**Codebook for “Complementarity in Alliance: How strategic compatibility and hierarchy promote efficient cooperation in international security”**

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Variables in 03\_df-full.rds used to produce results in the figures and tables

dol\_nicheolap – division of labor index measuring the degree to which members of the alliance specialize in one task versus performing all tasks and whether a task is performed by one alliance member or many of them. See Section 4.1

strcomp\_cinc\_total\_scaled – strategic compatibility of the alliance. See Section 4.2

hier\_laplace\_scaled – hierarchy of the alliance. See Section 4.3

year – calendar year

year\_sq – calendar year, squared

year\_cube – calendar year, cubed

milinst - peacetime military coordination indicating the presence of peacetime integrated

military command and a common defense policy

demo\_polityprop - proportion of alliance members with a Polity score greater or equal to 6

dist\_contigprop - proportion of alliances members that are contiguous

dist\_maxlog – maximum capital to capital distance across alliance members

rivals\_log - logged number of total threats faced by all alliance members

members\_log – logged number of states in each alliance-year

allianceage\_avg – average number of years each member has been in the alliance

Other variables in 03\_df-full.rds used in the appendix or not used in this paper

atopid – ID variable indicating ATOP alliance ID reference. See Leeds et al (2002)

year\_norm – year, normalized with start date of earliest year in the data

dol\_modq – alternate measure of division of labor produced by the packages in 01\_dv-dol.qmd

dol\_nested – alternate measure of division of labor produced by the packages in 01\_dv-dol.qmd

dol\_nodf – alternate measure of division of labor produced by the packages in 01\_dv-dol.qmd

dol\_linkdense – alternate measure of division of labor produced by the packages in 01\_dv-dol.qmd

dol\_connectance – alternate measure of division of labor produced by the packages in 01\_dv-dol.qmd

dol\_h2 – alternate measure of division of labor produced by the packages in 01\_dv-dol.qmd

dol\_clustcoef – alternate measure of division of labor produced by the packages in 01\_dv-dol.qmd

dol\_funcomplement – alternate measure of division of labor produced by the packages in 01\_dv-dol.qmd

dol\_partnerdiverse – alternate measure of division of labor produced by the packages in 01\_dv-dol.qmd

dol\_vulnerab – alternate measure of division of labor produced by the packages in 01\_dv-dol.qmd

dol\_funccomplement\_scaled – alternate measure of division of labor produced by the packages in 01\_dv-dol.qmd

strcomp\_unvotekappaavv\_avg – alternate measure of strategic compatibility using UN voting similarity scores (kappa average)

strcomp\_unvotekappaavv\_low – alternate measure of strategic compatibility using UN voting similarity scores (kappa lowest)

strcomp\_unvotepivv\_avg – alternate measure of strategic compatibility using UN voting similarity scores (Pi average)

strcomp\_unvotepivv\_low – alternate measure of strategic compatibility using UN voting similarity scores (Pi lowest)

strcomp\_sscorekappava\_avg – alternate measure of strategic compatibility using alliance s-scores (kappa average)

strcomp\_sscorekappava\_low – alternate measure of strategic compatibility using alliance s-scores (kappa lowest)

strcomp\_sscorekappaba\_avg – alternate measure of strategic compatibility using alliance s-scores (kappa binary average)

strcomp\_sscorekappaba\_low – alternate measure of strategic compatibility using alliance s-scores (kappa binary lowest)

strcomp\_sscorepiva\_avg – alternate measure of strategic compatibility using alliance s-scores (Pi valued average)

strcomp\_sscorepiva\_low – alternate measure of strategic compatibility using alliance s-scores (Pi valued lowest)

strcomp\_sscorepiba\_avg – alternate measure of strategic compatibility using alliance s-scores (Pi binary average)

strcomp\_sscorepiba\_low – alternate measure of strategic compatibility using alliance s-scores (Pi binary lowest)

strcomp\_peacelevel\_avg – alternate measure of strategic compatibility using average peace score value

strcomp\_peacelevel\_low – alternate measure of strategic compatibility using lowest peace score value

strcomp\_cinc\_total – raw version of strcomp\_cinc\_total\_scaled variable explained above

strcomp\_cinc\_ratio – ratio of CINC scores for shared threats and total threats (shared plus non-shared

hier\_laplace – raw version of hier\_laplace\_scaled explained above

hier\_laplace2 – alternate measure of laplace hierarchy using a different package

