

Online Appendix

Value Preferences and Structures Among Japanese Voters and Political Candidates

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A. Missing responses in the UTAES

Table A1. Patterns of missing responses by party in the UTAES

	Candidates			Winners		
	A	B	C	A	B	C
LDP	74	45	61%	56	30	54%
DP	55	44	80%	32	25	78%
CGP	24	24	100%	14	14	100%
JCP	56	43	77%	6	4	67%
IfO	28	27	96%	7	6	86%
SDP	11	11	100%	1	1	100%
PLP&TYF	5	3	60%	1	1	100%
JPK	15	15	100%	0	0	—
HRP	47	44	94%	0	0	—
Joint candidates of opposition parties	37	24	65%	4	3	75%
Minor parties	16	13	81%	0	0	—
Other independents	21	15	71%	0	0	—
Total	389	308	79%	121	84	69%

Notes:

A = number of candidates; B = number of candidates who gave a complete ranking of values; C = B / A (%). Abbreviated party names are presented in full in Table 2 in the main text. “Joint candidates of opposition parties” are independent candidates who were supported by the DP, JCP, PLP, and SDP.

B. Distribution of the Ranks of Values

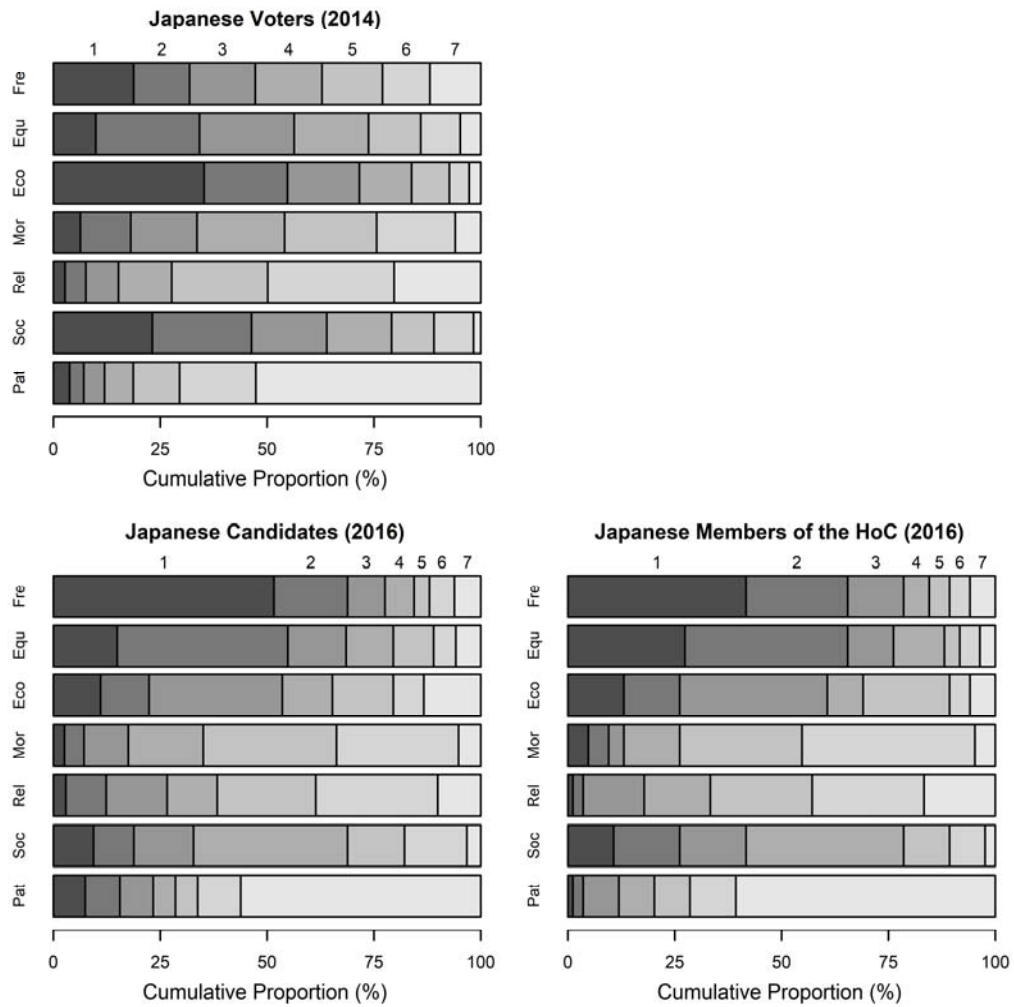


Figure A1. Distribution of the ranks of values.

