

Are Voters' Decisions Consistent with Their Policy Preferences?*

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Abstract

To what extent do voters select the party or candidate whose policy platform best embodies their multidimensional policy preferences? We provide a new measure of individual-level policy preferences estimated via a conjoint experiment on parties' policy platforms embedded in a large-scale, nationwide panel survey conducted during Japan's 2017 general election. We predict voters' expected utility from each of the parties' platforms, and test how well these utilities relate to vote choice. We find that the estimated utility from a party's platform positively predicts voting for that party; however, the relationship is modest, and factors such as party-specific trust also matter.

Keywords: elections, representation, policy manifestos, conjoint analysis, Japan

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1 Introduction

How (on what basis) do voters decide which candidate or party to support in an election? And do these decisions correspond to the voters' policy preferences? These are among the most important and persistent questions surrounding voting behavior in modern representative democracies (e.g., Key, 1966; Lupia and McCubbins, 1998; Lau and Redlawsk, 2006), and for good reason. For representative democracy to function properly, a widely held assumption is that elected leaders will represent the policy preferences of their voters, and that they will be held accountable if the policies they pursue once in office veer too far from the direction favored by the majority of the electorate they represent (e.g., Downs, 1957; Przeworski, Stokes and Manin, 1999). This fundamental assumption of how democracy works is moot if voters do not choose parties at least in part (and either retrospectively or prospectively) on the basis of those parties' policies.

In theory, spatial models of voting developed in the U.S. context assume that voters gather (at least some) information on each of the policy positions of the parties or candidates, rationally calculate which option would provide them with the most benefit, or "utility," and then vote for this option (e.g., Downs, 1957; Enelow and Hinich, 1984).¹ In the multiparty contexts of parliamentary systems outside of the U.S. context, spatial models of voting also assume either a basic congruence between voters' policy preferences and their vote choice, or directional or strategic voting aimed toward influencing post-electoral coalition formation outcomes (e.g., Adams and Merrill, 1999; Kedar, 2005; Iversen, 1994; MacDonald, Listhaug and Rabinowitz, 1991).

In reality, however, voters are diverse in terms of how, and to what extent, their vote choices incorporate policy preferences. In the first place, voters do not tend to possess complete information about which policies each party represents (e.g., Fowler and Margolis,

¹Strategic voters may also consider the candidate or party's chances of winning the election. For a recent study of policy voting in the U.S. context, see Tausanovitch and Warshaw (2018). For a general review, see Dewan and Shepsle (2011).

2014). As a result, their decisions may be based only on a handful of key issues (e.g., Ansolabehere, Rodden and Snyder, 2008; Carmines and Stimson, 1980), long-standing partisan identifications or social group attachments (e.g., Campbell et al., 1960; Lazarsfeld, Berelson and Gaudet, 1948), or rough heuristics used to approximate policy congruence (e.g., Popkin, 1991). Voters’ decisions are also likely to incorporate non-policy factors, such as perceived competence, trust, name recognition, or other valence attributes of candidates (e.g., Groseclose, 2001; Kam and Zechmeister, 2013).

The extent to which these non-policy factors matter to vote choice should also vary by the electoral system in use. Specifically, policy-based voting decisions should be more common in electoral systems where voters choose a party representing a set of policies, such as a closed-list proportional representation (PR) system, than in systems where voters select an individual candidate, such as the first-past-the-post (FPTP) single-member district (SMD) system or open-list PR systems (e.g., Carey and Shugart, 1995; Shugart, Valdini and Suominen, 2005). The winner-take-all nature of FPTP contests often also results in strategic voting, whereby voters whose preferred candidate is not likely to win instead cast their ballot for the more preferred of the two most competitive candidates (e.g., Cox, 1997; Duverger, 1954).²

Despite the theoretical importance of whether voters’ decisions are based on their policy preferences, the actual measurement of such “policy-based voting” is fraught with challenges. To assess whether vote choices are consistent with policy preferences, researchers must start with a faithful measurement of those preferences (van der Eijk et al., 2006). However, traditional survey questions face significant limitations in measuring policy preferences as conceived in spatial models, a fundamentally unobserved quantity. Survey respondents have difficulty attaching a cardinal measure to their alternative choices in elections. More-

²A fair amount of research has investigated the ideological congruence between voters and politicians in the aggregate under alternative electoral systems (e.g., Golder and Stramski, 2010; Huber and Powell, 1994). We are less aware of any studies directly testing whether policy-based voting at the individual level varies across systems.

over, parties and candidates represent multidimensional bundles of positions and attributes, rendering single-dimensional ratings largely insufficient.

In this study, we apply a novel approach to measuring voters’ policy preferences to evaluate the extent to those preferences map onto vote choice in multiparty elections. We designed and administered a large-scale nationwide panel survey before and after Japan’s 2017 House of Representatives general election, featuring a fully randomized conjoint experiment (Hainmueller, Hopkins and Yamamoto, 2014). Conjoint designs have become increasingly popular in studies of voter preferences for alternative candidates or politicians (e.g., Franchino and Zucchini, 2015; Carnes and Lupu, 2016; Horiuchi, Smith and Yamamoto, 2018*a*). In our design, respondents were asked to choose between hypothetical bundles of policies based on the actual policy manifestos of the main parties contesting the election, following the application introduced by Horiuchi, Smith and Yamamoto (2018*b*) for Japan’s 2014 general election. Improving on this previous research, we conducted our survey as a two-wave panel before and after the election, which allows us to relate the policy preferences measured through the conjoint design to voters’ actual vote choices. This approach directly tackles the challenge between theory and measurement in the vote choice literature, providing an alternative way to measure policy preferences holistically without focusing on ideological self-placement or averages across issue positions measured in separate survey items. In short, our key contribution is to measure voters’ multidimensional policy preferences and assess how such measures predict their decisions between parties, all in the context of an actual election campaign.

Our conjoint-based approach to understand voting behavior speaks to earlier methodological work on vote choice in multiparty systems (Hausman and Wise, 1978; Alvarez and Nagler, 1998; Imai and Van Dyk, 2005; Yamamoto, N.d.). Specifically, we use the rich choice data generated from the conjoint experiment to estimate each individual’s policy bundle-specific utility. Using these party-specific preference estimates, we improve on previous modeling of multinomial choices in elections by providing a more clearly defined estimate of the degree to which policy preferences matter in voters’ decisions. Because we record each respondent’s

electoral district (SMD) of residence, we are also able to incorporate information on the entry of candidates and parties in each district-level contest to better assess the impact of voters’ choice options.

Finally, we examine whether policy preferences have a stronger relationship to vote choice under different electoral systems—even for the same voter and in the same election. We do this by taking advantage of Japan’s mixed-member system, in which voters cast one ballot for a party in a closed-list PR contest in a multimember district (MMD) and a second ballot for a candidate in an FPTP contest in an SMD (the two tiers allocate seats separately, with no compensation or linking across tiers).³ As noted, policy preferences should, theoretically, be more closely related to a voter’s choice in the PR contest than in the FPTP contest in their district, where the relationship will be conditional on party entry and viability, and where candidate attributes and other district-specific factors will be more salient. To our knowledge, we are the first to use a conjoint-based approach to investigate whether and how policy-based voting varies under alternative electoral systems.

In Section 2, we describe the context of our survey experiment. We then outline our methodological strategy to estimate and make use of policy-bundle utilities in Section 3. The results are presented in Section 4. We discuss and conclude in Section 5.

2 Case, Survey Design, and Implementation

We investigate the degree of policy-based voting using a large-scale, online panel survey conducted during, and immediately after, a national election campaign in Japan. The central feature of the survey is a fully-randomized conjoint design (Hainmueller, Hopkins and Yamamoto, 2014) in the first (pre-election) wave of the survey for policy bundles presented as hypothetical party platforms, as in a previous application by Horiuchi, Smith and Yamamoto (2018b) in the 2014 Japanese general election. Respondents in our survey were

³Candidates may run in both tiers, and if they fail to win an FPTP seat may still be elected via their party list in the PR tier. However, the seat allocation at the party level happens in parallel across tiers.

presented with two hypothetical manifestos randomly generated by juxtaposing sets of multiple policy issues, each of which reflected one of the multiple actual positions of the parties in the election. Respondents were then asked to choose the party they would prefer most (based on its bundle of policies).

There are three key differences between our survey design and existing surveys. First, we asked respondents to select their SMD of residence through a series of branching questions. Second, respondents received a follow-up post-election wave of the survey, asking them to report their actual vote choice (or abstention) in the election. Finally, to measure alternative rationales for party support (beyond candidate attributes in SMDs), we also included a series of questions about the respondent’s trust in each of the eight parties and party leaders.

2.1 The Japanese 2017 House of Representatives Election

A brief description of the context of the election is necessary to help to set the stage for our conjoint design. On September 28, 2017, Prime Minister Shinzo Abe of the Liberal Democratic Party (LDP) dissolved the House of Representatives for new elections more than a year earlier than scheduled. As justification for the snap election, Abe pointed to a need to seek voter approval for his government’s plan to allocate funds from a scheduled increase in the consumption tax toward social welfare and education. However, many viewed the early election as an opportunistic ploy to stave off potentially greater losses for his government, as the decision to call a snap election came after a brief uptick in public opinion toward the Abe administration in the wake of threats from North Korea, after several months of sagging public support due to scandals involving perceived political favors for Abe’s friends (Pekkanen et al., 2018).

The campaign began on October 10, and voting took place on October 22.⁴ Just prior to the election, Tokyo Governor Yuriko Koike announced the creation of a new party, the

⁴Early voting has been allowed since 2005, and a record number of voters (roughly 20% of voters) took advantage of the option in 2017.

Party of Hope (Kibo), to challenge the LDP. Koike had served as an LDP cabinet minister in previous administrations. However, after failing to receive the LDP endorsement for the Tokyo gubernatorial election in 2016, she ran as an independent and won, defeating the LDP's nominee. She then formed a new party, Tomin First no Kai (or Tokyoites First), which crushed the LDP in the July 2017 Tokyo Metropolitan Assembly elections with the cooperation of the local branch of the LDP's national coalition partner, Komeito. Koike's decision to launch Kibo as a national party thus shook up the opposition (although she herself decided not to run in the election), while also adding some tension to the relationship between the LDP and Komeito.

Seiji Maehara, the leader of the main opposition Democratic Party (DP), announced on September 28 that his party would not endorse any candidates, and would instead encourage its members to join the Party of Hope. The DP had struggled to increase support among voters since the 2012 general election, when its predecessor, the Democratic Party of Japan (DPJ), was defeated by the LDP following three turbulent years of DPJ government (Kushida and Lipsky, 2013). Although many of the DP members joined Kibo, Koike refused to admit any DP candidates who would not pledge support for a long list of conservative positions. The left wing of the DP, led by Yukio Edano, established a rival new party, the Constitutional Democratic Party (CDP) on October 2, and began to coordinate with two small but long-surviving leftist parties, the Social Democratic Party (SDP) and the Japan Communist Party (JCP). Other parties that competed in the election included the Osaka-based Nippon Ishin no Kai (Ishin) and the right-wing Party for the Japanese Kokoro (Kokoro).⁵

The mixed-member electoral system for the House of Representatives combines 289 SMDs allocated by plurality rule (FPTP) and 176 seats separately allocated to parties using closed-list PR (d'Hondt) in eleven regional MMDs. Turnout was low, at 54% of eligible voters

⁵Apart from Kokoro, these parties fielded a list of candidates in all eleven regional PR districts. As an officially recognized party, Kokoro was included in party debates and most newspaper coverage, but ended up nominating a party list of candidates in only two PR districts: Tohoku and Tokyo. A few minor parties also fielded candidates, and many SMD contests also featured independents.

(second-lowest in postwar history following the previous general election in 2014), and the LDP-Komeito governing coalition won a crushing victory over a fragmented opposition for the third time in a row, taking home over 68% of the seats. The CDP emerged from the election as the largest opposition party, with 12% of the seats, followed by Kibo with 11%, JCP with 3%, and Ishin with 2%; the SDP won just two seats, with the rest won by independents (many of whom were DP “refugees” who did not join Kibo or the CDP). The governing coalition’s two-thirds majority in the chamber following the election means that the Abe government has the two-thirds majority of seats needed to pursue Abe’s long-held goal of amending the Japanese Constitution—in particular to revise Article 9 (the so-called “Peace Clause”) so as to legitimize and clarify the role of Japan’s Self-Defense Forces (SDF).⁶ The overwhelming victory also secured Abe’s position as the prime minister and the leader of the LDP.