hier\_crank – alternate measure of hierarchy produced in 02\_ev-alliance.qmd

hier\_lrank – alternate measure of hierarchy produced in 02\_ev-alliance.qmd

hier\_leverage – alternate measure of hierarchy produced in 02\_ev-alliance.qmd

hier\_ivi – alternate measure of hierarchy produced in 02\_ev-alliance.qmd

hier\_spread – alternate measure of hierarchy produced in 02\_ev-alliance.qmd

hier\_hub – alternate measure of hierarchy produced in 02\_ev-alliance.qmd

hier\_laplace2\_scaled – scaled alternate measure of laplace hierarchy using a different package

cinc\_dispersal – dispersal of CINC scores of alliance members used in appendix model

cinc\_asymmetry – asymmetry of CINC scores of alliance members used in appendix model

cinc\_total – total CINC scores of alliance members used in appendix model

cinc\_totalsq – cinc\_total, squared

gp\_ratio – ratio of alliance members that are great powers

asymmetric – coded 1 if gp\_ratio > 0

demo\_polityavg – average polity score of alliance members

demo\_politylowest – lowest polity score of alliance members

demo\_polityprop – proportion of alliance members that are democracies, measured using polity

demo\_politydiff – difference in polity score between most and least democratic members

demo\_sameregime – coded 1 if all alliance members share the same regime type

demo\_udsavg – average UDS democracy score of alliance members

demo\_udslowest – lowest UDS democracy score of alliance members

demo\_udsdiff – difference in UDS democracy score between most and least democratic members

members – number of states in the alliance

members\_sq – members, squared

allianceage\_avg – average number of years each state has been in the alliance

allianceage\_avgsq - allianceage\_avg, squared

allianceage\_longest – longest number of years a state has been a member of the alliance

allianceage\_longestsq – allianceage\_longest, squared

dist\_contigprop – proportion of alliance members that are contiguous with each other

dist\_max – maximum capital to capital distance between two alliance members

dist\_maxlog – dist\_max, logged

dist\_avg – average capital to capital distance between two alliance members

dist\_avglog dist\_avg, logged

rival\_count – total number of rivals faced by at least one alliance member

bilat – ATOP variable indicating whether the alliance is bilateral

defense – ATOP variable indicating whether the alliance is a defense pact

terrres – ATOP Dummy variable coded 1 if any alliance member promises to make some aspect of

its territory or resources available to an alliance partner in the event of conflict or under

other specified conditions relevant to the alliance.

Milcon - This variable indicates whether the alliance agreement includes provisions requiring contact among the military planners/armed services of the alliance members for the purpose of coordination. The agreement might provide, for instance, for the members to exchange opinions on military doctrine regularly, or for the general staffs of the armed services to hold regular meetings for joint planning. If no such provision appears in the agreement, the variable is coded 0. If official contact among the armed services is required only in the event of hostilities, the variable is coded 1. If official contact is required during peacetime as well, the variable is coded 2. If the parties commit to conducting a common defense policy, the variable is coded 3. Contact among the armed forces for the purpose of confidence building only, and not for the purpose of policy coordination in developing and implementing military plans, is not included in the coding of this variable. If we have not located the original documents and do not know if the alliance requires official contact among military personnel, the variable is coded as missing.

Milaid – ATOP variable indicates whether there are any provisions in the alliance agreement for any members to provide any other members with military aid. If there are no provisions regarding military aid, the variable is coded 0. If the agreement provides for general or unspecified military assistance, the variable is coded 1. If the agreement provides for grants or loans, the variable is coded 2. If the agreement provides for military training and/or provision or transfer of technology, the variable is coded 3. If the agreement provides for both grants and/or loans and training and/or technology, the variable is coded 4.

intcom – ATOP dummy variable indicating whether the agreement provides for an integrated

command among the allies. Importantly, an integrated command must exist in both

peacetime and wartime for this variable to be coded 1

milinst – ATOP variable for degree of military institutionalization

formal – ATOP variable for degree of alliance formality

latent.depth.mean – latent alliance depth (mean) from Alley (2021)

latent.depth.var – latent alliance depth (variance) from Alley (2021)

latent.depth.sd – latent alliance depth (standard deviation) from Alley (2021)

PotMilCapacity.score - Benson and Clinton (2016) measure of alliance potential military capacity

Depth.score - Benson and Clinton (2016) measure of alliance depth

Scope.score - Benson and Clinton (2016) measure of alliance scope

members\_log – number of alliance members, logged

rivals\_log – number of alliance rivals, logged