Coding Decisions & Additional Results for "When and Whom to Join: The Expansion of Ongoing Violent Interstate Conflicts"

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Data Set Construction

Rules for Including MIDs

We use the Correlates of War (COW) Militarized Interstate Dispute (MID) data set to identify a sample of disputes (Ghosn, Palmer, and Bremer 2004). The rules for including MIDs in our data set was based only on the values of certain variables for the initial belligerents. We define the initial belligerents of a MID as those states involved in a MID on its first day either as the state(s) that took the first codeable militarized action or as the state(s) that was targeted by that militarized action. We consider a state(s) to be the initiator of a MID if Side A equals 1, which occurs when a state(s) crosses the MID threshold by either threatening to use force or using force before its opponent. In this sense, the initiator(s) of a MID is not necessarily the instigator. We consider a state(s) to be the target of a MID if Side A equals 0. MIDs are included in our data set if the following two conditions are met:

1. The MID lasted for more than 1 day (i.e., the start date of a MID could not be equal to the end date).

2. The hostility level of the **dispute** had to be 4 (use of force) or 5 (war). Note: this rule requires that only one of the initial belligerents have a hostility level of 4 or 5. For example, in MID# 4, the UK (country code or ccode 200) had a **participant** hostility level of 3 but Albania (ccode 339) had a **participant** hostility level of 4, which made the overall hostility level of the **dispute** a 4 and thus, this MID is included in our data set. Another example is MID# 11, in which Austria (ccode 305) had a **participant** hostility level of 1 but Germany (ccode 255) had a **participant** hostility level of 4, which made the overall hostility level of the **dispute** a 4 and thus, this MID is also

included in our data set. In short, only one of the initial belligerents is required to have a **participant** hostility level of 4 in order for the MID to be included in our data set.

Multiple Initial Belligerents

If there were multiple initial belligerents of a MID then we created a set of initiator-target dyads. For example, MID# 50 had three initial belligerents, the US (ccode 2) and Taiwan (ccode 713) on the initiating side and China (ccode 710) on the target side. We created two dyads: a US-China (2-710) dyad and a Taiwan-China (713-710) dyad.

Joiners

A state was considered to have joined a MID if it participated in the MID for at least one day after the first day of the MID. It is not possible for us to determine whether a state joined a MID voluntarily or "joined" because they were targeted by another state after the first day of a MID. A state was considered to have joined the initiating side if they were not an initial belligerent and Side A equals 1. A state was considered to have joined the targeted side if they were not an initial belligerent and Side A equals 0.

We are not concerned with how long a state that joined participated in a MID or why and when they exited a MID. States are counted as joiners (assuming they meet the conditions stipulated above) even if they only participate for one day. For example, the UK (ccode 200) joined MID# 122 on June 25, 1961 and exited on June 26, 1961. As another example, South Korea (ccode 732) joined MID# 1217 on February 24, 1967 which is on the same day that the MID ended.

We are also not interested in a state that joins a MID multiple times (e.g., joining, exiting, joining). We only examine the time until the first joining occurrence. For example, in MID# 4095, Greece (ccode 350) initially joins on August 17, 1996 but later exits on October 25, 1998, re-joins on July 21, 1999 and exits on October 7, 1999, and re-joins again on October 20, 2000 and exits on April 26, 2001. In our data set, after Greece joins on August 17, 1996, it exits the data set and is no longer at risk of joining that MID.

Initial Belligerent Participation

If an initial belligerent only participated in a MID for a single day then potential joiners do not have the ability to join that initial belligerent (i.e., they are removed from the data set). For example, MID# 1382 began on July 14, 1974. On the day the MID began, Sudan (target, ccode 625) exited the MID leaving three other initial belligerents; Uganda (initiator, ccode 500), Tanzania (target, ccode 510), and Zambia (target, ccode 551), all of whom participated in the MID until it ended on September 7, 1975. Thus, there is not a Uganda-Sudan (500-625) dyad for states to join for this MID.

If a state joined a MID the same day an initial belligerent exited then we coded that as joining. For example, MID# 3051 began on March 8, 1984 and involved Libya (initiator, ccode 620), Sudan (target, ccode 625), and Egypt (target, ccode 651) as initial belligerents. Thus we have two dyads that states could potentially join, a Libya-Sudan (620-625) dyad and a Libya-Egypt (620-651) dyad. In this MID the US (ccode 2) joins on March 19, 1984, which is on the same day that Egypt exits the MID. We count the US as having joined both dyads in this MID because it joins on the initiating side.

MID Start Dates

If a MID began on December 31 of a particular year, then we moved the start date forward to January 1 of the next year. For example, MID# 2155 began on December 31, 1966 and ended on April 22, 1967. We changed the start date of this MID to January 1, 1967.

MID End Dates

If a MID ended on January 1 of a particular year, then the end date of the MID was moved back 1 day to December 31 of the previous year. For example, MID# 1238 ended on January 1, 1949. We moved the end date back to December 31, 1948.