Abe may have scored a victory in the election, but few public opinion polls leading up to the election suggested that voters were enthusiastic about the LDP’s policies. As in the 2012 and 2014 elections (Reed et al., 2013; Scheiner, Smith and Thies, 2016; Horiuchi, Smith and Yamamoto, 2018b), it appeared that the LDP won *despite its policies, not because of them*. Observers noted the disarray of the opposition parties and low voter turnout as possible reasons for the LDP’s success. Nevertheless, even if many voters were unimpressed with the LDP’s policy positions, it is not necessarily the case that the opposition’s policies were more popular. Moreover, the overall outcome of the election tells us little about which policies were most important to voters, the degree to which policy preferences mattered, or whether voters relied more heavily on policy-based evaluations in the PR or FPTP tier of voting. Our conjoint design, the panel structure of our survey, and our statistical analysis to estimate voters’ utilities from each party’s policy manifesto will help to elucidate these puzzles.

⁶The Constitution requires a two-thirds majority vote by each chamber of the Diet, followed by a majority referendum of voters, for amendments.

2.2 Conjoint Design

The policy positions we included in our conjoint experiment were based on the actual policy positions articulated in the parties’ manifestos. In the run-up to the start of the campaign on October 10, we carefully followed the policy discussions published in each of the five major national daily newspapers in Japan (*Asahi*, *Yomiuri*, *Mainichi*, *Sankei*, and *Nikkei*). Upon publication of the official party manifestos, we used each document to decide on the final set of major policy issues in the campaign: (1) consumption tax (scheduled to increase to 10% from 8% in October 2019), (2) constitutional revision (especially with regard to Article 9, but also including other components), (3) nuclear energy (specifically, whether or not to restart nuclear power reactors, which were shut down following the meltdown disaster at Fukushima Dai-ichi in March, 2011), (4) national security (including how to respond to the threat from North Korea), and (5) economic growth strategy (including Abe’s signature “Abenomics” policies, but also proposals for addressing growing inequality).⁷ For each of these five issues, we then generated distinct position wordings that summarized the actual positions of the eight major parties that contested the election: LDP, Komeito, Kibo, Ishin, CDP, SDP, JCP, and Kokoro.⁸

Each respondent was shown a table containing two hypothetical party manifestos with randomized positions on the five policy issues,⁹ and asked “*Imagine, hypothetically, that the following two parties were nominating candidates in this general election. Which party would you support? Even if you are not entirely sure, please indicate which of the two you would be*

⁷These issues also largely correspond to public opinion polling on which issues were most important. For example, a *Yahoo!* poll on October 3 asked voters which issue was most important in the election, with the following results: “constitutional revision” (27.9%), “diplomacy and national security” (27.6%), “consumption tax increase/allocation” (12.3%), “economics (Abenomics)” (10%), “nuclear problem” (4.9%). Other issues attracted fewer respondents. <https://news.yahoo.co.jp/polls/domestic/31045/result> (last accessed on December 21, 2018).

⁸The complete set of policy positions (in Japanese and English) and their correspondence with the actual party manifestos are shown in Appendix Tables A.1 and A.2. We avoided using any keywords, such as “Abenomics,” in the position wordings that could potentially give away the originating party.

⁹The order of attributes is also randomized across respondents but fixed for each respondent to minimize cognitive burden. For each attribute, the probability of presenting each level is constant. We did not impose any cross-attribute constraint.

most inclined to support.” Each respondent then registered his or her preference for one of the two hypothetical parties, and this exercise was repeated twenty times. After the conjoint exercises, we asked each respondent a number of questions about their social demographic backgrounds, political ideology and partisanship, vote intention in the FPTP and PR tiers of the election, and support for the Abe government, among other questions about political attitudes and trust in the parties and leaders.

In a post-election follow-up survey, we recontacted the same respondents and asked them to confirm their vote choice (or decision to abstain). In total, 6,065 respondents completed the first-wave survey, and 4,578 completed the follow-up survey. Respondents who reported having already voted early in the first wave were not invited to participate in the second wave.

There are two main advantages to using conjoint analysis over standard survey questions (Horiuchi, Smith and Yamamoto, 2018*b*). First, conjoint analysis jointly measures the relevance of each policy issue to respondents, as well as which position on each issue is most preferred. More specifically, conjoint analysis allows researchers to identify the average marginal component effect (AMCE) of each policy position (compared to the baseline) on the probability that a respondent would choose a manifesto containing that position.¹⁰ In any estimation of AMCEs, the selection of baseline categories is a crucial consideration. In some applications of conjoint analysis, this selection is arbitrary, which makes the interpretation of AMCEs questionable, particularly when AMCEs are compared between subgroups (Leeper, Hobolt and Tilley, N.d.). In our case, however, we set the LDP’s position as the baseline for every single attribute because, first and foremost, we want to understand voters’ preferences for opposition parties’ policies, which are significantly different from the LDP’s policies. Thus, AMCEs for these positions are directly relevant quantities of interest.

The second advantage is that conjoint experiments force respondents to evaluate mani-

¹⁰See Hainmueller, Hopkins and Yamamoto (2014) for the precise definition of the AMCE and discussion about the meaning of the quantity.

festos as a whole, just as they would do in a real election. Newspapers often present conjoint-like tables to voters in pre-election coverage of parties’ issue positions, so respondents in our survey would have been familiar with the kind of table shown in the experiment.¹¹

2.3 Survey Implementation

We used Qualtrics to implement our survey and collect samples. Respondents were recruited online during the period between October 10 (the first day of the campaign) and the morning of October 22 (when polls opened). The follow-up survey was conducted two days after the election. Our final sample of 6,065 respondents is not a probability sample, but the distributions of key demographic variables are similar to the distributions in the population based on the 2012 employment status survey conducted by the Ministry of Internal Affairs and Communications.¹²

Specifically, in our sampling process, we set quotas for five variables – age group, gender, region (corresponding to the eleven PR districts), income level, and education level. In order to facilitate our sample collection leading up to the day of the election, we removed all quotas during the last several days of the campaign period. This introduced some imbalances between our sample and the targeted population. We adjusted these imbalances by post-stratification weights estimated via entropy balancing (Hainmueller, 2012). In our presentation of the main results, we use the unweighted sample.¹³

¹¹An example of the kind of policy issue coverage that appeared in the daily newspapers leading up to the campaign is presented in Appendix Figure A.1.

¹²Statistics Japan, <http://www.stat.go.jp/data/shugyou/2012/index.htm> (last accessed on December 21, 2018). Descriptive statistics on the sample are provided in Appendix Table A.3.

¹³Since the degree of imbalances is small, unweighted and weighted results are qualitatively identical (see Appendix Figures A.3, A.4, A.5, and A.6 for estimates without weights). Reassuringly, the reported vote choices of our survey respondents, aggregated to the prefectural level, are approximately similar to the official prefecture-level vote results in the election (Appendix Figure A.2).

3 Utility Estimation and Multinomial Vote Choice

We now present a framework to estimate a survey respondent’s preference for a bundle of policies directly. An AMCE, as its name suggests, estimates a component-specific effect on the probability that a respondent chooses a given bundle over another. It does not, however, measure the *overall* level of preference for any given bundle. Therefore, to compare preferences over multiple bundles, we use a regression framework to estimate the conditional expectation of utilities as a function of demographic variables interacted with policy proposals, and generate predicted values.

3.1 The Random Utility Model

In a typical conjoint experiment, an individual respondent i makes a binary choice $S_i \in \{0, 1\}$ —whether or not to select a particular profile, which in our case is a bundle of policies (a hypothetical party manifesto). This choice is assumed be based on a standard random utility model. Let U_{ik} be the utility respondent i derives from a policy bundle $k \in \{1, \dots, K\}$, where k is indexing a party’s manifesto. Then, respondent i chooses party k ’s manifesto if the utility for that party manifesto is larger than the utility for any other party’s manifesto in consideration:

$$U_{ik} > U_{ik'} \quad \forall k' \neq k$$

By adding a stochastic component to U_{ik} , we can define the probability function that maps a given party’s policy manifesto to the likelihood of an individual respondent choosing that particular manifesto among others.

The key idea in our estimation is to abide by the random utility model and infer the values of U_{ik} by observing a series of binary choices. Choices are parameterized by pairwise interactions between a choice’s policy attributes and the demographic characteristics of the respondent. Formally, we model S_{ik} using respondent i ’s demographic attributes, the

positions X_k between which the respondent chose, and their interactions as inputs. We approximate this function through a saturated linear model. Finally, the predicted values of this linear model when the positions X_k are set to a party's bundle serve as estimates for U_{ik} .

3.2 Estimating Utility as a Linear Function

We illustrate our estimation strategy from a simple example. Assume there are only two policy issues, each of which has only three policy positions possible, a , b , and c . For now, also assume that respondents are homogeneous in their preferences, and thus they have the same component-wise utilities. Given these assumptions, for a given bundle k we can estimate:

$$U_{ik} = \begin{cases} \beta_a^1 + \beta_a^2 + \varepsilon_i & \text{if } k = \{a, a\} \\ \beta_a^1 + \beta_b^2 + \varepsilon_i & \text{if } k = \{a, b\} \\ \beta_b^1 + \beta_b^2 + \varepsilon_i & \text{if } k = \{b, b\} \\ \vdots & \\ \beta_c^1 + \beta_c^2 + \varepsilon_i & \text{if } k = \{c, c\} \end{cases}$$

where the β_a^1 , β_b^1 , and β_c^1 can be thought of as weights that individuals place on position a , b , and c of the first issue, and β_a^2 , β_b^2 , and β_c^2 as the weights that individuals place on position a , b , and c of the second issue.

As mentioned, we model a respondent's conjoint choice as a random utility model: between any pair of policy bundles, he or she prefers the bundle that would generate a higher utility value. By observing the binary vote choice, we can estimate the coefficients by running a regression model that predicts each individual's binary choice of a profile on a series of dummy variables indicating the positions revealed in the profile. With estimates of the coefficients in hand, we can then estimate the utilities as a linear combination of the coefficient

estimates and indicators.

So far, all individuals are assumed to share the same utility weight, i.e., the parameters β and γ do not differ across different types of individuals. It is more realistic to assume, however, that individuals have different demographic covariates and different demographic groups weight different positions in different ways. For example, low-income citizens may prefer more redistribution, and residents of Tokyo may prefer nuclear power more than residents of a prefecture where a nuclear plant is located.

A natural way to account for this heterogeneity is to interact the policy variables with categorical demographic variables. Specifically, in our experiment with the five policy issues, we run a regression that roughly corresponds to the following model:

$$S_{ik} = \sum_j (X^j + age_i * X^j + sex_i * X^j + education_i * X^j + income_i * X^j + region_i * X^j) \\ + age_i + sex_i + education_i + income_i + region_i + \epsilon_i$$

where $j \in \{\text{Tax, Constitution, Nuclear, Security, Economy}\}$ for the five policy issues, and X^j is a categorical variable for issue j that takes on eight values for each policy position in the conjoint experiment, respondent-level demographic variables are given by $age_i, \dots, region_i$, etc., and ϵ_i is a disturbance term. A set of dichotomous variables for this attribute (excluding a baseline category) is then interacted with each of the five demographic variables that may be predictive of policy preferences. They include age group, sex, income level, educational level, and geographical region (approximated by PR regional district), and are all categorical variables.

Coefficients are estimated for each combination of a dummy variable for each level in X^j and a dummy variable for each level in the demographic variable. Therefore, the number of coefficients we estimate is very large. For example, given that we have seven age groups and eight parties, we estimate $(8 - 1) \times (7 - 1) = 42$ interaction coefficients only for the $age_i * X^j$ term above. In total, the number of coefficients in the OLS regression is 1,044.

For our main results, we estimate this regression model by OLS. Although these are discrete outcomes, the OLS estimation can be a reasonable approximation because the regression specification is highly saturated. To account for the growing number of covariates and interactions, we also estimate the model with the standard variable selection methods of LASSO and Ridge using the `glmnet` package, choosing the tuning parameter by cross-validation (Friedman, Hastie and Tibshirani, 2010). In these penalized regressions, we estimate coefficients for the baseline value as well, so that coefficient estimates are not baseline-dependent.¹⁴ We find that predicted values from these sparse regressions are heavily correlated with those from OLS, and therefore use OLS results in the rest of the paper.

Having estimated a regression model, we generate the estimated utilities by setting the conjoint attribute variables for a given party. That is, to compute individual i 's utility from party bundle k , U_{ik} , we set all the conjoint policy variables to that of party k , leave individual i 's demographic covariates constant, and then compute the linear combination of the estimated coefficients and the set covariates. We repeat this for each of eight parties, so we can estimate $8 \times n$ utility values, eight for each respondent. The estimated utilities are cardinal and are thus unit-less. To facilitate the interpretation of these cardinal values, we recenter all the estimated utilities after estimation by a global constant so that the average of the utility from the governing party (LDP) is zero.

