

APPENDIX A. Descriptive Statistics of Variables

| | Obs | Freq. | Min | Max | Mean | Std.Dev. | P1 | P25 | P50 (Med) | P75 | P99 |
|-------------------------------------|---------|--------------------|---------|------------|-----------|--------------|---------|---------|--------------|-----------|------------|
| MID Initiation | | | | | | | | | | | |
| 0 | | 110,889 (98.8%) | | | | | | | | | |
| 1 | | 1,352 (1.2%) | | | | | | | | | |
| Ethnic Exclusion (Share of Pop.) | 112,241 | | 0.000 | 0.980 | 0.169 | (0.214) | 0.000 | 0.013 | 0.080 | 0.246 | 0.869 |
| Mass Unrest (Count) | 112,102 | | 0.000 | 88.000 | 2.310 | (7.126) | 0.000 | 0.000 | 0.000 | 2.000 | 34.000 |
| Ongoing Rivalry | | | | | | | | | | | |
| 0 | | 107,431 (95.7%) | | | | | | | | | |
| 1 | | 4,810 (4.3%) | | | | | | | | | |
| Ethnic Fractionalization | 112,241 | | 0.000 | 0.890 | 0.390 | (0.254) | 0.010 | 0.165 | 0.346 | 0.627 | 0.882 |
| Side A's Relative Capabilities | 112,241 | | 0.000 | 1.000 | 0.483 | (0.412) | 0.001 | 0.041 | 0.428 | 0.952 | 0.999 |
| Total Trade Volume | 112,241 | | 0.000 | 605,935 | 2,838.667 | (16,259.372) | 0.000 | 10.000 | 94.000 | 685.000 | 52,464.000 |
| FP Similarity | 112,241 | | -0.206 | 1.000 | 0.733 | (0.225) | 0.098 | 0.611 | 0.782 | 0.939 | 1.000 |
| Polity2 Score A | 112,241 | | -10.000 | 10.000 | 1.715 | (7.710) | -10.000 | -7.000 | 4.000 | 10.000 | 10.000 |
| Polity2 Score B | 112,241 | | -10.000 | 10.000 | 2.220 | (7.601) | -10.000 | -7.000 | 5.000 | 10.000 | 10.000 |
| Minimum Distance | 112,241 | | 0.000 | 17,942.213 | 3,928.240 | (3,950.578) | 0.000 | 131.120 | 3,152.224 | 7,046.336 | 14,083.934 |
| Peace Years | 112,241 | | 0.000 | 66.000 | 21.986 | (16.839) | 0.000 | 8.000 | 18.000 | 34.000 | 63.000 |

Correlation between MID initiation, ethnic exclusion, and ethnic fractionalization

| | MID Initiation | Ethnic Exclusion | Eth. Frac. |
|------------------|----------------|------------------|------------|
| MID Initiation | 1 | | |
| Ethnic Exclusion | 0.0373 | 1 | |
| Eth. Frac. | 0.0054 | 0.4134 | 1 |

Overall, the correlation between ethnic exclusion and ethnic fractionalization is not too large, yet still considerable. To account for this, I tried estimating the models with and without ethnic fractionalization and ethnic exclusion. Even when removing ethnic exclusion, the effect of fractionalization is still not statistically significant. In contrast, the coefficient of ethnic exclusion is statistically significant – a finding that remains robust.

APPENDIX B. Robustness Check with Random Effects (REs) Estimator

Random effects estimator is chosen for the robustness checks because of a few main reasons. First, fixed effects (FE) models – the common model choice in many international relations studies – involves subtracting the unit-specific means from both the dependent variable (DV) and independent variables (IVs). This removes between-unit variation and limits the effects of the variables to within-unit variations (Wooldridge 2019). While this makes FE estimator suitable for time-variant data (data that varies a lot across time), this feature also makes the FE filters out the effects of time-invariant variables (Beck 2001; Greene 2018, 396; Wilson and Butler 2007). In other words, FE models will absorb the effects of structural variables of interest, such regime type, income inequality, or education outcome, since they do not change much over time within a county/unit (and thus the data does not vary much from their unit-specific means). This makes the theoretically interesting coefficients lose their explanatory power. Since this study's purpose is to examine the effect of ethnic political inequality – which remains at the same level for a long time in many countries – the use of FE can increase the risk of type II error (rejecting the effect of a variable that actually matters).

Second, also because of the within-unit feature, FE models effectively remove observations that do not have any variation in the DV (Beck and Katz 2001). This is a major problem in this study because MID initiation, the outcome of interest, is a very rare event, which is highly time-invariant. This reduces significantly the sample size, making the sample unrepresentative and, potentially, creating selection bias (since dyads with no conflict at all are not random). Such selection bias can make coefficient estimates become biased, inefficient, and unreliable (Wilson and Butler 2007).

Third, RE models do not have the above problems, while still being able to provide information on both the within-unit (fixed effects) and between-unit variations. RE models are the recommended option, with no test required to determine between RE and FE, as it can produce similar results with the FE models without the associated issues (Bell and Jones 2015).

Table B1. Robustness Check (Interaction w/ Mass Unrest) (RE Estimator)

| | Model B1 Interaction (Mass Unrest) | Model B2 3-Way Interaction |
|--------------------------------|---------------------------------------|-------------------------------|
| Ethnic Exclusion | 0.662*** (0.188) | 0.537** (0.217) |
| Mass Unrest | -0.005 (0.007) | -0.002 (0.008) |
| Ethnic Exclusion * Mass Unrest | 0.046*** (0.017) | 0.039** (0.020) |
| Ongoing Rivalry | — | 1.560*** (0.151) |

| | | |
|--|----------------------|----------------------|
| Ongoing Rivalry * Ethnic Exclusion | — | -0.114 (0.372) |
| Ongoing Rivalry * Mass Unrest | — | -0.012 (0.017) |
| Ongoing Rivalry * Ethnic Exclusion * Mass Unrest | — | 0.022 (0.043) |
| Ethnic Fractionalization | -0.071 (0.197) | -0.086 (0.186) |
| Side A's Relative Capabilities | 0.451*** (0.113) | 0.469*** (0.115) |
| Dyad's Trade Volume | 0.000 (0.000) | 0.000 (0.000) |
| FP Similarity | -1.689*** (0.247) | -1.706*** (0.222) |
| Polity Score A | -0.025*** (0.006) | -0.020*** (0.006) |
| Polity Score B | -0.004 (0.006) | 0.005 (0.006) |
| Distance | -0.000*** (0.000) | -0.000*** (0.000) |
| Peace Years | -0.243*** (0.016) | -0.205*** (0.016) |
| Peace Years^2 | 0.008*** (0.001) | 0.007*** (0.001) |
| Peace Years^3 | -0.000*** (0.000) | -0.000*** (0.000) |
| Constant | -2.190*** (0.248) | -2.500*** (0.231) |
| Ln σ_u | 0.211** (0.103) | -0.005 (0.115) |
| N | 112,241 | 112,241 |
| N Directed Dyads | 2,846 | 2,846 |
| Log-likelihood | -5664 | -5554 |
| χ^2 | 924.0 | 1524 |
| σ_u | 1.111 | 0.997 |
| ρ (rho) | 0.273 | 0.232 |

