

Theory, Data, and Deterrence:
A Response to Kenwick, Vasquez, and Powers

Web Appendix

Brett Ashley Leeds
Rice University
leeds@rice.edu

Jesse C. Johnson
University of Kentucky
j.johnson@uky.edu

This document includes results for all of the empirical analyses mentioned in the text. Before each analysis is a brief description of the analysis.

Table A1 replicates Table 1 in Johnson and Leeds (2011) (hereafter JL).

Table A1: Probit Regression of Dispute Initiation, 1816-2000

	Column 1	
Potential Target has a Relevant Defensive Alliance	-0.062**	(0.015)
Potential Challenger is a member of a Defensive Alliance	-0.068**	(0.016)
Potential Challenger has a relevant Offensive Alliance	0.276**	(0.029)
Potential Challenger has a relevant Neutrality Pact	0.315**	(0.025)
Distance	-0.384**	(0.006)
Challenger's Likelihood of Winning	0.161**	(0.022)
Joint Democracy	-0.155**	(0.027)
Similarity in Alliance Portfolios	-0.455**	(0.041)
Peace Years	-0.042**	(0.001)
Peace Years ²	0.001**	(0.000)
Peace Years ³	-0.000**	(0.000)
Constant	0.827**	(0.068)
Observations	1077992	

Standard errors in parentheses

* $p < .05$, ** $p < .01$

Figure A1 replicates Figure 1 in JL.

