table 6

These results offer the following insights into the determinants of candidates' attitudes toward the TPP. First, the significance of the proportional representation formula and constituency size exhibits a sharp contrast between the two houses¹³. They have a positive impact on the candidates' support for the TPP in the lower house election in 2012 but have no influence in the upper house elections in 2013 and 2016¹⁴.

¹³ This is an additional finding to Ito (2015) and Kagitani and Harimaya (2017), which address solely the lower house election in 2012.

¹⁴ It is beyond the scope of this article to identify the causes of such a difference. It should be noted in this regard that candidates' responses in one election cannot be directly comparable to those in other elections even if a query is literally the same because the point of discussion over the TPP have evolved

Even in the lower house election, variables on constituency size are no longer significant once the sample is limited to single-member district candidates. Second, the attributes of constituency again indicate a clear difference between the two houses. The share of agricultural worker has a negative, while that of manufacturing worker has a positive impact on the candidates' attitudes toward the TPP in the 2012 lower house election¹⁵. In contrast, these variables are found to have little influence in the upper house elections in 2013 and 2016¹⁶. Third, candidates' political ideology plays an important role in shaping their attitudes toward the TPP. Overall, candidates' positive sentiment on agricultural policy and diplomatic ties with Asia as well as negative sentiment against small government and immigrants result in the opposition to the TPP, whereas their positive attitudes toward trade and investment liberalization consistently lead to the support for the TPP¹⁷. Finally, political parties to which candidates belong affect their attitudes toward the TPP in many specifications. This is exemplified by the fact that the sentiment of LDP candidates on the TPP changed from negative in 2012 to positive in 2016.

Conclusions on the source of protectionist bias are twofold. Regarding constituency size that manifests electoral incentives, it is not the main cause of candidates' protectionist bias. The estimation results show that although Hypothesis 1 is verified merely for all candidates in the 2012 lower house election, Hypothesis 2 is falsified in all three elections. It is therefore concluded that although the proportional representation formula has indeed positive impacts on the candidates' support for the TPP at least in the 2012 lower house election, constituency size is not the source of this¹⁸. In contrast, candidates' political ideology is proved to be the main drivers of candidates' protectionist motives. As stated above, their affinity for agriculture and Asia as well as antipathy to small government and immigrants largely result in the opposition to the TPP. The robustness of candidates' political ideology is verified because its variables are statistically significant even after controlling the attributes of electoral rules, constituency, and candidates themselves.

7. Conclusions

This article aims to clarify the linkage between electoral rules and politicians' protectionist motives. Specifically, hypotheses on the positive impacts of the proportional representation formula and constituency size on candidates' attitudes toward the TPP are tested by estimating an ordered probit model using survey data on Japan's national elections in 2012, 2013, and 2016. By extending the coverage to the upper house elections, this article adds value to the previous literature. The estimation results confirm that proportional representation formula and constituency size have a positive impact on candidates' support for the TPP in the lower house election in 2012, but have no influence in the upper house elections in 2013 and 2016. Moreover, constituency size is no longer significant once the sample is limited to single-member

over time and candidates' perception of the TPP changed accordingly.

¹⁵ These results are largely consistent with Ito (2015) and Kagitani and Harimaya (2017).

¹⁶ This is again an additional finding to Ito (2015) and Kagitani and Harimaya (2017), which address solely the lower house election in 2012.

¹⁷ Although political ideology is found to be significant in Ito (2015) and Kagitani and Harimaya (2017), this article adds value by expanding the scope of ideological variables available in the UTAS data.

¹⁸ Such a distinction is overlooked in Kagitani and Harimaya (2017) because their regression, limited to all candidates, fails to distinguish the effect of electoral formula from that of constituency size.

district candidates even in the 2012 lower house election. It is therefore concluded that, contrary to the previous literature, constituency size that manifests electoral incentives is not a notable cause of candidates' protectionist bias. In contrast, it is found that candidates' political ideology such as their affinity for agriculture and Asia as well as antipathy to small government and immigrants is proved to be the main drivers of candidates' protectionist motives.