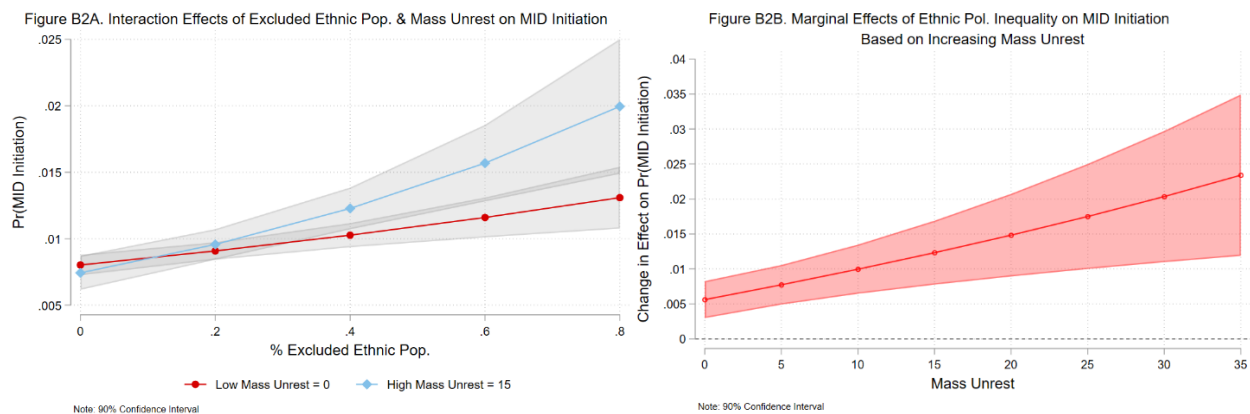
Robust standard errors in parentheses

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

In terms of significance, direction, and size of coefficients (the fixed effects part), results in table B1 are mostly similar compared to findings in the original table 1.

The sigma statistic (σ_u), or the standard deviation of the random effect, shows the between-group variation of the effects. For example, the odds ratios gained from exponentiating σ_u is $e^{1.111} = 3.037$ (for model B1) and $e^{0.997} = 2.71$ (for model B2). This means that the odds of MID initiation for a state, whose unobserved features put the state 1 standard deviation (SD) above the mean, are around 3 times those of an average/mean state having the *same observed variables*. In addition, the **rho** coefficient indicates that around 0.273 of the variance can be attributed to the unobserved features of the dyads.

Figures for Model B1 (Ethnic Inequality * Mass Unrest) (REs)



Even though the predicted probability plot (B2A) does not show a significant difference between the probabilities of MID initiation when mass unrest is 0 and 15, we can still see that there is a positive interaction. In addition, these are just two values/scenarios of mass unrest – just because these two scenarios have overlapping confidence intervals does not mean that there is no statistically significant interactive effect. In fact, the marginal effects plot (B2B) confirms that the effect of ethnic inequality on MID initiation increases noticeably when mass unrest increases.

Figure for Model B2

Figure B3. Marginal Effects of Ongoing Rivalry on MID Initiation (REs) Based on Ethnic Pol. Inequality & Mass Unrest

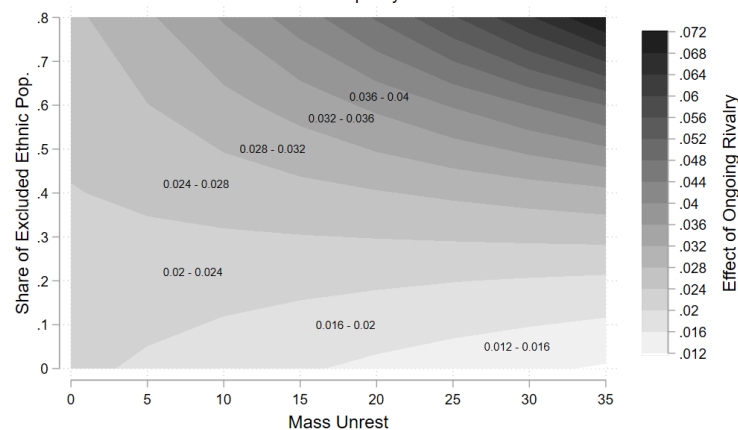


Figure B3 again shows very similar patterns to that of the 3-way interaction model (between ethnic exclusion, unrest, and rivalry) in the main findings.

APPENDIX C. Robustness Check: Rare Events Logistic Regression with Firth Estimator

Table C1. Robustness Test: Rare Events Logit (Firth Estimator))

| | Model C1 2-Way Interaction | Model C2 Rivalry | Model C3A Rivalry-Ethnic Kin Baseline: Non-Rivals | Model C3B Rivalry-Ethnic Kin Baseline: Other Rivals |
|--|-------------------------------|----------------------|---|---|
| DV: MID Initiation | | | | |
| Ethnic Exclusion | 0.461*** (0.130) | 0.526*** (0.167) | 0.514*** (0.167) | -0.165 (0.214) |
| Mass Unrest | -0.002 (0.006) | -0.001 (0.007) | -0.001 (0.007) | -0.008 (0.010) |
| Ethnic Exclusion * Mass Unrest | 0.047*** (0.014) | 0.040** (0.017) | 0.041** (0.017) | 0.051** (0.025) |
| Rivalry | — | 1.397*** (0.092) | — | — |
| Rivalry * Ethnic Exclusion | — | -0.672*** (0.239) | — | — |
| Rivalry * Mass Unrest | — | -0.009 (0.012) | — | — |
| Rivalry * Exclusion * Unrest | — | 0.016 (0.029) | — | — |
| Non-Rival | — | — | — | -1.340*** (0.099) |
| Rival (Other) | — | — | 1.340*** (0.099) | — |
| Rival (EGIPA Marginalized) | — | — | 1.615*** (0.165) | 0.275 (0.173) |
| Non-Rival * Exclusion | — | — | — | 0.679*** (0.259) |
| Non-Rival * Unrest | — | — | — | 0.008 (0.012) |
| Rival (Other) * Exclusion | — | — | -0.679*** (0.259) | — |
| Rival (Other) * Unrest | — | — | -0.008 (0.012) | — |
| Rival (EGIPA Marginalized) * Exclusion | — | — | -0.850* (0.435) | -0.171 (0.457) |
| Rival (EGIPA Marginalized) * Unrest | — | — | -0.043 (0.036) | -0.036 (0.037) |
| Non-Rival * Exclusion * Unrest | — | — | — | -0.011 (0.030) |
| Rival (Other) * Exclusion * Unrest | — | — | 0.011 (0.030) | — |
| Rival (EGIPA Marginalized) * Exclusion * Unrest | — | — | 0.380** (0.157) | 0.369** (0.158) |
| Eth. Frac. | -0.069 | -0.015 | -0.008 | -0.008 |