Figure A1: Predicted Probabilities of Dispute Initiation

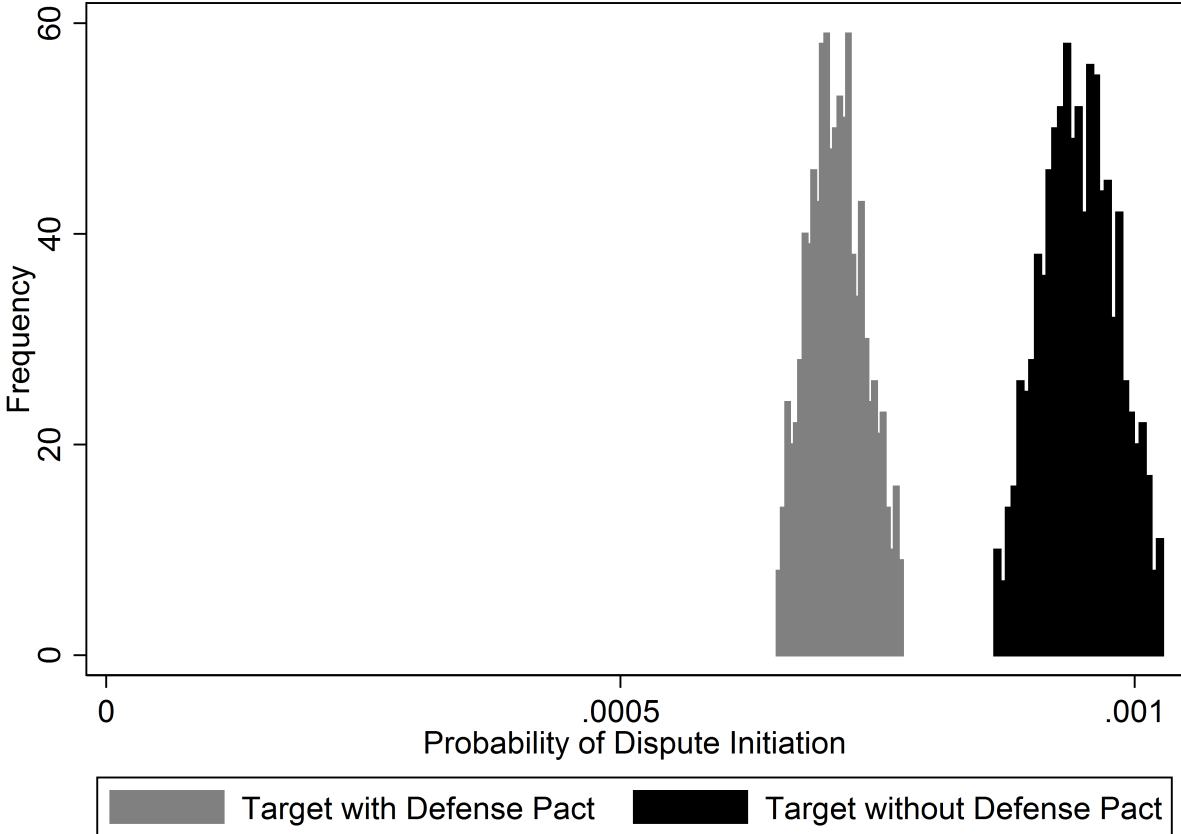


Figure A2 reports the duration of every defense pact in the Alliance Treaty Obligations and Provisions (ATOP) data (Leeds et al. 2002). Defense pacts that were still in effect when the data collection efforts ended (12/31/2003) were coded as ending December 31, 2003. As a result, this figure underreports the duration of defense pacts.

Figure A2: Predicted Probabilities of Dispute Initiation

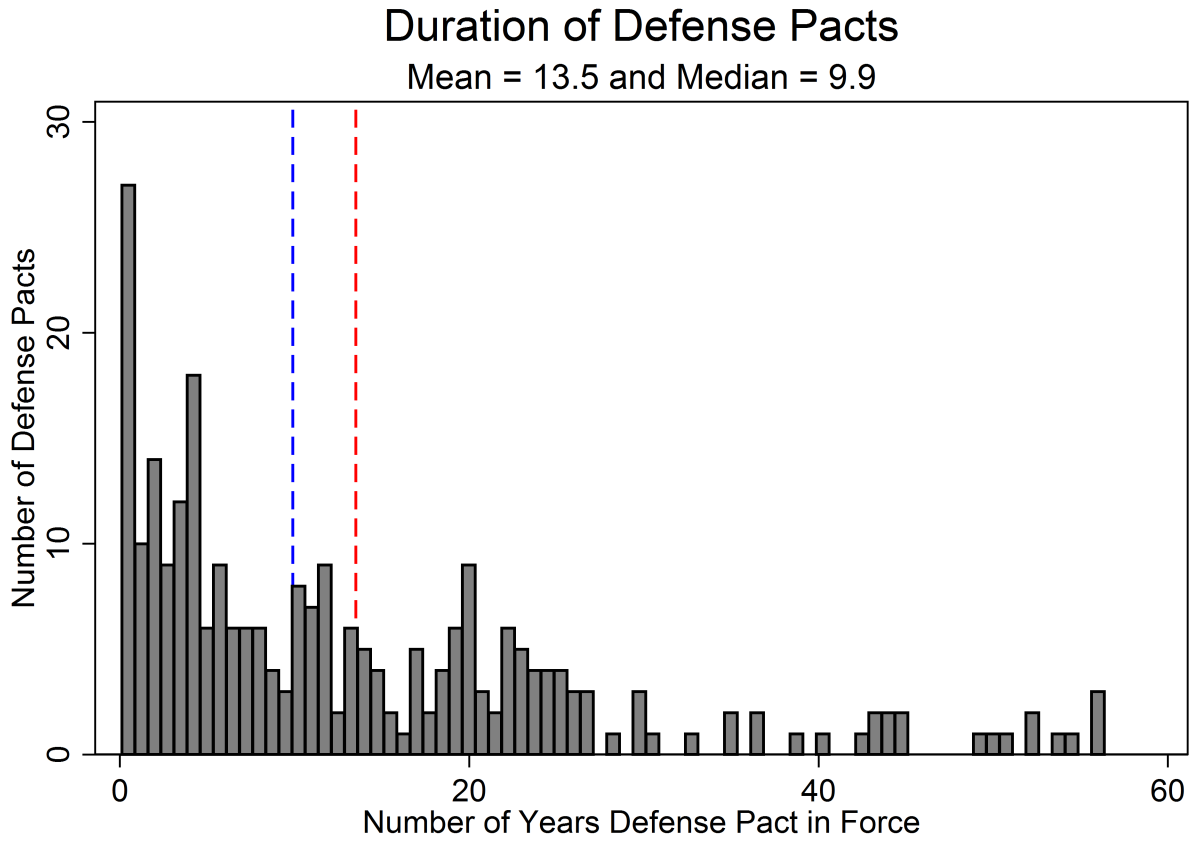


Table A2 Column 1 replicates the model used to produce Figure 1A in Kenwick, Vasquez, and Powers (2015) (hereafter KVP) and Column 2 presents the same model without the preprocessing matching strategy constructed by KVP but including the control variables directly in the model. A minor point worth noting is that, following KVP, these results were estimated using a logit model instead of the probit specification used in JL and the rest of the current web appendix.