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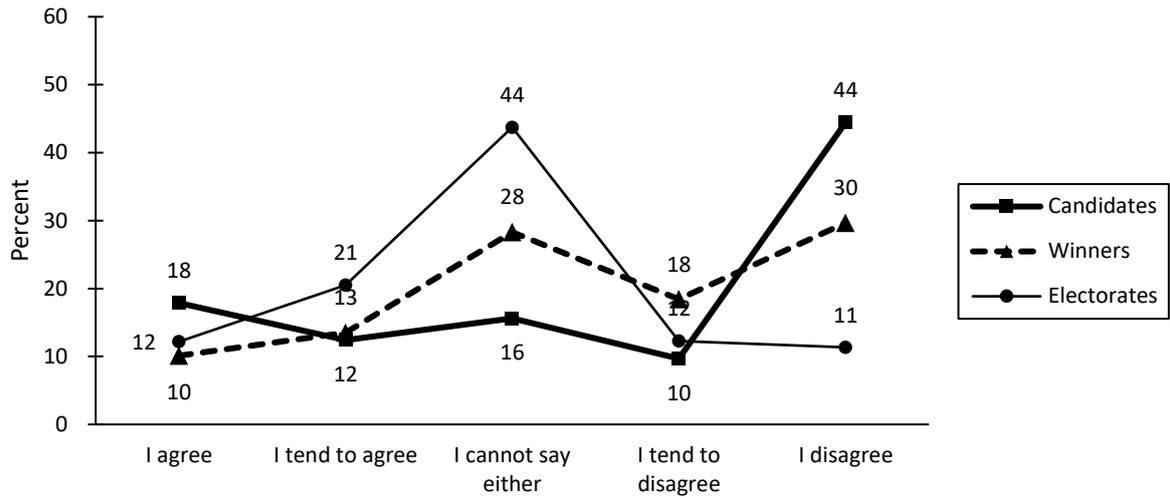


Figure 1. Survey Results on Japan's Participation in the TPP: Lower House Election in 2012

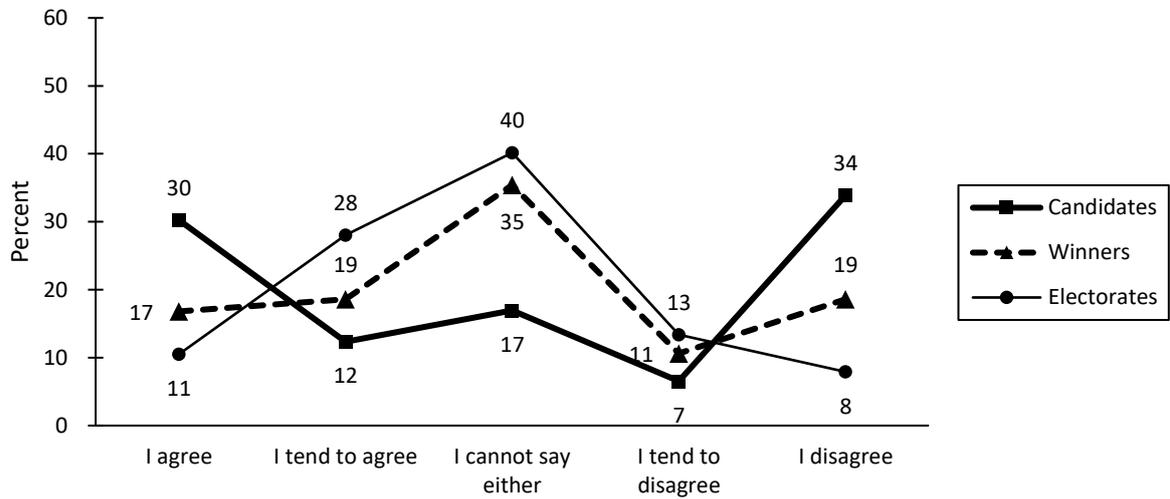


Figure 2. Survey Results on Japan's Participation in the TPP: Upper House Election in 2013

