THE ENDURANCE OF POLITICIANS' VALUES OVER FOUR DECADES: A PANEL STUDY:

Online Appendix

Donald D. Searing
Department of Political Science
University of North Carolina at Chapel Hill
361 Hamilton Hall, CB 3265
Chapel Hill, NC 27599-3265
searing@unc.edu

William G. Jacoby
Department of Political Science
Michigan State University
368 Farm Lane, S319
East Lansing, MI 48824
jacoby@msu.edu

Andrew H. Tyner
Department of Politics
Princeton University
001 Fisher Hall
Princeton, New Jersey 08544-1012
atyner@princeton.edu

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ONLINE APPENDIX A:

Panel Attrition and the MP Data Set

With panel data of the type used in the current study, there always is concern about sample attrition over time. And that is particularly the case when the panel waves are widely separated, as they are here. In fact, the 1973 interviewees who survived to become members of the 2013 sample differ from the non-survivors on several characteristics, including education, age of entry into Parliament, length of tenure in Parliament, and party affiliation. The information presented in Table A1 shows that the set of MPs who were re-interviewed in 2013 had higher levels of education, were younger when they entered Parliament, served in office longer, and were more likely to be Conservatives. The differences on the first three variables— education, age of entry, and length of tenure— are all statistically significant at the 0.01 level in a non-directional test. The difference in party affiliation is significant at the 0.05 level, again in a non-directional test.

Table A1 about here

So, as a group, the MPs who were interviewed in 2013 exhibit some systematically differing characteristics from the overall set of MPs who were interviewed back in 1973. But, do these differences have a detrimental effect on the analyses of value structures reported in this study? We argue that the answer to this important question is "no," based on two types of evidence.

First, the central outcome variables in our analysis are, for the most part, uncorrelated with the characteristics on which the samples differ across the two time points. We begin by considering the directions of the MPs' vectors, which effectively measure their value structures. Table A2 shows the correlations between the MPs' characteristics and their vector directions in the models for party-political and personal values. The table entries show that the correlations with education and length of tenure are all very close to zero and not statistically significant at any realistic level. And there also is a tiny and non-significant correlation between the directions of MPs' personal vectors and their age at entry into Parliament. While the correlation between age of entry and the directions of the MPs' political vectors is quite small, at -0.173, it is statistically significant at the 0.05 level (in a non-directional test). This latter result shows that there is a very slight

Table A1: Group differences between those MP's interviewed in 1973 who survived to be re-interviewed in 2013 and those who did not survive to be re-interviewed in 2013.

Group Characteristic	2013 Survivors	2013 Non-survivors	Observed Probability Value
Mean level of education	5.759	5.231	0.000
Mean age of entry into Parliament	34.398	40.667	0.000
Mean length of tenure in Parliament	31.793	21.546	0.000
Conservative party membership	0.600	0.487	0.037

Note: The education variable is coded 1 = Some primary school, 2 = Completed primary school, 3 = Some secondary school, 4 = Completed secondary school, 5 = Some university, 6 = Completed university, 7 = Some post-graduate training, and 8 = Post graduate degree. Age of entry into Parliament and length of tenure in Parliament are both given in years. The entries for Conservative party membership are the proportions of the two subgroups who reported that they were Conservatives. The observed probability values in the rightmost column are from t-tests for differences in the means of the first three variables, and for the difference in proportions on Conservative party membership.

pattern of older MPs ranking values like Freedom and Property higher than Social Equality and Community. Again, though, this relationship is very weak and does not mean that there are major systematic differences in political value structures across age cohorts among the MPs. Finally, party membership is strongly related to both political and personal value structures. But, this is entirely to be expected, given the patterns shown in Figure 7 from the main text. And we believe the partisan differences in value structures to be one of the most important findings from our analysis.

Table A2 about here

Another important variable in our analysis is the stability of MPs' value choices, as measured by the Spearman correlation between their value rank-orders at the two time points. Table A3 shows the correlations between the MPs' characteristics and the Spearman correlations for their party-political and personal value rankings. The correlations are all very small, with only two showing an absolute value that exceeds 0.10: the correlation between age of entry into Parliament and the individual-level Spearman coefficients for stability in personal value structures is -0.130 and the correlation between party membership and the stability coefficients for personal value structures is 0.204. So there are very slight tendencies for older MPs and Labour party members to show lower levels of temporal stability in their value choices. But any such patterns are still extremely weak; the correlations are not statistically significant at the 0.05 level (non-directional test). And these two coefficients stand in marked contrast to the other six correlations in Table A3, all of which are very close to zero and non-significant at any reasonable level.

Table A3 about here

The second type of evidence that suggests attrition bias is not a problem is obtained by comparing the 1973 distributions of vector directions for the 2013 survivors and non-survivors. Starting with the geometric model for party-political values, Figure A1 shows the histograms for the two subgroups of MPs. While obviously not identical, the two distributions have very similar shapes and locations along the scale of vector directions. For both survivors and non-survivors, the directions range from about 80 degrees to around 260 degrees. The distributions are bimodal, with one mode appearing in the interval between about 125 and 170 degrees, and the other mode concentrated

Table A2: Correlations between MPs' personal characteristics and their vector directions in the models of party-political and personal values.

	Correlation (Pearson's r)	Observed Probability Value
Education:		
Party-political value vector	-0.049	0.522
Personal value vector	-0.075	0.332
Age of entry:		
Party-political value vector	-0.173	0.023
Personal value vector	0.045	0.563
Length of tenure:		
Party-political value vector	-0.070	0.363
Personal value vector	0.063	0.415
Party membership:		
Party-political value vector	0.736	0.000
Personal value vector	-0.505	0.000

Note: The education variable is coded 1 = Some primary school, 2 = Completed primary school, 3 = Some secondary school, 4 = Completed secondary school, 5 = Some university, 6 = Completed university, 7 = Some post-graduate training, and 8 = Post graduate degree. Age of entry into Parliament and length of tenure in Parliament are both given in years. Party membership is coded 0 = Conservative, 1 = Labour. The observed probability values in the rightmost column are from tests of the null hypothesis that the respective slope coefficients are zero in bivariate regressions of the MPs' vector directions (in degrees) on each of their personal characteristics.

Table A3: Correlations between MPs' personal characteristics and the stability coefficients (Spearman correlations) for their value rank-orders over time.

