# Appendix

# (Not for Print Publication)

This appendix includes the following supplemental information:

- Descriptions and summary statistics for the relevant variables
- Investigation of temporal effects
- Robustness checks using an alternate data source

# Summary Statistics

| Variable | Description | Mean | Std. Dev. | Min. | Max. | N |
|---|---|---|---|---|---|---|
| MID Onset | Did a conflict begin in this year? | 1.56 | 12.38 | 0 | 100 | 18,379 |
| Hostile Onset | Did a conflict involving a display or use of force begin in this year? | 0.44 | 6.62 | 0 | 100 | 18,379 |
| Joint Membership | Were both states members of the Gatt/WTO from 1980–2009? | 0.56 | 0.50 | 0 | 1 | 18,379 |
| WTO Era | Does this observation occur after 1994? | 0.51 | 0.50 | 0 | 1 | 18,379 |
| Peace Clause | Does this observation occur after 2003? | 0.19 | 0.39 | 0 | 1 | 18,379 |
| Major Power | Does the dyad contain at least one major power? | 0.82 | 0.38 | 0 | 1 | 18,379 |
| Contiguous | Are the states directly contiguous or separated by less than 25 miles of water? | 0.21 | 0.40 | 0 | 1 | 18,379 |
| $\text{Polity}_L$ | What is the Polity score of the less democratic state in the dyad? | 0.74 | 7.08 | -10 | 10 | 15,186 |
| FTA | Are the two states involved in a free trade agreement with one another? | 0.07 | 0.26 | 0 | 1 | 18,379 |
| Alliance | Are the two states in an alliance? | 0.20 | 0.40 | 0 | 1 | 18,379 |
| M-Ratio | What is the stronger state's military power relative to the weaker? | 0.83 | 0.15 | 0 | 1 | 15,047 |
| Time | How many years have passed since the last dyadic conflict? | 42.74 | 30.41 | 0 | 140 | 18,379 |
| Agricultural Dyad | Was at least one member of the dyad in the top 10% of agricultural producers? | 0.71 | 0.45 | 0 | 1 | 12,567 |

Table A1: Summary statistics

Table A1 provides descriptions of our dependent and independent variables, as well as statistics on their means, minima, maxima, standard deviations, and number of complete observations. The reader may note that the maximum for both MID onset and Hostile MID onset is 100. As we mention in the main text, these variables are technically binary in nature, but we rescale by a factor of 100 in order to make the coefficients more easily interpretable. The domain for both of these variables is $\{0, 100\}$.

# Temporal Effects

| | Count Only | Quadratic | Include Dummy | Dummy and Quadratic |
|---|---|---|---|---|
| Joint Membership | $-1.44^{***}$ | $-1.44^{***}$ | $-1.67^{***}$ | $-1.67^{***}$ |
| | (0.30) | (0.32) | (0.35) | (0.35) |
| Number of WTO Years | $-0.06$ | 0.03 | $-0.03$ | 0.29 |
| | (0.05) | (0.17) | (0.07) | (0.25) |
| Joint × Number of WTO Years | $0.23^{***}$ | 0.28 | 0.13 | $-0.14$ |
| | (0.06) | (0.20) | (0.08) | (0.31) |
| (WTO Years)$^2$ | | $-0.01$ | | $-0.03$ |
| | | (0.02) | | (0.02) |
| Joint × (WTO Years)$^2$ | | $-0.01$ | | 0.02 |
| | | (0.02) | | (0.03) |
| WTO Era | | | $-0.35$ | $-0.94$ |
| | | | (0.55) | (0.71) |
| Joint × WTO Era | | | 1.03 | $1.52^{*}$ |
| | | | (0.67) | (0.87) |
| Major Power | 0.52 | 0.52 | 0.56 | 0.56 |
| | (0.75) | (0.75) | (0.75) | (0.75) |
| Contiguous | 0.90 | 0.88 | 0.91 | 0.90 |
| | (0.74) | (0.74) | (0.74) | (0.74) |
| Polity$_L$ | $-0.05^{***}$ | $-0.05^{***}$ | $-0.06^{***}$ | $-0.06^{***}$ |
| | (0.02) | (0.02) | (0.02) | (0.02) |
| FTA | $-0.57$ | $-0.57$ | $-0.56$ | $-0.56$ |
| | (0.43) | (0.43) | (0.43) | (0.43) |
| Alliance | $-0.25$ | $-0.24$ | $-0.24$ | $-0.24$ |
| | (0.28) | (0.28) | (0.28) | (0.28) |
| M-Ratio | $-2.66^{***}$ | $-2.68^{***}$ | $-2.61^{***}$ | $-2.64^{***}$ |
| | (0.84) | (0.84) | (0.84) | (0.84) |
| Time | $-0.64^{***}$ | $-0.64^{***}$ | $-0.64^{***}$ | $-0.64^{***}$ |
| | (0.03) | (0.03) | (0.03) | (0.03) |
| Time$^2$ | $0.01^{***}$ | $0.01^{***}$ | $0.01^{***}$ | $0.01^{***}$ |
| | (0.00) | (0.00) | (0.00) | (0.00) |
| Time$^3$ | $-0.00^{***}$ | $-0.00^{***}$ | $-0.00^{***}$ | $-0.00^{***}$ |
| | (0.00) | (0.00) | (0.00) | (0.00) |
| Constant | $14.73^{***}$ | $14.72^{***}$ | $14.79^{***}$ | $14.82^{***}$ |
| | (1.07) | (1.07) | (1.08) | (1.08) |
| Number of observations | 13,170 | 13,170 | 13,170 | 13,170 |
| $R^2$ | 0.08 | 0.08 | 0.08 | 0.08 |