Notes:

Fre = freedom; Equ = equality; Eco = economic stability; Mor = morality; Rel = self-reliance; Soc = social order; and Pat = patriotism.

C. Details of the MVNOS Model

This section explains the MVNOS model, following Alvo and Yu (2014).

It is assumed that the unobservable latent utility of individuals determines one's observable rank order of alternatives. Let y_{ij} denote unit j 's ($j \in \{1, \dots, N\}$) latent utility for alternative $i \in \{1, \dots, M\}$. Suppose that the vector of latent utility $\mathbf{y}_j = (y_{1j}, \dots, y_{Mj})$ is determined as follows:

$$\mathbf{y}_j = \mathbf{Z}_j \boldsymbol{\beta} + \mathbf{e}_j, \quad (\text{A1})$$

$$\mathbf{e}_j \sim N(\mathbf{0}, \mathbf{V}), \quad (\text{A2})$$

where $\boldsymbol{\beta} = (\boldsymbol{\delta}'_1, \boldsymbol{\delta}'_2, \dots, \boldsymbol{\delta}'_M)'$, $\boldsymbol{\delta}'_i$ is a coefficient vector of alternative i , and \mathbf{V} is a variance-covariance matrix. Because this study used only individual-specific variables, $\mathbf{Z}_j = \text{diag}(\mathbf{s}'_j)$, where \mathbf{s}_j is a vector of variables related to unit j .¹ It is then assumed that the observed ranking given by unit j corresponds to the order of unobservable latent utility for the alternatives; that is, the following relationship is assumed:

$$y_{[1]_j, j} > y_{[2]_j, j} > \dots > y_{[M]_j, j}, \quad (\text{A3})$$

where $[1]_j, \dots, [M]_j$ is the rank order given by unit j (that is, $[1]_j = m$ when unit j 's most favored alternative is the m -th alternative). In practice, the utility for one arbitrary alternative was subtracted from the utility for the remaining alternatives, and the models for $M - 1$ alternatives were estimated for identification. In addition, a constraint had to be imposed on \mathbf{V} . Following Burgette and Nordheim (2012), $\text{tr}(\mathbf{V}) = M - 1$.

The MVNOS model was suitable for this study because, unlike multinomial logit-based models, it permits violation of the independence of irrelevant alternatives (IIA) assumption: the MVNOS model assumes the error terms follow the multivariate normal distribution. Since the

¹ In general cases, researchers can use alternative specific variables.

values' similarity to one another varies, the IIA assumption was unlikely to hold in this study.

The parameters of the MVNOS model were estimated via a Markov chain Monte Carlo (MCMC) method, using marginal data augmentation (Imai and van Dyk 2005).² The data augmentation technique allowed the analysis of partial and incomplete ranking. An improper uniform prior distribution of the coefficients was assumed, and the prior of \mathbf{V} was set to the inverse Wishart distribution with seven degrees of freedom and a scale matrix \mathbf{I}_6 . Three MCMC chains were run. For each chain, after 1,000 iterations as a burn-in, 1,000 draws were obtained from the posterior distribution at every 10th iteration. The chains were judged to converge using the Gelman-Rubin diagnostic.