	Correlation (Pearson's r)	Observed Probability Value
Education:		
Party-political values	0.018	0.877
Personal values	0.046	0.705
Age of entry:		
Party-political values	0.088	0.489
Personal values	-0.130	0.311
Length of tenure:		
Party-political values	-0.017	0.889
Personal values	0.052	0.664
Party membership:		
Party-political values	-0.026	0.828
Personal values	0.204	0.093

Note: For each MP, the stability coefficient is the Spearman correlation between the value rank-order in 1973 and the value rank-order in 2013; these correlations are calculated separately for party-political values and for personal values. The education variable is coded 1 = Some primary school, 2 = Completed primary school, 3 = Some secondary school, 4 = Completed secondary school, 5 = Some university, 6 = Completed university, 7 = Some post-graduate training, and 8 = Post graduate degree. Age of entry into Parliament and length of tenure in Parliament are both given in years. Party membership is coded 0 = Conservative, 1 = Labour. The observed probability values in the rightmost column are from tests of the null hypothesis that the respective slope coefficients are zero in bivariate regressions of the MPs' stability coefficients on each of their personal characteristics.

between about 220 and 240 degrees. The former mode is a bit more pronounced in the distribution for non-survivors while the latter contains more MPs among the survivors. But, these differences are relatively minor. The mean direction for 2013 non-survivors is 167.474 degrees, and the mean direction for survivors is 178.565 degrees. In a t-test, the difference is not statistically significant, producing an observed probability value of 0.341.

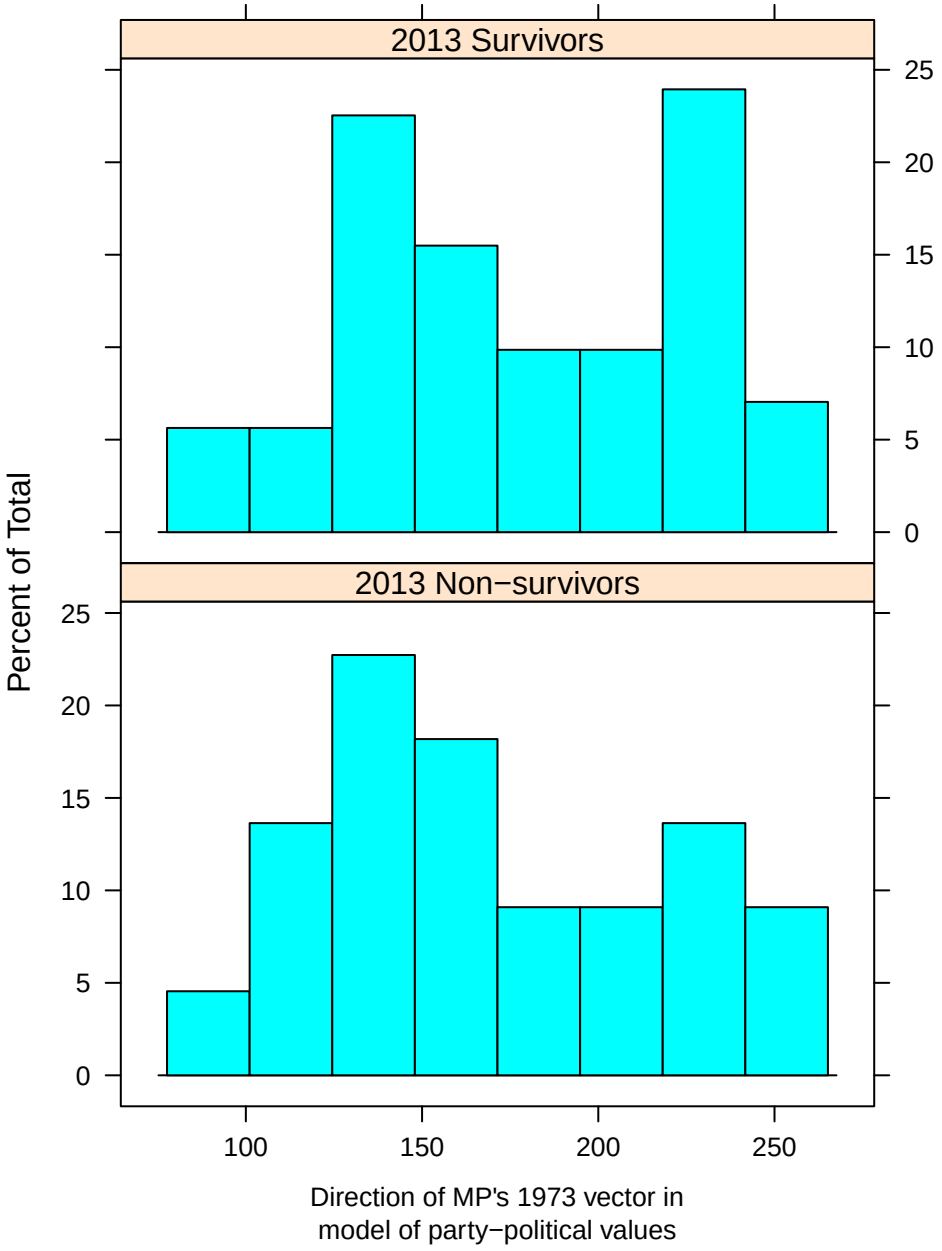
Figure A1 about here

Figure A2 shows the histograms of vector directions in the model of personal values for the two subsets of MPs. Here, the shapes of the two distributions are a bit different, but the general locations remain very similar. Basically, the distribution for 2013 survivors is more widely dispersed, compared to that for the non-survivors. On the other hand, the modal region for survivors falls in the interval from about 140 degrees to about 220 degrees. The modal region for the non-survivors is a bit wider, and ranges from about 140 degrees to about 240 degrees. So, both distributions show a strong central mode that is starkly separated from the upper and lower tails of the distribution. And the distribution tails for survivors are both longer than those for non-survivors. But just as with the political values, the central tendencies for the two groups are not very different. The mean vector directions in Figure A2 are 187.142 degrees for non-survivors and 178.30 degrees for survivors. Again, the difference is non-significant, with an observed probability value from the t-test of 0.312.