| | | | | |
|--------------------------------|-----------|-----------|-----------|-----------|
| | (0.120) | (0.121) | (0.121) | (0.121) |
| Side A's Relative Capabilities | 0.415*** | 0.476*** | 0.481*** | 0.481*** |
| | (0.080) | (0.084) | (0.084) | (0.084) |
| Dyad's Trade Volume | 0.000*** | 0.000** | 0.000** | 0.000** |
| | (0.000) | (0.000) | (0.000) | (0.000) |
| FP Similarity | -1.494*** | -1.394*** | -1.438*** | -1.438*** |
| | (0.154) | (0.151) | (0.152) | (0.152) |
| Polity Score A | -0.028*** | -0.022*** | -0.023*** | -0.023*** |
| | (0.004) | (0.004) | (0.004) | (0.004) |
| Polity Score B | 0.004 | 0.011*** | 0.010*** | 0.010*** |
| | (0.004) | (0.004) | (0.004) | (0.004) |
| Minimum Distance | -0.000*** | -0.000*** | -0.000*** | -0.000*** |
| | (0.000) | (0.000) | (0.000) | (0.000) |
| Peace Years | -0.350*** | -0.283*** | -0.282*** | -0.282*** |
| | (0.014) | (0.014) | (0.014) | (0.014) |
| Peace Years^2 | 0.012*** | 0.009*** | 0.009*** | 0.009*** |
| | (0.001) | (0.001) | (0.001) | (0.001) |
| Peace Years^3 | -0.000*** | -0.000*** | -0.000*** | -0.000*** |
| | (0.000) | (0.000) | (0.000) | (0.000) |
| Constant | -1.097*** | -1.823*** | -1.793*** | -0.454*** |
| | (0.151) | (0.158) | (0.159) | (0.160) |
| N | 112241 | 112241 | 112241 | 112241 |
| Log-likelihood | -5777.304 | -5612.074 | -5596.947 | -5596.947 |
| Chi2 | 2333.183 | 2928.110 | 2947.542 | 2947.502 |

Even though the findings have been robust across the logistic regression models and random-effects models, there is a concern that the maximum likelihood estimator (MLE) may suffer from bias when the events in the sample are rare. The penalized MLE (Firth's estimator) is used as a robustness check to account for the fact that international conflict (MIDs) are rare events. Overall, the results in table C1 and the following figures show that the key variables and interactions have strongly similar directions and statistical significance compared to those in the main findings.

Figures for Model C1

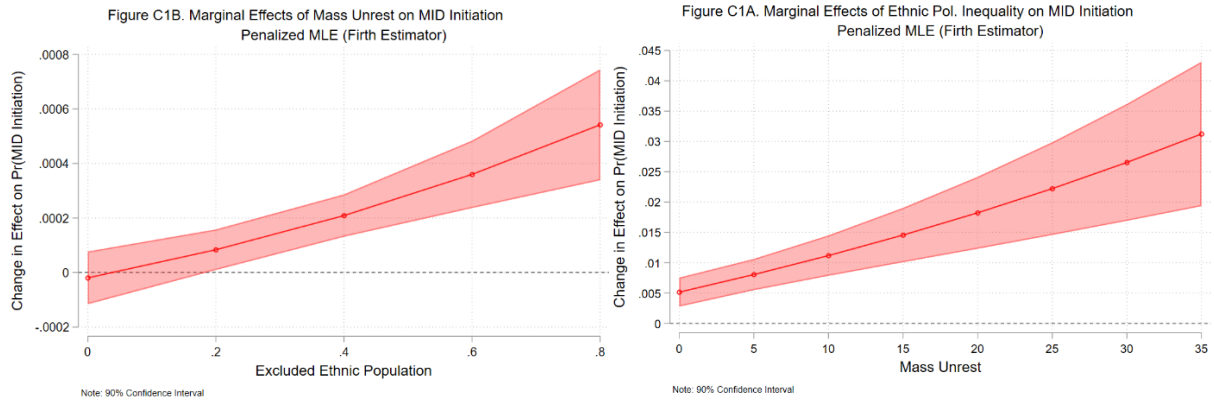
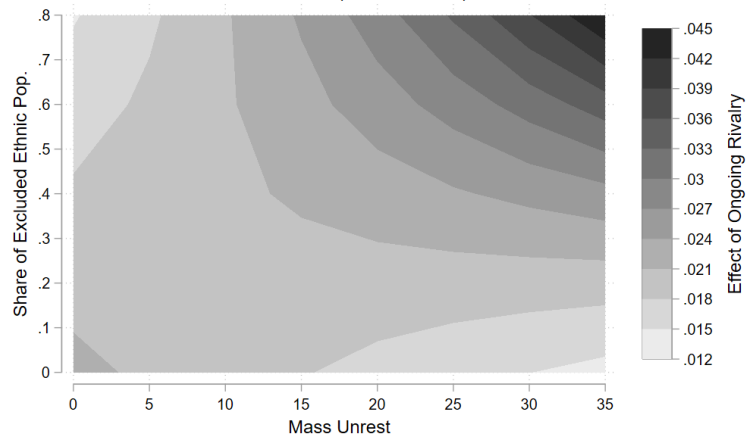


Figure for Model C2

Figure C2. Marginal Effects of Ongoing Rivalry on MID Initiation
Penalized MLE (Firth Estimator)



Figures for Model C3A and Model C3B

Figure C3A. Marginal Effects of Other Rivals (Who Do Not Marginalize State A's EGIPs)
Penalized MLE (Firth Estimator)

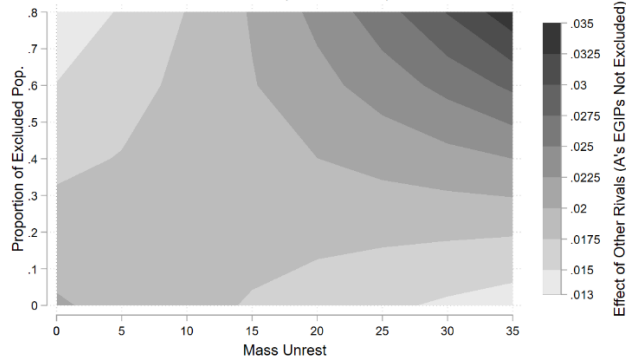
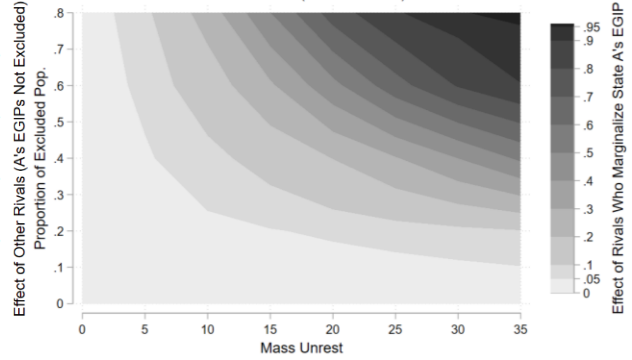


Figure C3B. Marginal Effects of Rivals Who Marginalize State A's EGIP
Penalized MLE (Firth Estimator)



APPENDIX D. Robustness Check: Joint Democracy (Instead of Polity Score for Each State)

Overall, the results when replacing joint democracy with polity scores have a strong resemblance to the main findings. While the marginal effects appear to be a bit smaller, their direction and significance are pretty much the same.