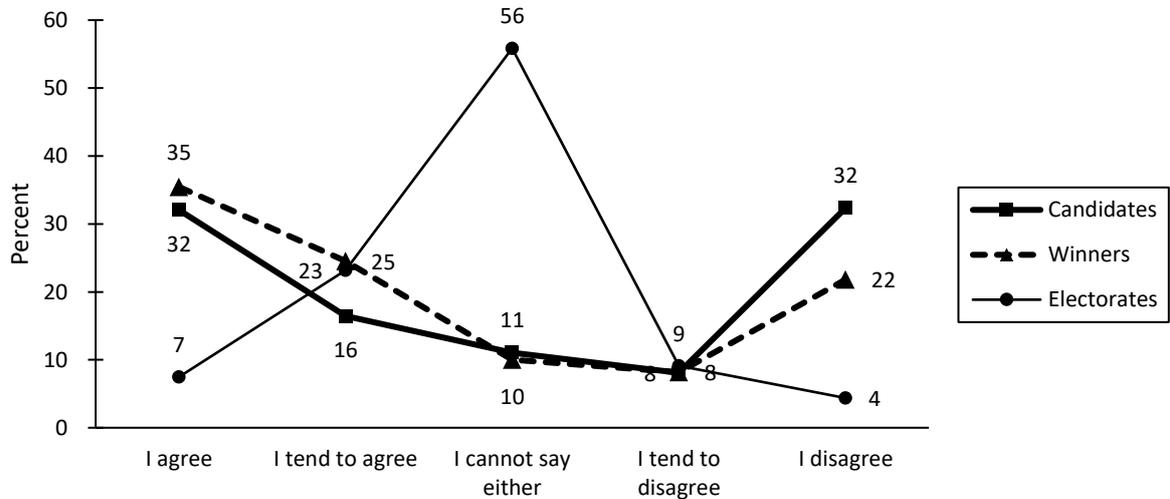


Figure 3. Survey Results on Japan's Ratification of the TPP: Upper House Election in 2016

Table 1. Classification of Literature on Electoral Formulas and Trade Protection

Sectoral coverage	Dependent variable on protection	Independent variable on electoral formulas	Association of Majoritarian Rules and Higher Protection		
			A. Significant with positive sign	B. Insignificant	C. Significant with negative sign
Overall trade	I. <i>Ex-post</i> protection	i. Dichotomous	Rogowski (1987) Evans (2009) Rickard (2012) Ardelean and Evans (2013)	Hatfield and Hauk (2014)	Rogowski and Kayser (2002)
		ii. Continuous	Nielson (2003) Hankla (2006) Wagner and Plouffe (2017)		
	II. Politicians' preferences	i. Dichotomous		Ehrlich (2007)	
		ii. Continuous	Kagitani and Harimaya (2017)	Karol (2007) Ehrlich (2009) Conconi <i>et al.</i> (2014)	Ito (2015)
Agriculture	III. <i>Ex-post</i> protection	i. Dichotomous	Thies and Proche (2007) Klomp and de Haan (2013) Thies (2015)		Olper and Raimondi (2011) Olper and Raimondi (2013)
		ii. Continuous	Henning (2008)		Park and Jensen (2007)

Table 2. Definition of Variables and Sources of Data

Variable	Definition	Source
<i>Dependent variables</i>		
Anti-TPP	Categorical variable from 1 to 5: 1 is the most and 5 is the least supportive of TPP participation/ratification	Taniguchi (2012, 2013a, 2016a)
<i>Variables of interest</i>		
PR	Dummy variable: 1 if candidate runs in proportional representation district	Taniguchi (2012, 2013a, 2016a)
Electorate	Continuous variable: Logarithm of the number of electorates in constituency	MIAC (2013, 2016), LDB (2015)
Droop Quota	Continuous variable: Logarithm of the number of electorates per seat plus one in constituency	MIAC (2013, 2016), LDB (2015)
<i>Constituency attributes</i>		
Agriculture share	Continuous variable: Share of agricultural worker in constituency (%)	MIAC (2012, 2017)
Manufacturing share	Continuous variable: Share of manufacturing worker in constituency (%)	MIAC (2012, 2017)
<i>Candidate ideology</i>		
Pro-agriculture	Categorical variable from 0 to 3: 3 is the most enthusiastic to agricultural policy	Taniguchi (2012, 2013a, 2016a)
Anti-small government	Categorical variable from 1 to 5: 1 is the most and 5 is the least pro-small government	Taniguchi (2012, 2013a, 2016a)
Anti-public works	Categorical variable from 1 to 5: 1 is the most and 5 is the least pro-public works	Taniguchi (2012, 2013a, 2016a)
Anti-immigrants	Categorical variable from 1 to 5: 1 is the most and 5 is the least pro-immigrants	Taniguchi (2012, 2013a, 2016a)
Pro-Asia	Categorical variable from 1 to 5: 1 is the most pro-US and 5 is the most pro-Asia	Taniguchi (2012, 2013a, 2016a)
Pro-liberalization	Categorical variable from 1 to 5: 1 is the most pro-protection and 5 is the most pro-liberalization	Taniguchi (2012, 2013a)
<i>Candidate attributes</i>		
DPJ	Dummy variable: 1 if a candidate belongs to Democratic Party of Japan	Taniguchi (2012, 2013a, 2016a)
LDP	Dummy variable: 1 if a candidate belongs to Liberal Democratic Party	Taniguchi (2012, 2013a, 2016a)
NKP	Dummy variable: 1 if a candidate belongs to New Komeito Party	Taniguchi (2012, 2013a, 2016a)
Terms	Continuous variable: Number of terms that a candidate has served in the Diet	Taniguchi (2012, 2013a, 2016a)
Incumbent	Dummy variable: 1 if a candidate is incumbent	Taniguchi (2012, 2013a, 2016a)
Female	Dummy variable: 1 if a candidate is female	Taniguchi (2012, 2013a, 2016a)
Win	Dummy variable: 1 if a candidate wins the election	Taniguchi (2012, 2013a, 2016a)