Figure A2 about here

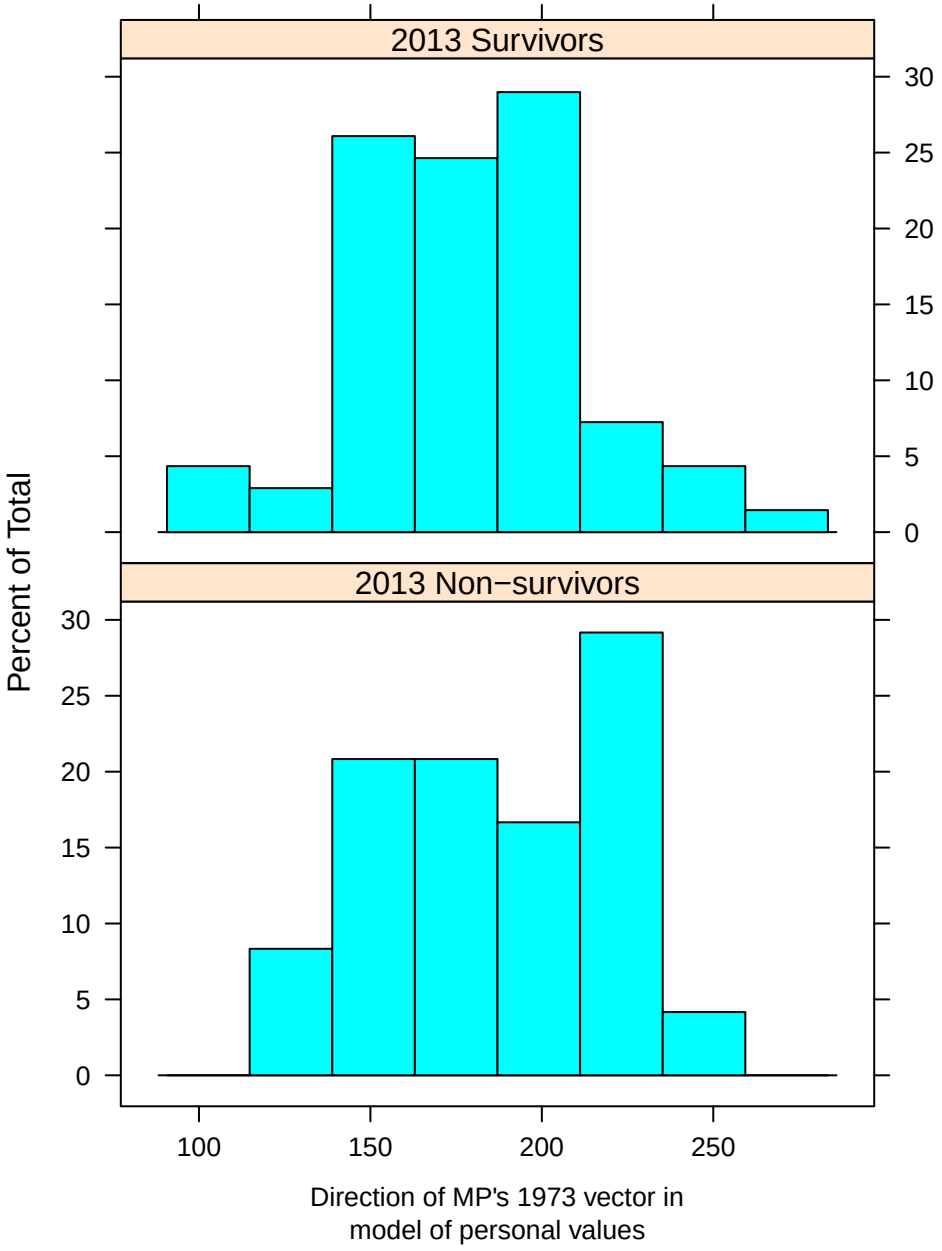
In summary, the observable differences in the MPs' characteristics across the non-survivor and survivor groups are not related to the outcome variables in our main analysis. With only a few minor exceptions, MPs' education levels, age at entry into Parliament, length of tenure, and party memberships are not correlated with either their vector directions in the two values models or the stability of their value choices over time. Similarly, the distributions of 1973 vectors in both values models for 2013 survivors and non-survivors are very similar, suggesting there are no systematic differences in the structure of value choices across those two groups. Based on this evidence, we conclude that attrition bias is not a serious problem for our analysis.

Figure A1: Distribution of 1973 vector directions for party-political value structures, shown separately for MPs who survived to be re-interviewed in 2013 and for MPs who were not re-interviewed in 2013.



Note: Vector directions are shown in degrees, taken in the counterclockwise direction from the 3:00 position in the model of party-political values (Figure 2A in the main text).

Figure A2: Distribution of 1973 vector directions for personal value structures, shown separately for MPs who survived to be re-interviewed in 2013 and for MPs who were not re-interviewed in 2013.



Note: Vector directions are shown in degrees, taken in the counterclockwise direction from the 3:00 position in the model of personal values (Figure 2B in the main text).

ONLINE APPENDIX B:

Hypothetical Example to Illustrate the Vector Model

This appendix provides a simple hypothetical example of the vector model, simlar to one presented in Jacoby (2014), to show how vector directions within a two- dimensional space can be used to depict MPs' value structures. The first panel of Figure B1 shows the rank-orders of two MPs (designated MP 1 and MP 2) for four values (designated values A through D). So, MP 1 ranks value A as most important, C as second-most important, B as third-most important, and D as least important. Similarly, MP 2 ranks value B as most important, D as second-most important, and so on. These rank-orders comprise the input data to the model.

Figure B1 about here

The second panel of Figure B1 shows a possible representation these data. The display shows four points representing the values, and two vectors for the MPs. The third panel shows how MP 1's value choices are represented in the model. Specifically, the dotted lines from the value points onto the line collinear to MP 1's vector are the perpendicular projections. These projections intersect the vector in the order that corresponds to MP 1's ranking: Starting at the tip of MP 1's vector and moving backward, we encounter the projection for value A first, followed by the projections for values C, B, and D in that order. Of course, this corresponds to MP 1's ranking of the values back in the first panel of the figure. The fourth panel shows the projections from the value points onto the line collinear to MP 2's vector. Once again, the order of the projections along the line corresponds to the rank-order of the values provided by MP 2 (i.e., from value B as most important down to value C as least important). From the figure, it is easy to see how differing vector directions would correspond to very different rank-orders of the values. While the simple example in Figure B1 is useful for exposition, any "real" application requires more values and far more MPs to fix the relative positions of the points and the vectors.

The vector model has many desirable features for analyzing individual value structures. For one thing, the configuration of value points summarizes the similarities and differences across the values; but this is not a central concern for present purposes. Instead, we are more interested in

Figure B1: Hypothetical example of geometric model to represent value importance rankings.

Part 1: Data on two hypothetical MPs' value structures. Cell entries are importance rankings for four values (labelled A, B, C, and D), with smaller numbers corresponding to more important values.

	Values:			
	A	B	C	D
MP 1:	1	3	2	4
MP 2:	3	1	4	2

Part 2: Geometric model of hypothetical MPs' value structures. Points represent values and vectors represent the MPs.