Standard errors in parentheses.

$^{*}$ $p < .10$; $^{**}$ $p < .05$; $^{***}$ $p < .01$. All tests are two-tailed tests.

Table A2: Estimated effects on likelihood of conflict

Our analysis assumes clean breaks at 1995 and 2004, suggesting that the situation is significantly different for relevant states before and after these time points. However, it may be the case that temporal effects exist. For example, the institutionalization effects may have developed slowly as states adjusted to the new framework, or agricultural states might have stuck to their strategies for the first few years after the expiration of the peace clause. For this reason, we create a count variable that takes a value of 0 for all years before the relevant year (1995 for the WTO and 2004 for the peace clause), denoted $\underline{t}$, and $t - \underline{t}$ for all years after $\underline{t}$. We then estimate a series of models, shown in Table A2.[1]

The first column omits our *WTO Era* dummy, and simply replaces it with the count variable described above. The results here are substantively similar to the main text, and the average effect here is approximately equivalent to the effect estimated in the main equation. It suggests that each year after the move from the GATT to the WTO increased the probability of conflict for member states by 0.15. The effect of the WTO era in the analogous model in the main text was approximately 7.8 times as large. This is unsurprising, given that the average number of years since establishment of the WTO in the data set (for post-1995 observations) was 7.272. Thus, the average effect here is, as expected, approximately the same as the effect estimated in the main text. Of course, linear regression imposes a particular structure on the data, and it may either be that the effect is dynamic and our original model (incorrectly) gives us a flat average, or it may be that the effect is actually flat with respect to time and this new model fits an increasing line with the same average effect. Therefore, we explore these dynamics a bit more deeply in the subsequent columns.

Column two includes a quadratic term for years since WTO institutionalization, allowing us to look for non-linear temporal effects. This relaxes the linear restriction we put on time, and if there are temporal dynamics, then they will likely show up here. However, when we estimate this specification, we find no significant effects for time, and the signs on our coefficients indicate a concave relationship, which would be consistent with the idea of diminishing returns to

[1] To keep things simple, we report only the results building on our original model in the main text. Estimation of models analogous to the other three models in the paper reveal results that are similar (or even weaker).

time since the WTO was established. Our third column adds our 1995 dummy (and associated interaction) back into the model, so that we can estimate the post-1995 era and the time-since variable separately (relaxing the restrictions discussed above in a different way). Once again, we fail to find significant effects (though our 1995 interaction approaches conventional levels of significance, with $p \approx 0.11$). Finally, in column four, we combine the previous two models and use our era dummy, our count variable, and the square of our count variable in the same regression. Here, we find no effect for either of the time-since variables, but we find that the WTO era once again plays a significant role ($p \approx 0.09$).

These results further suggest to us that we are dealing with a break in the data. It was the change from GATT to WTO that altered interactions between states, and not the amount of time that passed. This provides us with greater confidence in the theoretical and empirical claims given in the main text.

