

# **Appendix for “Alliances, State Preferences, and Trade Networks: The Impact of United States Sanctions on Dual-use Trade”**

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## **Appendix A. Introduction**

This supplementary appendix presents the results of additional models intended to demonstrate the robustness of our results. We also present summary statistics broken down by the importer's US sanction status.

## Appendix B. ADL model

In this section, we present results by rerunning the analysis using autoregressive distributed lag (ADL) models. We added lags of the dependent variable until AR(1) serial correlation was eliminated and also produced robust standard errors clustered on the dyad. Notably, these models do not incorporate year fixed effects given our use of multiple lags. The results are mostly similar to those we obtain with the main models. The main difference is that for model 2 exporter US proximity (when the importer is under US sanctions) become statistically insignificant. Also, in this case, the result for US export controls on the importer actually reverses (with statistical significance).

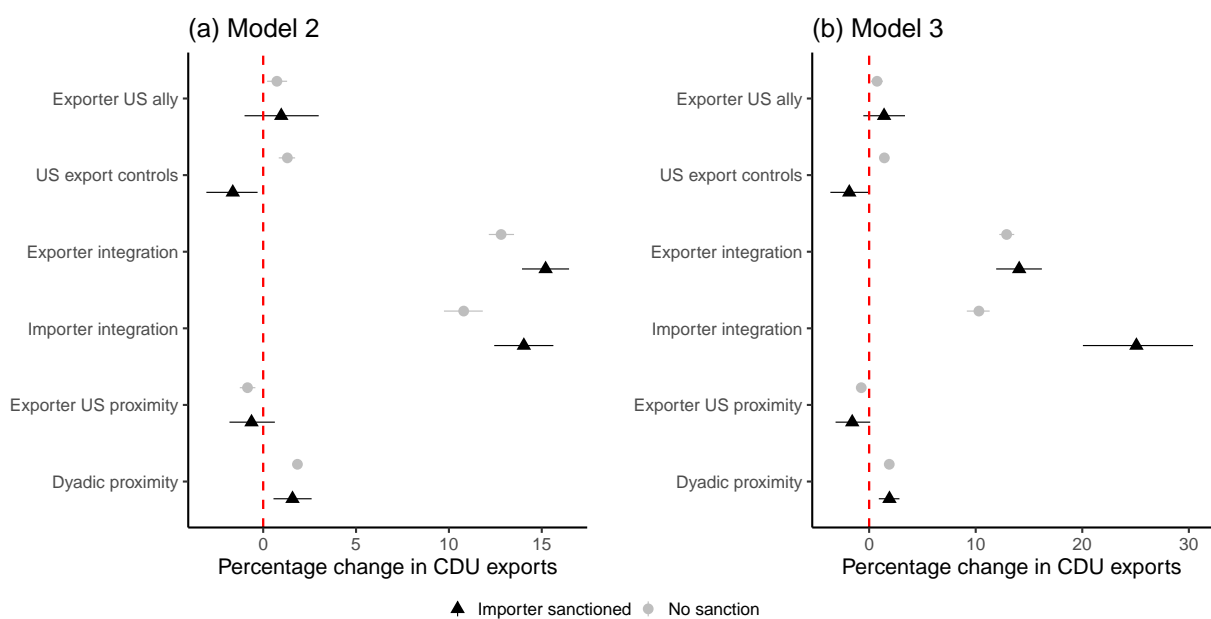


Figure 1: Marginal effects of the main variables with 95 percent confidence intervals. For the four continuous variables, we plot the effects when increasing the respective variable by 1 standard deviation.

Table 1: Coefficients and 95 percent confidence intervals for ADL models.

	DV = log CDU		
	Model 1	Model 2	Model 3
log CDU <sub>t-1</sub>	0.572*** (0.568, 0.577)	0.572*** (0.568, 0.577)	0.572*** (0.567, 0.576)
log CDU <sub>t-2</sub>	0.174*** (0.169, 0.179)	0.174*** (0.169, 0.179)	0.174*** (0.169, 0.179)
log CDU <sub>t-3</sub>	0.103*** (0.098, 0.108)	0.103*** (0.098, 0.108)	0.103*** (0.098, 0.108)
log CDU <sub>t-4</sub>	0.089*** (0.084, 0.093)	0.089*** (0.085, 0.094)	0.089*** (0.085, 0.094)
Importer US sanction	-0.027*** (-0.037, -0.018)	-0.147* (-0.262, -0.033)	0.216 (-0.007, 0.438)
Exporter US ally	0.008* (0.002, 0.013)	0.007* (0.001, 0.013)	0.007* (0.001, 0.014)
US export controls	0.060*** (0.040, 0.079)	0.058*** (0.039, 0.078)	0.065*** (0.045, 0.085)
Exporter integration	0.751*** (0.716, 0.787)	0.742*** (0.706, 0.778)	0.747*** (0.711, 0.784)
Importer integration	0.871*** (0.795, 0.946)	0.843*** (0.767, 0.919)	0.808*** (0.730, 0.885)
Exporter US proximity	-0.046*** (-0.070, -0.022)	-0.049*** (-0.073, -0.024)	-0.043*** (-0.068, -0.018)
Dyadic proximity	0.125*** (0.108, 0.141)	0.123*** (0.106, 0.141)	0.126*** (0.108, 0.143)
Exporter log GDP	0.016*** (0.013, 0.019)	0.016*** (0.013, 0.019)	0.016*** (0.013, 0.019)
Importer log GDP	0.003 (-0.001, 0.008)	0.004 (-0.000, 0.008)	0.005* (0.001, 0.010)
Exporter MECR	0.046*** (0.037, 0.054)	0.046*** (0.038, 0.054)	0.043*** (0.034, 0.051)
Importer MECR	-0.006 (-0.015, 0.003)	-0.010* (-0.019, -0.001)	-0.001 (-0.010, 0.009)
Exporter liberal democracy	-0.064*** (-0.078, -0.050)	-0.064*** (-0.078, -0.050)	-0.064*** (-0.078, -0.049)
Importer liberal democracy	-0.045*** (-0.058, -0.032)	-0.039*** (-0.052, -0.026)	-0.045*** (-0.059, -0.032)
log Distance	-0.065*** (-0.068, -0.061)	-0.065*** (-0.069, -0.062)	-0.064*** (-0.067, -0.060)
Importer sanct X Exporter ally		0.002 (-0.017, 0.022)	0.007 (-0.014, 0.028)
Importer sanct X Exp cont		-0.132*** (-0.193, -0.071)	-0.151*** (-0.232, -0.071)
Importer sanct X Exp cent		0.128*** (0.062, 0.195)	0.066 (-0.053, 0.184)
Importer sanct X Imp cent		0.238*** (0.161, 0.314)	1.030*** (0.716, 1.344)
Importer sanct X Exp prox		0.012 (-0.057, 0.081)	-0.048 (-0.142, 0.045)
Importer sanct X Dyad prox		-0.018 (-0.088, 0.052)	0.001 (-0.072, 0.073)
Importer sanct X Exp GDP			0.003 (-0.006, 0.012)
Importer sanct X Imp GDP			-0.036*** (-0.054, -0.018)
Importer sanct X Exp MECR			0.038* (0.008, 0.067)
Importer sanct X Imp MECR			-0.067*** (-0.092, -0.042)
Importer sanct X Exp libdem			0.007 (-0.045, 0.058)
Importer sanct X Imp libdem			0.010 (-0.039, 0.059)
Importer sanct X Dist			-0.024*** (-0.035, -0.013)
Observations	196,109	196,109	196,109
R <sup>2</sup>	0.945	0.945	0.945
Adjusted R <sup>2</sup>	0.945	0.945	0.945
F Statistic	185,653.700***	139,282.900***	107,868.100***

