**Appendix A. Detailed Description of the W-NOMINATE Method**

*Spatial Voting and Single-Peaked Preferences*

The W-NOMINATE method, developed by Poole (2005) is a probabilistic model designed to uncover the underlying ideal points of voters based upon a series of votes in a given legislative body. Originally, W-NOMINATE was designed to capture the political polarization of American politics based on legislators in the U.S. Congress. Later work suggested applications for international and supranational legislatures such as the UN General Assembly and the European Parliament. Based in theories of spatial voting (Black 1958; Downs 1957), W-NOMINATE assumes that voters maintain single-peaked preferences over an issue. That is to say, if a legislator is, for example, fully pro-choice on the issue of abortion, then they would prefer a policy with some restrictions over an outright ban. In the case of the GA, policies that states might vote over include condemning Israeli settlements in the West Bank, in which a single-peaked preference would indicate that a country that prefers an independent Palestinian state with no Israeli settlements would prefer condemnation of new settlement construction to no condemnation of Israel at all. Similarly, a state that prefers a complete lifting of the U.S. embargo on Cuba should prefer a partial lifting of that embargo versus the status quo. Seeking to maximize their utility (i.e. national interest) states will vote for or against a particular policy.

Typically, W-NOMINATE has been used to understand legislators’ preferences on a left-right dimension with respect to their voting behavior in a legislative body (U.S. Congress, EU Parliament, etc.). Thus we can see that in the 115th Congress that Sen. Mazie Hirono (D-HI) is located to the left of Sen. Lisa Murkowski (R-AK) who is to the left of Sen. Ted Cruz (R-TX) (Lewis et al. 2019). Each legislator is represented by a point in Euclidean space, while each vote is a line that divides legislators who are for or against a particular issue that is up for a vote (Poole 2005). In the case of the cloture motion to advance the nomination of Brett Kavanaugh to the U.S. Supreme Court, Hirono and Murkowski voted against the motion while Cruz voted for the motion, despite the shared party affiliation of the latter two legislators. If ideology were the only dimension on which Democrats and Republicans voted, then that line may have cut the legislators differently. While legislators do not frequently bridge ideological divides, the occurrence is common enough to suggest the existence of multiple dimensions of voting.

*Unit Circle and Cartesian Coordinates in Euclidean Space*

Figure 1 (in the text) displays the results of the W-NOMINATE analysis on the GA roll call voting data. Each state is represented by a point on a unit circle. The unit circle has a radius of 1 and an origin with Cartesian coordinates (0,0). Thus each point refers to a specific Cartesian coordinate each representing a dimension of voting.

W-NOMINATE does not assume equal importance of the dimensions.[[1]](#footnote-1) But, when a voter values issues — dimensions — differently (for instance, a U.S. Republican that puts more importance on economic issues than social ones or an emerging economy that puts greater emphasis issues of development than upon nuclear proliferation), the indifference curves will be elongated rather than symmetrical, meaning that a relatively small move on one dimension may imply a much larger one on another. For example, Hix, Noury, and Roland (2009) have suggested that voting in the European Parliament occurs along two dimensions, the traditional left-right, and of secondary importance, pro and anti-EU dispositions.

**Appendix B. Explaining Dimensionality in the Context of the UN General Assembly**

In most analyses that consider multidimensional spatial voting, the dimensions fall along the lines of left-right or government-opposition; however, in international politics, these dimensions are more difficult to identify, given the comparative lack of predictability in GA voting as compared to domestic legislatures and the EU Parliament, in which there are established political parties. In the results below, we offer some intuition as to the importance of the dimensions and use different techniques to analyze what these may represent.

In addition to the ideal point estimates for each state, W-NOMINATE reports statistics that are used to determine the dimensionality of voting in the GA. Table 1 reports these summary statistics. The geometric mean probability (GMP) is a test statistic that indicates how much the model is explaining compared to chance. The GMP ranges from 0.5 to 1, with 0.5 meaning that the model does no better than a coin toss. The GMP for each time period hovers just above 0.8, meaning that the model correctly predicts 80 percent of the roll-call behavior across the votes analyzed. The aggregate proportional reduction in error (APRE) is a statistic that provides further information on the correct classification of roll-call votes and ranges between 0 and 1. The closer the test statistic is to 1, the more variation the model explains. Each dimension receives an APRE score, and the difference between the second and first dimension relays information about the importance of the second dimension relative to the first. The classification percentage is derived from the APRE. Thus, in the first period under investigation, the first dimension correctly classifies 92 percent of the voting decisions, while the second dimension explains only 1.24 percent of the voting decisions (93.25-92.01). In the second period, 2002-2011, the first dimension is responsible for about 66 percent of the proportional reduction in error, whereas the second dimension only further reduces that error by 8 percent. While the percentage of variation explained by the second dimension remains rather low across the two periods analyzed, it is higher in the last decade, calling into question what these dimensions could be.