3.3 Using Utility as a Covariate in Multinomial Probit

In most electoral settings, voters do not make binary choices between pairs of profiles but instead make a single choice between two or more possibilities. In multiparty systems, voters weigh the policy profiles of three or more parties at the ballot box. The policies of each

¹⁴Of course, the functional form of $U(\cdot)$ can be specified incorrectly, and no method would be able to overcome the problem of potential omitted variables. The aim is therefore to use an estimation procedure that we would expect to have the least amount of bias and the least variance. To make the most out of the variables that are observed, the best we can do is to use a regression specification that is sufficiently flexible (e.g., non-parametric regression via tensor splines) in how different variables interact, while controlling for the overabundance of parameters (e.g., LASSO penalty).

party are generally fixed across districts, but different voters are likely to experience different degrees of support for the same policy platform. To investigate whether and how much policy preferences determine voters’ decisions to choose their most preferred party, it is therefore necessary to obtain and use estimates of voter-specific utilities as covariates.

To model this choice, we use a multinomial probit model. The multinomial model is ideal for our data because our data are multivariate, and we estimate utility from each party’s policy bundle, separately for each respondent, as the multinomial model requires. As opposed to a multinomial logit model, a multinomial probit model relaxes the independence of irrelevant alternatives assumption in a random utility framework.¹⁵ By implementing a multinomial probit, we follow earlier work (Alvarez and Nagler, 1995; Quinn, Martin and Whitford, 1999) in this area. Our modeling innovation is to incorporate the estimates of utilities directly, rather than relying on the issue-specific perceived ideological distances as the choice-specific variables, as in earlier work. Importantly, our proposed method leveraging the conjoint experiment responses does not rely on self-reported ideology and perception, does not impose a unidimensional assumption, and isolates the contribution of policy preferences by using questions that only ask about policy—masking party labels which may influence vote choice due to long-term partisan attachment. We should also note that our utility estimates are based on the actual policy manifestos of all major parties fielding candidates and our experiment was fielded during the actual campaign period.

Although multinomial models are used frequently in political science, the interpretation of coefficients sometimes remains unclear. We can illustrate the core features of our models through a simple example. For concreteness, suppose there are three parties: a , b , and c . Let $p = 3$ to denote the number of parties, and Y_i is the non-ordered categorical outcome variable that can take a value of a , b , or c . Let U_i^a , U_i^b , and U_i^c be the estimated utilities individual i has for these parties.

¹⁵For a discussion of the multinomial probit and multinomial logit in a similar context of multiparty electoral systems, see Quinn, Martin and Whitford (1999).

We suppose that there are two latent variables, W_i^b and W_i^c (where superscripts indicate the relative choice $j \in 1, \dots, (p-1)$, where $p = 3$). The parameters we want to estimate are expressed in terms of the vector of these latent variables $\mathbf{W}_i$, which is a length $(p-1)$ vector with a multivariate normal distribution. It takes the following form:

$$\mathbf{W}_i = \begin{bmatrix} W_i^b \\ W_i^c \end{bmatrix} = \begin{bmatrix} 1 & 0 & U_i^b - U_i^a \\ 0 & 1 & U_i^c - U_i^a \end{bmatrix} \begin{bmatrix} \alpha^b \\ \alpha^c \\ \beta \end{bmatrix} + \mathbf{e}_i$$

This is simply the familiar regression formulation, but repeated twice. The coefficients $\alpha^b, \alpha^c, \beta$ are the key parameters we want to estimate (the first two are intercepts). To rewrite,

$$\begin{cases} W_i^b &= \alpha^b + \beta(U_i^b - U_i^a) + e_i^b \\ W_i^c &= \alpha^c + \beta(U_i^c - U_i^a) + e_i^c \end{cases}$$

where $\mathbf{e}_i$ is a length $(p-1)$ vector that also has a multivariate normal distribution. Its mean vector is set at zero, and the variance-covariance matrix is symmetric and positive semi-definite. Thus,

$$\begin{bmatrix} W_i^b \\ W_i^c \end{bmatrix} \sim \begin{bmatrix} 1 & 0 & U_i^b - U_i^a \\ 0 & 1 & U_i^c - U_i^a \end{bmatrix} \begin{bmatrix} \alpha^b \\ \alpha^c \\ \beta \end{bmatrix} + \text{Multivariate Normal} \left(\boldsymbol{\mu} = \begin{bmatrix} 0 \\ 0 \end{bmatrix}, \Sigma = \begin{bmatrix} 1 & \sigma_{12} \\ \sigma_{12} & \sigma_{22} \end{bmatrix} \right)$$

How does this vector of latent variables translate to a single party? The value of Y_i is

dictated in the following way:

$$Y_i = \begin{cases} a & \text{if } W_i^b < 0 \text{ and } W_i^c < 0, \text{ i.e. } \max(\mathbf{W}_i) < 0 \\ b & \text{if } W_i^b > W_i^c \text{ and } W_i^b > 0, \text{ i.e. } \max(\mathbf{W}_i) = W_i^b > 0 \\ c & \text{if } W_i^c > W_i^b \text{ and } W_i^c > 0, \text{ i.e. } \max(\mathbf{W}_i) = W_i^c > 0 \end{cases} \quad (1)$$

The intuition is as follows. If W_i^b is very large and positive, it is more likely to become the biggest element in $\mathbf{W}_i$. Therefore, a larger latent variable indicates that respondent i is more likely to choose b . If both are negative and very small, then it is more likely that a will be chosen.

We estimate this multinomial probit model via Bayesian Markov Chain Monte Carlo, sped up by data augmentation (Imai and Van Dyk, 2005). This estimation imposes a multivariate normal prior for the β parameters and a constrained inverse Wishart distribution for the covariance matrix. To approach convergence, we increase the number of draws to 10^5 , thinning the draws at every 10 draws and a burn-in sample of 2×10^3 .¹⁶

In our data, there are eight main parties that nominated lists of candidates in the PR tier. In the FPTP tier, in contrast, no district was contested by all eight parties, but most featured multiparty competition.¹⁷ In the current specification, we drop respondents who reported abstaining or voting for a minor party that was not one of these eight parties because there is no obvious selection of choice-specific utility for this category. Therefore, in the PR tier, we define our outcome variable as a categorical variable with eight choices.

$$Y_i \in \{\text{LDP, CDP, Kibo, Ishin, Komeito, SDP, JCP, Kokoro}\} \quad (2)$$

We posit that each individual i attaches a different utility to each of these choices, and

¹⁶The default values of no burn-in, no thinning, and 5×10^3 draws generated substantially varying estimates.

¹⁷Scholars of Japanese politics have long noted how the opposition fails to coordinate in the FPTP tier, often splitting the opposition vote after fielding multiple opposition candidates in an SMD.

we thus use the policy bundle-specific utilities estimated in the previous section to represent these party utilities. In the FPTP tier, the choice set differs by the voter’s district. Our survey questionnaire asked each voter’s SMD, by self-report, so it is possible to merge information on the candidate options in each SMD into our estimation. In our analysis of vote choice in the FPTP tier, we report the multinomial probit results when unconditioned on candidate availability, with the same eight choices as the PR tier, as well as conditional results that take into account the choice set facing the respondent in his or her actual district.

4 Results

We now present the findings from our empirical analysis. We first present AMCEs using all voters. Next, we compare the AMCEs between those who voted for the LDP and those who voted for the opposition. Third, we show the distribution of individual-level utilities for each party’s policy manifesto. Finally, we examine how much the utility estimates and vote choices are associated. In all of these empirical tests, given our primary interest of understanding the relationship between voters’ policy preferences and their vote choices, we exclude respondents who reported abstaining from voting in the election.

4.1 Average Marginal Component Effects

We begin with the average marginal component effects (AMCEs) of policy positions on preferences for hypothetical manifestos, using the full sample of respondents who reported voting. Figure 1 presents the estimated AMCEs for non-LDP policy positions (solid circles) along with cluster-robust 95% confidence intervals (horizontal bars). On each policy issue, the LDP’s position (the baseline) is indicated by a solid circle on the zero line without an interval estimate. The estimates are grouped into the five policy issues we included in our experiment, as indicated by the labels on the left and also by the colors of the plotted points. In place of the full policy position, only the party label associated with the position is shown

for simplicity of presentation.¹⁸

Figure 1 shows that although the LDP cruised to victory in the 2017 election, their policy positions were not necessarily popular, as indicated by positive and large AMCEs for other parties' policy positions (compared to the baseline of LDP's positions) for some issues. For example, on the *Consumption Tax* issue, the policy position of the LDP ("Raise the consumption tax to 10% in October 2019, striking the appropriate balance between allocating the financial resources to invest in the child-rearing generation and the stabilization of social security") is estimated to be the least popular position. The position advocated by Komeito, which is marginally different from the LDP's position, was only slightly more popular. Each of the other opposition parties called for a freeze on the tax increase, with various alternative proposals. The most popular position was that of Ishin ("Freeze the October 2019 10% consumption tax increase. First reduce expenditures through administrative and fiscal reform").

On the issue of *Constitutional Revision*, the LDP's position was to "Revise Article 9 to clearly state the role of the SDF. In addition, revise the constitution to include provisions for free education, strengthening education, responding to emergency situations, and eliminating combined prefectural districts of the House of Councilors." This position was more popular than the anti-revisionist positions of the CDP, the JCP, and the SDP (all of which opposed the revision of Article 9 in particular), as well as the pro-revisionist, nationalist position of Kokoro. The AMCE for the Komeito's position of protecting Article 9 while adding new rights to the constitution and the AMCE for the LDP's position are not statistically distinguishable. The most popular position was promoted by Kibo, which issued a vague statement for further debate: "Whether Article 9 is revised and the SDF role is clearly stated will depend on whether public understanding can be obtained or not. We will advance discussion of the entire Constitution including the people's right to information and local decentralization." Ishin's position is also slightly more favored by voters as compared to the LDP's position.

¹⁸For the full description of policy positions, see Appendix Tables A.1 and A.2.

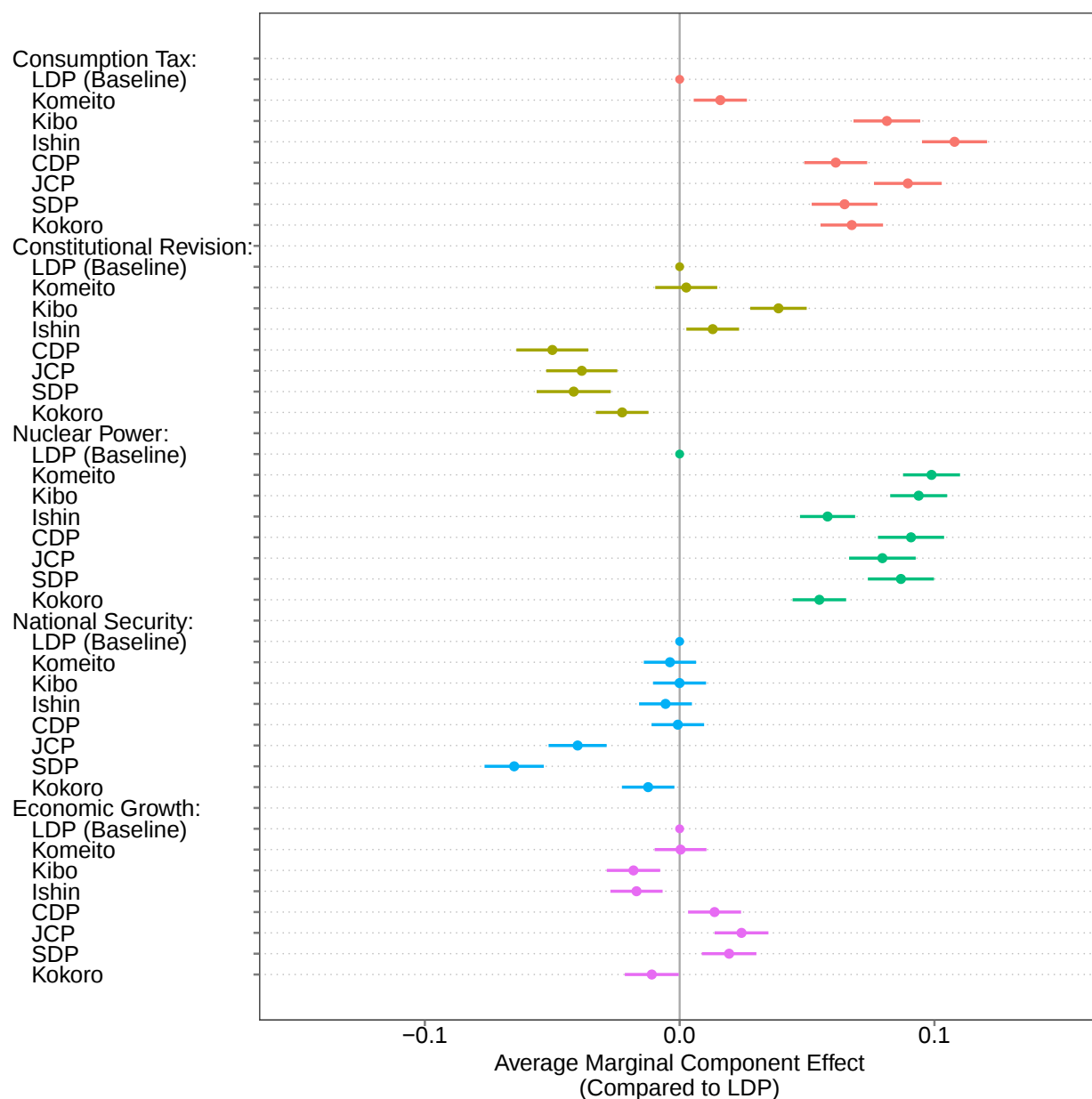


Figure 1: Average marginal component effects of policy positions on voters' preference for a hypothetical party manifesto. The horizontal bars represent 95% confidence intervals robust to clustering at the respondent level. The estimates and confidence intervals in this analysis are not adjusted for observed imbalances in age, gender, region (PR district), income and education between our sample and the target population of voting-age adults (see Appendix Figure A.3 for weighted results, which are nearly identical).