Table 3. Descriptive Statistics of Variables

Variable	Lower House Elections in 2012			Upper House Elections in 2013			Upper House Elections in 2016		
	N	Mean	Std. Dev.	N	Mean	Std. Dev.	N	Mean	Std. Dev.
<i>Dependent variables</i>									
Anti-TPP	1,384	3.5043	1.5684	413	3.0145	1.6619	371	2.9218	1.6804
<i>Variables of interest</i>									
PR	1,384	0.1033	0.3045	413	0.3584	0.4801	371	0.4070	0.4919
Electorate (log)	1,384	13.1017	1.0408	413	15.9419	2.0101	371	16.3125	1.9257
Droop Quota (log)	1,384	11.2832	0.6807	413	13.9066	0.6594	371	14.0550	0.5689
<i>Constituency attributes</i>									
Agriculture share	1,384	3.6552	3.7346	413	4.3123	2.5728	371	3.6570	2.2017
Manufacturing share	1,384	15.8681	6.4404	413	16.3243	3.9475	371	15.9648	3.9314
<i>Candidate ideology</i>									
Pro-agriculture	1,384	0.1828	0.5859	413	0.2494	0.6850	371	0.2345	0.6547
Anti-small government	1,372	3.6232	1.1927	411	3.5523	1.2703	366	3.5792	1.1718
Anti-public works	1,379	2.4692	1.0887	411	2.4428	1.0670	369	2.4119	0.9772
Anti-immigrants	1,380	2.9109	1.0183	411	2.7105	0.9958	368	2.7337	0.9538
Pro-Asia	1,362	2.8678	1.3575	409	2.8240	1.3204	370	2.7216	1.2367
Pro-liberalization	1,360	2.6949	1.3521	411	2.8102	1.3892	n/a	n/a	n/a
<i>Candidate attributes</i>									
DPJ	1,384	0.1828	0.3866	413	0.1283	0.3349	371	0.1456	0.3531
LDP	1,384	0.2175	0.4127	413	0.1719	0.3778	371	0.1698	0.3760
NKP	1,384	0.0311	0.1736	413	0.0484	0.2149	371	0.0647	0.2463
Terms	1,384	1.1597	2.0929	413	0.3608	0.7963	371	0.4852	0.8863
Incumbent	1,384	0.2941	0.4558	413	0.1985	0.3993	371	0.2480	0.4324
Female	1,384	0.1496	0.3568	413	0.2446	0.4303	371	0.2453	0.4308
Win	1,384	0.3215	0.4672	413	0.2736	0.4464	371	0.2965	0.4573