Table D1. Robustness Test: Joint Democracy (Instead of Polity Scores for Each State)

| | (1) Model D1 | (2) Model D2 | (3) Model D3A (Baseline: Non- Rival) | (4) Model D3B (Baseline: Other Rivals) |
|---|---------------------|---------------------|---|---|
| | b/se | b/se | b/se | b/se |
| DV: MID Initiation | | | | |
| Ethnic Exclusion | 0.483*** (0.145) | 0.504** (0.197) | 0.497** (0.196) | -0.157 (0.261) |
| Mass Unrest | -0.005 (0.007) | -0.003 (0.008) | -0.003 (0.008) | -0.014 (0.015) |
| Ethnic Exclusion * Mass Unrest | 0.050*** (0.019) | 0.044** (0.019) | 0.044** (0.019) | 0.053 (0.043) |
| Rivalry | | 1.351*** (0.142) | | |
| Rivalry * Ethnic Exclusion | | -0.641** (0.304) | | |
| Rivalry * Mass Unrest | | -0.011 (0.016) | | |
| Rivalry * Exclusion * Unrest | | 0.014 (0.045) | | |
| Non-Rival | | | | -1.300*** (0.147) |
| Rival (Other) | | | 1.300*** (0.147) | |
| Rival (EGIPA Marginalized) | | | 1.567*** (0.229) | 0.267 (0.225) |
| Non-Rival * Exclusion | | | | 0.654** (0.323) |
| Non-Rival * Unrest | | | | 0.010 (0.017) |
| Rival (Other) * Exclusion | | | -0.654** (0.323) | |
| Rival (Other) * Unrest | | | -0.010 (0.017) | |
| Rival (EGIPA Marginalized) * Exclusion | | | -0.840 (0.516) | -0.186 (0.539) |
| Rival (EGIPA Marginalized) * Unrest | | | -0.056** (0.022) | -0.046* (0.026) |

| | | | | |
|--|----------------------|----------------------|----------------------|----------------------|
| Non-Rival * Exclusion * Unrest | | | | -0.009 (0.047) |
| Rival (Other) * Exclusion * Unrest | | | 0.009 (0.047) | |
| Rival (EGIPA Marginalized) * Exclusion * Unrest | | | 0.426*** (0.089) | 0.417*** (0.097) |
| Eth. Frac. | 0.003 (0.176) | 0.039 (0.164) | 0.049 (0.166) | 0.049 (0.166) |
| Side A's Relative Capabilities | 0.269** (0.107) | 0.315*** (0.114) | 0.324*** (0.110) | 0.324*** (0.110) |
| Dyad's Trade Volume | 0.000*** (0.000) | 0.000* (0.000) | 0.000* (0.000) | 0.000* (0.000) |
| FP Similarity | -1.365*** (0.236) | -1.339*** (0.190) | -1.377*** (0.188) | -1.377*** (0.188) |
| Joint Democracy | -0.664*** (0.154) | -0.533*** (0.142) | -0.551*** (0.133) | -0.551*** (0.133) |
| Minimum Distance | -0.000*** (0.000) | -0.000*** (0.000) | -0.000*** (0.000) | -0.000*** (0.000) |
| Peace Years | -0.347*** (0.019) | -0.285*** (0.018) | -0.284*** (0.018) | -0.284*** (0.018) |
| Peace Years^2 | 0.012*** (0.001) | 0.009*** (0.001) | 0.009*** (0.001) | 0.009*** (0.001) |
| Peace Years^3 | -0.000*** (0.000) | -0.000*** (0.000) | -0.000*** (0.000) | -0.000*** (0.000) |
| Constant | -1.069*** (0.221) | -1.705*** (0.204) | -1.683*** (0.200) | -0.382* (0.215) |
| N | 118590 | 118590 | 118590 | 118590 |
| Log-likelihood | -6064.064 | -5914.462 | -5907.245 | -5907.245 |
| Pseudo R2 | 0.201 | 0.221 | 0.222 | 0.222 |
| Chi2 | 1581.142 | 2293.844 | 2758.270 | 2758.270 |