As with the consumption tax issue, the LDP's position on *Nuclear Power* was clearly the least popular. The nuclear issue has been salient since the March 11, 2011 meltdown at the Fukushima Daiichi power plant. All other nuclear power plants were shut down after the incident as a precaution. In the 2017 election, the LDP's position called for "Reactivation of nuclear power plants promoted with the understanding of the local authorities while satisfying regulatory standards. Positioning nuclear power as an important basic power source and considering new expansion." Most of the other parties advocated the eventual elimination of nuclear power, and those on the left (the CDP, the SDP, and the JCP) opposed restarting the plants altogether.

In terms of *National Security*, the big issue of the election was how to deal with the threat from North Korea. The LDP pushed to "Collaborate with the international community and raise the pressure on North Korea. Accelerate improvement of capacity to cope with missiles through revised security legislation, and further strengthen the Japan-U.S. alliance." The positions of Komeito, Kibo, Ishin, and the CDP, which offered similar policies to the LDP, did not gain statistically distinguishable support, compared to the LDP's position. Less popular were the positions of the SDP and JCP, which called for negotiations with North Korea.

Finally, in terms of *Economic Growth* strategy, there was a slightly more positive preference for the policies of the parties on the left (the CDP, the JCP, the SDP) over the policy of the LDP. The LDP advocated for "Concentrate investment in innovation to boost productivity, and support for small and medium-sized enterprises (SMEs) to revitalize a private-led economy." In contrast, the most popular position was that proposed by the JCP: "Raise the minimum wage and revitalize SMEs that are the backbone of the Japanese economy. Promote agriculture, forestry, and fishery industries by direct income compensation. Advance correction of income disparities and poverty." The CDP and the SDP similarly focused on supporting rural industries and small businesses, and reducing wealth inequalities. The positions of other centrist or rightist opposition parties (Kibo, Ishin, and Kokoro) are slightly

less favored by voters, as compared to the LDP’s position.

In sum, for two of the five major policy issues in the campaign, the LDP’s positions were the least popular on offer. On the other three issues, some parties’ positions were more popular while other parties’ positions were less popular. It would seem that the LDP’s overwhelming victory in the election cannot be attributed to the overall popularity of its policies. This finding is consistent with what Horiuchi, Smith and Yamamoto (2018*b*) report for the 2014 election as well.

4.2 Differences by Party Support

Horiuchi, Smith and Yamamoto (2018*b*) note that many of the respondents who opposed the LDP’s policies in 2014 were likely to be “floating voters” (independents), many of whom likely did not turn out to vote. While their 2014 study only asked respondents about their vote intentions, we also asked their actual voting decision in the post-election wave. Using this information, we can evaluate whether the policy preferences of respondents varied by support for the LDP versus the opposition.¹⁹

Figure 2 presents these results, using vote choice in the PR tier to generate the separate groups of respondents.²⁰ The left panel shows the results for the subsample of respondents who reported voting for the LDP in the PR tier. Here we can see that one thing that clearly sets LDP supporters apart is a dislike of the leftist positions on constitutional revision and national security. The split within the LDP-Komeito coalition on the issue of constitutional revision is also evident. LDP supporters do not prefer Komeito’s position of retaining Article 9 while adding other rights to the constitution.

The left panel results, however, also suggest that apart from some leftist parties’ positions on contentious issues, the AMCEs for most policy positions are close to zero. This may

¹⁹Those who supported Komeito, the LDP’s coalition partner, are excluded from this analysis.

²⁰Weighted results, and corresponding analyses for the FPTP tier, as shown in Appendix Figures A.4, A.5, and A.6 (these results are nearly indistinguishable from the unweighted PR tier results shown).

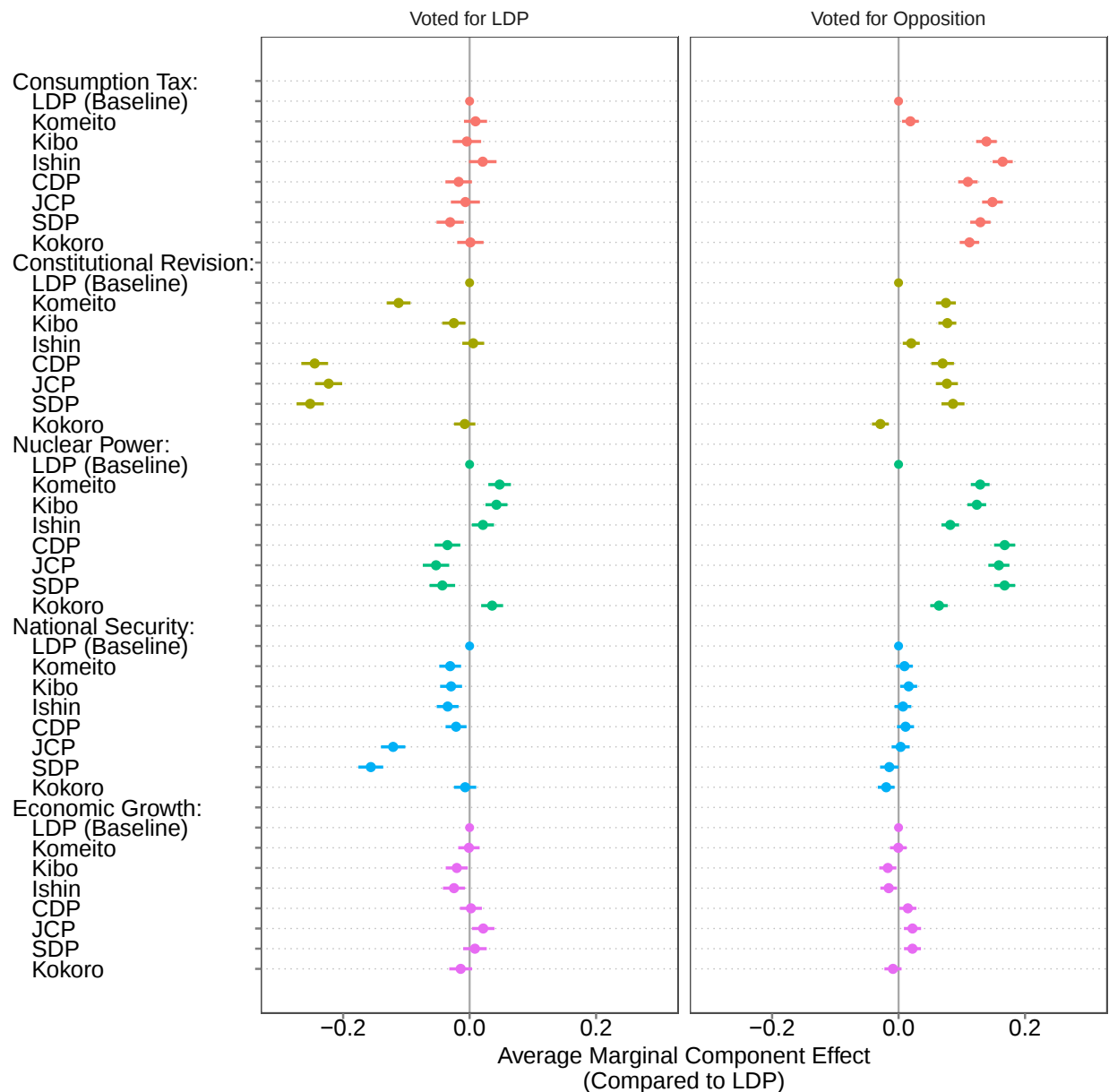


Figure 2: AMCE for LDP supporters and opposition supporters. The left panel shows AMCEs among respondents who reported voting for the Liberal Democratic Party (LDP) in the PR tier, while the right panel shows AMCEs among respondents who reported voting for any of the opposition parties except LDP’s coalition partner, Komeito. Horizontal bars represent 95% confidence intervals robust to clustering at the respondent level. The estimates and confidence intervals are not adjusted for observed imbalances in age, gender, region (PR district), income and education between our sample and the target population of voting-age adults (see Appendix Figure A.4 for weighted results, which are nearly identical). Appendix Figures A.5 and A.6 show (nearly identical) results for FPTP vote choice, unweighted and weighted.

indicate that the LDP’s policy and other parties’ policies are not substantially different for LDP supporters in their vote decisions. In other words, this is one indication that *something other than policies* was important for LDP supporters to vote for the LDP.

The right panel shows the results for respondents who reported voting for opposition parties, which we define here as any of the eight parties excluding the LDP and Komeito. Opposition voters were especially opposed to the LDP positions on the consumption tax, constitutional revision, and nuclear power, as the large and positive AMCEs indicate. Yet, they were largely unmoved by differences in positions on the issues of national security and economic growth. The most popular positions among opposition voters appear to be the leftist parties’ strong stances against restarting nuclear power plants.

Overall, the comparison of AMCEs between LDP supporters and supporters of the opposition is particularly insightful to understand which policy issues were more relevant in vote choices (in this case, consumption tax, constitutional revision, and nuclear power) and which policy issues were more divisive (in this case, most notably, constitutional revision). But as Leeper, Hobolt and Tilley (N.d.) point out, comparing AMCEs between subgroups is not suited to discussing the differences in the overall preferences between these groups. To delve further into the analysis of policy preferences, we now turn to predicting individual-level utilities from each party’s policy manifesto.

4.3 Individual-Level Utilities from Each Party

Figure 3 presents the distribution of estimated utilities from each of the eight parties we consider in the conjoint experiment. Each distribution contains the 3,651 respondents who completed the conjoint tasks and reported their vote choices in SMD and PR in the election. For ease of interpretation, all utilities are adjusted so that the mean of the LDP’s policy bundle is set to zero. Most importantly, Figure 3 shows that the utilities from all parties’ policy manifestos except the LDP tend to be *positive*—meaning the platforms of all other parties are more favored than the LDP’s platform. This serves as another piece of evidence

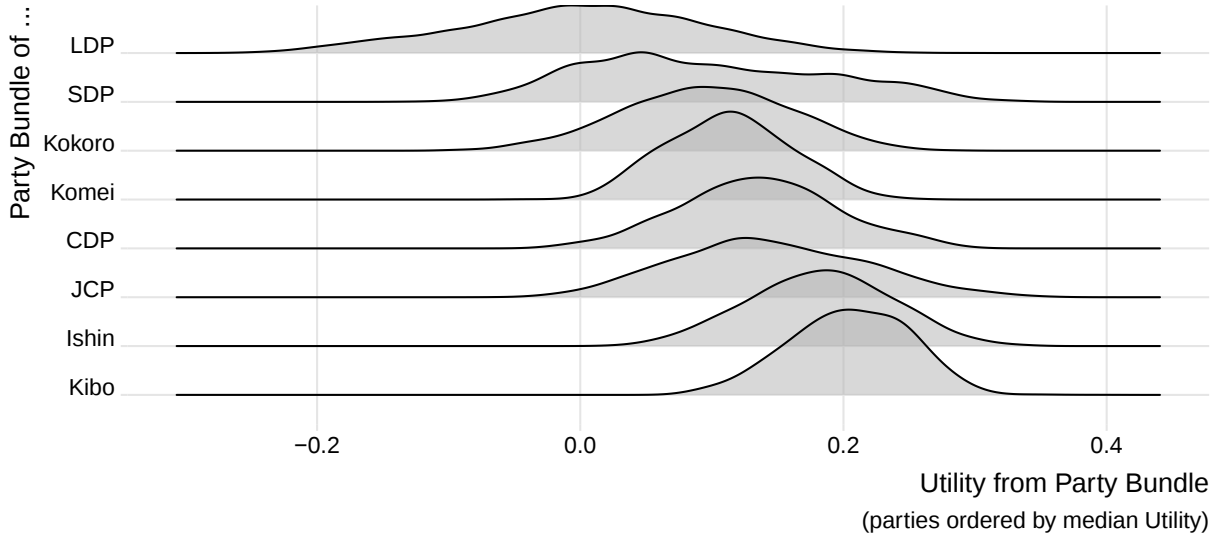


Figure 3: Distribution of estimated utilities (OLS) for each party bundle. For ease of interpretation, all utilities are centered by a constant so that the mean of the bundle for the governing party (LDP) is zero (this involved subtracting 0.378 from all utility estimates). On average, respondents derived less utility from the governing party’s bundle.

suggesting that voters chose parties based not only on the parties’ policies but also something else. To put it differently, we would not observe the patterns shown in Figure 3 if the LDP had won *because of the popularity of its policy positions*. Our finding is that compared to the mean of the estimated utilities from the LDP’s policy manifesto, the distribution of utilities is significantly to the right (higher utility) for other parties. Among the opposition, Kibo’s policy was the most preferred by voters.