Note: all models include year fixed effects. \* p less than 0.05, \*\* p less than 0.01, \*\*\* p less than 0.001

## Appendix C. Item response theory modeling

In this section, we present results by rerunning the analysis using item response theory modeling for the US export control strictness variable. The results are mostly similar to those we obtain with the main models.

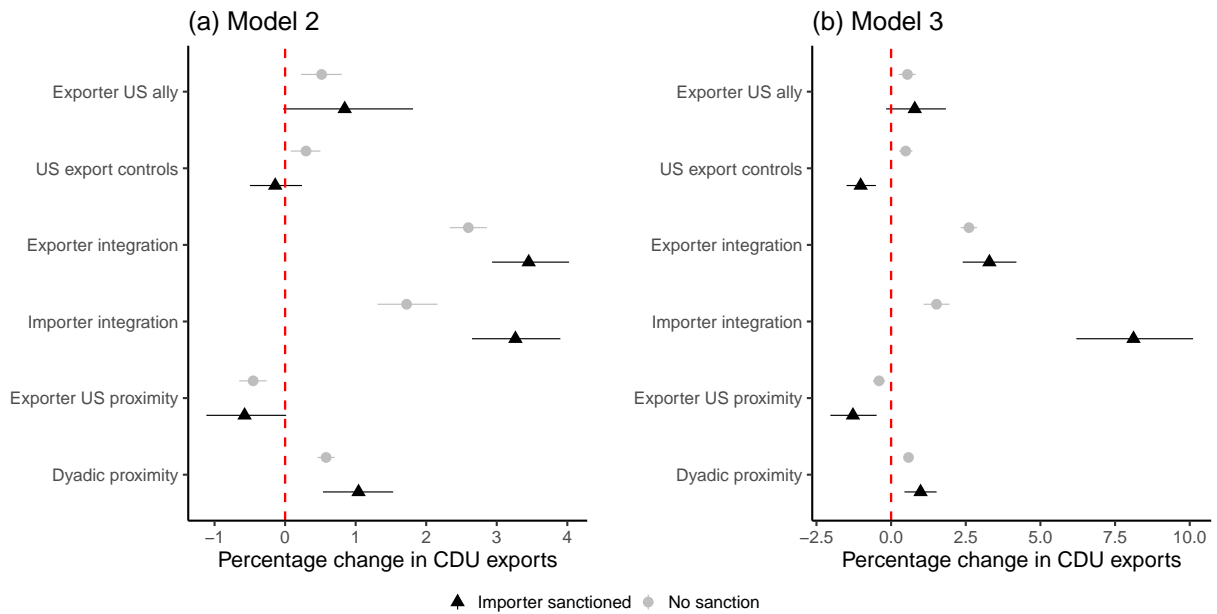


Figure 2: Marginal effects of the main variables with 95 percent confidence intervals. For the four continuous variables, we plot the effects when increasing the respective variable by 1 standard deviation.

Table 2: Coefficients and 95 percent confidence intervals for GLS models with ARMA residual structure grouped by dyad.

	DV = $\Delta \log \text{CDU}$		
	Model 1	Model 2	Model 3
Importer US sanction	-0.012*** (-0.017, -0.007)	-0.140*** (-0.190, -0.090)	-0.003 (-0.112, 0.105)
Exporter US ally	0.005*** (0.003, 0.008)	0.005*** (0.002, 0.008)	0.005*** (0.003, 0.008)
US export controls	0.002* (0.000, 0.004)	0.003** (0.001, 0.005)	0.005*** (0.003, 0.007)
Exporter integration	0.162*** (0.147, 0.178)	0.158*** (0.142, 0.174)	0.159*** (0.143, 0.175)
Importer integration	0.153*** (0.117, 0.188)	0.141*** (0.105, 0.176)	0.125*** (0.088, 0.161)
Exporter US proximity	-0.027*** (-0.038, -0.016)	-0.026*** (-0.038, -0.015)	-0.023*** (-0.035, -0.011)
Dyadic proximity	0.045*** (0.037, 0.052)	0.039*** (0.031, 0.047)	0.039*** (0.031, 0.047)
Exporter log GDP	-0.001 (-0.002, 0.000)	-0.001 (-0.002, 0.000)	-0.001 (-0.002, 0.000)
Importer log GDP	-0.001 (-0.003, 0.001)	-0.001 (-0.003, 0.001)	-0.001 (-0.003, 0.001)
Exporter MECR	0.023*** (0.020, 0.027)	0.024*** (0.020, 0.027)	0.023*** (0.019, 0.027)
Importer MECR	0.005* (0.001, 0.010)	0.004 (-0.001, 0.008)	0.011*** (0.006, 0.016)
Exporter liberal democracy	-0.049*** (-0.056, -0.043)	-0.049*** (-0.056, -0.042)	-0.051*** (-0.058, -0.044)
Importer liberal democracy	-0.034*** (-0.039, -0.028)	-0.029*** (-0.035, -0.023)	-0.032*** (-0.038, -0.026)
log Distance	-0.007*** (-0.008, -0.006)	-0.007*** (-0.009, -0.006)	-0.007*** (-0.008, -0.006)
Importer sanct X Exporter ally		0.003 (-0.006, 0.012)	0.002 (-0.008, 0.013)
Importer sanct X Exp cont		-0.004* (-0.008, -0.000)	-0.015*** (-0.020, -0.009)
Importer sanct X Exp cent		0.052** (0.020, 0.084)	0.041 (-0.017, 0.100)
Importer sanct X Imp cent		0.124*** (0.087, 0.162)	0.517*** (0.359, 0.675)
Importer sanct X Exp prox		-0.008 (-0.042, 0.026)	-0.051* (-0.097, -0.005)
Importer sanct X Dyad prox		0.031 (-0.005, 0.067)	0.027 (-0.009, 0.063)
Importer sanct X Exp GDP			-0.000 (-0.005, 0.004)
Importer sanct X Imp GDP			-0.017*** (-0.025, -0.008)
Importer sanct X Exp MECR			0.010 (-0.004, 0.024)
Importer sanct X Imp MECR			-0.051*** (-0.066, -0.037)
Importer sanct X Exp libdem			0.023 (-0.002, 0.049)
Importer sanct X Imp libdem			0.011 (-0.011, 0.033)
Importer sanct X Dist			-0.006* (-0.011, -0.001)
Constant	-0.028 (-0.057, 0.000)	-0.014 (-0.044, 0.015)	-0.020 (-0.050, 0.010)
Observations	265,447	265,447	265,447
Log Likelihood	-199,909.400	-199,900.000	-199,893.900
Akaike Inf. Crit.	399,890.900	399,884.100	399,885.700
Bayesian Inf. Crit.	400,268.500	400,324.600	400,399.700