Table 4. Estimation Results: Lower House Election in 2012

Variable	All Candidates			Single-member District Candidates	
	(1)	(2)	(3)	(4)	(5)
PR	-0.3978*** (0.1436)				
Electorate (log)		-0.1045** (0.0419)		0.2401 (0.2168)	
Droop Quota (log)			-0.1691*** (0.0633)		-0.0027 (0.1916)
Agriculture share	0.0729*** (0.0118)	0.0690*** (0.0118)	0.0702*** (0.0117)	0.0821*** (0.0138)	0.0749*** (0.0147)
Manufacturing share	-0.0097* (0.0056)	-0.0100* (0.0056)	-0.0095* (0.0056)	-0.0090 (0.0059)	-0.0100* (0.0058)
Pro-agriculture	0.1700** (0.0832)	0.1724** (0.0831)	0.1705** (0.0830)	0.1546* (0.0851)	0.1551* (0.0850)
Anti-small government	0.3057*** (0.0414)	0.3049*** (0.0413)	0.3043*** (0.0413)	0.2796*** (0.0442)	0.2786*** (0.0442)
Anti-public works	-0.0125 (0.0383)	-0.0101 (0.0382)	-0.0098 (0.0382)	-0.0289 (0.0405)	-0.0273 (0.0405)
Anti-immigrants	0.0843** (0.0396)	0.0849** (0.0395)	0.0834** (0.0395)	0.1085** (0.0426)	0.1099** (0.0426)
Pro-Asia	0.4467*** (0.0392)	0.4473*** (0.0392)	0.4491*** (0.0392)	0.4694*** (0.0417)	0.4692*** (0.0418)
Pro-liberalization	-0.6291*** (0.0385)	-0.6282*** (0.0385)	-0.6313*** (0.0385)	-0.6462*** (0.0408)	-0.6458*** (0.0409)
DPJ	-1.1105*** (0.1091)	-1.1091*** (0.1092)	-1.1066*** (0.1090)	-1.0546*** (0.1118)	-1.0572*** (0.1118)
LDP	0.7564*** (0.1215)	0.7478*** (0.1213)	0.7606*** (0.1216)	0.8292*** (0.1329)	0.8221*** (0.1329)
NKP	0.12804 (0.2178)	0.2443 (0.2166)	0.2638 (0.2167)	-0.0984 (0.4091)	-0.1110 (0.34108)
Terms	-0.0097 (0.022)	-0.0090 (0.0215)	-0.0091 (0.0215)	0.0010 (0.0223)	0.0016 (0.0223)
Incumbent	0.5898*** (0.1098)	0.5863*** (0.1097)	0.5944*** (0.1098)	0.5121*** (0.1147)	0.504*** (0.1147)
Female	-0.0061 (0.1116)	-0.0074 (0.1116)	-0.0132 (0.1116)	-0.0364 (0.1178)	-0.0431 (0.1180)
Win	-0.1158 (0.1030)	-0.1085 (0.1028)	-0.1100 (0.1028)	-0.1938* (0.1131)	-0.1942* (0.1131)
No. of samples	1338	1338	1338	1196	1196
Pseudo R ²	0.3752	0.3749	0.3751	0.3731	0.3727
Log likelihood	-1215.16	-1215.88	-1215.43	-1084.02	-1084.63

Note: Values in parentheses denote standard errors. ***, **, and * stand for significance at the 1, 5 and 10 percent levels, respectively.

Table 5. Estimation Results: Upper House Election in 2013

Variable	All Candidates			Majoritarian District Candidates	
	(6)	(7)	(8)	(9)	(10)
PR	-0.1090 (0.1434)				
Electorate (log)		-0.0310 (0.0380)		-0.1639 (0.1784)	
Droop Quota (log)			-0.1301 (0.1337)		-0.3073 (0.2670)
Agriculture share	0.0044 (0.0304)	-0.0022 (0.0323)	-0.0118 (0.0360)	0.0245 (0.0492)	0.0209 (0.0465)
Manufacturing share	-0.0158 (0.0184)	-0.0173 (0.0186)	-0.0187 (0.0187)	-0.0178 (0.0210)	-0.0169 (0.0202)
Pro-agriculture	0.2728** (0.1088)	0.2737** (0.1089)	0.2763** (0.1090)	-0.0168 (0.1467)	-0.0104 (0.1469)
Anti-small government	0.3760*** (0.0780)	0.3766*** (0.0780)	0.3776*** (0.0780)	0.5505*** (0.1130)	0.5526*** (0.1132)
Anti-public works	0.0509 (0.0772)	0.0521 (0.0773)	0.0551 (0.0775)	0.3455*** (0.1227)	0.3545*** (0.1237)
Anti-immigrants	0.0768 (0.0787)	0.0766 (0.0787)	0.0759 (0.0787)	0.3816*** (0.1158)	0.3818*** (0.1159)
Pro-Asia	0.4494*** (0.0718)	0.4489*** (0.0718)	0.4482*** (0.0718)	0.3282*** (0.0978)	0.3280*** (0.0977)
Pro-liberalization	-0.8481*** (0.0775)	-0.8493*** (0.0775)	-0.8520*** (0.0777)	-1.1195*** (0.1258)	-1.1269*** (0.1266)
DPJ	-0.1928 (0.2151)	-0.1986 (0.2154)	-0.2061 (0.2158)	-0.8804*** (0.3108)	-0.8877*** (0.3085)
LDP	0.0989 (0.2407)	0.0918 (0.2402)	0.0829 (0.2401)	0.0565 (0.3909)	0.0509 (0.3859)
NKP	-0.4196 (0.3001)	-0.4183 (0.2996)	-0.4177 (0.2982)	-0.0079 (0.6436)	-0.0123 (0.6436)
Terms	0.0418 (0.1218)	0.0430 (0.1219)	0.0459 (0.1220)	-0.2217 (0.1912)	-0.2105 (0.1916)
Incumbent	0.3315 (0.2569)	0.3333 (0.2567)	0.3353 (0.2566)	0.9495** (0.4004)	0.9354** (0.3997)
Female	0.3608** (0.1724)	0.3613** (0.1724)	0.3626** (0.1724)	0.3418 (0.2395)	0.3475 (0.2401)
Win	0.0388 (0.1905)	0.0422 (0.1900)	0.0467 (0.1897)	0.0538 (0.3149)	0.0595 (0.3127)
No. of samples	402	402	402	260	260
Pseudo R ²	0.4226	0.4227	0.4229	0.5281	0.5287
Log likelihood	-341.13	-341.09	-340.95	-178.29	-178.05

