External Threat and Alliance Formation

Web Appendix

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Figure A1 graphs Pregibon's Delta-Beta influence statistic for each observation used to estimate Model 1. Observations above the dashed line at .02 are excluded from the estimation of Model 9.

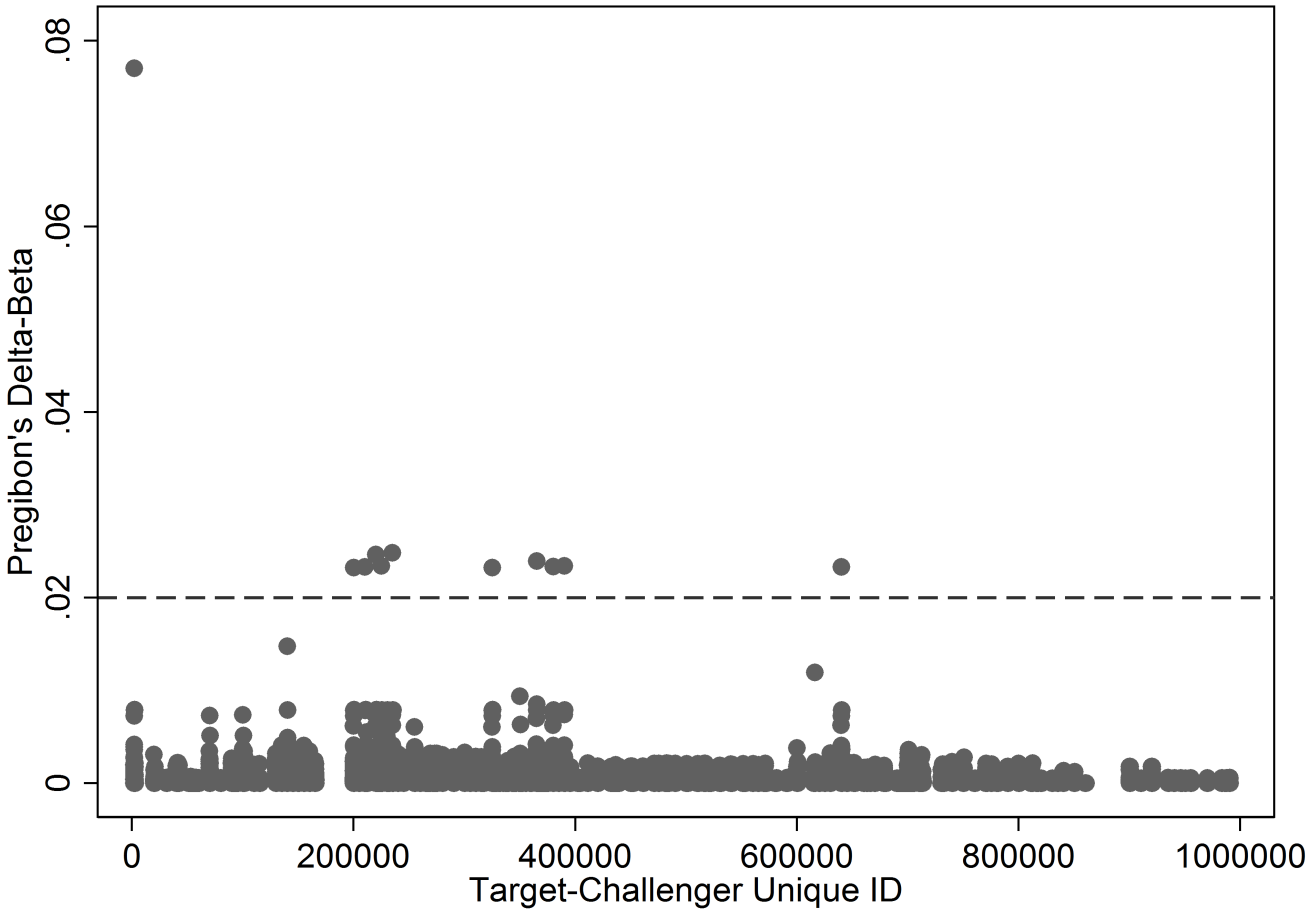

Figure A1: Pregibon's Delta-Beta Influence Statistic: Directed Dyads

Figure A1 graphs Pregibon's Delta-Beta influence statistic for each observation used to estimate Model 4. Observations above the dashed line at .02 are excluded from the estimation of Model 12.