Note: all models include year fixed effects. \* p less than 0.05, \*\* p less than 0.01, \*\*\* p less than 0.001

## Appendix D. Adding a lagged DV

In this section, we present results by rerunning the analysis adding a lagged dependent variable to each of our main models, effectively turning them into error correction models. The results are mostly similar to those from the main models. The main difference is that the impact of exporter US alliance (when the importer is not under US sanctions) becomes statistically insignificant. Additionally, for model 2 exporter US proximity (when the importer is under US sanctions) is also insignificant. However, given that we use year fixed effects along with LDVs, we take these results with a grain of salt.

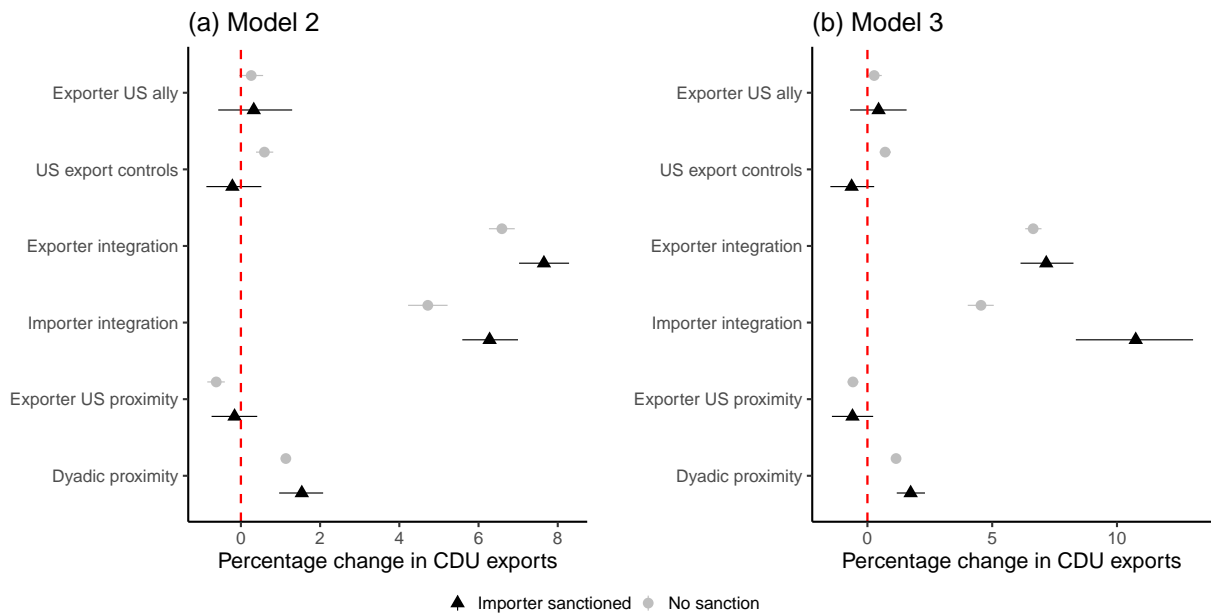


Figure 3: Marginal effects of the main variables with 95 percent confidence intervals. For the four continuous variables, we plot the effects when increasing the respective variable by 1 standard deviation.

Table 3: Coefficients and 95 percent confidence intervals for ECM models with ARMA residual structure grouped by dyad.

	DV = $\Delta \log \text{CDU}$		
	Model 1	Model 2	Model 3
log CDU <sub>t-1</sub>	-0.034*** (-0.035, -0.033)	-0.034*** (-0.035, -0.033)	-0.034*** (-0.035, -0.033)
Importer US sanction	-0.013*** (-0.017, -0.008)	-0.131*** (-0.191, -0.070)	-0.001 (-0.116, 0.115)
Exporter US ally	0.003 (-0.000, 0.006)	0.003 (-0.000, 0.006)	0.003 (-0.000, 0.006)
US export controls	0.029*** (0.019, 0.039)	0.027*** (0.017, 0.037)	0.032*** (0.022, 0.042)
Exporter integration	0.398*** (0.380, 0.416)	0.393*** (0.375, 0.411)	0.395*** (0.377, 0.414)
Importer integration	0.393*** (0.354, 0.432)	0.380*** (0.341, 0.419)	0.367*** (0.327, 0.407)
Exporter US proximity	-0.034*** (-0.046, -0.022)	-0.036*** (-0.048, -0.024)	-0.033*** (-0.046, -0.021)
Dyadic proximity	0.078*** (0.070, 0.087)	0.076*** (0.067, 0.085)	0.077*** (0.068, 0.086)
Exporter log GDP	0.009*** (0.008, 0.010)	0.009*** (0.008, 0.010)	0.009*** (0.008, 0.010)
Importer log GDP	0.006*** (0.004, 0.008)	0.006*** (0.004, 0.008)	0.007*** (0.004, 0.009)
Exporter MECR	0.026*** (0.021, 0.030)	0.026*** (0.022, 0.030)	0.024*** (0.020, 0.029)
Importer MECR	-0.001 (-0.006, 0.003)	-0.004 (-0.008, 0.001)	0.002 (-0.003, 0.007)
Exporter liberal democracy	-0.032*** (-0.039, -0.025)	-0.032*** (-0.039, -0.025)	-0.032*** (-0.040, -0.025)
Importer liberal democracy	-0.020*** (-0.026, -0.013)	-0.016*** (-0.023, -0.010)	-0.020*** (-0.026, -0.013)
log Distance	-0.036*** (-0.037, -0.034)	-0.036*** (-0.038, -0.034)	-0.035*** (-0.037, -0.034)
Importer sanct X Exporter ally		0.001 (-0.009, 0.011)	0.002 (-0.009, 0.013)
Importer sanct X Exp cont		-0.036* (-0.068, -0.004)	-0.061** (-0.101, -0.020)
Importer sanct X Exp cent		0.062*** (0.028, 0.096)	0.031 (-0.031, 0.094)
Importer sanct X Imp cent		0.122*** (0.082, 0.162)	0.475*** (0.301, 0.649)
Importer sanct X Exp prox		0.026 (-0.010, 0.062)	-0.001 (-0.050, 0.048)
Importer sanct X Dyad prox		0.026 (-0.011, 0.064)	0.039* (0.001, 0.077)
Importer sanct X Exp GDP			0.002 (-0.003, 0.006)
Importer sanct X Imp GDP			-0.015** (-0.024, -0.005)
Importer sanct X Exp MECR			0.015* (0.000, 0.030)
Importer sanct X Imp MECR			-0.040*** (-0.053, -0.027)
Importer sanct X Exp libdem			0.008 (-0.019, 0.035)
Importer sanct X Imp libdem			0.010 (-0.015, 0.034)
Importer sanct X Dist			-0.009** (-0.015, -0.004)
Constant	-0.375*** (-0.408, -0.342)	-0.362*** (-0.396, -0.328)	-0.371*** (-0.405, -0.336)
Observations	265,447	265,447	265,447
Log Likelihood	-198,022.000	-198,014.900	-198,014.800
Akaike Inf. Crit.	396,118.000	396,115.800	396,129.600
Bayesian Inf. Crit.	396,506.100	396,566.800	396,654.000