Table A2: Logit Regressions of Dispute Initiation, 1816-2000

	Column 1		Column 2	
KVP Defensive Alliance Treatment Variable	0.353**	(0.126)	0.345**	(0.132)
Potential Challenger has a relevant Offensive Alliance			-0.219	(0.209)
Potential Challenger has a relevant Neutrality Pact			-0.166	(0.187)
Potential Target has a relevant Offensive Alliance			0.345	(0.283)
Potential Target has a relevant Neutrality Pact			-0.228	(0.218)
Contiguity			2.152**	(0.121)
Challenger Major Power			1.746**	(0.114)
Target Major Power			0.616**	(0.155)
Joint Democracy			-1.102**	(0.286)
Number of Rival Years in the Past 5 Years			0.235**	(0.030)
Number of Militarized Disputes in the Past 5 Years			1.260**	(0.099)
Constant	-4.794**	(0.057)	-5.567**	(0.081)
Observations	44929		45721	

Standard errors in parentheses

* $p < .05$, ** $p < .01$

Table A3a reports balance statistics after employing Coarsened Exact Matching (CEM) (Iacus et al. 2012) to find directed dyad-years that are similar to the directed dyad-years where the potential target had a relevant defense pact. Observations are matched exactly on the dichotomous variables: joint democracy, challenger offense pacts, challenger neutrality pacts, and challenger defense pacts. The natural log of the distance between the potential target and challenger was coarsened into bins of (0-4), (4-6), (6-8), and (8-10). The challengers likelihood of winning was coarsened into bins of (0-.2), (.1-.3), (.3-.5), (.5-.7), (.7-.9), and (.98-1). The similarity in alliance portfolios was coarsened into bins of (-.2-.4), (.4-.63), (.63-.79), (.79-.92), (.92-.97), and (.97-1). The number of years of peace in the directed dyad was coarsened into bins of (0-1), (1-3), (3-9), (9-22), (22-39), (39-74), and (74-184).

Table A3a: Covariate Balance between Directed Dyad-Years

	L_1	mean	min	25%	50%	75%	max
Potential Challenger Defensive Alliance	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Potential Challenger Offensive Alliance	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Potential Challenger Neutrality Pact	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Distance	0.136	-0.004	0.000	0.088	-0.144	-0.046	0.000
Challenger's Likelihood of Winning	0.024	-0.001	0.000	-0.001	-0.002	-0.001	0.000
Joint Democracy	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Similarity in Alliance Portfolios	0.268	-0.020	0.000	-0.032	-0.006	-0.043	0.000
Peace Years	0.066	1.897	0.000	0.000	0.000	1.000	0.000

Global Imbalance: $L_1 = 0.993$

	Target without Defense Pact	Target with Defense Pact
All	492525	585467
Matched	479961	549895
Unmatched	12564	35572

Table A3b estimates the JL model using the matched sample described in Table A3a. Column 1 reports estimates from a model that includes just the defense pact treatment variable and Column 2 reports estimates from a model that also includes the control variables to control for any remaining differences in the covariates between the two groups.

Table A3b: Probit Regressions of Dispute Initiation, 1816-2000

	Column 1	Column 2
Potential Target has a Relevant Defensive Alliance	-0.350** (0.012)	-0.378** (0.013)
Potential Challenger is a member of a Defensive Alliance		-0.291** (0.013)
Potential Challenger has a relevant Offensive Alliance		0.113** (0.034)
Potential Challenger has a relevant Neutrality Pact		0.435** (0.021)
Distance		-0.353** (0.006)
Challenger's Likelihood of Winning		0.201** (0.019)
Joint Democracy		-0.290** (0.029)
Similarity in Alliance Portfolios		-0.861** (0.038)
Peace Years		-0.035** (0.001)
Peace Years ²		0.001** (0.000)
Peace Years ³		-0.000** (0.000)
Constant	-2.572** (0.007)	1.236** (0.068)
Observations	1029856	1029856

Standard errors in parentheses

* $p < .05$, ** $p < .01$

Table A4a reports balance statistics after employing CEM (Iacus et al. 2012) to find directed dyad-years that are similar to the directed dyad-years where the potential target had a relevant defense pact. Observations are matched exactly on the dichotomous variables: joint democracy, challenger offense pacts, challenger neutrality pacts, and challenger defense pacts. The default binning algorithm, Sturge’s rule, is used to coarsen the continuous variables.

