1 Supermajority Rule

A voting rule is supermajoritarian if the selection of a new policy (passage of a bill, amendment, court decision, etc.) requires the agreement of at least a majority of the voters, but there are some majority coalitions that are not sufficient to enact a new policy. The classic examples of such rules are referred to as $q$-rules with $q > \frac{n+1}{2}$. (A voting rule is a $q$-rule if any new policy is enacted (or “passes”) if and only at least $q$ (of the $n$ total) individuals vote in favor of the new policy.) The purpose of this short note is to describe the basic operation of supermajority rules within the 1 and 2-dimensional spatial models with classical Euclidean preferences.\textsuperscript{1}

Figure 1 displays the operation of a $2/3$rd's supermajority rule with 9 voters (i.e., 6 votes necessary to pass a new proposal). This Figure is illustrative of the operation of supermajority legislative bodies such as the U.S. Senate when politics is unidimensional. The main point to be taken from Figure 1 for the 1 dimensional case with symmetric and single-peaked preferences (i.e., the setting for the Median Voter Theorem) is as follows.

Under a $q$-rule (i.e., a rule that requires at least $q$ of $n$ total votes for passage of a new proposal), any policy that is greater than or equal to at least $n - q$ voters’ ideal points and less than or equal to at least $n - q$ voters’ ideal points can not be defeated. (This is illustrated by the example at the bottom of Figure 1.)

Figure 2 displays this point in an alternate way: it displays the set of points that can not be defeated under three different supermajority rules. For each rule, the appropriate interval of points might be referred to as a gridlock interval – once policy is within the appropriate interval, it will never change unless the rule is changed (as has been discussed recently in the U.S. Senate with respect to Judicial nominations) or the voters’/legislator’s’ preferences change (as generally occurs to some degree after each election).

\textsuperscript{1}Recall that individual $i$’s preferences, over $X = \mathbb{R}^M$ (represented by a utility function $u_i$) are classical Euclidean if, for all $x \in X$,

$$u_i(x) = -\sqrt{\sum_{j=1}^{M} \alpha_j^i (x_j - t_j^i)^2}.$$
9 voters, 6 votes needed for passage.
q: status quo
policies that can defeat status quo (winset of q):

Figure 1: Supermajority Rule in 1-Dimension, Symmetric Single-peaked Preferences
Figure 2: Gridlock Intervals in 1-Dimension, Symmetric Single-peaked Preferences
Figure 3 displays an example of a $4/5^{th}$ supermajority rule in a 2-dimensional spatial setting and contrasts it with the outcomes that would be achievable with simple majority rule. Unsurprisingly, the supermajority winset is smaller than, and contained within, the simple majority rule winset.