Figures for Model D1

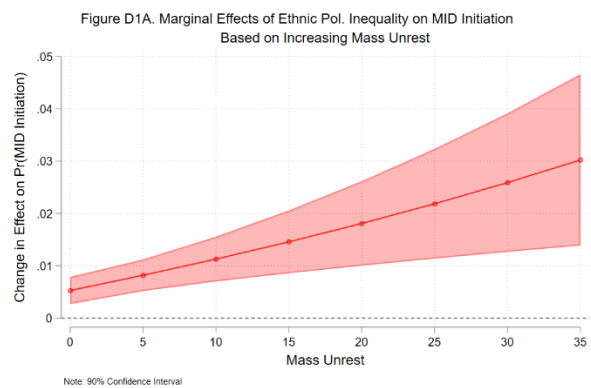
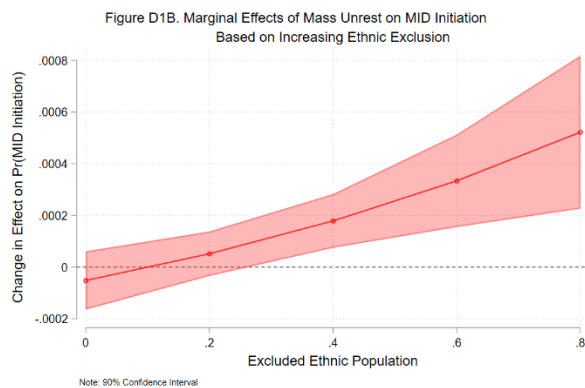
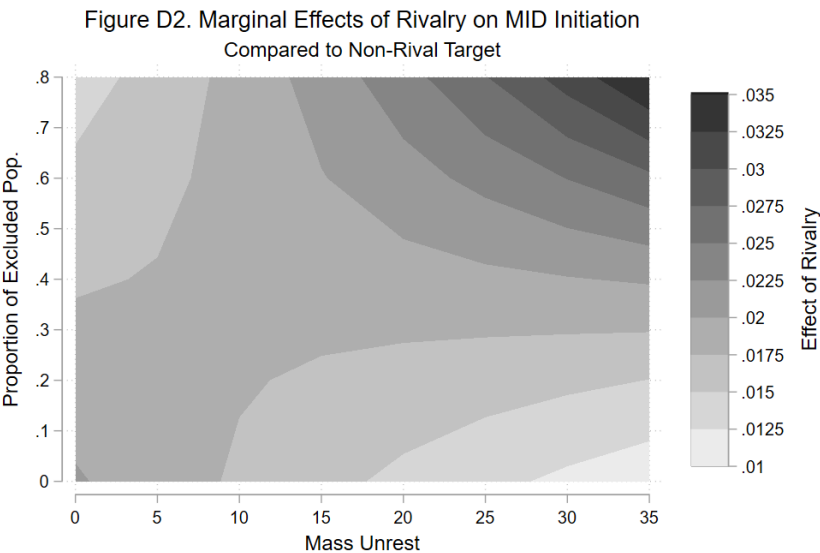
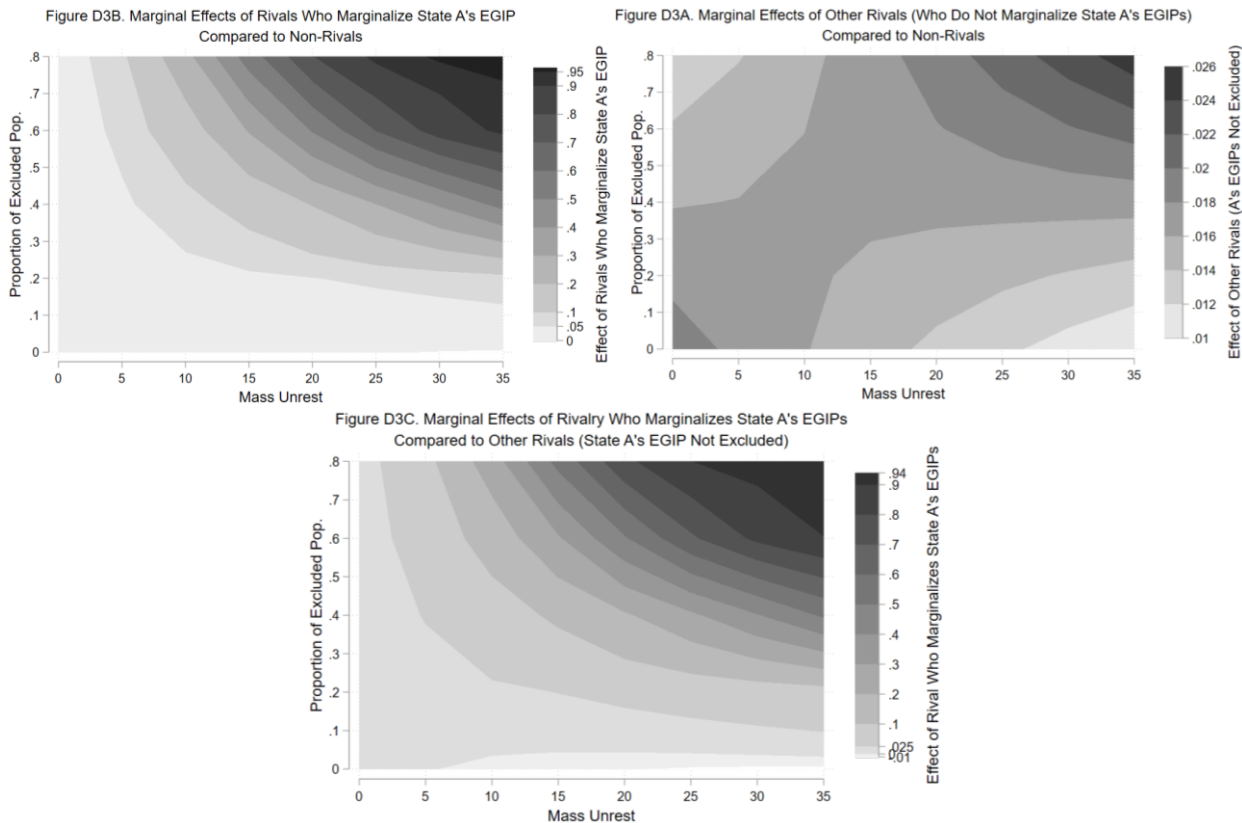


Figure for Model D2



Figures for Model D3A and Model D3B



APPENDIX E. Effects of Economic Triggers (Inflation)

Economic problems (especially their impact on ordinary citizens) can be ideally captured by the misery index (a combination of inflation and unemployment). Unfortunately, data for the misery index, especially unemployment, is either unavailable or inconsistent for most states and years. To my knowledge, the most comprehensive dataset for unemployment (from World Bank) only contains such information since 1991 (and even then, it has many missing values).

Instead, I only use inflation data given its more extensive coverage. However, results from such data should still be interpreted with caution, since similar issues also exist with inflation data (especially missingness). In the models below, I capture inflation by percent change in CPI by year, which is drawn from the World Bank.

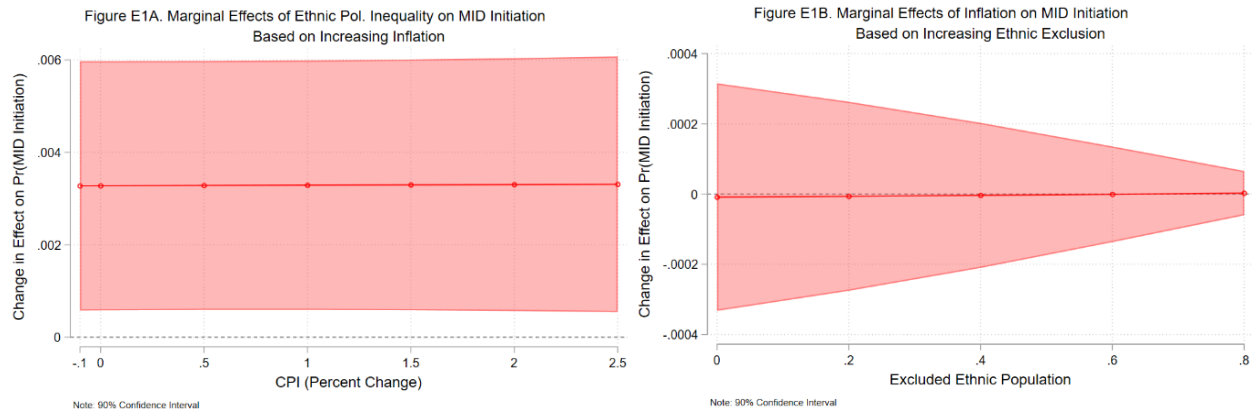
Table E1. Interaction of Ethnic Exclusion, Inflation, and Rival-Ethnic Combination

| | Model E1 2-Way Interaction | Model E2 Rivalry | Model E3A Rivalry-Ethnic Kin Baseline: Non-Rival | Model E3B Rivalry-Ethnic Kin Baseline: Other Rivals |
|------------------------------------|-------------------------------|----------------------|--|--|
| DV: MID Initiation | | | | |
| Ethnic Exclusion | 0.342** (0.171) | 0.381* (0.216) | 0.342 (0.213) | -0.139 (0.286) |
| Inflation | -0.001 (0.022) | -0.050 (0.033) | -0.048 (0.032) | 0.076** (0.033) |
| Ethnic Exclusion * Inflation | 0.002 (0.024) | 0.057 (0.036) | 0.055 (0.036) | -0.086** (0.038) |
| Rivalry | | 1.126*** (0.190) | | |
| Rivalry * Ethnic Exclusion | | -0.609** (0.309) | | |
| Rivalry * Inflation | | 0.139*** (0.041) | | |
| Rivalry * Exclusion * Inflation | | -0.161*** (0.047) | | |
| Non-Rival | | | | -0.926*** (0.192) |
| Rival (Other) | | | 0.926*** (0.192) | |
| Rival (EGIPA Marginalized) | | | 1.259*** (0.206) | 0.333 (0.208) |
| Non-Rival * Exclusion | | | | 0.480 (0.329) |
| Non-Rival * Inflation | | | | -0.125*** (0.046) |
| Rival (Other) * Exclusion | | | -0.480 | |