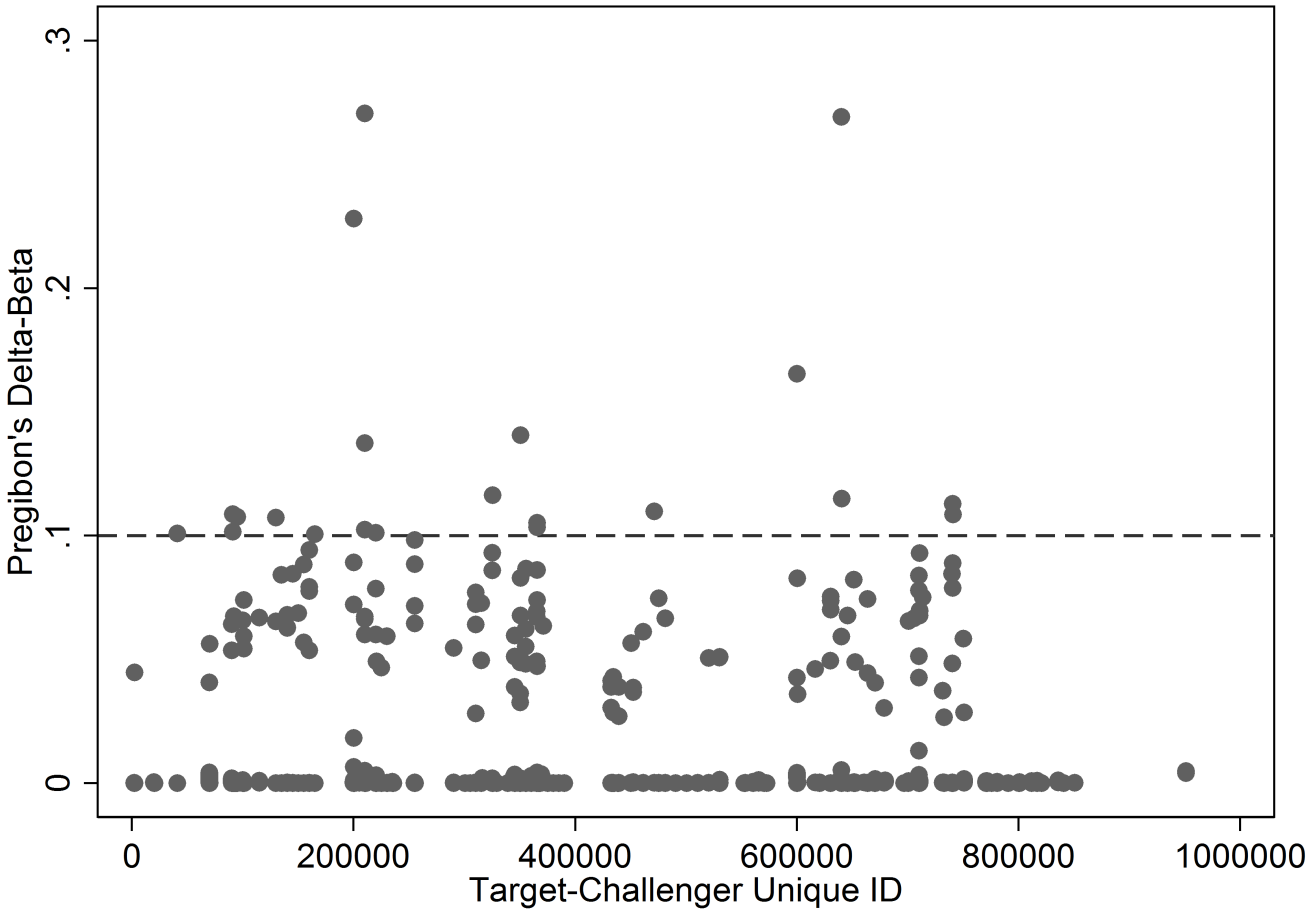

Figure A2: Pregibon's Delta-Beta Influence Statistic: Territorial Disputes

Table A1 follows the suggestion of King and Roberts (2015) and compares classical and robust standard errors for Models 1-3 to check for model misspecifcation.