Table A4a: Covariate Balance between Directed Dyad-Years

	L_1	mean	min	25%	50%	75%	max
Potential Challenger Defensive Alliance	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Potential Challenger Offensive Alliance	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Potential Challenger Neutrality Pact	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Distance	0.090	-0.002	0.000	0.000	-0.021	0.019	0.000
Challenger’s Likelihood of Winning	0.036	-0.001	0.000	0.000	0.000	0.001	0.000
Joint Democracy	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Similarity in Alliance Portfolios	0.201	-0.002	-0.054	-0.001	-0.001	-0.002	0.000
Peace Years	0.047	0.073	0.000	0.000	0.000	0.000	0.000

Global Imbalance: $L_1 = 0.990$

	Target without Defense Pact	Target with Defense Pact
All	492525	585467
Matched	403920	372797
Unmatched	88605	212670

Table A4b estimates the JL model using the matched sample described in Table A4a. Column 1 reports estimates from a model that includes just the defense pact treatment variable and Column 2 reports estimates from a model that also includes the control variables to control for any remaining differences in the covariates between the two groups.

Table A4b: Probit Regressions of Dispute Initiation, 1816-2000

	Column 1	Column 2
Potential Target has a Relevant Defensive Alliance	-0.288** (0.016)	-0.327** (0.017)
Potential Challenger is a member of a Defensive Alliance		-0.317** (0.017)
Potential Challenger has a relevant Offensive Alliance		0.229** (0.051)
Potential Challenger has a relevant Neutrality Pact		0.273** (0.041)
Distance		-0.407** (0.009)
Challenger's Likelihood of Winning		0.108** (0.023)
Joint Democracy		-0.074 (0.039)
Similarity in Alliance Portfolios		-1.274** (0.057)
Peace Years		-0.039** (0.002)
Peace Years ²		0.001** (0.000)
Peace Years ³		-0.000** (0.000)
Constant	-2.680** (0.009)	1.971** (0.105)
Observations	776717	776717

Standard errors in parentheses

* $p < .05$, ** $p < .01$

Table A5a reports balance statistics after employing CEM (Iacus et al. 2012) to find directed dyad-years that are similar to the directed dyad-years where the potential target had a relevant defense pact. Observations are matched exactly on the dichotomous variables: joint democracy, challenger offense pacts, challenger neutrality pacts, and challenger defense pacts. Equally spaced bins are used to coarsen the continuous variables.

Table A5a: Covariate Balance between Directed Dyad-Years

	L_1	mean	min	25%	50%	75%	max
Potential Challenger Defensive Alliance	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Potential Challenger Offensive Alliance	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Potential Challenger Neutrality Pact	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Distance	0.083	-0.004	0.000	0.010	-0.051	0.014	0.000
Challenger's Likelihood of Winning	0.044	-0.002	0.000	-0.001	0.000	-0.001	0.000
Joint Democracy	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Similarity in Alliance Portfolios	0.212	-0.001	0.004	-0.001	-0.002	-0.004	0.000
Peace Years	0.051	0.146	0.000	0.000	0.000	1.000	0.000

Global Imbalance: $L_1 = 0.991$

	Target without Defense Pact	Target with Defense Pact
All	492525	585467
Matched	440552	426359
Unmatched	51973	159108

Table A5b estimates the JL model using the matched sample described in Table A5a. Column 1 reports estimates from a model that includes just the defense pact treatment variable and Column 2 reports estimates from a model that also includes the control variables to control for any remaining differences in the covariates between the two groups.