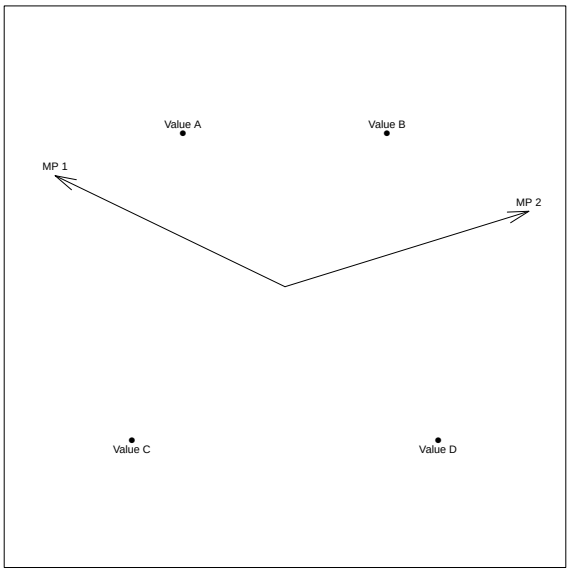
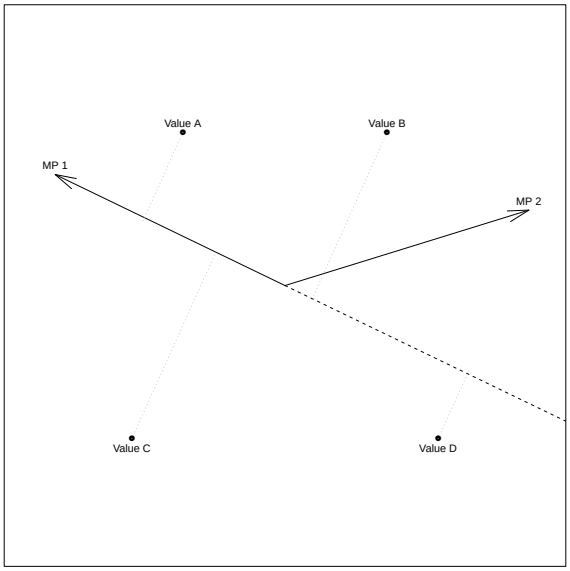
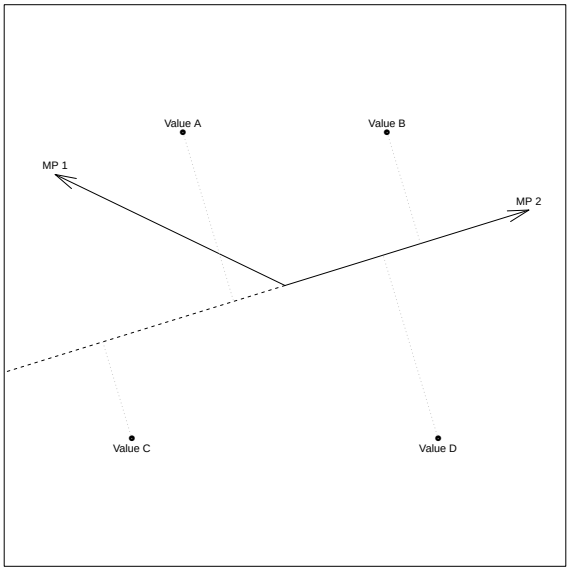


Figure B1: Hypothetical example of geometric model to represent value importance rankings. (Continued)

Part 3: Geometric model of hypothetical MPs' value structures, showing projections from value points onto MP 1's vector



Part 4: Geometric model of hypothetical MPs' value structures showing projections from value points onto MP 2's vector.



the MPs' vectors. Each vector's position is defined by its angular separation from a fixed direction representing an origin. Here, we will use angles obtained by counterclockwise movement from the 3:00 position. Thus, a vector pointing upward in the vertical direction is at 90 degrees from the origin. A vector pointing downward in the vertical direction would be at 270 degrees, and so on. Again, the vector orientation summarizes the individual's value structure. So, we can also say that each value structure is "measured" by its angular position. In Figure B1, MP 1's vector is at 155.77 degrees, and MP 2's vector is at 16.70 degrees. As we will see in the analysis below, the ability to summarize an MP's vector with a single numeric value greatly facilitates our ability to analyze variability across individual value structures.

Differences between MPs' value structures are shown by the angular separation between their vectors. MPs with similar value structures will have vectors that point in the same general direction within the space (i.e., they are separated by angles of less than 90 degrees). Contrasting value structures are shown by vectors that point in different directions (i.e., angles greater than 90 degrees). In the hypothetical example, the rank-orders for MPs 1 and 2 are not exact mirror-images. But it is the case that the values ranked higher by MP 1 (i.e., Values A and C) are ranked lower by MP 2. And values ranked higher by MP 2 (i.e., values B and D) are ranked lower by MP 1. In the geometric model (i.e., Figure B1, Part 2), these differing value structures are shown by the fact that MP 1's vector points toward the upper left while MP 2's vector points toward the upper right.

To be more specific, the cosine of the angle between a pair of vectors is the correlation between the value projections for the two individuals; basically, this means that the smaller the angle between two vectors, the more similar the two corresponding sets of rank-ordered values (hence, the larger the correlation between them). Angles less than 90 degrees indicate positively correlated rankings, angles greater than 90 degrees are negatively correlated rankings, and an angle of 90 degrees means two rankings are uncorrelated with each other. In the limiting cases, two MPs who rank-order the values exactly the same way (i.e., the correlation between their rankings is +1.0) will be shown as collinear vectors pointing the same direction (i.e., there are zero degrees between the vectors), while two MPs who profess mirror-image value structures (i.e., the correlation between their rankings is -1.0) will be shown as two collinear vectors pointing in opposite directions (i.e.,

there is a 180 degree angle between them). In the hypothetical model (Figure B1, Part 2), the vectors for the two MPs are separated by an angle of 139.07 degrees. The cosine of this angle is -0.76. Of course, this reflects nicely the fairly strong negative correlation between the rank-orders for these two hypothetical MPs.

ONLINE APPENDIX C:

Bootstrap Estimates of Sampling Variability

The vector model used in this analysis provides a descriptive representation of the MPs' value choices. As described in the text, the directional orientation of a given vector effectively *measures* that MP's value structure at that time point. But how stable are these measurements relative to sampling fluctuations? Answering that question is critical for evaluating both the quality of the measures themselves and the statistical significance of changes in individual MP's value structures over time.

In order to evaluate sampling variability, we use a modified bootstrap resampling strategy. With typical applications, the bootstrap estimates a sampling distribution by repeatedly resampling randomly (and with replacement) from the original data. Here, the problem is complicated a bit by the fact that we want bootstrap replications for every MP's vector. With bootstrap replications based upon simple random sampling, the number of bootstrap replicates could vary widely across the individual MPs. That would, in turn, lead to varying precision in the estimates of sampling variability in the vector orientations.