Table A1: Probit Regressions of Alliance Formation

	Directed Dyads					
	Classical SE	Robust SE	Classical SE	Robust SE	Classical SE	Robust SE
Challenger's Probability of Winning (CINC)	0.116**	0.116**				
	(0.010)	(0.009)				
Challenger's Probability of Winning (Adjusted CINC)			0.117**	0.117**		
			(0.009)	(0.009)		
Challenger's Probability of Winning (Expenditures)					0.148**	0.148**
					(0.010)	(0.010)
Target Major Power	0.507**	0.507**	0.493**	0.493**	0.562**	0.562**
	(0.018)	(0.018)	(0.018)	(0.018)	(0.021)	(0.021)
Challenger-Target Contiguity	0.131**	0.131**	0.108**	0.108**	0.130**	0.130**
	(0.019)	(0.019)	(0.019)	(0.019)	(0.021)	(0.021)
Challenger Alliance	-0.275**	-0.275**	-0.279**	-0.279**	-0.248**	-0.248**
	(0.008)	(0.009)	(0.008)	(0.009)	(0.009)	(0.010)
Pre-Cold War Period	-0.467**	-0.467**	-0.463**	-0.463**	-0.360**	-0.360**
	(0.011)	(0.012)	(0.011)	(0.012)	(0.014)	(0.016)
Cold War Period	0.032**	0.032**	0.032**	0.032**	0.131**	0.131**
	(0.008)	(0.008)	(0.008)	(0.008)	(0.009)	(0.010)
Years Since Last Formation	-0.039**	-0.039**	-0.039**	-0.039**	-0.036**	-0.036**
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Years Since Last Formation^2	0.001**	0.001**	0.001**	0.001**	0.001**	0.001**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Years Since Last Formation^3	-0.000**	-0.000**	-0.000**	-0.000**	-0.000**	-0.000**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Constant	-1.510**	-1.510**	-1.495**	-1.495**	-1.647**	-1.647**
	(0.011)	(0.012)	(0.011)	(0.011)	(0.013)	(0.014)
Observations	668944	668944	668944	668944	537282	537282
Log-likelihood	-75174.517	-75174.517	-75166.917	-75166.917	-59760.475	-59760.475
AIC	150369.033	150369.033	150353.833	150353.833	119540.950	119540.950

Standard errors in parentheses

† $p < .1$, * $p < .05$, ** $p < .01$

Table A2 follows the suggestion of King and Roberts (2015) and compares classical and robust standard errors for Models 4-6 to check for model misspecifcation.