Note: all models include year fixed effects. \* p less than 0.05, \*\* p less than 0.01, \*\*\* p less than 0.001



## Appendix E. Using level rather than change of the DV

In this section, we present results by rerunning the analysis using the level rather than change in CDU exports. We also add a lagged dependent variable in these models to account for historical patterns of CDU trade. The results are mostly similar to those from the main models. The main difference again is that US alliance appears to be non-significant regardless of US sanctions status. Accordingly, the appendix models, when taken together introduce mixed evidence that US alliance affects CDU trade at all when accounting for the key determinants thereof. Again, the combination of year fixed effects and lagged DVs leads us to prefer our primary models.

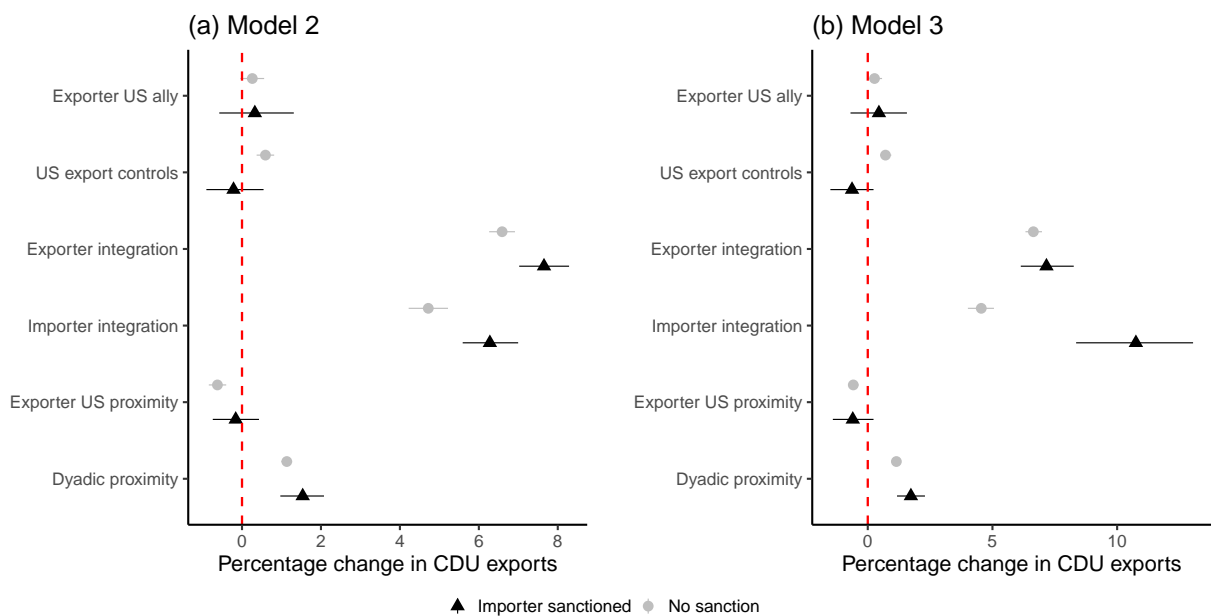


Figure 4: Marginal effects of the main variables with 95 percent confidence intervals. For the four continuous variables, we plot the effects when increasing the respective variable by 1 standard deviation.

Table 4: Coefficients and 95 percent confidence intervals for LDV models with ARMA residual structure grouped by dyad.

	DV = log CDU		
	Model 1	Model 2	Model 3
Lagged DV	0.966*** (0.965, 0.967)	0.966*** (0.965, 0.967)	0.966*** (0.965, 0.967)
Importer US sanction	-0.013*** (-0.017, -0.008)	-0.131*** (-0.191, -0.070)	-0.001 (-0.116, 0.115)
Exporter US ally	0.003 (-0.000, 0.006)	0.003 (-0.000, 0.006)	0.003 (-0.000, 0.006)
US export controls	0.029*** (0.019, 0.039)	0.027*** (0.017, 0.037)	0.032*** (0.022, 0.042)
Exporter integration	0.398*** (0.380, 0.416)	0.393*** (0.375, 0.411)	0.395*** (0.377, 0.414)
Importer integration	0.393*** (0.354, 0.432)	0.380*** (0.341, 0.419)	0.367*** (0.327, 0.407)
Exporter US proximity	-0.034*** (-0.046, -0.022)	-0.036*** (-0.048, -0.024)	-0.033*** (-0.046, -0.021)
Dyadic proximity	0.078*** (0.070, 0.087)	0.076*** (0.067, 0.085)	0.077*** (0.068, 0.086)
Exporter log GDP	0.009*** (0.008, 0.010)	0.009*** (0.008, 0.010)	0.009*** (0.008, 0.010)
Importer log GDP	0.006*** (0.004, 0.008)	0.006*** (0.004, 0.008)	0.007*** (0.004, 0.009)
Exporter MECR	0.026*** (0.021, 0.030)	0.026*** (0.022, 0.030)	0.024*** (0.020, 0.029)
Importer MECR	-0.001 (-0.006, 0.003)	-0.004 (-0.008, 0.001)	0.002 (-0.003, 0.007)
Exporter liberal democracy	-0.032*** (-0.039, -0.025)	-0.032*** (-0.039, -0.025)	-0.032*** (-0.040, -0.025)
Importer liberal democracy	-0.020*** (-0.026, -0.013)	-0.016*** (-0.023, -0.010)	-0.020*** (-0.026, -0.013)
log Distance	-0.036*** (-0.037, -0.034)	-0.036*** (-0.038, -0.034)	-0.035*** (-0.037, -0.034)
Importer sanct X Exporter ally		0.001 (-0.009, 0.011)	0.002 (-0.009, 0.013)
Importer sanct X Exp cont		-0.036* (-0.068, -0.004)	-0.061** (-0.101, -0.020)
Importer sanct X Exp cent		0.062*** (0.028, 0.096)	0.031 (-0.031, 0.094)
Importer sanct X Imp cent		0.122*** (0.082, 0.162)	0.475*** (0.301, 0.649)
Importer sanct X Exp prox		0.026 (-0.010, 0.062)	-0.001 (-0.050, 0.048)
Importer sanct X Dyad prox		0.026 (-0.011, 0.064)	0.039* (0.001, 0.077)
Importer sanct X Exp GDP			0.002 (-0.003, 0.006)
Importer sanct X Imp GDP			-0.015** (-0.024, -0.005)
Importer sanct X Exp MECR			0.015* (0.000, 0.030)
Importer sanct X Imp MECR			-0.040*** (-0.053, -0.027)
Importer sanct X Exp libdem			0.008 (-0.019, 0.035)
Importer sanct X Imp libdem			0.010 (-0.015, 0.034)
Importer sanct X Dist			-0.009** (-0.015, -0.004)
Constant	-0.375*** (-0.408, -0.342)	-0.362*** (-0.396, -0.328)	-0.371*** (-0.405, -0.336)
Observations	265,447	265,447	265,447
Log Likelihood	-198,022.000	-198,014.900	-198,014.800
Akaike Inf. Crit.	396,118.000	396,115.800	396,129.600
Bayesian Inf. Crit.	396,506.100	396,566.800	396,654.000

