**Appendix 1: Most to Least modeling**

In this section I run multiple iterations of the model, starting with all of the proposed variables, and then progressively dropping the least significant variable until all variables included are significant. This approach can help address issues that might arise such as spurious correlations due to multicollinearity, while also testing the robustness of the model to specification changes.

First, I dropped war participation (p value = .82). The substantive results did not change.

Table A1.1 **TERGM of financial interdependence, 1913-1946 dropping war participation**

|  |  |  |
| --- | --- | --- |
|  |  |  |
| VARIABLES | Bootstrapped mean coefficient |
|  |  |
| Edges | -3.832\*\*\* |
|  | (-6.38, -1.631) |
| Mutual | -16.349\*\*\* |
|  | (-17.136, -15.442) |
| GW indegrees | -1.5\*\*\* |
|  | (-2.448, -.493) |
| GW outdegrees | -.572 |
|  | (-1.345, .212) |
| Relative GDP (indegree) | .944 |
|  | (-1.581, 3.782) |
| Power Projection (indegree) | 2.886\*\* |
|  | (.304, 6.0) |
| Liberalism | 1.801\*\*\* |
|  | (.633, 3.164) |
| British Colony (indegree) | -15.647\*\*\* |
|  | (-16.289, -14.887) |
| War (edgelist) | -18.323\*\*\* |
|  | (-20.962, -15.474) |
| Alliances (edgelist) | .127 |
|  | (-.324, .597) |
| Memory term (edgelist) | 3.492\*\*\* |
|  | (3.184, 3.872) |
|  |  |

95% Confidence intervals in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Model fit remained good.

Figure A1.1: Model Fit



Next, I dropped alliances, the second-least significant variable. Once again, the results remained substantively the same as in the main model.

Table A1.2: TERGM of financial interdependence, 1913-1946 dropping alliances

|  |  |  |
| --- | --- | --- |
|  |  |  |
| VARIABLES | Bootstrapped mean coefficient |
|  |  |
| Edges | -3.743\*\*\* |
|  | (-6.29, -1.454) |
| Mutual | -16.348\*\*\* |
|  | (-17.164, -15.442) |
| GW indegrees | -1.479\*\*\* |
|  | (-2.394, -.491) |
| GW outdegrees | -.589 |
|  | (-1.356, .188) |
| Relative GDP (indegree) | .816 |
|  | (-1.648, 3.561) |
| Power Projection (indegree) | 2.907\*\* |
|  | (.328, 6.046) |
| Liberalism | 1.784\*\*\* |
|  | (.597, 3.145) |
| British Colony (indegree) | -15.636\*\*\* |
|  | (-16.284, -14.884) |
| War (edgelist) | -18.245\*\*\* |
|  | (-20.739, -15.482) |
| Memory term (edgelist) | 3.48\*\*\* |
|  | (3.175, 3.857) |
|  |  |

95% Confidence intervals in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Model fit remained good.

Figure A1.2: Model Fit



Next, I dropped relative GDP from the model. Once again, the results did not change substantively. Model fit remained good.

Table A1.3: TERGM of financial interdependence, 1913-1946 dropping relative GDP

|  |  |  |
| --- | --- | --- |
|  |  |  |
| VARIABLES | Bootstrapped mean coefficient |
|  |  |
| Edges | -3.655\*\*\* |
|  | (-6.016, -1.459) |
| Mutual | -16.296\*\*\* |
|  | (-17.274, -15.405) |
| GW indegrees | -1.556\*\*\* |
|  | (-2.404, -.667) |
| GW outdegrees | -.616 |
|  | (-1.359, .141) |
| Power Projection (indegree) | 3.133\*\* |
|  | (.468, 6.377) |
| Liberalism | 1.798\*\*\* |
|  | (.595, 3.158) |
| British Colony (indegree) | -15.605\*\*\* |
|  | (-16.316, -14.888) |
| War (edgelist) | -18.328\*\*\* |
|  | (-20.84, -15.412) |
| Memory term (edgelist) | 3.463\*\*\* |
|  | (3.162, 3.832) |
|  |  |

95% Confidence intervals in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Figure A1.3: Model Fit



Finally, I dropped geometrically weighted outdegrees (which were close to being weakly statistically significant and negative). As before, the substantive results remained the same and model fit remained good.