Table A2: Probit Regressions of Alliance Formation

	Territorial Disputes					
	Classical SE	Robust SE	Classical SE	Robust SE	Classical SE	Robust SE
Challenger's Probability of Winning (CINC)	0.314*	0.314*				
	(0.128)	(0.123)				
Challenger's Probability of Winning (Adjusted CINC)			0.351**	0.351**		
			(0.133)	(0.127)		
Challenger's Probability of Winning (Expenditures)					0.349*	0.349*
					(0.149)	(0.139)
Target Major Power	0.751**	0.751**	0.765**	0.765**	0.886**	0.886**
	(0.128)	(0.136)	(0.129)	(0.138)	(0.157)	(0.165)
Challenger-Target Contiguity	0.236*	0.236*	0.220*	0.220*	0.179	0.179
	(0.099)	(0.099)	(0.099)	(0.098)	(0.114)	(0.112)
Challenger Alliance	0.298**	0.298**	0.297**	0.297**	0.213†	0.213†
	(0.094)	(0.097)	(0.094)	(0.097)	(0.114)	(0.121)
Pre-Cold War Period	-0.872**	-0.872**	-0.853**	-0.853**	-0.884**	-0.884**
	(0.126)	(0.132)	(0.126)	(0.131)	(0.159)	(0.175)
Cold War Period	-0.283*	-0.283*	-0.288*	-0.288*	-0.183	-0.183
	(0.130)	(0.121)	(0.130)	(0.121)	(0.144)	(0.135)
Years Since Last Formation	-0.040**	-0.040**	-0.039**	-0.039**	-0.045**	-0.045**
	(0.009)	(0.010)	(0.009)	(0.010)	(0.010)	(0.011)
Years Since Last Formation^2	0.001**	0.001**	0.001**	0.001**	0.001**	0.001*
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Years Since Last Formation^3	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Constant	-1.536**	-1.536**	-1.568**	-1.568**	-1.497**	-1.497**
	(0.182)	(0.179)	(0.185)	(0.182)	(0.211)	(0.204)
Observations	6512	6512	6512	6512	4512	4512
Log-likelihood	-594.710	-594.710	-594.169	-594.169	-438.608	-438.608
AIC	1209.421	1209.421	1208.337	1208.337	897.216	897.216

Standard errors in parentheses

† $p < .1$, * $p < .05$, ** $p < .01$

Table A3 employs a sample of politically relevant dyads, dyads that are either contiguous or contain a major power, to test the External Threat Hypothesis.

Table A3: Probit Regressions of Alliance Formation

	Politically Relevant Dyads		
Challenger's Probability of Winning (CINC)	0.164**		
	(0.045)		
Challenger's Probability of Winning (Adjusted CINC)		0.206**	
		(0.047)	
Challenger's Probability of Winning (Expenditures)			0.099*
			(0.050)
Target Major Power	0.500**	0.532**	0.466**
	(0.042)	(0.043)	(0.048)
Challenger-Target Contiguity	0.098**	0.093**	0.065*
	(0.026)	(0.025)	(0.029)
Challenger Alliance	-0.182**	-0.183**	-0.176**
	(0.024)	(0.024)	(0.027)
Pre-Cold War Period	-0.420**	-0.417**	-0.278**
	(0.027)	(0.027)	(0.032)
Cold War Period	0.131**	0.129**	0.239**
	(0.029)	(0.029)	(0.032)
Years Since Last Formation	-0.029**	-0.028**	-0.029**
	(0.002)	(0.002)	(0.002)
Years Since Last Formation^2	0.000**	0.000**	0.000**
	(0.000)	(0.000)	(0.000)
Years Since Last Formation^3	-0.000**	-0.000**	-0.000**
	(0.000)	(0.000)	(0.000)
Constant	-1.668**	-1.704**	-1.698**
	(0.052)	(0.052)	(0.058)
Observations	81270	81270	64293
Log-likelihood	-9544.664	-9541.296	-7652.029
AIC	19109.327	19102.593	15324.058

Standard errors in parentheses

† $p < .1$, * $p < .05$, ** $p < .01$

Table A4 reports results from models that include dummy variables for the region of the territorial dispute. America is the reference category. Observations where the states were engaged in territorial disputes in multiple regions are dropped.