## Alternative Measure of Conflict

| | All Dyads | Non-agricultural dyads only | Agricultural dyads only |
|---|---|---|---|
| Joint Membership | $-1.56^{***}$ | $-2.55^{***}$ | $-0.80^{**}$ |
| | (0.21) | (0.60) | (0.35) |
| WTO Era | $-1.26^{***}$ | $-2.13^{***}$ | $-0.57^{*}$ |
| | (0.22) | (0.65) | (0.34) |
| Joint × WTO | $1.30^{***}$ | $1.83^{**}$ | $0.73^{*}$ |
| | (0.26) | (0.79) | (0.42) |
| Peace Clause | | 0.45 | −0.33 |
| | | (0.67) | (0.30) |
| Joint × Peace Clause | | −0.30 | −0.08 |
| | | (0.79) | (0.40) |
| Major Power | $-0.85^{***}$ | 0.43 | $-1.68^{***}$ |
| | (0.33) | (0.93) | (0.41) |
| Contiguous | −0.16 | 0.63 | −0.52 |
| | (0.32) | (0.93) | (0.38) |
| $\text{Polity}_L$ | $-0.03^{***}$ | −0.04 | $-0.05^{***}$ |
| | (0.01) | (0.03) | (0.01) |
| FTA | $-0.54^{**}$ | −0.42 | $-1.06^{***}$ |
| | (0.22) | (0.47) | (0.33) |
| Alliance | $0.36^{**}$ | $-0.86^{**}$ | $1.22^{***}$ |
| | (0.17) | (0.38) | (0.23) |
| M-Ratio | $-1.10^{**}$ | $-3.49^{***}$ | $-1.27^{**}$ |
| | (0.48) | (1.26) | (0.63) |
| Time | 0.01 | −0.08 | 0.02 |
| | (0.03) | (0.07) | (0.04) |
| $\text{Time}^2$ | −0.00 | 0.00 | −0.00 |
| | (0.00) | (0.00) | (0.00) |
| $\text{Time}^3$ | 0.00 | −0.00 | 0.00 |
| | (0.00) | (0.00) | (0.00) |
| Constant | $3.42^{***}$ | $6.24^{***}$ | $3.58^{***}$ |
| | (0.56) | (1.46) | (0.77) |
| Number of observations | 15,483 | 3,252 | 7,194 |
| $R^2$ | 0.01 | 0.02 | 0.02 |

Standard errors in parentheses.

$^{*}p < .10$; $^{**}p < .05$; $^{***}p < .01$. All tests are two-tailed tests.

Table A3: Estimated effects on likelihood of conflict

Table A3 replicates the table in the main text, using data from the International Crisis Behav-

ior (ICB) data set (Brecher and Wilkenfeld, 2000). We collapse columns one and two (all MIDs and hostile MIDs) into a single regression here, as the ICB data do not distinguish by intensity. Indeed, the data used here focus on general crises, rather than militarized disputes, and so the idea of conflict intensity is not necessarily applicable. In general, our results are substantively similar to those in the main text, though not wholly robust. The results using the full sample of dyads shows that joint membership in the GATT was associated with lower likelihood of crisis involvement, as was the post-1995 era for non-joint-member dyads. While the interaction between the two is positive, it is large enough to cancel out only the period effects, meaning that the joint membership effects remain. Effectively, this means that—in spite of its positive effects with respect to trade—the deepening of institutionalization had no effect on crisis behavior. And importantly, non-joint-member dyads see a reduction in the likelihood of conflict of 1.26% when they move into the post-1995 era, despite being unaffected by WTO rules. We see a similar result in column two, using only non-agricultural dyads, wherein the judicialization of the WTO reduces the conflict-mitigating effects of the trade institution. Unlike our previous analysis, however, we see effects for agricultural dyads at 1995 ($p < .10$), but not in 2004. Notably, these results are weaker, both statistically and substantively, than those in the second column, suggesting that the effect of judicialization was not quite as powerful non-agricultural dyads.

In general, our results using international crises are similar to, but weaker than, our findings with respect to militarized disputes. This may be because of the difference in conceptualization of conflict across the two data sets. The MID data deal with the military behavior of states, while the ICB data focus on the genesis of *crises*. There is overlap here, but the two capture substantially different ideas. We are encouraged by the fact that our findings are similar across the two data sets, but that they hold more strongly within the data that concentrate on military interactions, as this is our area of interest.

# References

Brecher, Michael and Jonathan Wilkenfeld. 2000. *A Study of Crisis.* Ann Arbor, MI: University of Michigan Press.