Table A5b: Probit Regressions of Dispute Initiation, 1816-2000

	Column 1	Column 2
Potential Target has a Relevant Defensive Alliance	-0.295** (0.014)	-0.329** (0.016)
Potential Challenger is a member of a Defensive Alliance		-0.370** (0.016)
Potential Challenger has a relevant Offensive Alliance		0.336** (0.039)
Potential Challenger has a relevant Neutrality Pact		0.407** (0.030)
Distance		-0.392** (0.008)
Challenger's Likelihood of Winning		0.207** (0.021)
Joint Democracy		-0.228** (0.040)
Similarity in Alliance Portfolios		-1.098** (0.050)
Peace Years		-0.031** (0.002)
Peace Years ²		0.001** (0.000)
Peace Years ³		-0.000** (0.000)
Constant	-2.655** (0.008)	1.669** (0.091)
Observations	866911	866911

Standard errors in parentheses

* $p < .05$, ** $p < .01$

Table A6a reports balance statistics after employing CEM (Iacus et al. 2012) to find directed dyad-years that are similar to the directed dyad-years where the potential target had a relevant defense pact. Observations are matched exactly on the dichotomous variables: joint democracy, challenger offense pacts, challenger neutrality pacts, and challenger defense pacts. Smaller equally spaced bins are used to coarsen the continuous variables.

Table A6a: Covariate Balance between Directed Dyad-Years

	L_1	mean	min	25%	50%	75%	max
Potential Challenger Defensive Alliance	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Potential Challenger Offensive Alliance	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Potential Challenger Neutrality Pact	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Distance	0.074	-0.001	0.000	-0.002	0.000	0.003	0.000
Challenger's Likelihood of Winning	0.038	-0.001	0.000	-0.001	0.000	0.001	0.000
Joint Democracy	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Similarity in Alliance Portfolios	0.146	0.000	-0.013	-0.001	0.000	-0.002	0.000
Peace Years	0.045	0.023	0.000	0.000	0.000	0.000	3.000

Global Imbalance: $L_1 = 0.982$

	Target without Defense Pact	Target with Defense Pact
All	492525	585467
Matched	296832	249718
Unmatched	195693	335749

Table A6b estimates the JL model using the matched sample described in Table A6a. Column 1 reports estimates from a model that includes just the defense pact treatment variable and Column 2 reports estimates from a model that also includes the control variables to control for any remaining differences in the covariates between the two groups.

Table A6b: Probit Regressions of Dispute Initiation, 1816-2000

	Column 1	Column 2
Potential Target has a Relevant Defensive Alliance	-0.270** (0.020)	-0.299** (0.022)
Potential Challenger is a member of a Defensive Alliance		-0.433** (0.023)
Potential Challenger has a relevant Offensive Alliance		0.335** (0.074)
Potential Challenger has a relevant Neutrality Pact		0.198** (0.064)
Distance		-0.448** (0.013)
Challenger's Likelihood of Winning		0.248** (0.028)
Joint Democracy		-0.233** (0.067)
Similarity in Alliance Portfolios		-1.443** (0.078)
Peace Years		-0.033** (0.002)
Peace Years ²		0.001** (0.000)
Peace Years ³		-0.000** (0.000)
Constant	-2.740** (0.011)	2.351** (0.146)
Observations	546550	546550

Standard errors in parentheses

* $p < .05$, ** $p < .01$

Figure A3 reports predicted probabilities of dispute initiation and 95% confidence intervals based on the matching analyses presented in Tables A3-A6. The predicted probabilities were generated using Clarify (King et al. 2000) while holding the control variables at their means. The top left panel is based on the results in column 2 of Table A3b. The top right panel is based on the results in column 2 of Table A4b. The bottom left panel is based on the results in column 2 of Table A5b. The bottom right panel is based on the results in column 2 of Table A6b.