Table A4: Probit Regressions of Alliance Formation

	Territorial Disputes		
Challenger's Probability of Winning (CINC)	0.292*		
	(0.134)		
Challenger's Probability of Winning (Adjusted CINC)		0.288*	
		(0.137)	
Challenger's Probability of Winning (Expenditures)			0.309*
			(0.153)
Europe Dispute	0.438**	0.427**	0.580**
	(0.117)	(0.118)	(0.150)
Africa Dispute	0.202	0.199	0.389*
	(0.128)	(0.129)	(0.156)
Middle East Dispute	0.296†	0.281†	0.329
	(0.163)	(0.163)	(0.212)
Asia Dispute	0.048	0.061	0.280†
	(0.122)	(0.121)	(0.149)
Target Major Power	0.757**	0.754**	0.960**
	(0.130)	(0.131)	(0.163)
Challenger-Target Contiguity	0.152	0.140	0.080
	(0.103)	(0.103)	(0.121)
Challenger Alliance	0.249*	0.251**	0.201†
	(0.097)	(0.097)	(0.117)
Pre-Cold War Period	-0.883**	-0.862**	-0.905**
	(0.132)	(0.131)	(0.167)
Cold War Period	-0.256†	-0.258†	-0.152
	(0.132)	(0.132)	(0.147)
Years Since Last Formation	-0.038**	-0.037**	-0.043**
	(0.009)	(0.009)	(0.011)
Years Since Last Formation^2	0.001**	0.001**	0.001*
	(0.000)	(0.000)	(0.000)
Years Since Last Formation^3	-0.000†	-0.000	-0.000
	(0.000)	(0.000)	(0.000)
Constant	-1.649**	-1.659**	-1.777**
	(0.195)	(0.197)	(0.232)
Observations	6435	6435	4458
Log-likelihood	-576.976	-577.146	-425.772
AIC	1181.952	1182.292	879.543

Standard errors in parentheses

† $p < .1$, * $p < .05$, ** $p < .01$

Table A5 excludes the indicator of contiguity from Models 1-6.

Table A5: Probit Regressions of Alliance Formation

	Directed Dyads			Territorial Disputes		
Challenger's Probability of Winning (CINC)	0.116**			0.282*		
	(0.010)			(0.127)		
Challenger's Probability of Winning (Adjusted CINC)		0.122**			0.341**	
		(0.009)			(0.132)	
Challenger's Probability of Winning (Expenditures)			0.147**			0.335*
			(0.010)			(0.148)
Target Major Power	0.512**	0.498**	0.567**	0.606**	0.638**	0.790**
	(0.018)	(0.018)	(0.021)	(0.111)	(0.114)	(0.144)
Challenger Alliance	-0.277**	-0.281**	-0.250**	0.303**	0.300**	0.216†
	(0.008)	(0.008)	(0.009)	(0.094)	(0.094)	(0.114)
Pre-Cold War Period	-0.463**	-0.459**	-0.354**	-0.898**	-0.880**	-0.909**
	(0.011)	(0.011)	(0.014)	(0.125)	(0.125)	(0.158)
Cold War Period	0.032**	0.033**	0.132**	-0.291*	-0.296*	-0.193
	(0.008)	(0.008)	(0.009)	(0.129)	(0.130)	(0.144)
Years Since Last Formation	-0.039**	-0.039**	-0.036**	-0.041**	-0.040**	-0.046**
	(0.001)	(0.001)	(0.001)	(0.009)	(0.009)	(0.010)
Years Since Last Formation^2	0.001**	0.001**	0.001**	0.001**	0.001**	0.001**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Years Since Last Formation^3	-0.000**	-0.000**	-0.000**	-0.000	-0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Constant	-1.508**	-1.495**	-1.644**	-1.309**	-1.365**	-1.325**
	(0.011)	(0.011)	(0.013)	(0.153)	(0.159)	(0.178)
Observations	668944	668944	537282	6512	6512	4512
Log-likelihood	-75197.343	-75182.419	-59778.589	-597.657	-596.732	-439.855
AIC	150412.686	150382.837	119575.178	1213.313	1211.463	897.709

Standard errors in parentheses

† $p < .1$, * $p < .05$, ** $p < .01$

Table A6 estimates Models 12-18 using only threats and displays of force in the count of MIDs in the past 10 years.