Note: all models include year fixed effects. \* p less than 0.05, \*\* p less than 0.01, \*\*\* p less than 0.001

## Appendix F. Using only dyads with nonzero CDU trade

In this section, we present results by rerunning the analysis using only the dyads with at least some CDU trade across all years. Specifically, we sum up all dyads' CDU trade across all years. We then filter out all the dyads with no CDU trade at all (3288 out of 23572 dyads). The results are mostly similar to those from the main models.

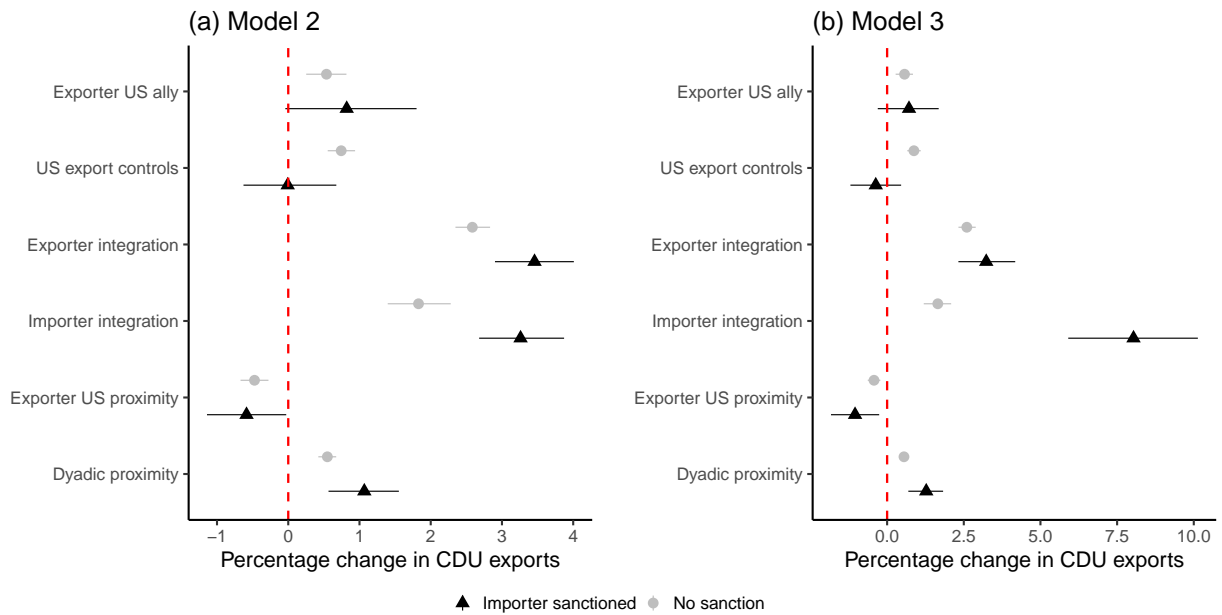


Figure 5: Marginal effects of the main variables with 95 percent confidence intervals. For the four continuous variables, we plot the effects when increasing the respective variable by 1 standard deviation.

Table 5: Coefficients and 95 percent confidence intervals for GLS models with ARMA residual structure grouped by dyad.

	DV = $\Delta \log \text{CDU}$		
	Model 1	Model 2	Model 3
Importer US sanction	-0.014*** (-0.019, -0.010)	-0.116*** (-0.174, -0.057)	0.008 (-0.103, 0.119)
Exporter US ally	0.005*** (0.003, 0.008)	0.005*** (0.002, 0.008)	0.006*** (0.003, 0.008)
US export controls	0.036*** (0.027, 0.045)	0.034*** (0.024, 0.043)	0.039*** (0.030, 0.049)
Exporter integration	0.164*** (0.148, 0.180)	0.160*** (0.144, 0.176)	0.161*** (0.144, 0.177)
Importer integration	0.162*** (0.125, 0.198)	0.149*** (0.112, 0.185)	0.135*** (0.098, 0.172)
Exporter US proximity	-0.028*** (-0.040, -0.017)	-0.027*** (-0.039, -0.016)	-0.025*** (-0.036, -0.013)
Dyadic proximity	0.042*** (0.034, 0.050)	0.037*** (0.028, 0.045)	0.037*** (0.029, 0.045)
Exporter log GDP	-0.001* (-0.003, -0.000)	-0.001* (-0.002, -0.000)	-0.001* (-0.003, -0.000)
Importer log GDP	-0.002 (-0.004, 0.000)	-0.001 (-0.003, 0.001)	-0.001 (-0.003, 0.001)
Exporter MECR	0.024*** (0.020, 0.028)	0.024*** (0.020, 0.028)	0.023*** (0.019, 0.027)
Importer MECR	0.010*** (0.006, 0.014)	0.007*** (0.003, 0.012)	0.013*** (0.009, 0.018)
Exporter liberal democracy	-0.050*** (-0.057, -0.043)	-0.050*** (-0.057, -0.043)	-0.051*** (-0.058, -0.044)
Importer liberal democracy	-0.027*** (-0.033, -0.021)	-0.024*** (-0.030, -0.018)	-0.027*** (-0.033, -0.020)
log Distance	-0.007*** (-0.008, -0.006)	-0.008*** (-0.009, -0.006)	-0.007*** (-0.009, -0.006)
Importer sanct X Exporter ally		0.003 (-0.007, 0.012)	0.001 (-0.009, 0.012)
Importer sanct X Exp cont		-0.034* (-0.064, -0.003)	-0.057** (-0.096, -0.018)
Importer sanct X Exp cent		0.053** (0.020, 0.086)	0.039 (-0.021, 0.098)
Importer sanct X Imp cent		0.113*** (0.075, 0.151)	0.497*** (0.329, 0.665)
Importer sanct X Exp prox		-0.007 (-0.041, 0.028)	-0.035 (-0.082, 0.012)
Importer sanct X Dyad prox		0.035 (-0.001, 0.071)	0.049** (0.012, 0.085)
Importer sanct X Exp GDP			0.000 (-0.004, 0.005)
Importer sanct X Imp GDP			-0.017*** (-0.026, -0.008)
Importer sanct X Exp MECR			0.009 (-0.005, 0.024)
Importer sanct X Imp MECR			-0.041*** (-0.054, -0.028)
Importer sanct X Exp libdem			0.021 (-0.005, 0.047)
Importer sanct X Imp libdem			0.007 (-0.016, 0.030)
Importer sanct X Dist			-0.005 (-0.010, 0.001)
Constant	-0.054*** (-0.084, -0.024)	-0.040* (-0.070, -0.009)	-0.047** (-0.078, -0.015)
Observations	259,182	259,182	259,182
Log Likelihood	-198,118.900	-198,112.900	-198,111.300
Akaike Inf. Crit.	396,309.700	396,309.800	396,320.500
Bayesian Inf. Crit.	396,686.500	396,749.400	396,833.300