Post-estimation simulations were conducted to interpret the estimation results, given the difficulty of directly interpreting the coefficients of the MVNOS model. The simulation procedure was as follows. (a) A new dataset was prepared by replacing the variables of interest in the original dataset with particular values. For example, when interested in the average value ranking of LDP supporters, the dummy variable of long-term LDP support was set to one and the remaining support dummies to zero, while other variables remained the same. (b) Based on a new design matrix $\tilde{\mathbf{Z}}_j$, the vector of latent utility of each unit $\tilde{\mathbf{y}}_j^{(r)}$ was drawn from the multivariate normal distribution $N(\tilde{\mathbf{Z}}_j \boldsymbol{\beta}^{(r)}, \mathbf{V})$, where $\boldsymbol{\beta}^{(r)}$ was the r -th draw from the posterior distribution of $\boldsymbol{\beta}$. (c) Based on $\tilde{\mathbf{y}}_j^{(r)}$ and Equation (A3), the simulated rank order was obtained for each unit. (d) The average rank

² I used *MNP* package version 3.1–0 (Imai and van Dyk 2017) to estimate the parameters of the MVNOS model and to conduct the post-estimation simulation. I also used *coda* package version 0.19.1 (Plummer et al. 2006) to analyze the parameter samples drawn from the posterior distributions.

order of all units was computed. (e) Steps (a)–(d) were repeated using another new dataset in which the variables of interest were replaced with other particular values. The differences in the average rank orders of the two scenarios were then taken. (f) Steps (a)–(e) were repeated for $r = 1, \dots, R$, where R was the number of iterations of the MCMC draws. The point estimate and credible difference interval of the difference in the average rank orders of the two scenarios were then calculated.

D. Analyses of the Rank Order of Individual Values with Demographic Variables

In addition to long-term partisanship, the following basic demographic variables were considered: sex, age, education, and area of residence (rural–urban). For sex, a female respondent was coded 1 and a male respondent 0. The measurement of respondents’ ages in the UTAVS was used as a continuous variable, with age categorized using a six-point scale: 20s, 30s, 40s, 50s, 60s, and 70 and over. The UTAVS measured respondents’ educational level using seven categories, including “other.” This was recoded as a four-point continuous variable: 1 = “elementary or junior high school”; 2 = “high school”; 3 = “vocational college” or “junior college”; and 4 = “college” or “graduate school.” “Other” was treated as a missing variable. Respondents’ residence area was operationalized by the densely inhabited district (DID) population ratio of the municipality of residence. The DID population ratio is an officially published index based on the national census, and is widely used in Japanese social science studies. When applied to a municipality, it indicates the ratio of the population living in overcrowded areas (= DID); thus, 0 means most rural, while 1

means most urban.³ The municipal DID population ratios were sourced from Somusho Tokeikyoku (Statistics Bureau) (2014) for all but four respondents: municipality of residence was unavailable for those four. Respondents with missing independent variables were discarded by list-wise deletion, but any effect on the results was limited since only 33 of 1,639 respondents who provided a rank order for at least one value (2.0%) were removed. Finally, the number of respondents analyzed here comprised 1,606 individuals.

The estimation results of the MVNOS model with the demographic variables are shown in Figure A2. The implications for the relationship between value preferences and long-term partisanship did not substantially change: among supporters of the LDP, DPJ and JIP, the first favored patriotism more than did the other two, the second favored equality more than did the other two, and the third favored self-reliance more than did the other two. However, caution should be exercised in interpreting the results for the demographic variables because long-term partisanship, which might be causally posterior to the demographic variables, was controlled.

³ For the definition of the DID, see the website of Somusho Tokeikyoku (Statistics Bureau): <http://www.stat.go.jp/english/data/chiri/did/1-1.htm> (last accessed November 19, 2017).