Figure A3: Predicted Probabilities of Dispute Initiation

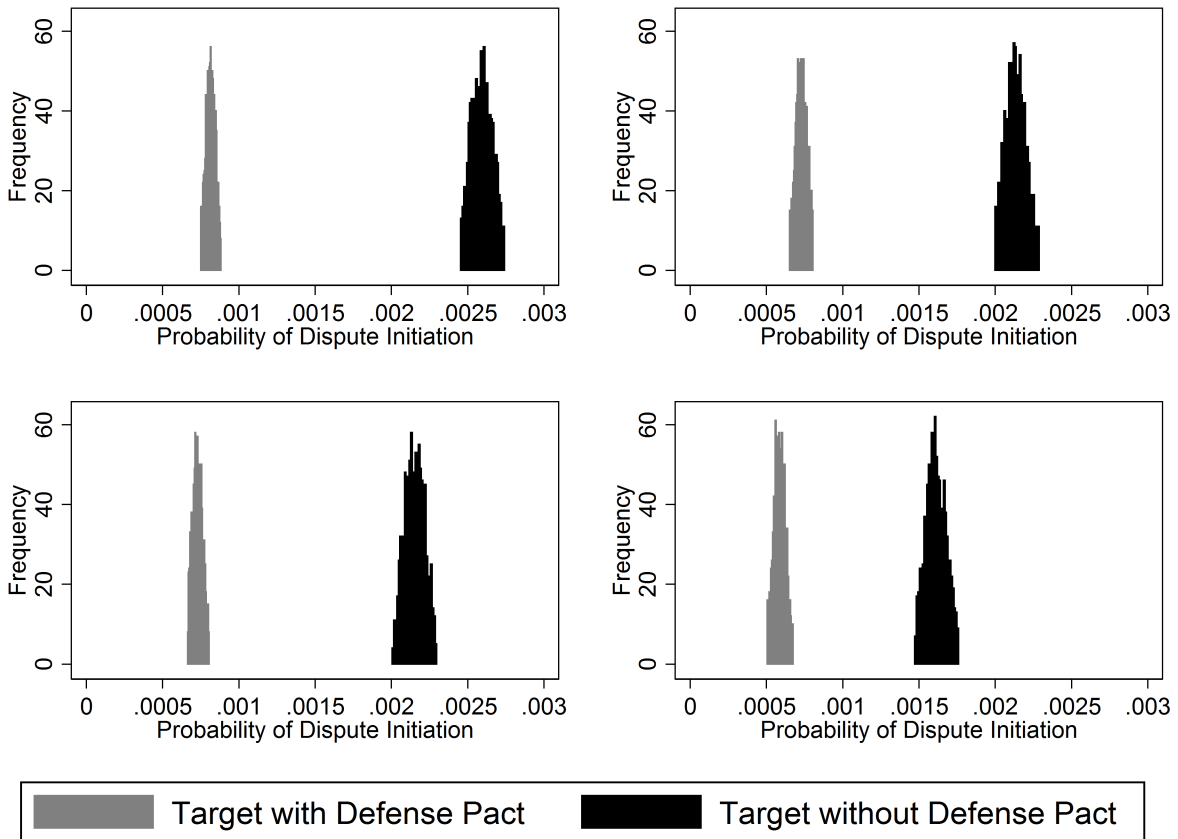


Table A7 estimates the JL model (Table A1) with the KVP control variables.