Note: all models include year fixed effects. \* p less than 0.05, \*\* p less than 0.01, \*\*\* p less than 0.001

## Appendix G. Excluding exporter US proximity

In this section, we present results by rerunning the analysis excluding the exporter US proximity variable, given its potential high correlation with the alliance variable. The results are mostly similar to those from the main models.

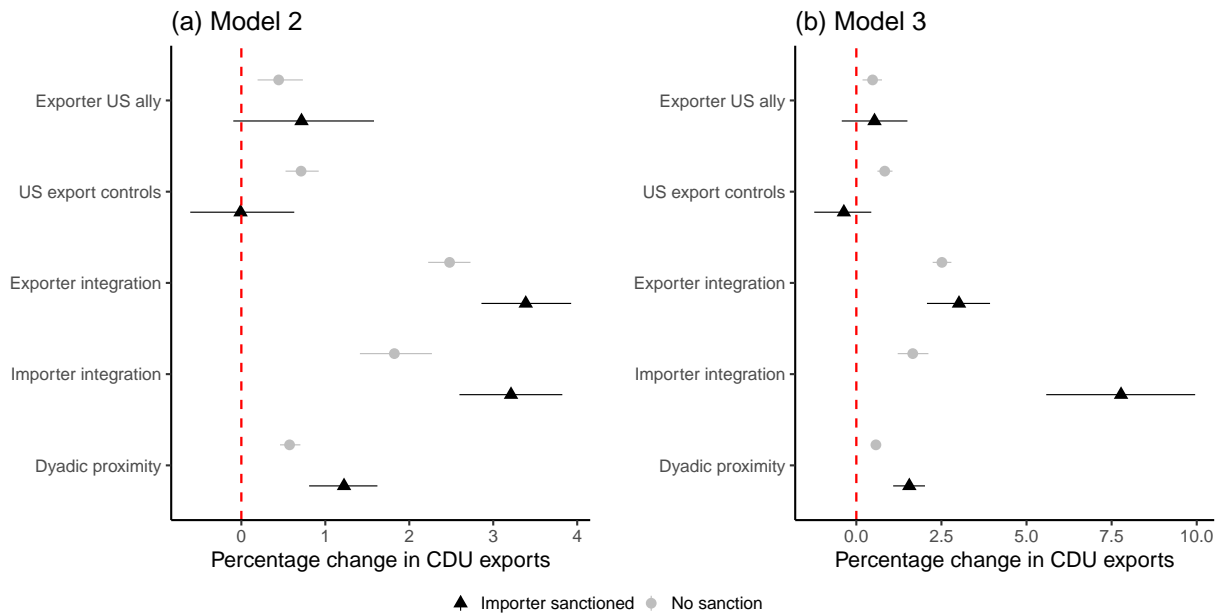


Figure 6: Marginal effects of the main variables with 95 percent confidence intervals. For the four continuous variables, we plot the effects when increasing the respective variable by 1 standard deviation.

Table 6: Coefficients and 95 percent confidence intervals for GLS models with ARMA residual structure grouped by dyad.

	DV = $\Delta \log \text{CDU}$		
	Model 1	Model 2	Model 3
Importer US sanction	-0.014*** (-0.019, -0.010)	-0.126*** (-0.176, -0.076)	-0.038 (-0.137, 0.060)
Exporter US ally	0.005*** (0.002, 0.007)	0.004** (0.002, 0.007)	0.005*** (0.002, 0.008)
US export controls	0.034*** (0.025, 0.043)	0.032*** (0.023, 0.041)	0.038*** (0.028, 0.047)
Exporter integration	0.155*** (0.140, 0.170)	0.151*** (0.136, 0.166)	0.153*** (0.137, 0.169)
Importer integration	0.162*** (0.127, 0.198)	0.149*** (0.113, 0.185)	0.136*** (0.099, 0.173)
Dyadic proximity	0.044*** (0.037, 0.052)	0.039*** (0.031, 0.047)	0.039*** (0.031, 0.047)
Exporter log GDP	-0.000 (-0.002, 0.001)	-0.000 (-0.002, 0.001)	-0.001 (-0.002, 0.001)
Importer log GDP	-0.002 (-0.004, 0.000)	-0.001 (-0.003, 0.001)	-0.001 (-0.003, 0.001)
Exporter MECR	0.019*** (0.016, 0.023)	0.020*** (0.016, 0.023)	0.019*** (0.016, 0.023)
Importer MECR	0.009*** (0.005, 0.013)	0.007*** (0.003, 0.011)	0.013*** (0.008, 0.017)
Exporter liberal democracy	-0.056*** (-0.062, -0.050)	-0.056*** (-0.062, -0.050)	-0.057*** (-0.063, -0.051)
Importer liberal democracy	-0.027*** (-0.033, -0.021)	-0.023*** (-0.030, -0.017)	-0.026*** (-0.033, -0.020)
log Distance	-0.007*** (-0.008, -0.005)	-0.007*** (-0.008, -0.006)	-0.007*** (-0.008, -0.005)
Importer sanct X Exporter ally		0.003 (-0.006, 0.012)	0.001 (-0.009, 0.011)
Importer sanct X Exp cont		-0.032* (-0.061, -0.002)	-0.055** (-0.094, -0.017)
Importer sanct X Exp cent		0.054*** (0.023, 0.084)	0.030 (-0.028, 0.088)
Importer sanct X Imp cent		0.111*** (0.074, 0.149)	0.476*** (0.311, 0.641)
Importer sanct X Dyad prox		0.043** (0.014, 0.073)	0.066*** (0.034, 0.098)
Importer sanct X Exp GDP			0.001 (-0.003, 0.005)
Importer sanct X Imp GDP			-0.016*** (-0.025, -0.007)
Importer sanct X Exp MECR			0.006 (-0.008, 0.019)
Importer sanct X Imp MECR			-0.041*** (-0.054, -0.029)
Importer sanct X Exp libdem			0.014 (-0.009, 0.037)
Importer sanct X Imp libdem			0.008 (-0.015, 0.031)
Importer sanct X Dist			-0.004 (-0.009, 0.001)
Constant	-0.076*** (-0.104, -0.047)	-0.061*** (-0.090, -0.032)	-0.066*** (-0.095, -0.036)
Observations	265,447	265,447	265,447
Log Likelihood	-199,890.300	-199,879.700	-199,879.300
Akaike Inf. Crit.	399,850.600	399,839.400	399,852.700
Bayesian Inf. Crit.	400,217.700	400,259.000	400,345.700