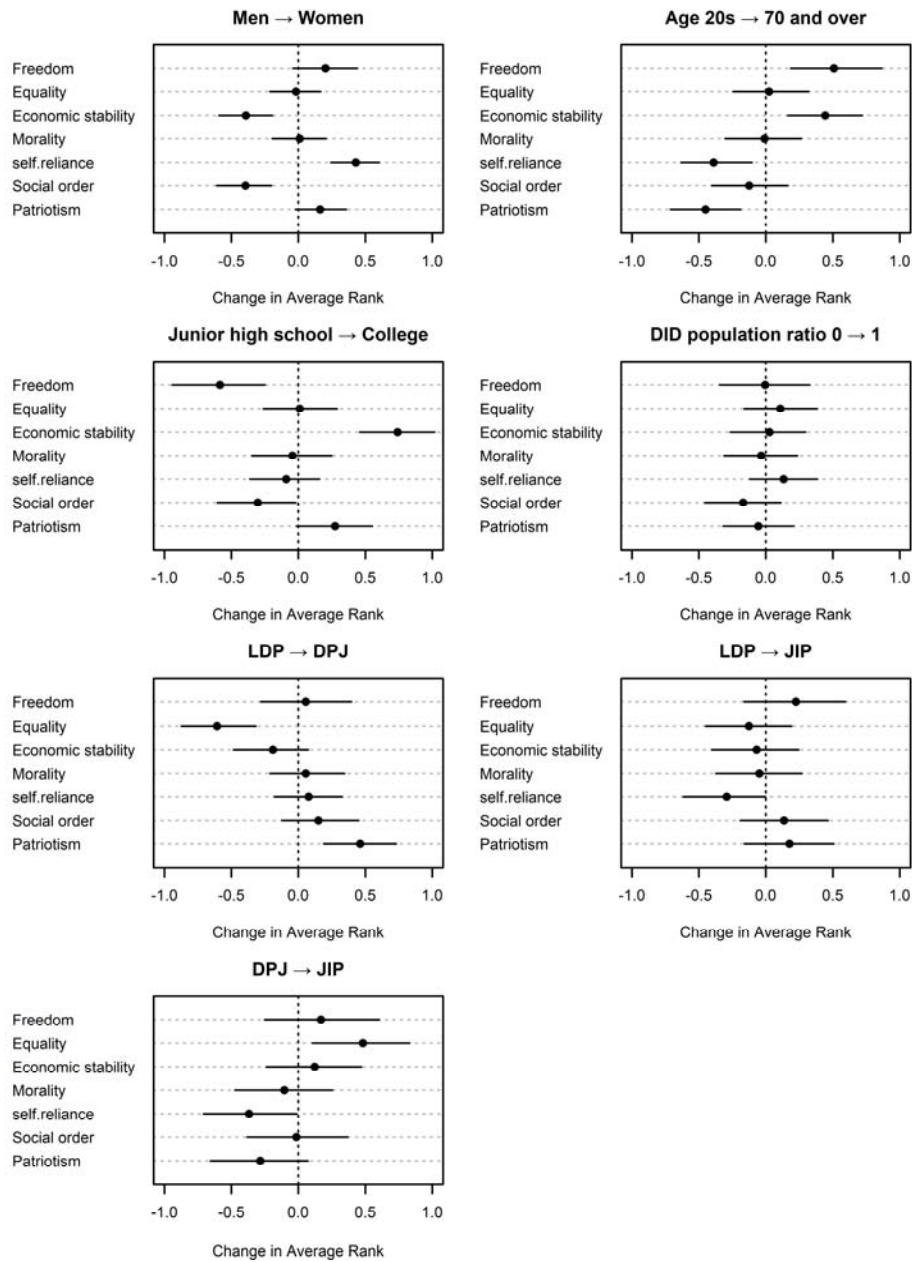


Figure A2. Simulation results on value ranking's relationship with long-term partisanship and demographic variables.

Notes:

Each panel shows the average change in each value's rank with a change in the explanatory variables. Dots represent the point estimates, and segments represent the 95% CIs.