**Table B1: W-NOMINATE Summary statistics**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| *Period* | *Votes*  *s* | *States* | *Classification %, 1-dim.* | *Classification %, 2-dim.* | *APRE1* | *APRE2* | *GMP* |
| 1992-2001 | 566 | 187 | 92.01 | 93.25 | 0.627 | 0.685 | 0.813 |
| 2002-2011 | 544 | 191 | 92.72 | 94.47 | 0.657 | 0.739 | 0.821 |

While there is no purely objective way to determine what the dimensions are, there are a number of methods that can inform this task. The manuscript reports a visual inspection of ideal points, which is corroborated here by an analysis of the angles and the location of the cutting lines and a statistical method, where we regress individual states’ ideal points on state attributes.

**I. Angle and cutting line analysis**

Table B2, which presents the mean and median angles of the cutting lines in each period, indicates that the three other issue areas together divide the first dimension with most of the angles falling around 90 degrees. The Palestinian question is the only cutting line with an angle outside of the range of the first dimension in both periods. The angles are very similar across both time periods, indicating that the dimensions exhibit stability across time.

**Table B2: Average (median) angles for cutting lines**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| *Period* | *Palestinian*  *Question* | *Human*  *Rights* | *Economic*  *Development* | *Nuclear*  *Proliferation* |
| 1992-2001 | 129 (126) | 94 (90) | 98 (90) | 87 (87) |
| 2002-2011 | 135 (142) | 101 (90) | 96 (90) | 82 (79) |

**II. What regression analysis reveals about dimensionality in W-NOMINATE**

To statistically assess the dimensions, we regress individual states’ ideal points on state attributes. The ideal points range from -1 to 1 with higher values falling closest to the US position. To determine whether there is a West/Non-West divide among states, we use the regional groupings as identified by the UN. We therefore identify several dummy variables indicating whether a state belongs to the African, Asia-Pacific, Latin American and Caribbean, Eastern European, or Western European and Others (WEOG) groups. In the analysis, the WEOG group serves as the reference category. To assess whether either of the two dimensions address the global economic divide, we include a variable gross domestic product (GDP) per capita, measured in current US dollars, for the level of development.[[2]](#footnote-2) We also include the regime type variable Polity IV to assess whether similarity of the regime type influences whether states will vote together.[[3]](#footnote-3) Polity ranges from -10 to 10 with higher values associated higher levels of democracy.

From visual inspection of the ideal points as well as analysis of the cutting lines, there is some reason to believe that regional differences as well as economic divisions influence the first dimension; however, the second dimension seems to divide states differently. In particular, the angles of the cutting lines indicate that votes concerning Israel and Palestine fall along a second dimension. In order to account for this, we include an additional variable when analyzing the second dimension – whether or not a state maintains formal diplomatic relations with Israel. We would expect the states that maintain diplomatic relations with Israel to exhibit greater voting cohesion with the US and Israel, or values closer to one on the second dimension, if the second dimension is defined, at least in part, by the Palestinian question.

Table B3: Regression analysis of state attributes on GA voting

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | *First Dimension* | | *Second Dimension* | |
|  | *(1) 1992-2001* | *(2) 2002-2010* | *(3) 1992-2001* | *(4) 2002-2010* |
| GDP per capita | 0.00001\*\* | 0.000004 | 0.000002 | 0.0000005 |
|  | (0.000005) | (0.000004) | (0.000004) | (0.000003) |
| Regime Type | 0.018\*\*\* | 0.031\*\*\* | 0.005 | 0.007 |
|  | (0.006) | (0.005) | (0.005) | (0.004) |
| Israel Relations | --- | --- | 0.222\*\*\* | 0.101\* |
|  |  |  | (0.058) | (0.054) |
| African | -0.761\*\*\* | -0.791\*\*\* | 0.397\*\*\* | 0.368\*\* |
|  | (0.13) | (0.129) | (0.145) | (0.143) |
| Asian | -0.670\*\*\* | -0.699\*\*\* | 0.222 | 0.144 |
|  | (0.112) | (0.134) | (0.136) | (0.136) |
| East European | 0.163 | 0.050 | 0.098 | -0.102 |
|  | (0.111) | (0.103) | (0.133) | (0.122) |
| Latin American | -0.616\*\*\* | -0.693\*\*\* | 0.438\*\*\* | 0.310\*\* |
|  | (0.11) | (0.11) | (0.128) | (0.132) |
| Constant | 0.266\*\* | 0.358\*\*\* | -0.526\*\*\* | -0.365\*\* |
|  | (0.131) | (0.135) | (0.151) | (0.154) |
| Observations | 144 | 150 | 143 | 149 |
| R-squared | 0.8 | 0.809 | 0.305 | 0.327 |