| | | | | |
|-----------------------------|-----------|-----------|-----------|-----------|
| | | | (0.329) | |
| Rival (Other) * Inflation | | | 0.125*** | |
| | | | (0.046) | |
| Rival (EGIPA Marginalized) | | | -0.129 | 0.352 |
| * Exclusion | | | | |
| | | | (0.519) | (0.552) |
| Rival (EGIPA Marginalized) | | | 1.695*** | 1.571*** |
| * Inflation | | | (0.609) | (0.608) |
| Non-Rival * Exclusion * | | | | 0.141*** |
| Inflation | | | | (0.053) |
| Rival (Other) * Exclusion * | | | -0.141*** | |
| Inflation | | | (0.053) | |
| Rival (EGIPA Marginalized) | | | -2.531** | -2.390** |
| * Exclusion * Inflation | | | (1.004) | (1.003) |
| Eth. Frac. | 0.290 | 0.365* | 0.422** | 0.422** |
| | (0.197) | (0.186) | (0.191) | (0.191) |
| Side A's Relative | 0.575*** | 0.565*** | 0.546*** | 0.546*** |
| Capabilities | | | | |
| | (0.135) | (0.140) | (0.135) | (0.135) |
| Dyad's Trade Volume | 0.000*** | 0.000 | 0.000* | 0.000* |
| | (0.000) | (0.000) | (0.000) | (0.000) |
| FP Similarity | -1.898*** | -1.833*** | -1.924*** | -1.924*** |
| | (0.303) | (0.288) | (0.274) | (0.274) |
| Polity Score A | -0.033*** | -0.026*** | -0.027*** | -0.027*** |
| | (0.008) | (0.008) | (0.008) | (0.008) |
| Polity Score B | 0.003 | 0.011 | 0.008 | 0.008 |
| | (0.008) | (0.008) | (0.007) | (0.007) |
| Minimum Distance | -0.000*** | -0.000*** | -0.000*** | -0.000*** |
| | (0.000) | (0.000) | (0.000) | (0.000) |
| Peace Years | -0.357*** | -0.306*** | -0.303*** | -0.303*** |
| | (0.023) | (0.024) | (0.024) | (0.024) |
| Peace Years^2 | 0.012*** | 0.010*** | 0.010*** | 0.010*** |
| | (0.001) | (0.001) | (0.001) | (0.001) |
| Peace Years^3 | -0.000*** | -0.000*** | -0.000*** | -0.000*** |
| | (0.000) | (0.000) | (0.000) | (0.000) |
| _cons | -0.831*** | -1.377*** | -1.316*** | -0.390 |
| | (0.273) | (0.301) | (0.284) | (0.296) |
| N | 80348 | 80348 | 80348 | 80348 |
| Log-likelihood | -3588.106 | -3523.792 | -3511.242 | -3511.242 |
| Pseudo R2 | 0.221 | 0.235 | 0.238 | 0.238 |
| Chi2 | 1507.671 | 1895.267 | 2020.789 | 2020.789 |

When using inflation as a proxy for economic problems, the results are mixed. Figures E1A and E1B show that not only is there no interactive effect between ethnic exclusion and inflation, but there is also no statistically significant effect of inflation on MID initiation.

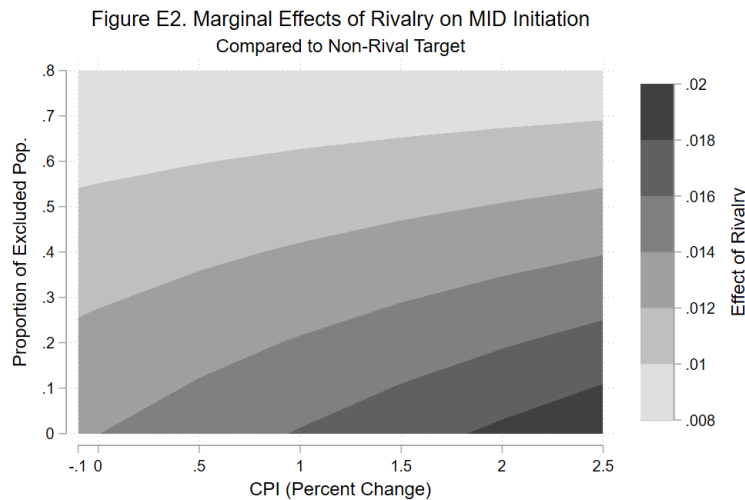
Figures for model E1



Despite the null result for model E1, there are consistent results when I included three-way interaction terms between ethnic exclusion, inflation, and rivalry (in model E2) and between ethnic exclusion, inflation, and ethnic kin in rival (in model E3A and E3B). Particularly, models E2, E3A, and E3B suggest that states are most likely to target rivals compared to non-rivals when such home states experience both low ethnic political inequality and high CPI change. The same pattern holds for rival targets who marginalize the home state's ethnic kin (figure E3A, E3B, and E3C).

However, these results also suggest that the results of the 3-way interaction terms may be driven by the strong effect of rivalry on MID initiation.

Figure for model E2



Figures for model E3A and E3B

Figure E3A. Marginal Effects of Other Rivals (Who Do Not Marginalize State A's EGIPs) Compared to Non-Rivals

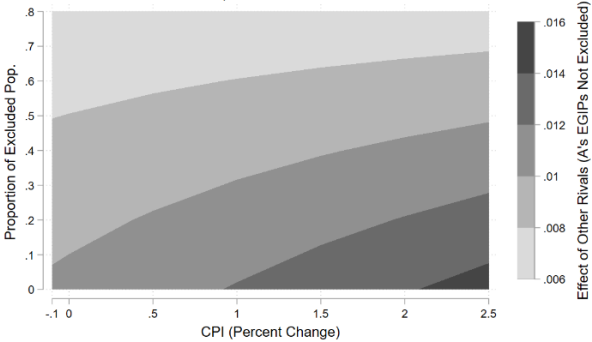


Figure E3B. Marginal Effects of Rivals Who Marginalize State A's EGIP Compared to Non-Rivals

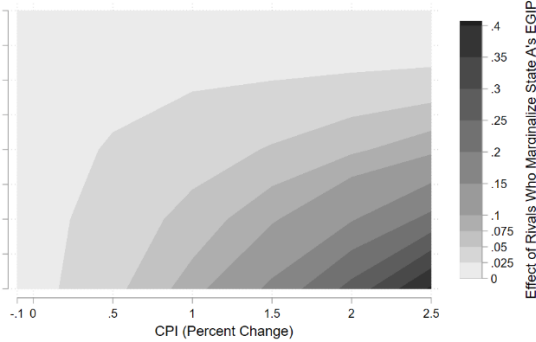
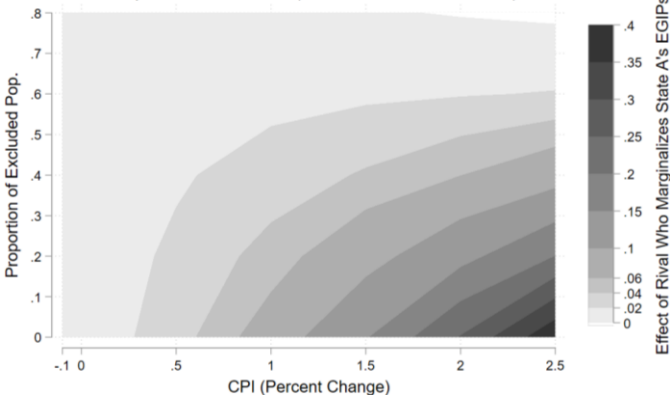