Figure 3 only shows the marginal distribution of our estimates for a given party. However, we are also interested in how these utilities for different bundles correlate *within* an individual. For example, we would expect that, if voters were paying attention to the conjoint exercises in our survey, then their utility for two policy bundles that are diametrically opposed in content would *negatively* correlate, while their utility for similar bundles would *positively* correlate. We provide a selective illustration of this pattern in Figure 4. For ease of illustration, we randomly selected 100 respondents and plotted their estimates for three out of the eight parties, by respondent. The preferences for the policy bundle of the LDP, the governing party, is in navy. The LDP’s main challengers were the CDP (magenta) and Kibo (green).

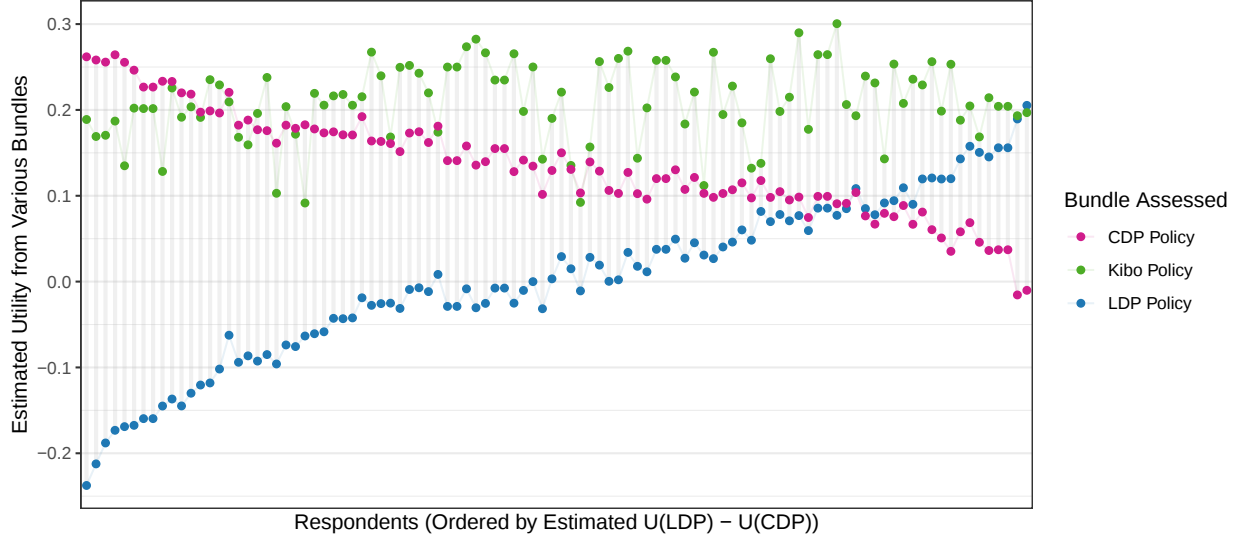


Figure 4: An illustration of utility estimates. A selective visualization of estimated utilities in our data. Each point is an OLS utility estimate. Only 100 respondents (randomly sampled out of 6,065) and 3 parties (out of 8) are shown for simplicity. Each vertical bar groups a respondent, and indicates the range of estimated utility estimates for the parties. Therefore the color of the point at the top of each bar indicates the respondent’s favorite party

Overall, we see that an individual’s estimated utility from the LDP’s platform is negatively correlated with its utility from the leftist CDP’s platform, and ambiguously correlated with that of the center-right Kibo party. These patterns suggest that respondents in our sample did display some degree of coherence in their evaluation of the policy alternatives on offer in the conjoint experiment of hypothetical parties.

4.4 Predictive Strength of Utility

We now turn to our final question of how policy utility predicts vote choice. As Figure 4 shows, even with only a handful of cases, our new approach produces specific estimates of utility for each of the eight policy bundles as a function of the respondent’s demographic characteristics. Do these utilities correspond to voter’s party choice?

A typical linear regression model is inadequate for analyzing the relationship between these party-specific utilities and vote choice, as individuals are making choices between two or more parties. We therefore proceed to estimate the multinomial probit model outlined

in Section 3, predicting vote choice in the by choice-specific utilities as the main covariates. Again we focus on the PR tier, where unlike the FPTP tier voters could vote for any of the eight parties [Note: we intend to compare the FPTP and PR tiers in a future version of this paper]. For comparison, we also estimate the model with another choice-specific covariate, self-reported trust in each party. In total, we estimate three models: one with only the estimated utility as a predictor, another with only trust, and a third with both. We estimated three sets of models iteratively until marginal convergence was achieved.²¹

Table 1 presents coefficient estimates from models that have reliably converged. Our key estimate is the first coefficient of 0.61. A one-unit increase in a voter’s estimated utility from a particular party’s policy bundle is associated with a 0.61-unit increase in the probit latent variable outlined in Section 3, which corresponds to a higher probability of choosing that party. The 95 percent credible interval does not cross 0, indicating that this estimate is distinguishable from zero.

In the next two models of Table 1, we model the same outcome variable with self-reported trust for each party included as predictors. The trust variable is also strongly predictive, with a coefficient estimate nearly an order of magnitude stronger. When both coefficients are estimated, the predictive strength of policy utility holding trust fixed is still positive and distinguishable from zero, but smaller than the initial estimate. This comparison reveals that while voters’ choices are partially consistent with their policy preferences, other non-policy factors such as trust also play an important role.

Some caution is required before directly interpreting the coefficient estimates. While our survey’s innovation is precisely in the ability to measure these covariates, both policy utility and trust are measured with distinct types of measurement error. As outlined, policy utility is computed by a regression based on a voter’s demographic variables, and therefore represents

²¹We tested a combination of prior variance values $\{ 10, 10^2, 10^3, 10^4 \}$, each with either 10^4 or 10^5 draws. 5 chains with different starting values were computed for each of these eight possibilities. We use a specification that converged reliably for all three models mentioned above: 10^5 draws, thinned every 3 draws, with a 10^3 burn-in period, and a weakly informative prior with the variances of the coefficients set to 10.

Coefficient	Outcome: PR Vote Choice					
	Utility		Trust		Utility + Trust	
	Mean	95% CI	Mean	95% CI	Mean	95% CI
Utility	0.61	[0.09, 1.00]			0.34	[0.07, 0.63]
Trust			3.07	[2.7, 3.4]	3.08	[2.7, 3.4]

Table 1: Policy-specific utilities, as well as trust for parties, predict vote choice. Each pair of columns shows estimates from a multinomial probit model predicting a voter’s party choice in the proportional representation (PR) tier of the election. The left model uses a voter’s estimated Utility for each party as a predictor (with intercepts), the middle only use voter’s self-reported trust for each party, and the right set uses both. Intercept coefficient estimates are omitted. Estimates are based on 25,000 posterior draws from 5 MCMC chains. Predictors are normalized by a constant so that the sample mean of LDP Utility is 0, and trust is a 4-point Likert scale recoded from -0.5 to 0.5. All models uses all 3,184 observations for which the respondent reported voting for one of the major parties; missing data and abstentions are dropped.

averages within a particular demographic cell. Trust estimates are, in contrast, measured at the individual-level and provide more granularity, although are only coarsely measured on a 4-point Likert scale. It is clear, however, that even conditional on trust in a variety of parties, a larger agreement on policy is predictive of voting for a given party.

The probit coefficients themselves are hard to interpret in substantive terms. We plot fitted probabilities in Figure 5. For each individual, we can estimate the fitted probability (in-sample predicted probability) of choosing each of the estimated choices by generating many posterior draws from the model and counting the proportion of times a given choice appears. We then plot these probabilities across utility estimates. There are fitted values and utility estimates for each of the choices, but to visually inspect whether the policy preferences predict voting for the relevant party we simplify the picture by only plotting corresponding pairs. That is, we first show the relationship between the MNP’s fitted probability for voting for the LDP and the utility estimate from the LDP’s platform. We then repeat the same graphing exercise for each party. The result is presented in Figure 5 and confirms the interpretation of the coefficient table.

How do we reconcile these findings with the mismatch from aggregate component effects?

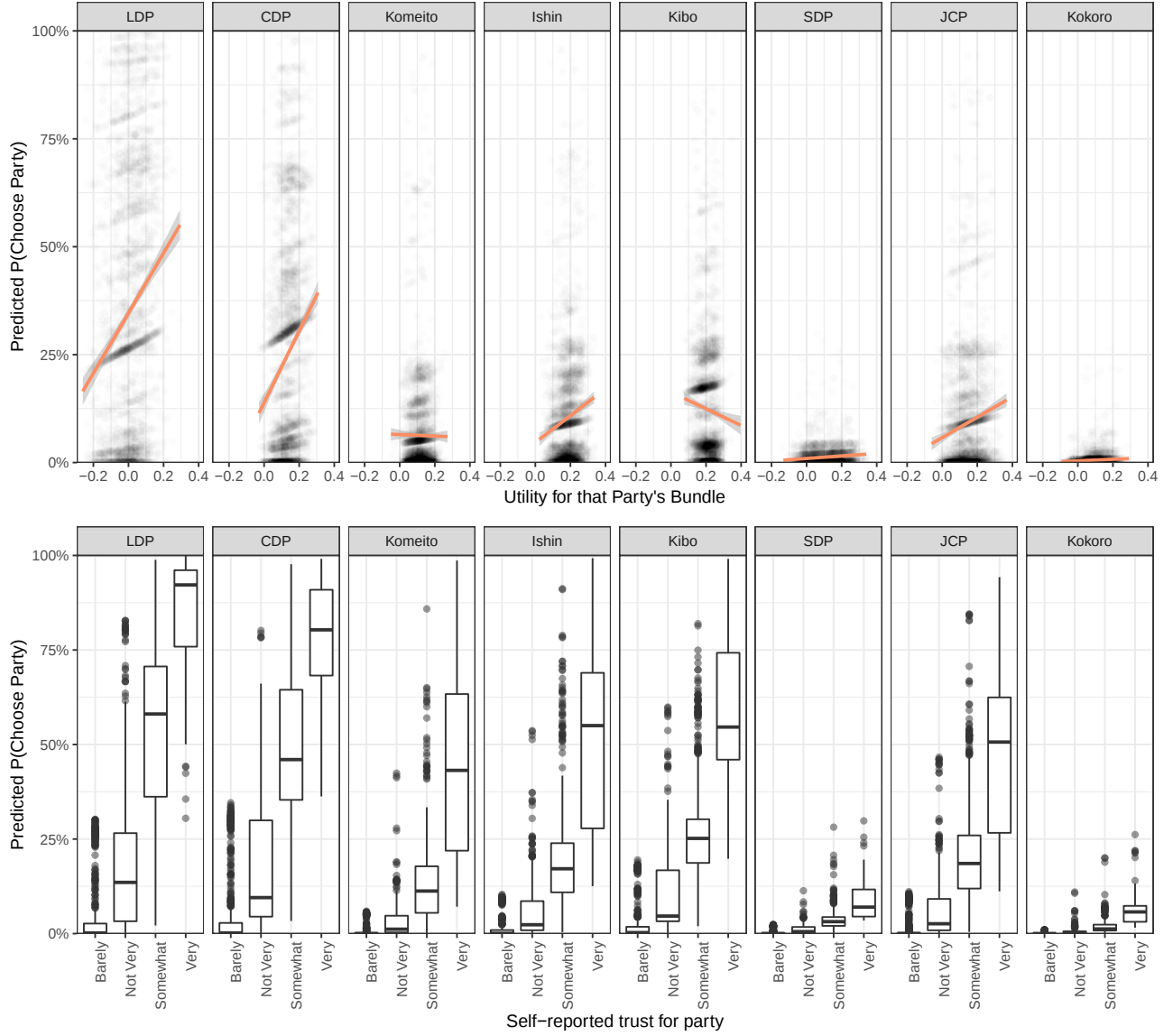


Figure 5: Fitted probabilities from multinomial probit, aligned by predicted utilities or self-reported trust. Probabilites are from fitted outcomes in the utility-trust multinomial probit model in Table 1. Each observation's fitted probability is aligned by either the estimated utility from that party (top panel) or self-reported trust in that party (bottom panel).