E. Results of the MDPREF for Winning Candidates in the 2016 Japanese HoC Election

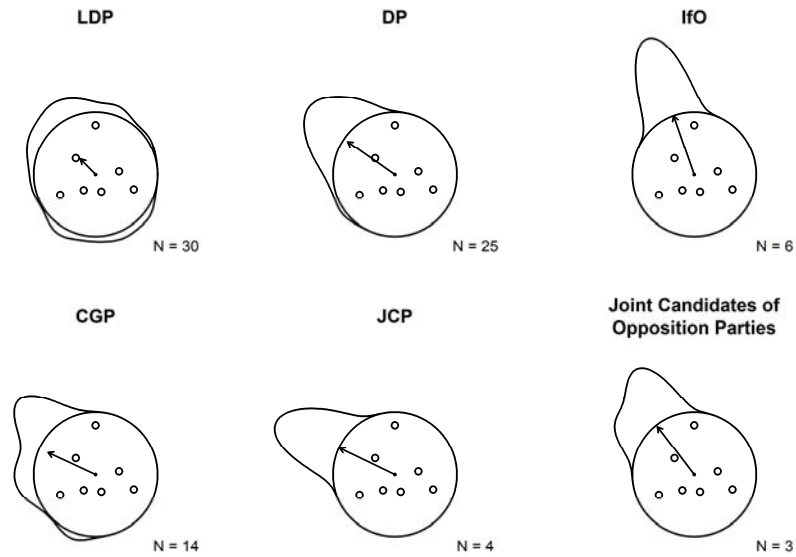


Figure A3. Value structures and the distribution of value preferences of each party's winning candidates in the 2016 Japanese HoC election.

Notes:

White dots represent the locations of values (see the bottom-left panel of Figure 3 in the main text). The curved shape enclosing each circle shows the estimated density of value preferences. Arrows indicate average value preferences. The number of observations is shown in the bottom-right corner of each panel. Abbreviated names of parties are presented in full in Table 2. Results for the SDP and PLP&TYF are not shown because there is only one observation for each party.

F. Comparison between Japanese and U.S. Voters

F.1 Analysis of the UTAVS

Jacoby (2014a) analyzed data from the 2006 Cooperative Congressional Election Study (CCES). Despite being an online survey, it collected a nationally representative sample of American adults using a sample matching procedure (Vavreck and Rivers 2008). Data on value preferences were obtained using the following questions, posed on an interactive interface. The survey first gave respondents the following information and instruction:

On the next few screens, we will show you a list of values, such as freedom, equality, and so on. Nearly everyone agrees that all of these values are important. However, sometimes we have to choose one value over another. From the list of values, please select the single value that you think is the most important.

Respondents were required to choose the value they considered most important of the seven shown in Panel A of Table A2. On the next screen, the survey asked, “Now, of the values that remain, which one would you say is the most important?” This step was repeated until respondents had ranked all seven values. This study has analyzed data files in Jacoby (2014b), in which 1,000 respondents were asked to respond to these questions, 775 of whom completely ranked all seven values.

The Japanese value labels and definitions in the UTAVS (as shown in Panel A of Table 1 in the main text) follow Jacoby (2014a), except where a literal translation would produce unnatural Japanese expressions. The value labels and definitions used in the UTAVS have been back-translated by a third-person professional translator and are presented in Panel B of Table A2 (which reproduces Panel B of Table 1 in the main text). Another third-person professional translator

ensured there were no major differences in meaning between the original wording (Panel A of Table A2) and the author's translation (Panel A of Table 1 in the main text).⁴

Figure A4 summarizes the average value preferences of Japanese and U.S. voters (the top-left panel reproduces the top-left panel of Figure 1 in the main text). In contrast to the value preferences of Japanese voters, the bottom-left panel shows that freedom was the most important value for U.S. voters. Economic security and social order were also identified as relatively important, but their popularity among American voters was less than among Japanese voters. It is also noteworthy that U.S. citizens indicated less support for equality than did Japanese citizens, and that they prioritized morality and patriotism more highly than Japanese citizens. Lower variance in the average rankings of U.S. voters suggests that, compared to Japanese voters, value preferences varied more widely among U.S. voters; conversely, Japanese citizens had relatively uniform value preferences. These features of U.S. voters' value preferences appear to reflect greater cultural divergence, and perhaps even a culture war, as identified by Jacoby (2014a).

Figure A5 shows the estimation results of the MDPREF model for Japanese and U.S. voters (the left panel reproduces the top-left panel of Figure 3 in the main text). Although the left and right panels are not strictly comparable because the value locations differ, it is noteworthy that the heterogeneity of value preferences differs distinctively for Japanese and U.S. voters. As seen in the left panel, almost all Japanese respondents lie in the 7–11 o'clock segment, and few respondents are positioned on the right of the circle. In contrast, U.S. respondents are distributed around the whole circle, although those located on the left are more numerous than those on the

⁴ A certificate of back-translation is available from the author upon request.

right. This implies that U.S. voters' value preferences are more diverse than those of Japanese voters.