Figure E3C. Marginal Effects of Rivalry Who Marginalizes State A's EGIPs Compared to Other Rivals (State A's EGIP Not Excluded)



APPENDIX F. Effects of Horizontal Inequality

To estimate the level of horizontal inequality at the country level, I calculate the Group Gini index (GGini) that captures the overall differences in levels of economic activity and development between ethnic groups. Particularly, the GGini shows the *average* difference in economic output between all pairs of groups in a country. The formula for the GGini is based on one proposed by Mancini, Stewart, and Brown (2008) and Canelas and Gisselquist (2018).ⁱ

To calculate the GGini index, nightlight data is used as a proxy for ethnic groups' economic output. This data is drawn from the EPR's GrowUP program. While not a perfect proxy, nightlight emission is still a reasonable metric to capture economic output/development. It also offers broad coverage (since 1992 to 2020) and varies by year. In addition, this data is corrected to adjust for situations when an ethnic group settles in multiple polygons.

Table F1. Interaction of Horizontal Inequality (Economic), Inflation, and Rival-Ethnic Kin

| | Model E1 2-Way Interaction | Model E2 Rivalry | Model E3A Rivalry-Ethnic Kin Baseline: Non-Rival | Model E3B Rivalry-Ethnic Kin Baseline: Other Rivals |
|-------------------------------|-------------------------------|---------------------|--|---|
| DV: MID Initiation | | | | |
| Group Gini | -0.423 (0.395) | -0.329 (0.465) | -0.341 (0.462) | -0.960 (0.736) |
| Mass Unrest | 0.025* (0.014) | 0.034** (0.014) | 0.034** (0.014) | 0.014 (0.044) |
| Group Gini * Mass Unrest | -0.045 (0.089) | -0.076 (0.090) | -0.077 (0.091) | -0.031 (0.376) |
| Rivalry | | 1.134*** (0.258) | | |
| Rivalry * Group Gini | | -0.932 (0.727) | | |
| Rivalry * Mass Unrest | | -0.040 (0.041) | | |
| Rivalry * GGini * Unrest | | 0.186 (0.358) | | |
| Non-Rival | | | | -0.955*** (0.302) |
| Rival (Other) | | | 0.955*** (0.302) | |
| Rival (EGIPA Marginalized) | | | 1.518*** (0.354) | 0.563 (0.413) |
| Non-Rival * GGini | | | | 0.620 (0.789) |
| Non-Rival * Unrest | | | | 0.020 (0.045) |
| Rival (Other) * GGini | | | -0.620 | |

| | | | | |
|------------------------|-----------|-----------|-----------|-----------|
| | | | (0.789) | |
| Rival (Other) * Unrest | | | -0.020 | |
| | | | (0.045) | |
| Rival (EGIPA | | | -1.684 | -1.064 |
| Marginalized) * GGini | | | (1.238) | (1.294) |
| Rival (EGIPA | | | -0.151** | -0.131* |
| Marginalized) * | | | | |
| Unrest | | | (0.069) | (0.077) |
| Non-Rival * GGini * | | | | -0.046 |
| Unrest | | | | (0.385) |
| Rival (Other) * GGini | | | 0.046 | |
| * Unrest | | | (0.385) | |
| Rival (EGIPA | | | 0.928** | 0.882* |
| Marginalized) * GGini | | | | |
| * Unrest | | | (0.402) | (0.483) |
| Eth. Frac. | 0.807** | 0.794** | 0.821*** | 0.821*** |
| | (0.326) | (0.318) | (0.313) | (0.313) |
| Side A's Relative | 0.775*** | 0.789*** | 0.795*** | 0.795*** |
| Capabilities | (0.168) | (0.172) | (0.169) | (0.169) |
| Dyad's Trade Volume | 0.000** | 0.000 | 0.000 | 0.000 |
| | (0.000) | (0.000) | (0.000) | (0.000) |
| FP Similarity | -1.667*** | -1.625*** | -1.678*** | -1.678*** |
| | (0.444) | (0.450) | (0.444) | (0.444) |
| Polity Score A | -0.021* | -0.013 | -0.013 | -0.013 |
| | (0.011) | (0.011) | (0.011) | (0.011) |
| Polity Score B | -0.012 | -0.003 | -0.004 | -0.004 |
| | (0.011) | (0.011) | (0.011) | (0.011) |
| Minimum Distance | -0.000*** | -0.000*** | -0.000*** | -0.000*** |
| | (0.000) | (0.000) | (0.000) | (0.000) |
| Peace Years | -0.336*** | -0.301*** | -0.300*** | -0.300*** |
| | (0.028) | (0.028) | (0.028) | (0.028) |
| Peace Years^2 | 0.011*** | 0.010*** | 0.010*** | 0.010*** |
| | (0.001) | (0.001) | (0.001) | (0.001) |
| Peace Years^3 | -0.000*** | -0.000*** | -0.000*** | -0.000*** |
| | (0.000) | (0.000) | (0.000) | (0.000) |
| Constant | -1.141*** | -1.576*** | -1.547*** | -0.593 |
| | (0.421) | (0.450) | (0.446) | (0.497) |
| N | 42349 | 42349 | 42349 | 42349 |
| Log-likelihood | -1971.925 | -1943.202 | -1940.119 | -1940.119 |
| Pesudo R2 | 0.235 | 0.246 | 0.248 | 0.248 |
| Chi2 | 748.626 | 824.981 | 894.380 | 894.380 |