To avoid the preceding problem, we modify the bootstrap resampling procedure as follows. Assume that there are n MPs who provide complete rank-orders for the values at one or both time periods; thus, we want sampling variability estimates for the directions of each of the n vectors that would be contained in the model. Assume we want to obtain m bootstrap replications for each vector. Begin by taking the data for the first MP, and make that the first observation in the first bootstrapped data set. Fill out the remaining $n-1$ observations in the first bootstrapped data set by randomly sampling with replacement from the data for the n original observations. Estimate the vector model using the first bootstrapped dataset to obtain the first bootstrap replication of the first MP's vector direction. Repeat this process $m-1$ more times, to produce a total of m bootstrap replications for the first MP's vector direction.

Next, take the data for the second MP and make that the first observation in the $(m+1)^{st}$ bootstrap dataset. As before, fill out the remainder of this bootstrap data set by sampling randomly, with replacement, from the original n MPs' data and use this data set to estimate a bootstrap replication of the vector model. This provides the first bootstrap replication of the second MP's vector direction. Repeat the process $m-1$ more times, with the second MP's data being kept as the first observation in each of these bootstrap data sets. Go on to repeat the same process for the third through n^{th} MPs, generating m bootstrap replications of the vector direction for each one. At the end of this procedure, there will be a total of mn bootstrap replications, consisting of m replicated vector directions for each of the n MPs. Here, we set m to 50, and there are 172 MPs used to estimate the model of party political values. Therefore the bootstrapped dataset contains $50 \times 172 = 8600$ observations. 169 MPs were used to estimate the personal values model, so the bootstrapped dataset contains $50 \times 169 = 8450$ observations.

Sampling Variability in Vector Directions

Jacoby (2014) used statistics designed specifically for directional data (e.g.. Pewsey, Neuhäuser, Ruxton 2013) in his analysis of value structures within the American public. Doing so was necessary because the directions of the individual vectors in his model spanned almost the entire unit circle. Here, we do not need to use directional statistics because the vectors only range across a limited arc in each of the two models. To be more precise, the MPs' vectors span an arc of 196.509 degrees in the model for party political values and 179.515 degrees in the model for personal values. In cases like these, standard linear statistics are fully adequate for dealing with variability in the vector directions (Jones 1983).

Here, each MP's vector direction is measured as its separation around the unit circle in the counter-clockwise rotation from the 3:00 position. The standard error for each MP's direction is just the standard deviation of the bootstrap replications for that person's vector direction. Figure C1 shows the distributions of the individual standard errors for the two vector models of MPs' value structures. The standard errors for the personal political values range from 14.41 degrees to 21.37 degrees. The histogram in the first panel of Figure C1 shows that the distribution of standard errors for political values has a positive skew, but a strong modal region between about 15 and 17

degrees. The mean of the standard errors is 15.92 degrees and the median is 15.72. There also are a few mild high-end outliers with standard errors just over 20 degrees.

Figure C1 about here

The standard errors for MPs' personal values tend to be smaller, with a distribution that ranges from 3.72 degrees to 33.73 degrees. The second panel of Figure C1 shows that there is pronounced positive skewness in the distribution. The mean standard error for personal value vectors is 7.50 degrees, and the median is 5.96 degrees. The distribution trails off in the upper direction, and there are a few high-end outliers with standard errors greater than 30 degrees. On the whole, however, the personal value structures appear to be measured with greater precision than do the party political value structures.

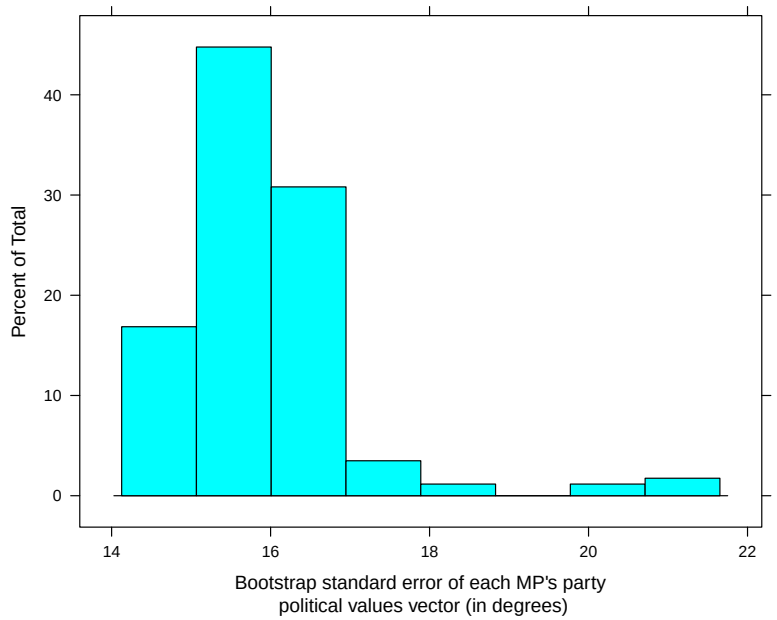
At first glance, the standard errors for the vector directions may appear to be distressingly large— especially those for the party political values. Using the rough rule of thumb that the margin of error for an estimate is twice its standard error, the figures just cited imply that on average, an MP's political value structure is measured to within plus or minus 31.84 degrees. Using the same approximation, the mean margin of error for personal values would be 15 degrees. Stated differently, the mean width of the confidence interval for a party political values vector is 63.68 degrees, while the mean width of the confidence interval for a personal values vector is 30 degrees. Again, these figures may seem to be large. But it is important to note that both of them are quite a bit smaller than 90 degrees. And inspection of the vector models, themselves, back in Figure 3 shows that a swing of about 64 degrees would not really lead to major changes in most MPs' rank-orders of the political values; of course, an arc of 30 degrees would imply even less change in the rank-orders of the personal values. So, based upon this reasoning, the amount of sampling variability in the estimates of the vector directions seems to be acceptable.