The results of the multinomial probit analysis provide a more complete picture of how a vector of party-specific utilities contribute to vote choice. While policy utility matters at the margins, the most preferred party may not be consistently chosen because other factors (trust, for example) accrue to the advantage of other parties (the LDP in particular for our case). Our estimates of coefficients combined with election vote choice is consistent with this view. On the one hand, the probability of voting for any given party does indeed increase with the estimated utility a voter would get from that party’s policies. On the other hand, the much higher intercept for the LDP, compared to other parties, indicates that the governing party earned many votes from among voters with unfavorable views toward the party’s policies.

5 Discussion

In this final section, we briefly summarize the findings presented in each set of analyses. First, voters’ overall evaluation of the parties’ policies, as measured through the AMCEs, appears to show several deviations from “perfect” policy voting. For many of the five major policy issues in the 2017 House of Representatives election, the LDP’s positions were less popular overall than those of the opposition parties. Nevertheless, this pattern is attenuated among the sample of LDP voters, suggesting that these voters may indeed be supporting the LDP’s candidates at least in part because they support the party’s policies over those of the opposition. A similar pattern holds true for voters who support the opposition: those who vote for the opposition clearly do not prefer the policies of the LDP on most issues.²²

Our second set of analyses using multinomial probit models and choice-specific utilities for each voter, however, suggest some ambiguity in how to interpret the voters’ decision-making processes. We find that voters in the 2017 election, for the most part, did not choose the party that campaigned on the bundle of policies that provided them with the *highest*

²²Perhaps most notably, the preferences of abstainers are most similar to the preferences of opposition voters on all issues except constitutional revision (not shown).

policy utility. That said, the higher the utility for a given policy bundle, the more likely a voter was to choose the party associated with that bundle. Additionally, a higher level of trust in a party was also associated with choosing that party. One possible interpretation of the LDP's victory in the 2017 election, therefore, is that the party benefited from greater trust by voters, despite its relatively less popular policies.

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A Survey Appendix

3党の主な主張と連携相手			
	自民党	希望の党	立憲民主党
憲法・安保	自衛隊の明記など4項目を中心に、党内外の十分な議論を踏まえ、初めての憲法改正を目指す(2日公表の衆院選公約)	改憲の議論を避けてはいけない(9月25日の小池百合子代表の会見) 北朝鮮の危機が迫っているなかでリアルな安全保障が必要だ(9月27日のBS番組での発言)	自衛隊加憲は違憲部分を含んだ安保法制を追認することになるので許されない(2日の枝野幸男代表の会見)
消費増税	2019年10月に消費税を10%に引き上げ、増収分は子育て世代に投資を集中する(同上)	2019年10月の消費税10%への引き上げを凍結(公認候補と結ぶ「政策協定書」)	現下の経済情勢で増税を予定通り実行することは国民の理解を得られない(同上)
原発	重要なベースロード電源と位置づけ、新規規制基準に適合すると認められた原発は関係者の理解と協力を得て再稼働を進める(同上)	2030年までに原発をゼロにするための行程表を検討していく(9月28日の会見)	一日も早く原発ゼロを実現するため、具体的な行程表を作り、国民に示す(同上)
政治理念	常に進歩を目指す保守政党(2010年綱領)	寛容な改革保守政党(党綱領)	立憲主義、法の支配のもと社会の構成員が互いに認め合える社会の実現(同上)
相連携	公明党	日本維新の会	共産党、社民党(連携模案)

Figure A.1: Example of conjoint-like presentation of party policy positions in a newspaper. Graphic appeared in the *Asahi Shimbun* (online edition) on October 4, 2017.

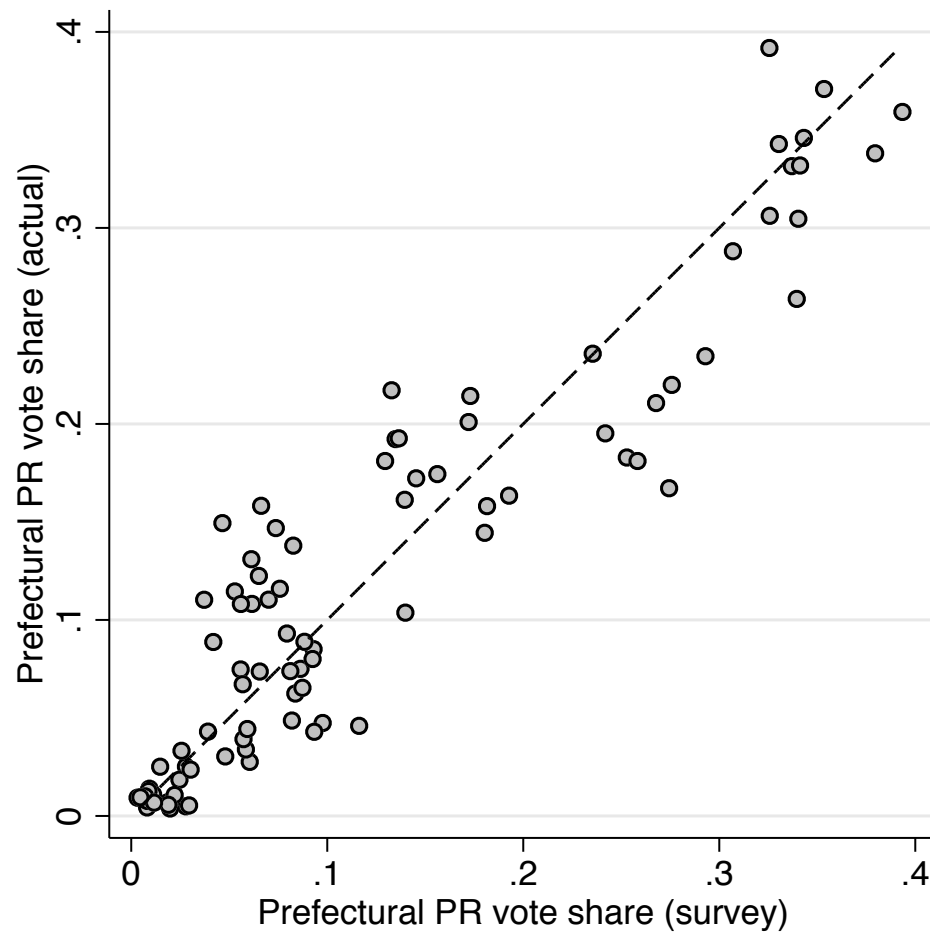


Figure A.2: Comparison of actual PR vote by PR vote as reported by survey respondents, by prefecture. Data on the actual vote results for the PR tier at the prefecture level come from the Ministry of Internal Affairs and Communication.

Table A.1: Policy positions used for each attribute (in rows) and associated party (in columns).

Attribute	JCP	SDP	CDP	Kibo	Ishin	Komeito	LDP	Kokoro
Consumption Tax	消費税１０％引き上げに反対。代わりに、大企業と大資産家に応分の負担を要求し、財源確保と格差是正を実現。	消費税１０％引き上げに反対。代わりに、法人税率引き上げや防衛費削減などで歳入確保と歳出削減。	２０１９年１０月の消費税１０％引き上げは凍結。将来的な国民負担を議論。	２０１９年１０月の消費税１０％引き上げは凍結。代わりに、大企業の内部留保への課税などを検討。	２０１９年１０月の消費税１０％引き上げは凍結。まずは、行財政改革による歳出削減。	２０１９年１０月に消費税を１０％に引き上げ、財源を教育無償化などに充当。飲食料品などに対する軽減税率制度の導入。	２０１９年１０月に消費税を１０％に引き上げ、財源を子育て世代への投資と社会保障の安定化などにバランスよく充当。	２０１９年１０月の消費税１０％引き上げは凍結。軽減税率の導入に反対。納めた消費税の一部が将来的に還付される制度の導入。
Constitution Revision	９条改正に反対。現行憲法の前文を含む全条項を守る。	９条改正に反対。平和憲法は変えさせない。	９条改正に反対。専守防衛を逸脱し、立憲主義を破壊する改悪を許さない。	９条を改正し自衛隊を明記するかは、国民理解が得られるか見極め判断。国民の知る権利、地方分権の明記を含めた憲法全体の見直し議論を進める。	国民の生命・財産を守るため、９条を改正。教育無償化、統治機構改革、憲法裁判所の設置を中心に、憲法改正を目指す。	９条は維持。自衛隊の明記は不要。環境権、地方自治の強化、緊急事態条項など、新たな条文を付け加えた憲法改正を検討。	９条を改正し、自衛隊を明記。その他に、教育無償化、緊急事態対応、参議院の合区解消を中心に、憲法改正を目指す。	９条を改正し、自衛隊を明記。日本人の手による自主憲法制定を目指す。
Nuclear Policy	原発の再稼働に反対。全ての原発で廃炉に着手。代わりに、再生可能エネルギーの比率を向上。	原発の再稼働に反対。既存原発は廃炉に着手し、早期脱原発を目指す。代わりに、再生可能エネルギーの比率を向上。	原発の再稼働に反対。原発ゼロを早期に実現するための新たな法律を策定。代わりに、再生可能エネルギーの比率を向上。	原発の再稼働は、規制基準を満たせば認める。新規増設は認めず、２０３０年までに原発ゼロを目指す。代わりに、再生可能エネルギーの比率を向上。	原発の再稼働は、新たな法律の策定を前提に認める。電力自由化を促進することで、市場競争による必然的な原発依存からの脱却を図る。	原発の再稼働は、規制基準を満たした上で、立地自治体の理解を得て判断。新規増設は認めず、原発ゼロを目指す。代わりに、再生可能エネルギー比率の向上や、火力発電の効率化を図る。	原発の再稼働は、規制基準を満たした上で、立地自治体の理解を得て進める。原子力を重要な基幹電源と位置づけて活用し、新規増設も検討。	原発の再稼働は、規制基準を満たせば認める。再生可能エネルギーを含むエネルギー源の多様化と安定化を図る。
National Security	北朝鮮への経済制裁の強化と一体に、対話を通じた平和的解決を図る。集団的自衛権行使容認の閣議決定を撤回させ、安保法制を廃止。秘密保護法、共謀罪法を廃止。	北朝鮮の問題に関しては、対話による外交努力で平和的解決を図る。集団的自衛権行使容認の閣議決定を撤回させ、安保法制を廃止。秘密保護法、共謀罪法を廃止。	国際社会と連携し、北朝鮮への圧力を高める。領域警備法の制定と憲法の枠内での周辺事態法の強化を目指す。	北朝鮮などの安全保障環境に対しては党派を超えて対応する。日米で防衛力を強化する一方、基地負担軽減など地位協定の見直しを進める。	日米中韓と連携し、北朝鮮の脅威に対応。日米で防衛力を強化する一方、基地負担軽減など地位協定の見直しを進める。集団的自衛権行使の要件を厳格化。	国際社会と連携し、北朝鮮への圧力を高める。安保法制を適切に運用、法の趣旨を踏まえた実績を蓄積。	国際社会と連携し、北朝鮮への圧力を高める。安保法制にてミサイル対処能力向上を加速、日米同盟を更に強化。	北朝鮮の脅威に対応するため、敵基地攻撃能力の保有・整備を含め、我が国の外交力及び国防力の強化による確固たる安全保障の構築を目指す。
Economic Growth	最低賃金を引き上げ、日本経済の根幹である中小企業を活性化。直接所得補償による農林漁業の振興。格差と貧困の是正を進める。	最低賃金の引き上げ。各種税金の再分配機能を強化。直接所得補償による農林漁業の振興。雇用の安定により個人消費の拡大を図る。	保育・教育、医療・介護の各分野の賃上げ。中間層の所得を安定化。各種税金の再分配機能を強化。中小企業・小規模事業者、農林漁業の支援。	徹底した規制改革と特区を最大活用し、民間の活力を生かした経済活性化を図る。	徹底した規制緩和により新たな民間の活力を促し、産業の振興と経済の活性化を図る。	中小企業・小規模事業者や農林漁業の支援、観光振興、新規技術への研究開発投資による地域経済の活性化を図る。	生産性を押し上げるイノベーションへの集中投資、中小企業・小規模事業者への支援などにより、民間主導の経済活性化を図る。	規制緩和、社会基盤（インフラ）の更新・高度化と徹底した競争政策により、個人所得の向上を図る。

Note: Cells show the actual text in Japanese as shown to survey respondents. An English translation is provided in Appendix

Table A.2.