Such difference in value preferences heterogeneity reflects that the United States has a partisan cleavage in values, whereas Japan does not. Jacoby (2014a) demonstrates that, in the United States, while Democrats prioritize freedom, equality, and economic stability, Republicans prioritize morality, social order, and patriotism, with Independents in the middle. He concluded his paper by commenting that “[i]t seems reasonable to characterize such sharp differences in feelings about fundamental values as the existence of a culture war” (767). Jacoby’s (2014a) analysis of political party value structures regarding U.S. citizens was replicated, and the results are illustrated in Figure A6.

F.2 Analysis of an online survey using a value preference measure precisely comparable with the CCES

To precisely compare value preferences between U.S. and Japanese voters, an online survey of the latter was conducted. As detailed below, the UTAVS’s question on value preferences was used but with three modifications: (1) the order of values was randomized; (2) inappropriate answers, such as a tied ranking, were not allowed; and (3) the definitions of economic security and morality were revised to more closely match their definitions in the 2006 CCES.

The online survey was conducted from November 10 to 15, 2017. The targeted population comprised Japanese voters aged 18 to 79. An invitation email was sent to 33,663 individuals registered as online panelists with Rakuten Research, one of Japan’s largest research companies. Quota sampling was used to match the proportions for sex, age (six strata: ten-year increments, except for 18–29), and region (seven strata: Hokkaido/Tohoku, Kanto, Chubu, Kinki, Chugoku,

Shikoku, and Kyushu/Okinawa) in the sample with the proportions for these variables in the population.

To detect satisficing respondents, the survey included two directed questions, namely, “questions directing subjects to give specific answers,” (Maniaci and Rogge 2014, 64) among the questions on issue attitudes. The items were: “For this question, please select the left-most option,” and “For this question, please select the right-most option.” Respondents who did not follow these instructions were judged to be satisficers. The survey also employed two bogus items, namely, “items with a clear correct answer” (Meade and Craig 2012, 441), among the questions concerning conservatism.⁵ The items were: “I have been to every country in the world,” and “I am currently using an electronic device such as a computer, cell, or tablet.” These questions had a seven-point scale, with 1 as “very strongly agree,” 7 as “very strongly disagree,” and 4 as “neither agree nor disagree.” Respondents were regarded as inattentive if they selected below 5 for the former item or above 3 for the latter item. In total, 1,157 respondents answered all four questions correctly, and only their data were used for analysis.

After discarding satisficing respondents, post-stratification weights obtained via entropy balancing (Hainmueller 2012) were used to adjust the sample distribution of demographic variables to that of the Japanese census data.⁶ These variables comprised: sex; age (twelve strata: five-year increments, except for 18–24); education (four strata: junior high school; high school; technical college/community college/vocational college; college or higher); and region (seven strata: Hokkaido/Tohoku, Kanto, Chubu, Kinki, Chugoku, Shikoku, and Kyushu/Okinawa).

⁵ The questions concerning issue attitudes and conservatism are not used in this study.

⁶ Entropy balancing was conducted using *ebal* package version 0.1–6 (Hainmueller 2014).

The online survey contained a question to measure value preferences. The question wording was basically the same as that used in the UTAVS, except for the definitions of economic security and morality. For the definition of economic security, “*subete no hitobito ni*” (“for everyone” in English) was inserted at the beginning to emphasize that the value related to every person, not just the respondent. For the definition of morality, “*shikitarī*” was replaced with “*rūru*.” Although both these Japanese words correspond to “rules” in English, the former has a nuance of referring to traditional rules, whereas the latter has a more neutral meaning. In addition, the order of values was randomized in the survey to prevent a primacy effect. Moreover, the survey did not allow inappropriate answers, such as tied, non-sequential, or partial ranking. Because these changes made the online survey follow the 2006 CCES more rigorously than did the UTAVS, the value preferences of Japanese and US voters could be more precisely compared.