Note: Values in parentheses denote standard errors. ***, **, and * stand for significance at the 1, 5 and 10 percent levels, respectively.

Table 6. Estimation Results: Upper House Election in 2016

Variable	All Candidates			Majoritarian District Candidates	
	(11)	(12)	(13)	(14)	(15)
PR	-0.2206 (0.1460)				
Electorate (log)		-0.0518 (0.0403)		0.2052 (0.1745)	
Droop Quota (log)			-0.1125 (0.1490)		0.3859 (0.2940)
Agriculture share	0.0336 (0.0331)	0.0219 (0.0348)	0.0223 (0.0375)	0.1068** (0.0541)	0.1020** (0.0484)
Manufacturing share	-0.0202 (0.0173)	-0.0234 (0.0172)	-0.0242 (0.0173)	-0.0198 (0.0199)	-0.0217 (0.0189)
Pro-agriculture	0.4115*** (0.1074)	0.4114*** (0.1077)	0.4027*** (0.1076)	0.1308 (0.1503)	0.1398 (0.1489)
Anti-small government	0.7198*** (0.0811)	0.7164*** (0.0811)	0.7069*** (0.0807)	0.6876*** (0.0994)	0.6902*** (0.0994)
Anti-public works	-0.2009*** (0.0766)	-0.2021*** (0.0766)	-0.2033*** (0.0767)	-0.1367 (0.0962)	-0.1303 (0.0968)
Anti-immigrants	0.2856*** (0.0792)	0.2865*** (0.0792)	0.2854*** (0.0792)	0.3362*** (0.1014)	0.3413*** (0.1015)
Pro-Asia	0.6254*** (0.0774)	0.6249*** (0.0774)	0.6225*** (0.0774)	0.7206*** (0.1021)	0.7210*** (0.1022)
Pro-liberalization	n/a	n/a	n/a	n/a	n/a
DPJ	0.1907 (0.2390)	0.1906 (0.2391)	0.1976 (0.2390)	0.9597*** (0.3567)	0.9444*** (0.3565)
LDP	-1.971*** (0.2539)	-1.4999*** (0.2549)	-1.4826*** (0.2551)	-0.9551*** (0.3617)	-0.9612*** (0.3603)
NKP	-2.2448*** (0.3182)	-2.2464*** (0.3179)	-2.2542*** (0.3171)	-1.1267** (0.5111)	-1.1324** (0.5114)
Terms	0.1453 (0.1311)	0.1405 (0.1311)	0.1349 (0.1312)	0.2218 (0.1681)	0.2297 (0.1687)
Incumbent	-0.2541 (0.2873)	-0.2463 (0.2873)	-0.2300 (0.2870)	-0.7028* (0.3980)	-0.7267* (0.3995)
Female	0.1579 (0.1677)	0.1598 (0.1679)	0.1690 (0.1680)	0.1754 (0.2098)	0.1808 (0.2101)
Win	0.1982 (0.1940)	0.2051 (0.1938)	0.2108 (0.1935)	-0.0190 (0.2576)	0.0130 (0.2573)
No. of samples	364	364	364	216	216
Pseudo R ²	0.3835	0.3829	0.3819	0.3961	0.3966
Log likelihood	-331.45	-331.77	-332.31	-194.77	-194.60

Note: Values in parentheses denote standard errors. ***, **, and * stand for significance at the 1, 5 and 10 percent levels, respectively.