*Robust standard errors in parentheses. \* p<0.10, \*\* p<0.05, \*\*\* p<0.01*

Table A1 presents the results of the regression analyses for the first (models 1 and 2) and second (models 3 and 4) dimensions for the first and second periods under study. In the first dimension, the regional variables and the regime type are the strongest predictors of whether a state will vote similarly to the US and other members of the WEOG group. In terms of regional differences, members of the African, Asian, and Latin American groups are predicted to vote less with Western countries. For example, being a member of the Asian group is predicted to lower a state’s ideal point by 0.7 across both periods under study. Given that the possible range of the dependent variable, the ideal point, is -1 to 1, this effect is large (over one-third of the total range). Also, across both periods, more democratic states are predicted to vote with the West. Finally, there is some limited evidence that the level of development, as measured by a state’s GDP per capita, is a predictor of whether a state will vote with the US in the immediate post-Cold War period. Richer countries are marginally more likely to vote with the US and Western countries than poorer ones, though this effect does not hold in the post-9/11 period. Overall, the results for the first dimension seem to indicate that a combination of regime type and regional differences form the basis of the division among states. This is consistent with a West/Non-West division, in which lower income and less democratic states are pitted against richer and more democratic ones.

The picture somewhat changes when we analyze the second dimension in models 3 and 4. Notably, neither the level of development nor the regime type exerts significant effects on states’ voting behavior across both periods. However, whether or not a state maintains formal diplomatic relations with Israel is a statistically significant predictor of whether the state will vote with the US. This is especially the case in model 3 in the immediate post-Cold War period, where maintaining diplomatic ties with Israel is predicted to increase a state’s ideal point estimate by 0.22 points. In model 4, the diplomatic ties variable remains significant, although at the 0.10 level, and is predicted to increase an ideal point value by 0.1. The effect of regional groupings also varies across the two dimensions with countries belonging to the African and Latin American groups being more likely to vote with the West after controlling for diplomatic ties with Israel and other factors. In sum, regardless of the region, states that do not maintain formal diplomatic ties with Israel tend to vote against the US.[[4]](#footnote-4) Thus, particularly in the first period under investigation, but also to a lesser degree in the second, states appear to be divided along two dimensions. The first dimensions points strongly to a West/Non-West divide, while the second indicates a cutting line congruent with a pro-Israel posture.

Taken together, the results of these techniques to identify the dimensions across which states align their votes, point to a West/Non-West divide on the first dimension and a pro- or anti-Israel divide along the second dimension.

**References**

Black D (1958) *The Theory of Committees and Elections.* Cambridge: Cambridge University Press.

Downs A (1957) *An Economic Theory of Democracy.* New York: Harper & Row.

Hix, S, Noury, A and Roland, G. (2009). Voting patterns and alliance formation in the European

Parliament. *Philosophical Transactions of the Royal Society: Biological Sciences* 364 (1518):

821-831.

Lewis, JB, Poole, K, Rosenthal, H, Boche, A, Rudkin, A, & Sonnet, L (2019). Voteview:

Congressional Roll-Call Votes Database. Available from: <https://voteview.com/>.

Marshall, MG, Gurr, TR and Jaggers, K, (2013). Polity IV Project: Political

Regime Characteristics and Transitions, 1800-2012 Dataset. http://www.systemicpeace.org/

Poole KT (2005) *Spatial Models of Parliamentary Voting.* Cambridge: Cambridge University Press.

Poole, KT, & Rosenthal, H. (1985). A Spatial Model for Legislative Roll Call

Analysis. *American Journal of Political Science,* *29*(2), 357-384.

World Bank. 2012. World Development Indicators 2012. Washington, D.C: The World

Bank.

1. W-NOMINATE was preceded by NOMINATE which assumed that each dimension was equally important to a voter (Poole and Rosenthal 1985). [↑](#footnote-ref-1)
2. World Bank 2012. [↑](#footnote-ref-2)
3. Marshall, Gurr, and Jaggers 2013. Both the polity and GDP per capita variables are averaged across the respective time periods in order to obtain a single value that corresponds to the ideal point estimate from the period. [↑](#footnote-ref-3)
4. It is the case that it is predominately members of the Asian regional group that do not maintain formal diplomatic relations with Israel, although there are some members from other groups as well. [↑](#footnote-ref-4)