The top-right panel of Figure A4 shows each value’s average ranks and the proportion of respondents who chose each value as the most important in the online survey. In comparison to the UTAVS results, one notable change is that economic security was given a much lower priority in the online survey. It is also noteworthy that morality was more prioritized in the online survey than in the UTAVS. These changes are probably attributable to improved definitions. Overall, in comparison with the UTAVS findings, the average value preferences of Japanese voters in the online survey more closely resembled those of US voters. However, some differences between Japanese and American voters remained; for example, Japanese voters prioritized economic security much more and patriotism much less compared to American voters.

Table A2. List of values

<u>A. Jacoby (2014a) survey values and definitions (derived from the 2006 CCES)</u>
FREEDOM, that is the widest liberty possible for everyone to act and think as they consider most appropriate.
EQUALITY, that is making sure that everyone has the same chance to get ahead in life.
ECONOMIC SECURITY, that is making sure that everyone has a steady job, a decent income, and a reasonable standard of living.
MORALITY, that is people living according to the rules that most people agree constitute decent human behavior.
INDIVIDUALISM, that is everyone getting ahead in life on their own, without extra help from government or other groups.
SOCIAL ORDER, that is being able to live without fear, in a safe, peaceful society where the laws are respected and enforced.
PATRIOTISM, that is looking beyond our own personal interests and doing things that honor, respect, and protect our nation as a whole.
<u>B. Values and definitions used in this study's survey</u>
Freedom [the ability of individuals to act or think according to their inclinations]
Equality [for all people to have an equal opportunity to succeed]
Economic stability [the guarantee of a stable job and appropriate income]
Morality [living according to the rules on which most people agree]
Self-reliance [achieving success on one's own without the help of governments or other organizations]
Social order [letting people live in an orderly and peaceful society where laws are respected]
Patriotism [honoring one's own country and acting on its behalf beyond personal interests]

Notes:

Panel A is sourced from Table 1 in Jacoby (2014a). Panel B reproduces Panel B of Table 1 in the main text.

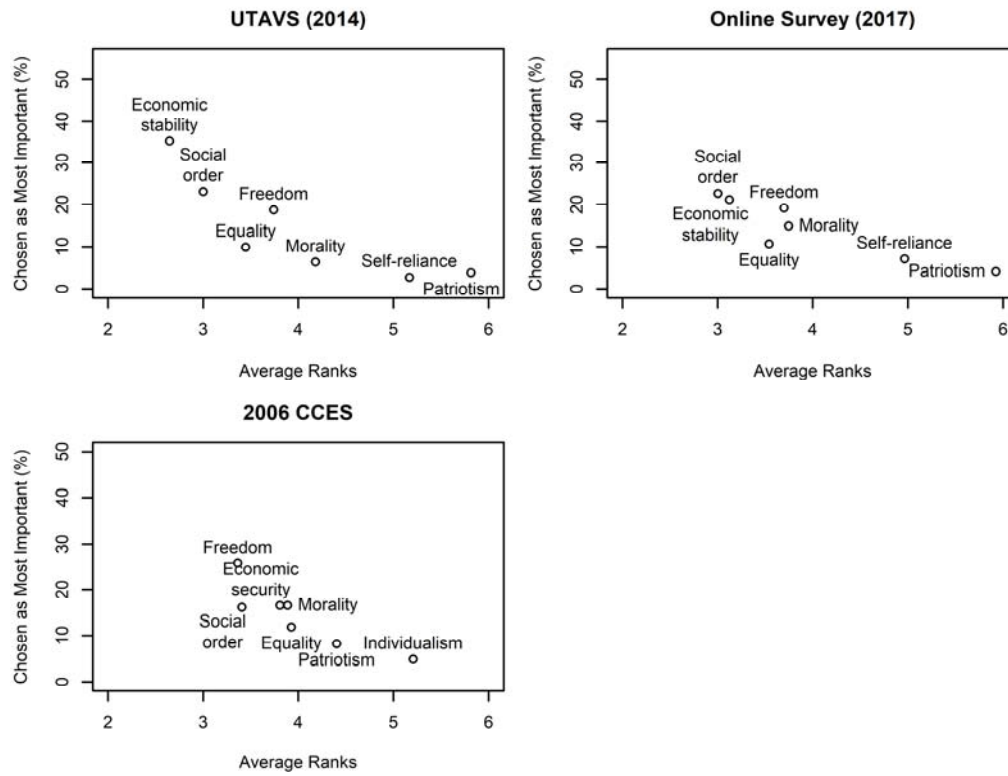


Figure A4. Average value ranks and the proportion choosing each value as their most important.