Table A.2: English translation of policy positions used for each attribute (in rows) and associated party (in columns).

Attribute	JCP	SDP	CDP	Kibo	Ishin	Komeito	LDP	Kokoro
Consumption Tax	Oppose tax increase. Instead, tax large corporations and asset owners, and eliminate inequality.	Oppose tax increase. Instead, raise corporate taxes and cut defense spending.	Freeze tax increase. Debate future burden on the people.	Freeze tax increase. Instead, tax internal reserves of large companies.	Freeze tax increase. Reduce expenditures through administrative and fiscal reform.	Raise tax as planned, use funds to make education free; reduced tax rate for food.	Raise tax as planned, with balance investing in childrearing generation, stabilizing social security.	Freeze tax increase, but oppose tax reduction. Introduce system whereby part of tax is refunded in future.
Constitution Revision	Oppose revising Art. 9. Protect entire constitution.	Oppose revising Art. 9. No change to Peace Constitution.	Oppose revising Art. 9. No deviation from constitutionalism or exclusively defensive role of SDF.	Revision of Art. 9 and SDF role depends on public understanding. Discuss including right to information and decentralization.	Amend Art. 9 to protect citizens' life and property. Include free education, administrative reform, creation of Constitutional Court.	Protect Art. 9. Clarifying SDF role unnecessary. Add new rights to the constitution instead.	Revise Art. 9 to clearly state role of SDF. Include free education, emergency response, elimination of combined districts of upper house.	Revise Art. 9 to clearly state role of SDF. Establish constitution written by the Japanese.
Nuclear Policy	Oppose restarting power plants and decommission. Instead, improve ratio of renewable energy.	Oppose restarting power plants, decommission, and remove early. Instead, improve ratio of renewable energy.	Oppose restarting power plants, and draft law for zero nuclear energy. Instead, improve ratio of renewable energy.	Reactivate plants if regulatory standards met. No expansion and aim for zero nuclear power by 2030. Instead, improve ratio of renewable energy.	Restart plants along with creation of new laws. Promote electricity liberalization to escape dependence on nuclear through market competition.	Restart plants if regulatory standards met, with understanding of local area. No expansion, aim for zero nuclear. Improve ratio of renewable energy and efficiency of thermal.	Restart plants if regulatory standards met, with understanding of local area. Position nuclear as basic power source and consider new expansion.	Reactivate plants if regulatory standards met. Diversify and stabilize energy sources including renewable energy.
National Security	Strengthen sanctions on DPRK, resolve peacefully through dialogue. Withdraw cabinet decision on CSD and abolish new security laws.	Resolve DPRK problem peacefully through diplomacy and dialogue. Withdraw cabinet decision on CSD and abolish new security laws.	Collaborate with international community and raise pressure on DPRK. Strengthen regional security laws within framework of Constitution.	Overcome partisan differences to respond to DPRK and other security issues. Strengthen Japan-US defense capability, review alliance agreement, including base burden.	Collaborate with US, China, ROK to respond to DPRK threat. Strengthen Japan-US defense capability, review alliance agreement, including base burden. Strict rules on CSD.	Collaborate with international community to raise pressure on DPRK. Manage security laws and get results based on purpose of the law.	Collaborate with international community to raise pressure on DPRK. Improve capacity to cope with missiles through revised security laws; strengthen Japan-U.S. alliance.	To respond to DPRK threat, aim to establish security by strengthening diplomatic power and defense capabilities, including enemy base-attacking abilities.
Economic Growth	Raise min. wage and revitalize SMEs, the backbone of the economy. Promote AFF industries by direct income compensation. Fix inequality and poverty.	Increase min. wage. Strengthen redistribution. Promote AFF industries by direct income compensation. Expand consumption by stabilizing employment.	Increase salaries in education, medical fields. Stabilize income of middle class. Strengthen redistribution. Support SMEs, AFF industries.	Make maximum use of regulatory reform and special zones to revitalize economy through private enterprise.	Deregulate to encourage new private enterprise, promote industries, and revitalize economy.	Revitalize regional economies through support of SMEs, AFF industries, tourism, and investment in R&D of new technology.	Concentrate investment in innovation to boost productivity and support for SMEs to revitalize a private business-led economy	Improve personal income through deregulation, advancement of social infrastructure and competition.

Note: Cells show English translations of the original Japanese text as provided in Appendix Table A.1. Translations are abridged and abbreviated to conserve space. SDF = self-defense forces; CSD = collective self-defense; DPRK = Democratic People's Republic of Korea; ROK = Republic of Korea; SME = small and medium-sized enterprise; AFF = agriculture, forestry, and fisheries.

Table A.3: Descriptive statistics of survey respondents.

Variable	Category	Unweighted	Weighted	Population
Age	18-19	0.01	0.023	0.023
	20-25	0.069	0.067	0.067
	26-35	0.155	0.131	0.131
	36-45	0.198	0.172	0.172
	46-55	0.204	0.153	0.153
	56-65	0.198	0.156	0.156
Gender	66-	0.166	0.299	0.299
	Male	0.574	0.482	0.482
	Female	0.426	0.518	0.518
Education	Primary school or junior high school	0.125	0.174	0.174
	Senior high school	0.475	0.445	0.445
	Professional training college	0.077	0.063	0.063
	Junior college	0.074	0.085	0.085
	College/university or graduate school	0.248	0.233	0.233
PR district	Kinki	0.171	0.163	0.163
	Minami-Kanto	0.127	0.127	0.127
	Tokyo	0.118	0.107	0.107
	Tokai	0.114	0.116	0.116
	Kita-Kanto	0.101	0.111	0.111
	Kyushu	0.091	0.113	0.113
	Tohoku	0.073	0.072	0.072
	Chugoku	0.059	0.058	0.058
	Hokkaido	0.058	0.044	0.044
	Hokuriku-Shinetsu	0.055	0.059	0.059
	Shikoku	0.034	0.031	0.031
Family income (JPY, 10,000s)	0-199	0.153	0.224	0.224
	200-399	0.299	0.29	0.29
	400-599	0.235	0.199	0.199
	600-799	0.136	0.123	0.123
	800-999	0.083	0.074	0.074
	1000-1249	0.048	0.048	0.048
	1250-	0.046	0.042	0.042
Observations	Sample Size	6,065	6,064	NA
	SMDs	289	289	289

Note: Proportions for the unweighted survey sample (left), weighted survey sample (center), and the population (right).

B Conjoint Appendix

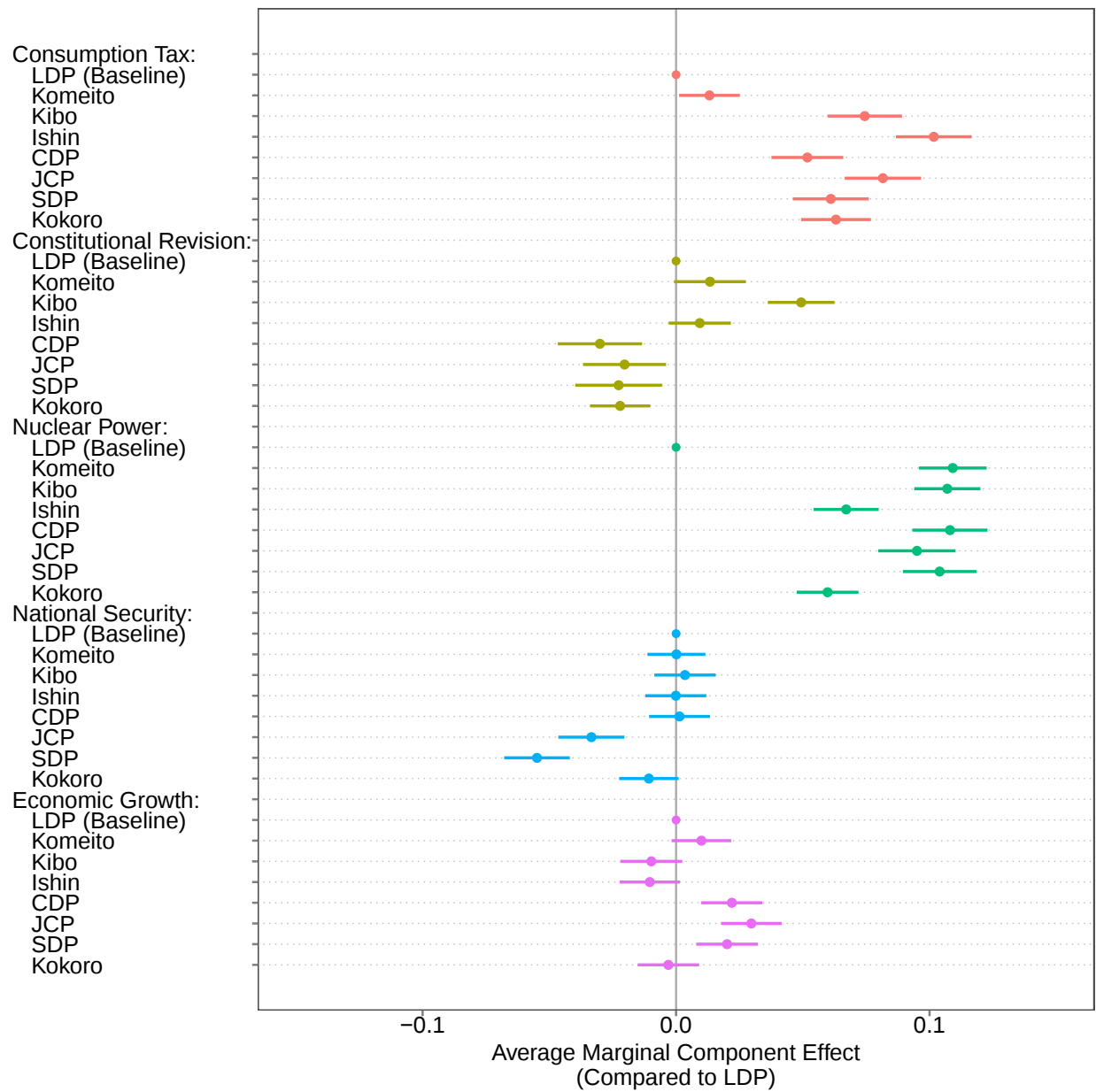


Figure A.3: Average effects of policy positions on respondents' preference for a hypothetical party manifesto (unweighted). See Figure 1 in the main text for a full explanation.