Note: all models include year fixed effects. \* p less than 0.05, \*\* p less than 0.01, \*\*\* p less than 0.001

## Appendix H. Using sanctions imposed by both the US and the EU

### EU

In this section, we rerun analysis using sanctions imposed by both the US and the EU. The results are mostly similar to the main models'. There are two changes worth noting. When a target state is sanctioned by both the US and the EU, the marginal effects of the US export controls variable become negative and statistically significant. This indicates a stronger effect than the main models: when a target is sanctioned by both the US and the EU, stricter US export controls are associated with a decrease in CDU trade. Meanwhile, the marginal effects of the exporter US proximity variable become insignificant.

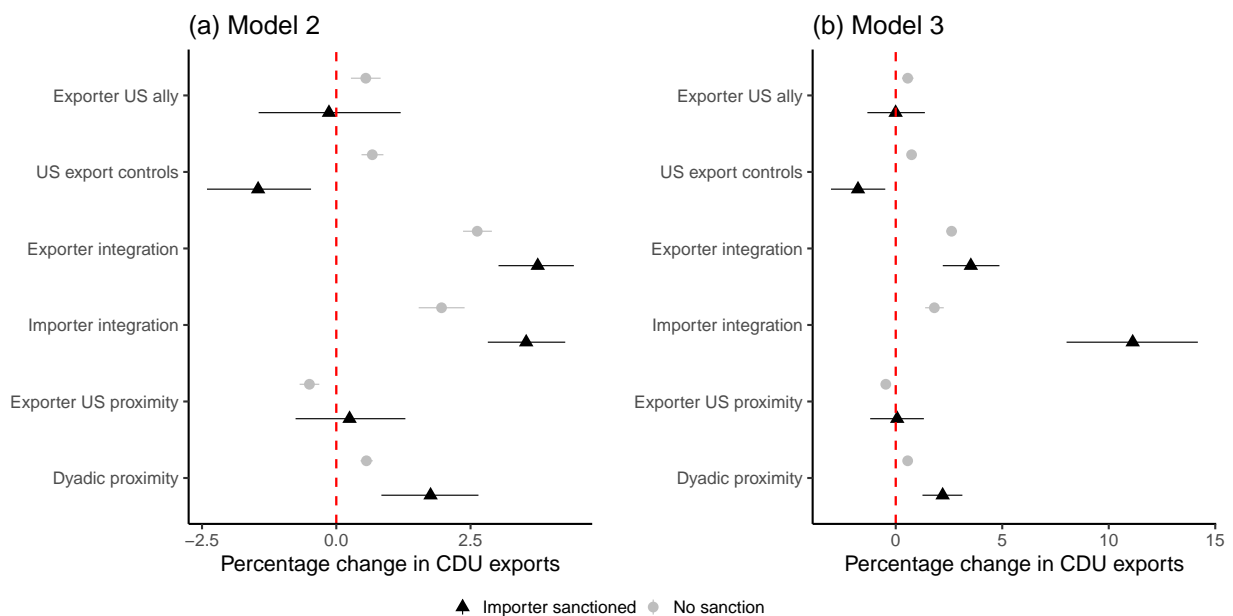


Figure 7: Marginal effects of the main variables with 95 percent confidence intervals. For the four continuous variables, we plot the effects when increasing the respective variable by 1 standard deviation.

Table 7: Coefficients and 95 percent confidence intervals for GLS models with ARMA residual structure grouped by dyad.

	Model 1	DV = $\Delta \log$ CDU Model 2	Model 3
Importer US EU sanction	-0.013*** (-0.019, -0.007)	-0.139** (-0.232, -0.045)	0.095 (-0.071, 0.262)
Exporter US ally	0.005*** (0.003, 0.008)	0.006*** (0.003, 0.008)	0.006*** (0.003, 0.008)
US export controls	0.030*** (0.022, 0.039)	0.030*** (0.021, 0.039)	0.034*** (0.025, 0.043)
Exporter integration	0.162*** (0.147, 0.178)	0.159*** (0.144, 0.175)	0.159*** (0.144, 0.175)
Importer integration	0.174*** (0.139, 0.210)	0.160*** (0.125, 0.195)	0.148*** (0.112, 0.184)
Exporter US proximity	-0.028*** (-0.039, -0.017)	-0.029*** (-0.040, -0.017)	-0.027*** (-0.039, -0.016)
Dyadic proximity	0.042*** (0.035, 0.050)	0.038*** (0.030, 0.045)	0.038*** (0.030, 0.045)
Exporter log GDP	-0.001 (-0.002, 0.000)	-0.001 (-0.002, 0.000)	-0.001 (-0.002, 0.000)
Importer log GDP	-0.002* (-0.004, -0.000)	-0.002 (-0.004, 0.000)	-0.001 (-0.003, 0.001)
Exporter MECR	0.023*** (0.020, 0.027)	0.024*** (0.020, 0.027)	0.023*** (0.019, 0.027)
Importer MECR	0.008*** (0.004, 0.012)	0.006** (0.002, 0.010)	0.009*** (0.005, 0.013)
Exporter liberal democracy	-0.049*** (-0.055, -0.042)	-0.049*** (-0.055, -0.042)	-0.049*** (-0.056, -0.042)
Importer liberal democracy	-0.025*** (-0.031, -0.019)	-0.023*** (-0.029, -0.017)	-0.024*** (-0.030, -0.017)
log Distance	-0.007*** (-0.008, -0.006)	-0.008*** (-0.009, -0.006)	-0.007*** (-0.009, -0.006)
Importer sanct X Exporter ally		-0.007 (-0.020, 0.006)	-0.006 (-0.020, 0.009)
Importer sanct X Exp cont		-0.097*** (-0.145, -0.049)	-0.114*** (-0.173, -0.056)
Importer sanct X Exp cent		0.068** (0.025, 0.111)	0.054 (-0.026, 0.133)
Importer sanct X Imp cent		0.126*** (0.081, 0.170)	0.718*** (0.481, 0.956)
Importer sanct X Exp prox		0.042 (-0.016, 0.101)	0.032 (-0.041, 0.105)
Importer sanct X Dyad prox		0.080* (0.018, 0.141)	0.110*** (0.045, 0.175)
Importer sanct X Exp GDP			-0.000 (-0.006, 0.006)
Importer sanct X Imp GDP			-0.030*** (-0.044, -0.017)
Importer sanct X Exp MECR			0.009 (-0.010, 0.029)
Importer sanct X Imp MECR			-0.046*** (-0.063, -0.029)
Importer sanct X Exp libdem			0.013 (-0.021, 0.047)
Importer sanct X Imp libdem			-0.049* (-0.094, -0.005)
Importer sanct X Dist			-0.005 (-0.013, 0.002)
Constant	-0.048** (-0.078, -0.019)	-0.038* (-0.068, -0.009)	-0.045** (-0.075, -0.014)
Observations	265,447	265,447	265,447
Log Likelihood	-199,891.700	-199,876.000	-199,875.000
Akaike Inf. Crit.	399,855.400	399,835.900	399,848.000
Bayesian Inf. Crit.	400,233.000	400,276.400	400,361.900