Table A7: Probit Regression of Dispute Initiation, 1816-2000

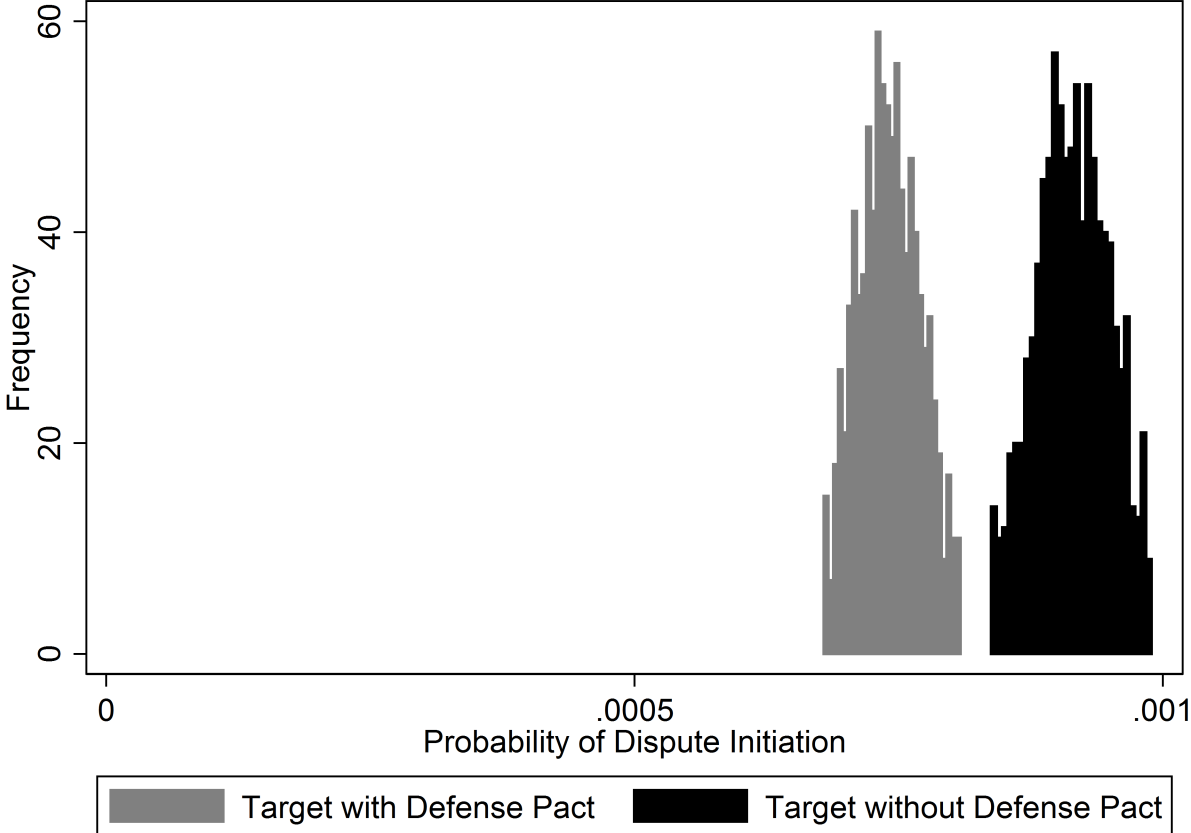
	Column 1	
Potential Target has a Relevant Defensive Alliance	-0.041*	(0.016)
Potential Challenger has a relevant Offensive Alliance	0.079*	(0.033)
Potential Challenger has a relevant Neutrality Pact	0.020	(0.030)
Potential Target has a relevant Offensive Alliance	0.102**	(0.036)
Potential Target has a relevant Neutrality Pact	-0.064	(0.035)
Contiguity	0.838**	(0.020)
Challenger Major Power	0.545**	(0.020)
Target Major Power	0.283**	(0.023)
Joint Democracy	-0.038	(0.027)
Number of Rival Years in the Past 5 Years	0.112**	(0.005)
Number of Militarized Disputes in the Past 5 Years	0.545**	(0.013)
Constant	-3.218**	(0.014)
Observations	1077992	

Standard errors in parentheses

* $p < .05$, ** $p < .01$

Figure A4 reports predicted probabilities of dispute initiation and 95% confidence intervals based on the results from the JL model with the KVP control variables (Table A7). The predicted probabilities were generated using Clarify (King et al. 2000) while holding the control variables at their means.

Figure A4: Predicted Probabilities of Dispute Initiation



References

- Iacus, Stefano M, Gary King and Giuseppe Porro. 2012. “Causal Inference without Balance Checking: Coarsened Exact Matching.” *Political analysis* 20(1):1–24.
- Johnson, Jesse C. and Brett Ashley Leeds. 2011. “Defense Pacts: A Prescription for Peace?” *Foreign Policy Analysis* 7(1):45–65.
- Kenwick, Michael R., John A. Vasquez and Matthew A. Powers. 2015. “Do Alliances Really Deter?” *Journal of Politics* .
- King, Gary, Michael Tomz and Jason Wittenberg. 2000. “Making the Most Of Statistical Analyses: Improving Interpretation and Presentation.” *American Journal of Political Science* 44(2):341–355.
- Leeds, Brett Ashley, Jeffrey M. Ritter, Sara McLaughlin Mitchell and Andrew Long. 2002. “Alliance Treaty Obligations and Provisions, 1815-1944.” *International Interactions* 28(3):237–260.