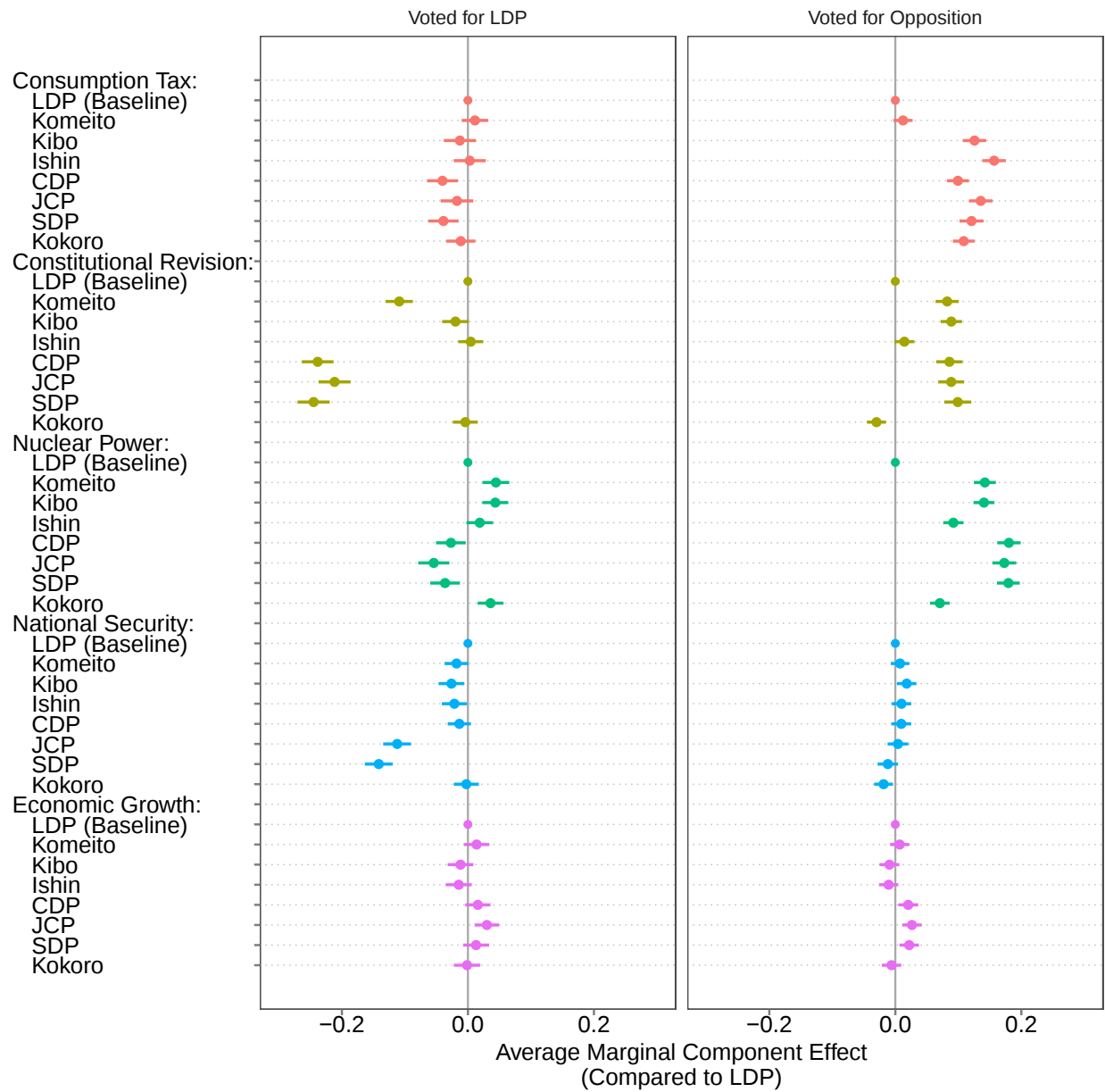


Figure A.4: AMCE for LDP supporters, opposition supporters, and abstainers (weighted) in PR tier. See Figure 2 in the main text for a full explanation.

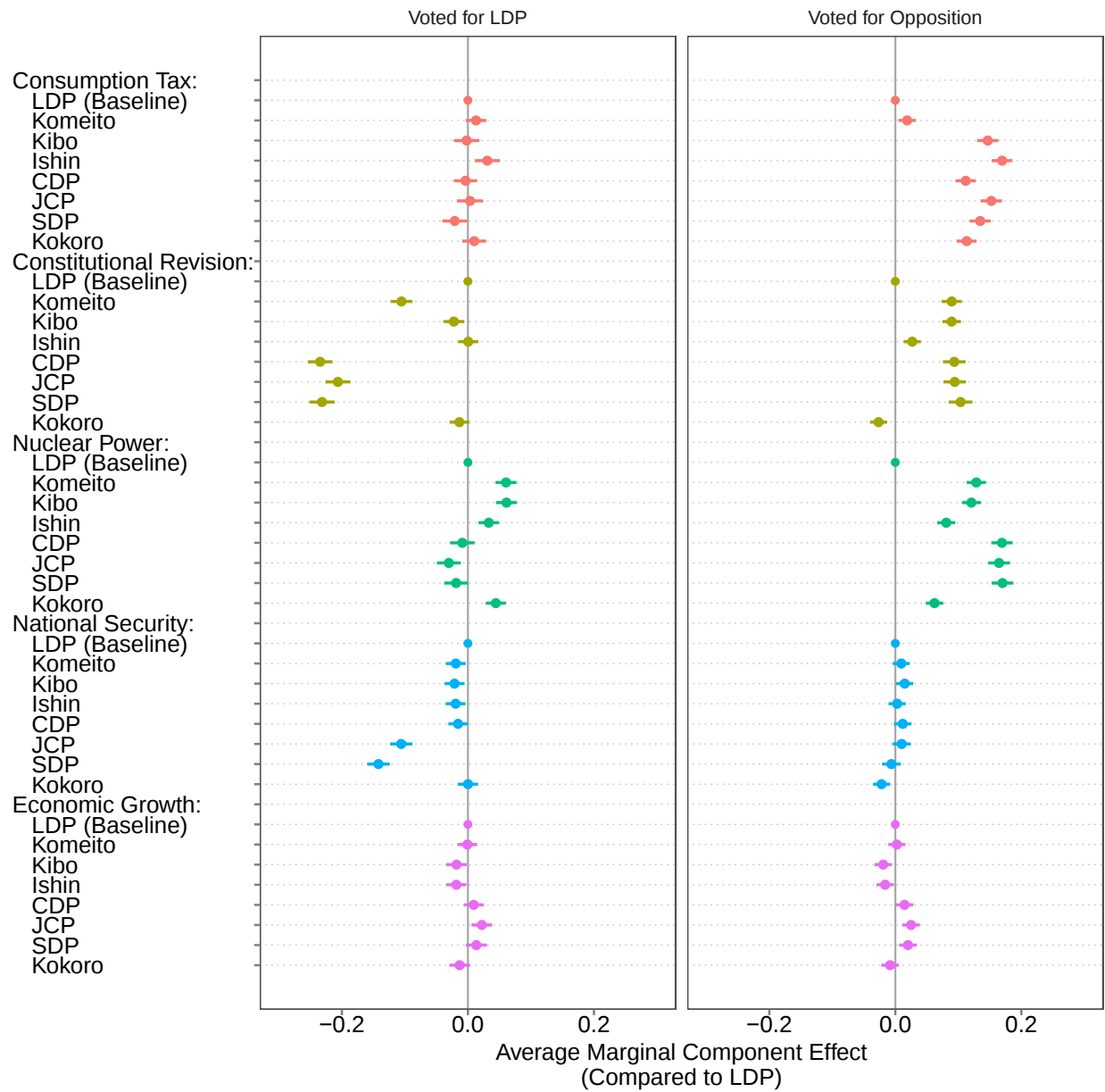


Figure A.5: AMCE for LDP supporters, opposition supporters, and abstainers (un-weighted) in FPTP tier. See Figure 2 in the main text for a full explanation.

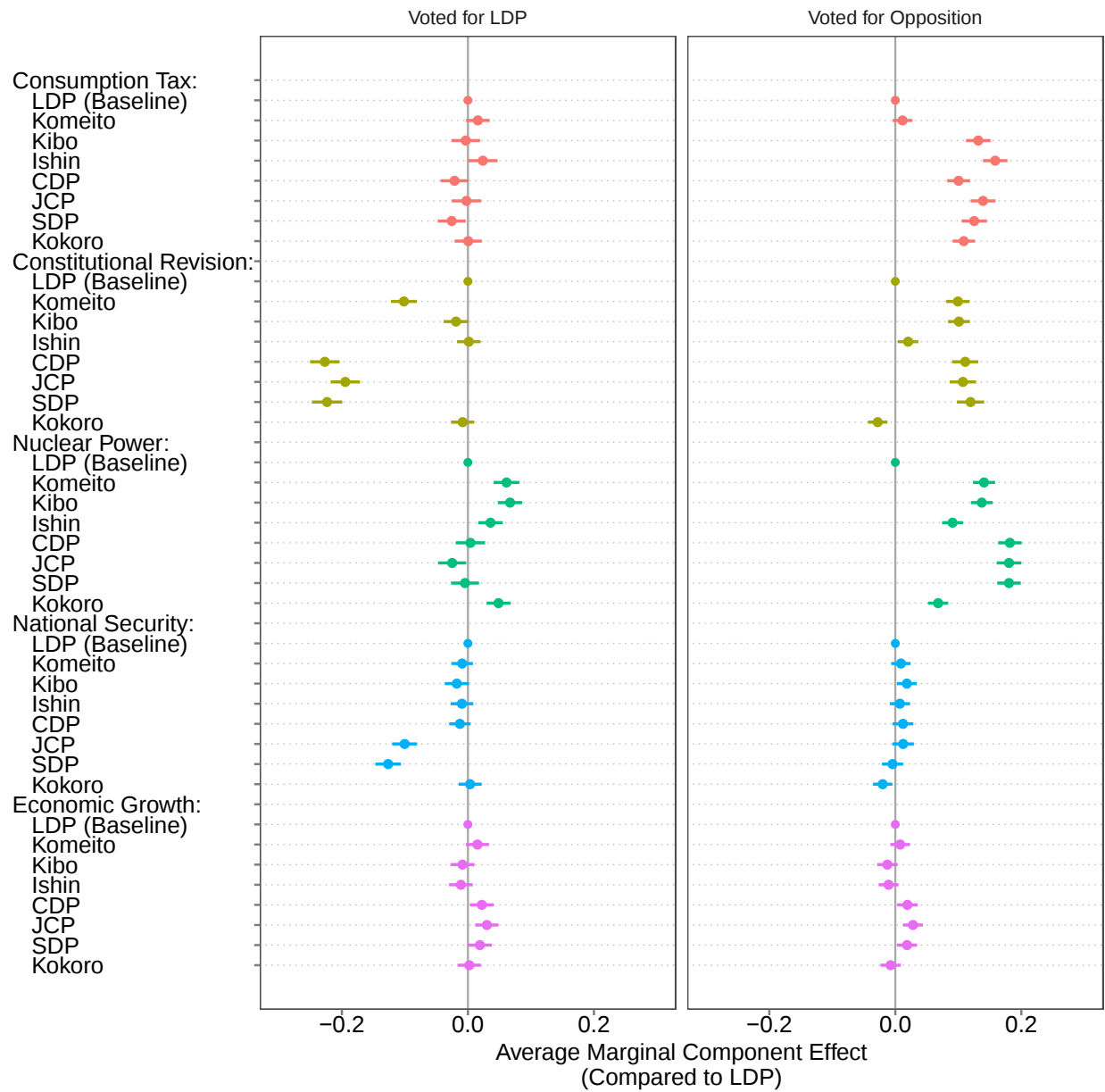


Figure A.6: AMCE for LDP supporters, opposition supporters, and abstainers (weighted) in FPTP tier. See Figure 2 in the main text for a full explanation.

C Multinomial Probit Appendix

We estimate a multinomial probit model by (Imai and Van Dyk, 2005). For each model, we tested at least two values of prior values. Each model was run with 5 MCMC chains with different starting values.

Prior Variance	Draws	Utility Only	Trust Only	Utility and Trust Models	
		Utility	Trust	Utility	Trust
10	10,000	one off	almost	✓	one off
100	10,000	✗			
1000	10,000	✗			
10	100,000	off	✓	✓	✓
10,000	10,000	✗	✓	✓	✓
10,000	100,000	off	almost	✓	✓

Table A.4: Convergence with different parameters. ✓ indicates convergence

D Translation of Utility-Maximizing Party to Vote Choice

How do the estimated utilities translate to respondents’ reported votes in the FPTP and PR tiers of the election? Table A.5 shows a cross-tabulation of our estimate of the party bundle (out of the eight available) that maximizes a respondent’s utility and the respondent’s eventual vote choice in the PR tier (where districts had most of the range of party options available).

argmaxU	LDP	Komeito	Ishin	Kibo	CDP	SDP	JCP	Kokoro	Other	Abstain
LDP	8	0	0	0	3	0	0	0	0	1
Komei	21	3	6	6	11	0	6	0	2	15
Ishin	413	76	118	120	173	14	51	10	26	418
Kibo	465	76	150	180	443	10	154	6	27	311
CDP	31	11	11	19	46	1	13	1	2	52
SDP	83	18	24	45	79	5	33	2	5	172
JCP	201	40	41	94	134	14	58	1	21	321
Kokoro	18	6	2	2	9	1	0	0	1	43

Table A.5: Cross-tabulation between voters’ favored policy bundle and actual vote choice. A cross-tabulation generated from the argmax of estimated policy bundle utilities (in rows) and vote choice (in columns). The first column (**argmaxU**) specifies the party bundle that is an individual’s favorite in terms of estimated utility. The other columns correspond to reported vote choice in the PR tier. For example, the first cell shows that 8 respondents were estimated to favor the LDP’s policy bundle the most, and reported voting for the LDP in the PR tier. There is no clear correlation between estimated favorite party and actual vote choice.

It is not clear from these aggregate pictures that voters in our sample chose the party that represented their most preferred policy bundle. Voters who we estimate as preferring Kibo’s policy, for example, split roughly evenly between not turning out to vote, voting for the LDP, voting for the CDP, or voting for a third party (Ishin, Kibo, or JCP). Interestingly, the two parties that received the highest reported votes in the PR tier, the LDP and CDP, represented policy bundles that were less popular than the bundles of Ishin, Kibo, JCP, and even the small SDP.