Appendix 1.4: TERGM of financial interdependence, 1913-1946 dropping relative GWOdegree

|  |  |  |
| --- | --- | --- |
|  |  |  |
| VARIABLES | Bootstrapped mean coefficient |
|  |  |
| Edges | -3.961\*\*\* |
|  | (-6.14, -1.887) |
| Mutual | -16.484\*\*\* |
|  | (-17.385, -15.683) |
| GW indegrees | -1.508\*\*\* |
|  | (-2.3, -.615) |
| Power Projection (indegree) | 2.713\*\* |
|  | (.174, 5.967) |
| Liberalism | 1.909\*\*\* |
|  | (.721, 3.209) |
| British Colony (indegree) | -15.605\*\*\* |
|  | (-16.325, -14.945) |
| War (edgelist) | -18.333\*\*\* |
|  | (-20.95, -15.596) |
| Memory term (edgelist) | 3.404\*\*\* |
|  | (3.082, 3.796) |
|  |  |

95% Confidence intervals in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Figure A1.4: Model Fit



Appendix 2: Replicating main model with a different seed

All previous results and those reported in the main model were produced using seed #1 for replicability. To see whether the results were consistent using other seeds, I also replicated the main model using seed #2. The results were nearly identical with only trivial differences between coefficients and standard errors.

Table A2.1: TERGM of financial interdependence, 1913-1946 with seed #2

|  |  |  |
| --- | --- | --- |
|  |  |  |
| VARIABLES | Bootstrapped mean coefficient |
|  |  |
| Edges | -3.784\*\*\* |
|  | (-6.265, -1.482) |
| Mutual | -16.407\*\*\* |
|  | (-17.207, -15.49) |
| GW indegrees | -1.47\*\*\* |
|  | (-2.385, -.435) |
| GW outdegrees | -.54 |
|  | (-1.255, .183) |
| Relative GDP (indegree) | .81 |
|  | (-1.81, 3.572) |
| Power Projection (indegree) | 2.955\*\* |
|  | (.307, 6.257) |
| Liberalism | 1.807\*\*\* |
|  | (.613, 3.15) |
| British Colony (indegree) | -15.668\*\*\* |
|  | (-16.304, -14.907) |
| World War participant | -.037 |
|  | (-.618, .438) |
| War (edgelist) | -18.196\*\*\* |
|  | (-20.908, -15.018) |
| Memory term (edgelist) | 3.482\*\*\* |
|  | (3.178, 3.873) |
|  |  |

95% Confidence intervals in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Model fit was good.

Table A2.1: Model Fit



Appendix 3: Replicating main model using war participation, not just world war participation

It is possible that mobilization for any wars and not just world wars might alter the likelihood of sovereign debt ties, either by increasing demand for credit, by stimulating the development of domestic borrowing capacity, or because war might reduce ties with rivals.

However, re-running the model, war participation is not statistically significant, nor do the results change substantively for the other variables.

**Table A3.1: TERGM of financial interdependence, 1913-1946, using participation in any war**

|  |  |  |
| --- | --- | --- |
|  |  |  |
| VARIABLES | Bootstrapped mean coefficient |
|  |  |
| Edges | -3.739\*\*\* |
|  | (-6.341, -1.465) |
| Mutual | -16.474\*\*\* |
|  | (-17.24, -15.554) |
| GW indegrees | -1.504\*\*\* |
|  | (-2.476, -.48) |
| GW outdegrees | -.456 |
|  | (-1.201, .291) |
| Relative GDP (indegree) | .892 |
|  | (-1.713, 3.754) |
| Power Projection (indegree) | 2.907\*\* |
|  | (.269, 6.183) |
| Liberalism | 1.816\*\*\* |
|  | (.633, 3.19) |
| British Colony (indegree) | -15.695\*\*\* |
|  | (-16.309, -14.934) |
| World War participant | -.272 |
|  | (-.732, .176) |
| War (edgelist) | -18.019\*\*\* |
|  | (-20.806, -14.752) |
| Alliances (edgelist) | .114 |
|  | (-.34, .586) |
| Memory term (edgelist) | 3.502\*\*\* |
|  | (3.194, 3.886) |
|  |  |