Reliability of Value Structure Measurement

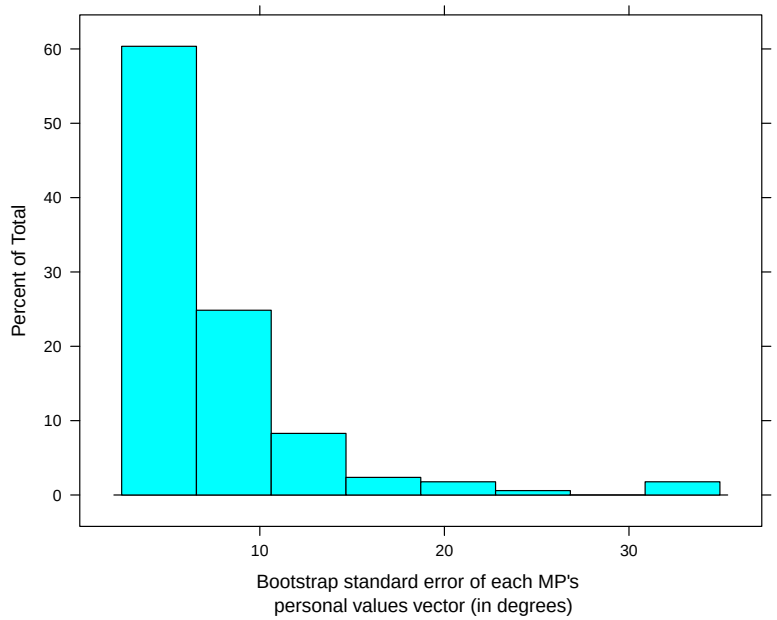
Again, the directions of the vectors comprise measured values for the individual value structures. Another way to evaluate the sampling variability is to consider the reliability of the measurements. Reliability is defined as the proportion of a measure's variance that is not random measurement error. The bootstrap replications of the vectors provide us with a way to estimate the error variance

Figure C1: Histograms Showing Distributions of Bootstrap Standard Errors for Individual MP Vector Directions in the Model of Party Political Values

A. Standard errors for party political value vectors



B. Standard errors for personal value vectors.



for each MP and, hence, the overall reliability of the measures of party political values and personal values.

In the bootstrapped dataset for one of the vector models, let D_{ij} be the direction of MP i's vector on the j^{th} bootstrap replication, let $\bar{D}_i$ be the mean vector direction calculated across the 50 bootstrap replications for MP i, and let $\bar{D}$ be the grand mean vector direction, calculated across all mn observations in the bootstrapped data set. The total sum of squares for the bootstrapped vector directions is calculated in the usual way as:

$$\sum_{i=1}^{n}\sum_{j=1}^{m}\left(D_{ij}-\bar{D}\right)^2$$

Schiffman, Reynolds, and Young (1981) show that the total sum of squares in the vector directions can be broken down as follows:

$$\sum_{i=1}^{n}\sum_{j=1}^{m}\left(D_{ij}-\bar{D}\right)^2=\sum_{i=1}^{n}\sum_{j=1}^{m}\left(D_{ij}-\bar{D}_i\right)^2+\sum_{i=1}^{n}\left(\bar{D}_i-\bar{D}\right)^2$$

Of course, the preceding expression simply shows the separability property that underlies the analysis of variance. The first term on the right hand side represents the sum of squares for each MP, summed across the n MPs (this is often called the "sum of squares within"). The second term represents the sum of squares for the mean MP vectors around the grand mean vector (often called the "sum of squares between").

Since the first term on the right side shows how the individual bootstrapped vectors vary across the replications, this could be interpreted as the error variance in the replications of each MP's vector. Then the second term on the right hand side could be interpreted as the variability of the systematic components for each MP's vector direction around the grand mean direction. Since reliability is just the proportion of total variance that is not error variance, it can be estimated from the sums of squares very easily as follows:

$$\text{REL}=\frac{\sum_{i=1}^{n}\left(\bar{D}_i-\bar{D}\right)^2}{\sum_{i=1}^{n}\sum_{j=1}^{m}\left(D_{ij}-\bar{D}\right)^2}=1-\frac{\sum_{i=1}^{n}\sum_{j=1}^{m}\left(D_{ij}-\bar{D}_i\right)^2}{\sum_{i=1}^{n}\sum_{j=1}^{m}\left(D_{ij}-\bar{D}\right)^2}$$

In the bootstrap replications for the model of party political values, the total sum of squares is 6396.60 and the sum of squares between MPs is 5742.757. Dividing the latter figure by the former, the reliability of the vector directions for party political value structures is 0.898. In the bootstrap replications for the model of personal values, the total sum of squares is 3448.08 and the sum of squares between MPs is 3247.93. This produces a reliability estimate of 0.942. These figures provide a more optimistic view of the sampling variability in the MPs' vector directions. They show that almost 90% of the variance in the bootstrap replications of the political value vectors and more than 94% of the variance in the personal value vectors is due to variability across MPs rather than to fluctuations in the estimation of individual MPs' vectors.

Change Over Time in MPs' Vector Directions

In our analysis of temporal change in value structures, we observe that none of the MPs exhibit perfectly stable political or personal value structures across the 40 year time span covered by this study. But, are these changes substantively meaningful? Or do they merely represent statistical fluctuations due to minor differences in each individual MP's responses across the two time points? The bootstrap replications of the model estimates provide a simple way to address these questions.

The MP's rank-orders at the two time points are treated as independent observations; therefore, the bootstrap replications for an MP's vectors at each of the two time points can be regarded as independent random samples. So, for each MP who gave full rank-orders at the two time points, we can carry out a t-test for the difference between the mean of the bootstrap replications at each time point. Let $\bar{D_{i,73}}$ be the mean of the bootstrap replications for MP i in 1973 and let $\bar{D_{i,13}}$ be the mean of the bootstrap replications for MP i in 2013. The t-test for each MP uses the following null and alternative hypotheses:

$$\begin{aligned} \mathrm{H}_0 : \bar{D}_{i,73} &= \bar{D}_{i,13} \\ \mathrm{H}_A : \bar{D}_{i,73} &\neq \bar{D}_{i,13} \end{aligned}$$

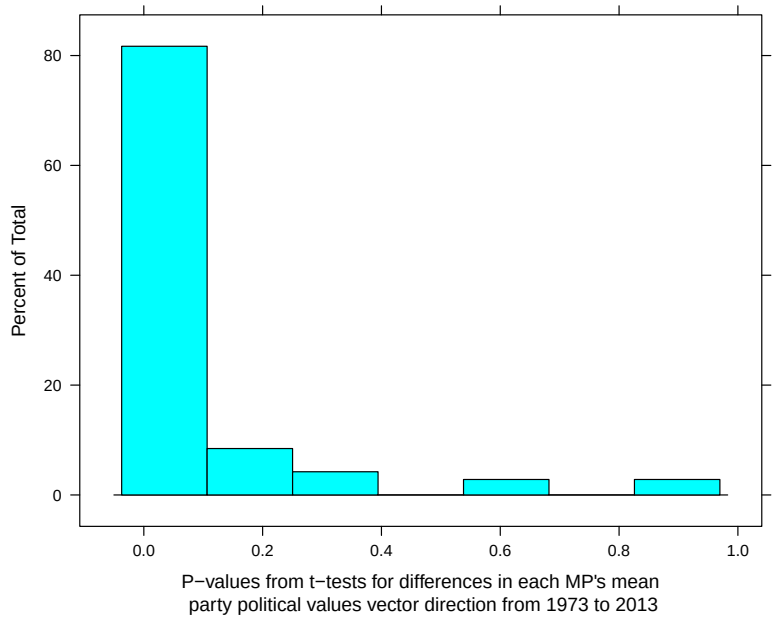
Since there are 50 bootstrap replications at each time point, the test will use 98 degrees of freedom. Figure C2 shows the distributions of observed probability values obtained from the t-tests for the party political values (Panel A) and and the personal values (Panel B). Obviously, both of