Table A6: Probit Regressions of Alliance Formation

	Directed Dyads			Territorial Disputes		
Number of Low Hostility MIDs in the Past 10 years	0.001	0.019	0.014	-0.003	-0.019	-0.022
	(0.014)	(0.014)	(0.014)	(0.026)	(0.029)	(0.030)
Challenger's Probability of Winning (CINC)			0.116**			0.318*
			(0.010)			(0.128)
Target Major Power		0.454**	0.506**		0.616**	0.755**
		(0.018)	(0.018)		(0.114)	(0.128)
Challenger-Target Contiguity		0.125**	0.126**		0.223*	0.247*
		(0.020)	(0.020)		(0.099)	(0.100)
Challenger Alliance		-0.272**	-0.275**		0.321**	0.304**
		(0.008)	(0.008)		(0.094)	(0.094)
Pre-Cold War Period		-0.466**	-0.468**		-0.852**	-0.870**
		(0.011)	(0.011)		(0.125)	(0.126)
Cold War Period		0.035**	0.032**		-0.250†	-0.265*
		(0.008)	(0.008)		(0.131)	(0.132)
Years Since Last Formation		-0.040**	-0.039**		-0.038**	-0.039**
		(0.001)	(0.001)		(0.009)	(0.009)
Years Since Last Formation^2		0.001**	0.001**		0.001**	0.001**
		(0.000)	(0.000)		(0.000)	(0.000)
Years Since Last Formation^3		-0.000**	-0.000**		-0.000	-0.000
		(0.000)	(0.000)		(0.000)	(0.000)
Constant	-1.954**	-1.444**	-1.510**	-2.025**	-1.370**	-1.551**
	(0.003)	(0.010)	(0.011)	(0.038)	(0.166)	(0.183)
Observations	668944	668944	668944	6512	6512	6512
Log-likelihood	-79050.243	-75246.877	-75174.024	-672.222	-597.514	-594.407
AIC	158104.487	150513.754	150370.049	1348.444	1215.029	1210.814

Standard errors in parentheses

† $p < .1$, * $p < .05$, ** $p < .01$

Table A7 excludes alliances that include the United States or Soviet Union from Models 1-6.

Table A7: Probit Regressions of Alliance Formation

	Directed Dyads			Territorial Disputes		
Challenger's Probability of Winning (CINC)	0.138**			0.441**		
	(0.010)			(0.137)		
Challenger's Probability of Winning (Adjusted CINC)		0.138**			0.491**	
		(0.010)			(0.143)	
Challenger's Probability of Winning (Expenditures)			0.159**			0.532**
			(0.011)			(0.163)
Target Major Power	0.483**	0.466**	0.532**	0.828**	0.849**	0.991**
	(0.019)	(0.019)	(0.022)	(0.132)	(0.134)	(0.165)
Challenger-Target Contiguity	0.148**	0.121**	0.151**	0.297**	0.277**	0.251*
	(0.020)	(0.020)	(0.022)	(0.104)	(0.104)	(0.122)
Challenger Alliance	-0.391**	-0.396**	-0.409**	0.272**	0.272**	0.149
	(0.009)	(0.009)	(0.010)	(0.098)	(0.098)	(0.123)
Pre-Cold War Period	-0.494**	-0.489**	-0.399**	-0.867**	-0.841**	-0.887**
	(0.011)	(0.011)	(0.014)	(0.126)	(0.126)	(0.160)
Cold War Period	-0.171**	-0.170**	-0.082**	-0.465**	-0.473**	-0.370*
	(0.009)	(0.009)	(0.010)	(0.137)	(0.137)	(0.152)
Years Since Last Formation	-0.035**	-0.035**	-0.032**	-0.037**	-0.037**	-0.044**
	(0.001)	(0.001)	(0.001)	(0.009)	(0.009)	(0.011)
Years Since Last Formation^2	0.001**	0.001**	0.001**	0.001**	0.001**	0.001*
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Years Since Last Formation^3	-0.000**	-0.000**	-0.000**	-0.000	-0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Constant	-1.503**	-1.484**	-1.608**	-1.686**	-1.733**	-1.676**
	(0.012)	(0.011)	(0.013)	(0.191)	(0.196)	(0.225)
Observations	665951	665951	534749	6496	6496	4497
Log-likelihood	-64801.827	-64793.376	-50937.720	-544.261	-543.407	-392.505
AIC	129623.653	129606.753	101895.439	1108.522	1106.813	805.010

Standard errors in parentheses

† $p < .1$, * $p < .05$, ** $p < .01$

Table A8 excludes alliances that specify the creation of a stand-alone organization with a permanent bureaucracy that has a purpose other than military cooperation/coordination from Models 1-6.