Notes:

The top-left panel reproduces the top-left panel of Figure 1 in the main text. The top-left panel replicates Figure 8 in Taniguchi and Miwa (2015).

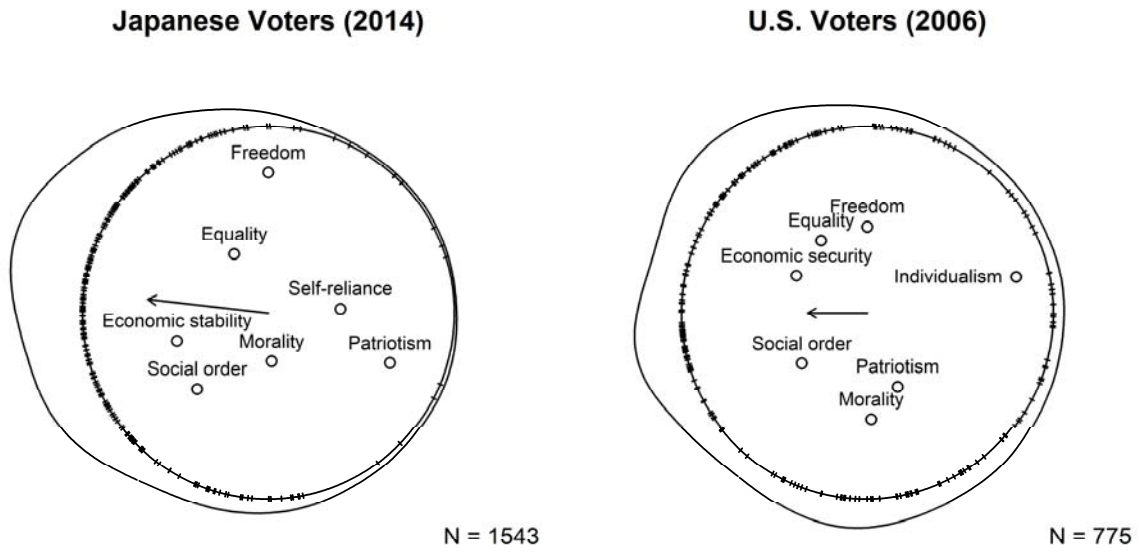


Figure A5. Value structures and the distribution of value preferences.

Notes:

Points on circles indicate the location of individual respondents. For each panel, 300 randomly sampled respondents are displayed for visibility. The curved shape enclosing each circle shows the estimated density of value preferences. White dots represent the location of values. Arrows indicate average value preferences. Spaces are rotated such that an x-coordinate of freedom equals zero, a y-coordinate of freedom becomes positive, and an x-coordinate of equality becomes negative. The number of observations is shown in the bottom-right corner of each panel. The left panel reproduces the top-left panel of Figure 3 in the main text.

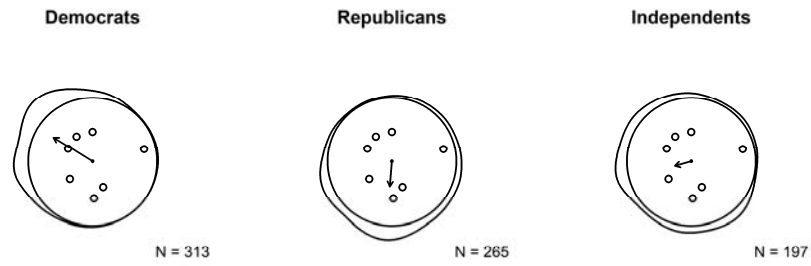


Figure A6. Value structures and the distribution of value preferences of U.S. voters by party identification.

Notes:

White dots represent the locations of values (see the right panel of Figure A5). The curved shape enclosing each circle shows the estimated density of value preferences. Arrows indicate average value preferences. The number of observations is shown in the bottom-right corner of each panel. The same results are partially reported in Panel A, Figure 4 of Jacoby (2014a).

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