the distributions are severely asymmetric, with most of the MPs showing very small probability values. This indicates that it would be very unlikely to see the actual differences in the bootstrapped mean vectors at the two time points if the actual means had been drawn from identically located distributions. Specifically, in the results for the party political value vectors, 55 out of 71 MPs (or 77.46%) had observed probability values lower than 0.05 (indicating that the null hypothesis would be rejected in a non-directional test carried out at the 0.05 level). For the personal value vectors, 61 of 69 MPs (or 88.40%) have observed probability values lower than 0.05. So, based upon the evidence from the bootstrap replications, most of the MPs show statistically significant changes in their value structures over time. But, as the analysis in the main text shows, even through the changes in individual value structures are probably *real*, they are not very large in absolute or relative terms.

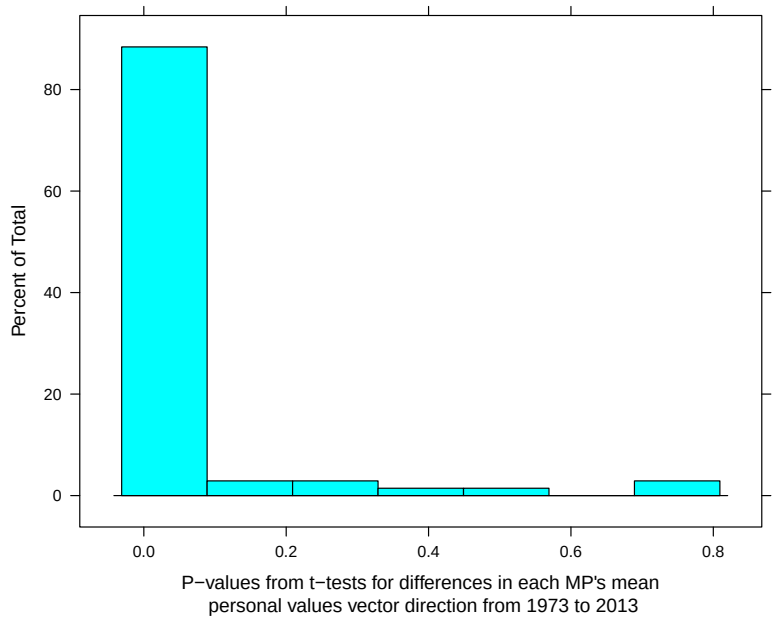
Figure C2 about here

Figure C2: Histograms Showing Distributions of Observed Probability Values from t-tests for Differences over Time in the Individual-Level Mean Value Vector Directions.

A. Probability values for tests of party political value vectors



B. Probability values for tests of personal value vectors.



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ONLINE APPENDIX D:

Value Structures and MPs Beliefs

The 1973 and 2013 mailback questionnaires included survey items intended to measure eight policy beliefs and twelve attitudes about institutional arrangements. Each of these 20 beliefs and attitudes are operationalized at each time point using four-item Likert scales. The full sets of items are shown in Figure D1. For present purposes we are less interested in the MPs' scale scores and more concerned with the total amount of change that occurred in the full set of items over the 40 years between the two data collections. For each MP, we take the absolute amount of change on each policy item, sum the changes across all eight such items, and express this total amount of change as a proportion of the maximum amount of change that could occur across the eight policy items for each MP. The result is a measure of total temporal change in policy orientations, expressed in a value that ranges from zero (for an MP whose policy orientations did not change at all over time) to 1.0 (for an MP who exhibits the maximum amount of change that is possible, given his or her 1973 policy beliefs). A measure of temporal change in institutional beliefs is defined the same way, using the 12 Likert scales measuring those beliefs.

Figure D1 about here

We define a measure of change in an individual MP's value structure as the absolute value of the change in direction of the MP's vector from 1973 to 2013 (i.e., the direction of change is ignored), expressed as a proportion of the maximum difference in vector directions that occurred in the data (which is just a bit greater than 90 degrees). The variable is created separately for partisan political values and for personal values. Each of these variables implicitly distinguishes between the values' relative positions within their rank orders. Given the nature of the vector model, change in the choices among values that fall within the middle of a person's ranking will have less effect on the vector's direction than changes in the most important or least important values.

Our measures of temporal change in beliefs and attitudes on the one hand, and in value structures on the other hand, are all measured as proportions of the total possible change in the respective

Figure D1: Survey Measures of Policy Beliefs and Institutional Attitudes.

Listed below are the statements of policy beliefs and institutional attitudes that were included in the 1973 and 2013 mailback questionnaires. MPs responded to each of the items using a four-point scale on which 1 = Agree without reservations, 2= Agree, but with reservations, 3 = Disagree but with reservations, and 4 = Disagree without reservation.

Policy Beliefs:

No matter how despicable his views, any man ought to have the freedom to publish his opinions and present them in public speeches.

Social Service benefits and exemptions ought to be provided only to the really poor rather than to all low wage earners.

The death penalty should be re-introduced for the murder of police officers.

Britain is right to resume sales of arms to South Africa.

The rich should be taxed as much as is necessary to provide everybody with approximately equal amounts of wealth.

A university education should be made available to everyone who wants it, regardless of previous performance in schools.

All grammar schools should be merged into comprehensive school systems.

Criminals convicted of violent crimes should be given longer prison sentences and fewer paroles.

Institutional Attitudes:

Individual M.P.s should decide for themselves in any particular division in the House how they should vote.

There should be more opportunity for debates in the House on urgent or topical issues.

The concentration of power in the hands of the Prime Minister has gone too far.

There is no need for a Government to resign simply because it is defeated in the House on an important bill.

The electorate ought to have the opportunity to vote in a referendum on crucial matters affected the nations vital interests.

Policy should be determined more by deliberation and consultation among M.P.s than by instructions or mandates from the electorate.

In a world as complicated as the modern one, it doesn't make sense to speak of increased control by ordinary citizens over governmental affairs.

Ministers should be prepared to reveal to Parliament virtually all information on their Departments affairs.