Figures for model F1

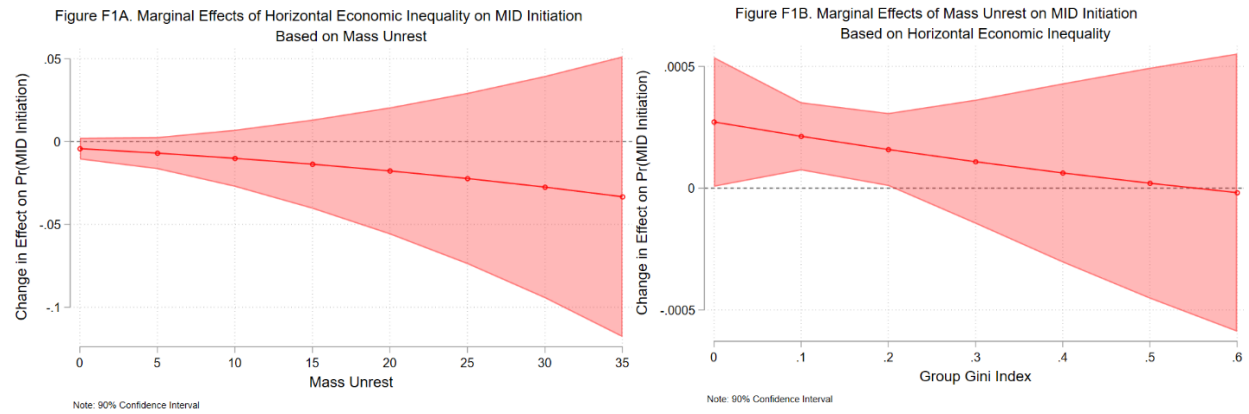
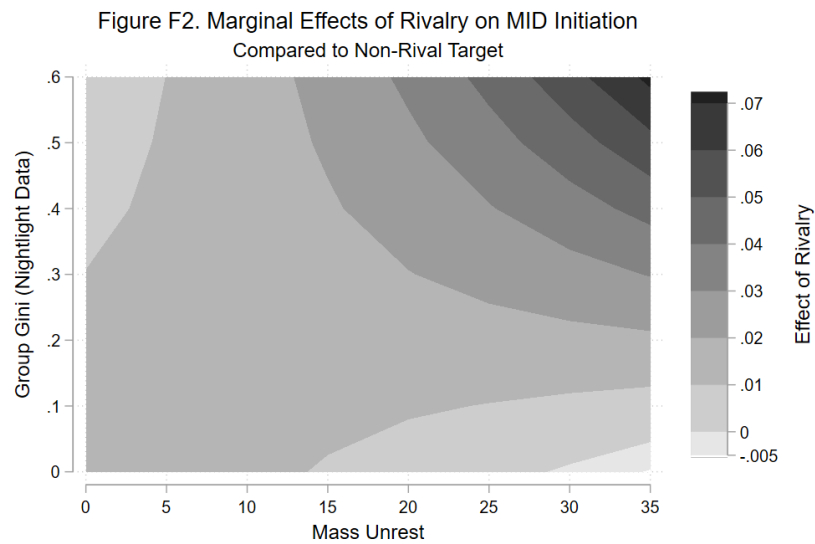


Figure for model F2



Figures for model F3A and F3B

Figure F3A. Marginal Effects of Other Rivals (Who Do Not Marginalize State A's EGIPs)
Compared to Non-Rival Targets

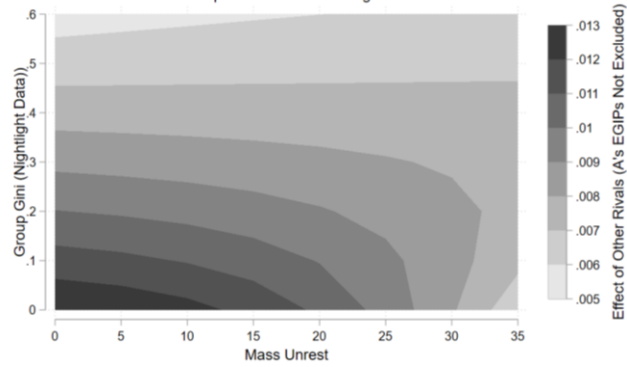


Figure F3B. Marginal Effects of Rivals Who Marginalize State A's EGIPs
Compared to Non-Rival Target

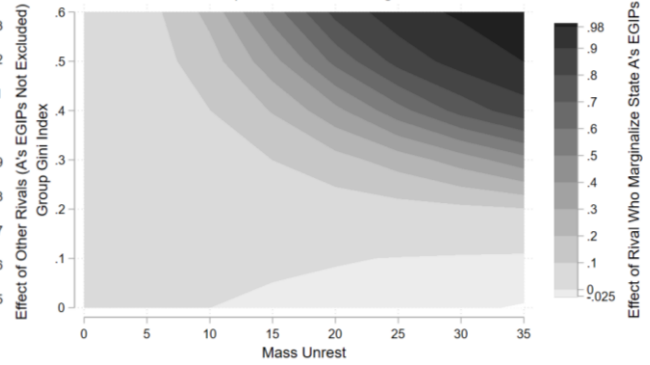
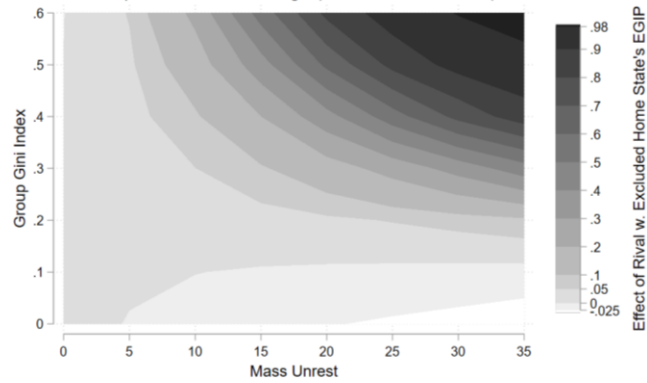


Figure F3C. Marginal Effects of Rivals Who Marginalize State A's EGIPs
Compared to Other Rival Target (A's EGIPs Not Excluded)



ⁱ The original formula for the Group Gini is

$$\frac{1}{2\bar{x}} \sum_i^I \sum_j^J w_i w_j |\bar{x}_i - \bar{x}_j|$$

Where

x is the variable of interest;

\bar{x} is the mean value;

J denotes the number of groups with i and j being two different groups in the population; and

w represents each group's population share.

However, for computational efficiency, I adopted a mathematically equivalent approach **(b)** when calculating the GGini:

$$\begin{aligned} & \frac{1}{2\bar{x}} \sum_i^I \sum_j^J w_i w_j |\bar{x}_i - \bar{x}_j| \\ = & \frac{1}{\bar{x}} \sum_{i < j} w_i w_j |\bar{x}_i - \bar{x}_j| \\ = & \frac{1}{\frac{\sum_j x_j}{N}} \sum_{i < j} w_i w_j \left| \frac{y_i}{N_i} - \frac{y_j}{N_j} \right| \\ = & \frac{N}{\sum_j x_j} \sum_{i < j} w_i w_j \left| \frac{y_i}{N_i} - \frac{y_j}{N_j} \right| \\ = & \frac{N}{\sum_j x_j} \sum_{i < j} w_i w_j \left| \frac{y_i}{w_i N} - \frac{y_j}{w_j N} \right| \quad (\mathbf{a}) \end{aligned}$$

Let $\bar{y}_i^* = \frac{y_i}{w_i}$ and $\bar{y}_j^* = \frac{y_j}{w_j}$:

$$\begin{aligned} (\mathbf{a}) &= \frac{N}{\sum_j x_j} \sum_{i < j} w_i w_j \left| \frac{\bar{y}_i^*}{N} - \frac{\bar{y}_j^*}{N} \right| \\ &= \frac{N}{\sum_j x_j} \sum_{i < j} w_i w_j \left(\frac{1}{N} \right) |\bar{y}_i^* - \bar{y}_j^*| \\ &= \frac{N}{\sum_j x_j} \left(\frac{1}{N} \right) \sum_{i < j} w_i w_j |\bar{y}_i^* - \bar{y}_j^*| \\ &= \frac{1}{\sum_j x_j} \sum_{i < j} w_i w_j |\bar{y}_i^* - \bar{y}_j^*| \quad (\mathbf{b}) \end{aligned}$$