Table A8: Probit Regressions of Alliance Formation

	Directed Dyads			Territorial Disputes		
Challenger's Probability of Winning (CINC)	0.025*			0.270*		
	(0.011)			(0.132)		
Challenger's Probability of Winning (Adjusted CINC)		0.026*			0.296*	
		(0.010)			(0.136)	
Challenger's Probability of Winning (Expenditures)			0.045**			0.263†
			(0.011)			(0.155)
Target Major Power	0.511**	0.508**	0.589**	0.701**	0.710**	0.824**
	(0.019)	(0.019)	(0.022)	(0.130)	(0.131)	(0.160)
Challenger-Target Contiguity	0.134**	0.129**	0.126**	0.213*	0.199*	0.141
	(0.020)	(0.020)	(0.023)	(0.101)	(0.100)	(0.117)
Challenger Alliance	-0.350**	-0.351**	-0.304**	0.288**	0.287**	0.197†
	(0.009)	(0.009)	(0.011)	(0.096)	(0.096)	(0.119)
Pre-Cold War Period	-0.376**	-0.375**	-0.256**	-0.737**	-0.721**	-0.686**
	(0.012)	(0.012)	(0.016)	(0.136)	(0.136)	(0.175)
Cold War Period	0.114**	0.115**	0.243**	-0.153	-0.157	0.007
	(0.009)	(0.009)	(0.010)	(0.140)	(0.140)	(0.162)
Years Since Last Formation	-0.040**	-0.040**	-0.037**	-0.042**	-0.042**	-0.050**
	(0.001)	(0.001)	(0.001)	(0.009)	(0.009)	(0.011)
Years Since Last Formation^2	0.001**	0.001**	0.001**	0.001**	0.001**	0.001**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Years Since Last Formation^3	-0.000**	-0.000**	-0.000**	-0.000*	-0.000†	-0.000†
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Constant	-1.601**	-1.598**	-1.770**	-1.622**	-1.645**	-1.593**
	(0.012)	(0.012)	(0.014)	(0.190)	(0.193)	(0.224)
Observations	665356	665356	534148	6502	6502	4503
Log-likelihood	-61889.788	-61889.395	-47993.002	-564.154	-563.864	-410.692
AIC	123799.576	123798.791	96006.004	1148.308	1147.727	841.385

Standard errors in parentheses

† $p < .1$, * $p < .05$, ** $p < .01$

Table A9 tests the External Threat Hypothesis using only the military personnel component of the CINC score.

Table A9: Probit Regressions of Alliance Formation

	Directed Dyads	Territorial Disputes
Challenger's Probability of Winning (Personnel)	0.104**	0.208†
	(0.010)	(0.125)
Target Major Power	0.531**	0.642**
	(0.019)	(0.125)
Challenger-Target Contiguity	0.133**	0.198†
	(0.020)	(0.102)
Challenger Alliance	-0.270**	0.250*
	(0.008)	(0.098)
Pre-Cold War Period	-0.413**	-0.587**
	(0.012)	(0.145)
Cold War Period	0.083**	-0.059
	(0.008)	(0.147)
Years Since Last Formation	-0.041**	-0.042**
	(0.001)	(0.009)
Years Since Last Formation^2	0.001**	0.001**
	(0.000)	(0.000)
Years Since Last Formation^3	-0.000**	-0.000
	(0.000)	(0.000)
Constant	-1.536**	-1.624**
	(0.012)	(0.193)
Observations	640684	6296
Log-likelihood	-68790.284	-554.348
AIC	137600.569	1128.696

Standard errors in parentheses

† $p < .1$, * $p < .05$, ** $p < .01$