There should be no limitations on Parliaments power to make or unmake any law whatsoever.

The number of specialist Select Committees in the House should be increased.

There should be fewer obstacles to Private Members Bills.

By constantly criticizing the Government, the Opposition is performing a constructive public duty.

orientations. This is a very convenient property, because it means the measurement units are comparable across the variables. That will enable us to determine whether value structures are more stable than beliefs and attitudes or vice versa.

The comparisons of temporal change in value structures versus temporal change in beliefs and attitudes are presented in Figures D2 and D3. In each panel of the figures, proportionate value change is shown on the horizontal axis and proportional belief or attitude change is shown on the vertical axis. Each figure includes a red line with a slope of one and an intercept of zero. The plotting symbols in the figure (i.e., the small open circles) represent individual MPs. Those who exhibit higher proportionate belief or attitude change than proportionate value change will appear as points above the diagonal line. Those for whom proportionate value change exceeds proportionate change in the other orientations will appear below the line.

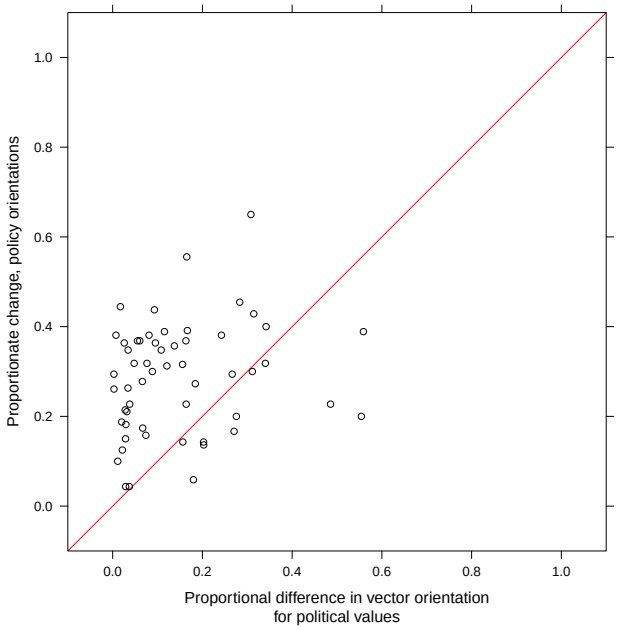
Figures D2 and D3 about here

The evidence in Figures D2 and D3 shows clearly that value choices are much more stable than either the policy beliefs or the institutional attitudes. Taking party-political values first, Figure D2A shows that 44, or 80% of the 55 MPs with sufficient data, show more proportionate change in policy orientations than in value vector orientations. In Figure D2B, 49, or 89% of the MPs, show more proportionate change in institutional beliefs than in value structures. Turning to personal values in Figure D3, we find similar results. Here 54 MPs had sufficient data for the comparison. And 83% (or 45 MPs) in the scatterplot in Figure D3A show more change in policy orientations than change in personal value vector directions. Finally, 89% (48 MPs) show more change in institutional orientations than in personal value vector directions (Figure D3B). Exactly as substantive theory leads us to predict, the MPs' rank-ordered value structures show higher stability over time than do feelings about policies and institutions.

The relative constancy of individual value choices is particularly striking precisely because values involve abstract, general specifications about desirable and undesirable end-states; they do not involve tangible stimulus objects like policy prescriptions or institutional characteristics. The latter should serve to "anchor" related beliefs and attitudes. But, we observe precisely the opposite: it is choices among values that are more stable than evaluations of policies or institutions. The only way that such high levels of value structure stability could occur is if the rank-orders really do represent meaningful and ongoing individual choices about the relative importance of different values.

Figure D2: Proportionate Change in Policy and Institutional Orientations Versus Proportionate Change in Party Political Value Vector Direction, 1973-2013.

A. Policy orientations



B. Institutional beliefs.

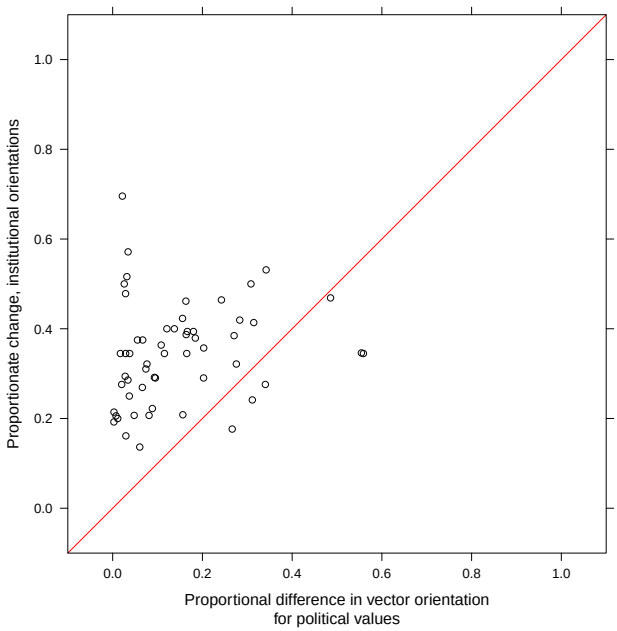
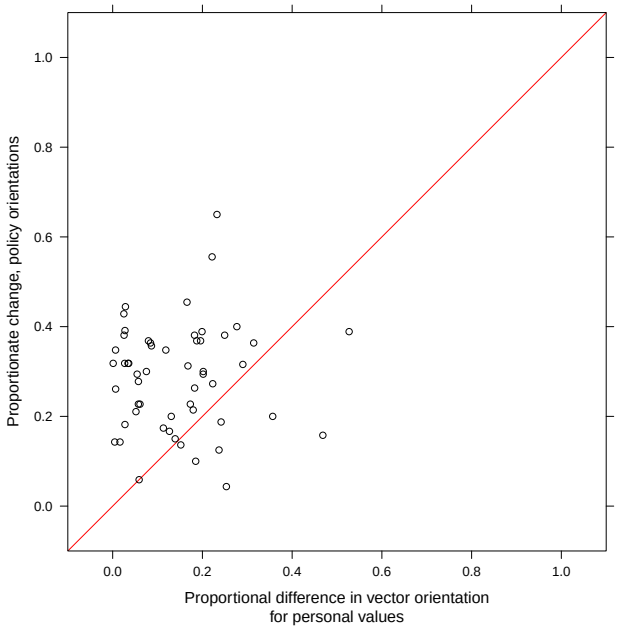


Figure D3: Proportionate Change in Policy and Institutional Orientations Versus Proportionate Change in Personal Value Vector Direction, 1973-2013.

A. Policy orientations



B. Institutional beliefs.