Note: all models include year fixed effects. \* p less than 0.05, \*\* p less than 0.01, \*\*\* p less than 0.001



## Appendix I. Additional summary statistics and plots

In this section, we present the summary statistics by sanction status. We also provide a histogram of the dependent variable after taking the first difference (i.e. the  $\Delta \log \text{CDU}$  used in the main model).

Table 8: Summary statistics: 1997-2015

Characteristic	Importer sanctioned		p-value <sup>2</sup>
	No, N = 264,219 <sup>1</sup>	Yes, N = 25,186 <sup>1</sup>	
log CDU export	1.58 (2.09)	1.62 (2.13)	0.5
Exporter US ally			0.6
No	156,786 (59%)	14,900 (59%)	
Yes	107,433 (41%)	10,286 (41%)	
US export controls	0.58 (0.22)	0.77 (0.14)	<0.001
Exporter integration	0.53 (0.16)	0.53 (0.15)	<0.001
Importer integration	0.65 (0.12)	0.64 (0.11)	<0.001
Exporter US proximity	0.48 (0.17)	0.49 (0.17)	0.3
Dyadic proximity	0.80 (0.15)	0.78 (0.16)	<0.001
Exporter log GDP	18.03 (2.07)	18.07 (2.06)	0.006
Importer log GDP	18.02 (2.06)	18.40 (2.05)	<0.001
Exporter liberal democracy	0.47 (0.28)	0.47 (0.28)	0.2
Importer liberal democracy	0.50 (0.28)	0.21 (0.21)	<0.001
Distance	8.52 (0.87)	8.54 (0.82)	0.6
Exporter MECR			<0.001
No	155,709 (59%)	14,423 (57%)	
Yes	108,510 (41%)	10,763 (43%)	
Importer MECR			<0.001
No	152,610 (58%)	16,902 (67%)	
Yes	111,609 (42%)	8,284 (33%)	

<sup>1</sup>Mean (SD); n (%)

<sup>2</sup>Wilcoxon rank sum test; Pearson's Chi-squared test

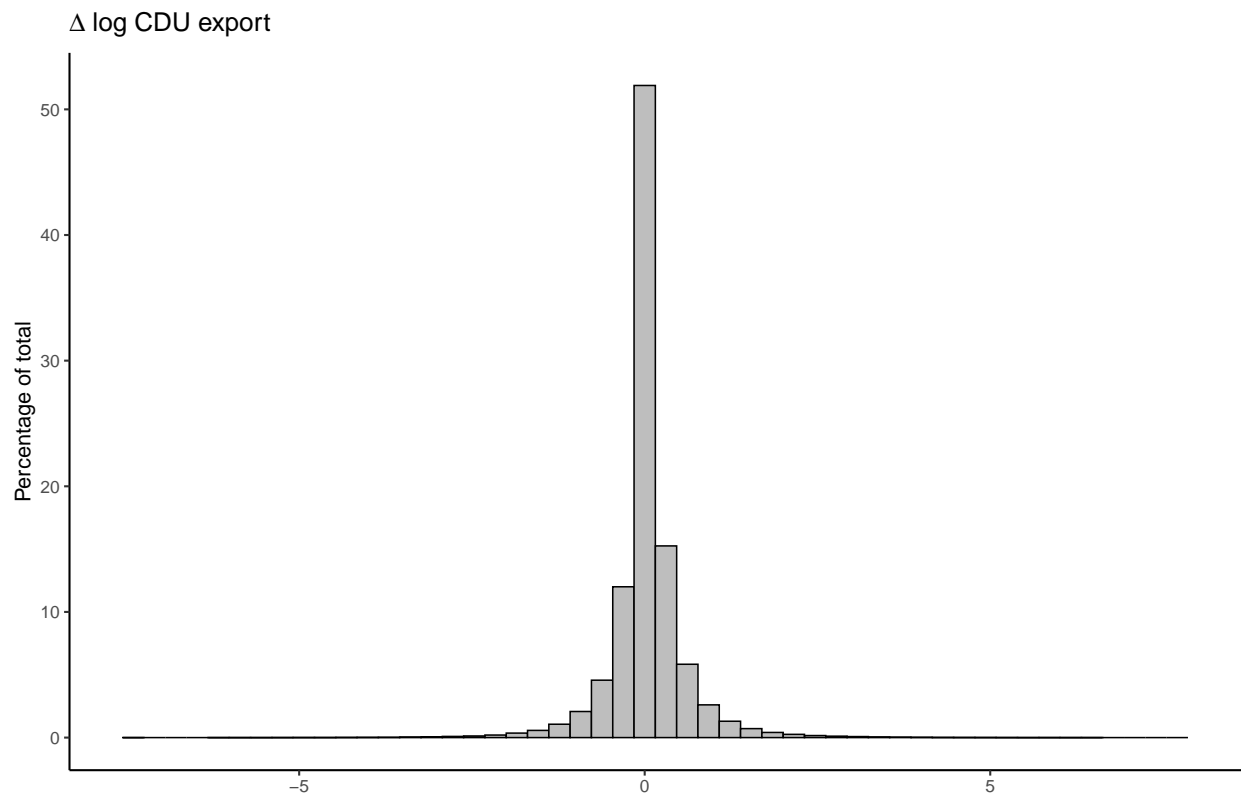


Figure 8: Distribution of the dependent variable used in the main model.