95% Confidence intervals in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table A3.1: Model Fit



**Appendix 4: Replicating main model using liberal democracy instead of liberalism**

It is possible that using democracy instead of liberalism might alter the results. Here, I replace liberalism with democracy, which is also statistically significant and positive (though the coefficient is smaller than liberalism was). This change does not substantively alter the other results except that geometrically-weighted outdegrees becomes weakly statistically significant and negative.

Table A4.1: TERGM of financial interdependence, 1913-1946 replacing liberalism with democracy

|  |  |  |
| --- | --- | --- |
|  |  |  |
| VARIABLES | Bootstrapped mean coefficient |
|  |  |
| Edges | -2.509\*\*\* |
|  | (-4.02, -1.078) |
| Mutual | -16.176\*\*\* |
|  | (-16.91, -15.316) |
| GW indegrees | -1.507\*\*\* |
|  | (-2.466, -.49) |
| GW outdegrees | -.643\* |
|  | (-1.334, .084) |
| Relative GDP (indegree) | 1.513 |
|  | (-1.092, 4.267) |
| Power Projection (indegree) | 2.75\*\* |
|  | (.195, 5.751) |
| Liberal Democracy | 1.473\*\*\* |
|  | (.495, 2.512) |
| British Colony (indegree) | -15.635\*\*\* |
|  | (-16.353, -14.852) |
| World War participant | .024 |
|  | (-.547, .544) |
| War (edgelist) | -18.002\*\*\* |
|  | (-20.681, -14.945) |
| Alliances (edgelist) | .068 |
|  | (-.399, .584) |
| Memory term (edgelist) | 3.497\*\*\* |
|  | (3.206, 3.836) |
|  |  |

95% Confidence intervals in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table A4.1: Model Fit



Appendix 5. Replicating model using a 5% threshold for ties

In the main model, a node was considered to have a directed tie to another if they borrowed at least 7.5% of their debt from that node. I replicated the main model instead using a 5% threshold for ties in the financial interdependence model. i.e. if Countrya borrowed at least 5% of its debt (including domestic debt) from Countryb they were considered to have a directed tie from A to B (i.e. A was dependent on B) and vice-versa. The results were largely consistent with the main model, except the geometrically weighted outdegrees became statistically significant and negative, an outcome consistent with a hypothesis of sociality. i.e. outdegrees disproportionately clustering in particular nodes. In the context of sovereign debt this would mean there is a tendency for a few countries to be dependent on many other economies for loans.

**Table A5.1: TERGM of financial interdependence, 1913-1946 using 5% threshold for ties**

|  |  |  |
| --- | --- | --- |
|  |  |  |
| VARIABLES | Bootstrapped mean coefficient |
|  |  |
| Edges | -2.797\*\*\* |
|  | (-4.22, -1.553) |
| Mutual | -16.092\*\*\* |
|  | (-17.097, -15.485) |
| GW indegrees | -2.168\*\*\* |
|  | (-2.942, -1.335) |
| GW outdegrees | -.692\*\* |
|  | (-1.361, -.063) |
| Relative GDP (indegree) | .599 |
|  | (-1.601, 2.884) |
| Power Projection (indegree) | 2.674\*\* |
|  | (.028, 5.931) |
| Liberalism | 1.426\*\*\* |
|  | (.572, 2.271) |
| British Colony (indegree) | -15.109\*\*\* |
|  | (-15.913, -14.537) |
| World War participant | -.135 |
|  | (-.659, .407) |
| War (edgelist) | -8.846\*\*\* |
|  | (-20.716, -.803) |
| Alliances (edgelist) | .024 |
|  | (-.475, .599) |
| Memory term (edgelist) | 3.303\*\*\* |
|  | (2.94, 3.726) |
|  |  |

95% Confidence intervals in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Table A5.1: Model Fit**