Initial Belligerents Exiting

Since the initial belligerents of a MID determine the length of time until a potential joiner could join that MID, when an initial belligerent exits before the MID ends then potential joiners no longer have the ability to join that initial belligerent. For example, MID# 135 involves 4 initial belligerents, 3 on the initiating side (UK, France, Spain with ccodes 200, 220, and 230, respectively) and 1 on the target side (Mexico, ccode 70). This MID begins on October 31, 1861 at which point potential joiners have the opportunity to join one of the initiator-target dyads (e.g., the UK-Mexico or 200-70 dyad). However, on April 8, 1862, the UK and Spain exit the MID, at which point potential joiners can no longer join the UK-Mexico (200-70) or Spain-Mexico (230-70) dyad. In MIDs with only two initial belligerents, the same rule applies except if an initial belligerent exits then the MID is coded as having ended on that day. In short, the length of time a potential joiner has for joining an initiator-target dyad in a MID is determined by the earliest end date for one of the initial belligerents in that dyad. For example, in MID# 611 between the US (ccode 2) and Vietnam (ccode 816), the MID is coded as having ended on January 27, 1973 when the US exits the MID even though the MID continues (because of states joining the US before January 27, 1973) until April 30, 1975.

World War II

We split World War II (MID# 258) into two separate MIDs. The first MID (now labeled MID# 999) begins on March 25, 1939 where Poland (ccode 290) and Germany (ccode 255) are the initial belligerents. We coded this MID as ending on September 27, 1939 when Poland exits the MID. Thus, any states that joined World War II between March 25, 1939

and September 27, 1939 are considered to have joined this MID. As a result, states that joined in the first MID (# 999) are not considered to be at risk of joining the second MID (# 258). The second MID begins on September 28, 1939 and ends on August 14, 1945, where the UK (initiator, ccode 200) and Germany (target) are considered to be the initial belligerents. Note: we still consider the UK as a joiner in the first MID (# 999) even though we code the UK as the initiator in the second MID (# 258).

Congo War

In MID# 4339 there are missing start dates for four states: Democratic Republic of the Congo (ccode 490), Rwanda (ccode 517), Uganda (ccode 500), and Namibia (ccode 565). We coded the Democratic Republic of the Congo and Rwanda as initial belligerents of the MID and coded the MID as beginning on August 2, 1998. We coded Uganda as joining this MID on August 4, 1998 and Namibia as joining on August 30, 1998.

Start/End Dates of MIDs

- If a MID is missing its start day then we coded its start day as being on the first day of the month the MID began.
- If a MID is missing its end day then we coded its end day as being on the last day of the month the MID ended (accounting for the fact that different months have different days and some years are leap years).
- If a MID is missing both its start and its end day but lasted for at most one month as indicated by the start month being the same as the end month, then we coded its start day as being on the first day of the month the MID began and coded its end day as being on the last day of the month the MID ended (accounting for the fact that different months have different days and some years are leap years).
- If a MID is missing both its start and its end day but lasted for more than one month, then we coded its start day as being on the first day of the month the MID began and coded its end day as being on the last day of the month the MID ended (accounting for the fact that different months have different days and some years are leap years).
- MIDA coded MID# 1656 as ending on November 11, 1918 while MIDB coded this MID as ending on January 11, 1918. Since this MID marks the end of World War I, we coded the end month as being in November, which corresponds with the coding in MIDA.

Start/End Dates of Joiners

- If the day a state joined a MID is missing we coded the joining day as occurring on the first of the month.

- MID# 1806 began on January 18, 1968. In this MID, China (ccode 710) joined in January but the joining day is missing. As a result, we coded China as having joined the MID one week later on January 25, 1968. The same rule was used for MID# 375.

- If a state joined a MID on January 1 then we moved the joining date back one day to December 31 of the previous year. For example, in MID# 51, France (ccode 220) joined on January 1, 1951. We coded France as joining on December 31, 1950. The same rule was used for MID#'s 1363 and 2604.

Membership in the International System

Since a potential joiner is at risk of joining each day during a MID, we needed to correct for the dates of entry into and exit from the international system. We used the COW State System Membership List (Correlates of War Project 2008) to make these corrections. In our data set, a potential joiner does not become at risk of joining until the day they enter the state system and if a state exits the state system, they cease to be at risk of joining the day they exit the state system.

- If a MID began the day a potential joiner exited the state system then we did not consider that state to be at risk of joining that MID. For example, MID# 3855 began on July 14, 1940 and the Netherlands (ccode 210) exited the state system on July 14, 1940. Since the day the Netherlands ceased to be at risk of joining was the same day the MID began then the Netherlands is not considered to be at risk of joining this MID. Because of the way the data need to be set up for survival analysis, the day a potential joiner becomes at risk of joining a MID cannot be the same day a potential joiner ceases to be at risk of joining that MID.

- If a MID ended the day a state exited the state system then that state was still considered to be at risk of joining that MID. For example, Japan exits the state system on August 14, 1945 and MID# 3264 ends on August 14, 1945. In this MID, Japan was still considered to be at risk of joining.

- If a MID ended the day a state entered the state system then we did not consider that state to be at risk of joining that MID. For example, Mongolia (ccode 712) entered the state system on March 13, 1921 and MID# 230 ended on March 13, 1921. Since the day Mongolia became at risk of joining this MID was the same day the MID ended then Mongolia is not considered to be at risk of joining this MID. Because of the way the data need to be set up for survival analysis, the day a potential joiner becomes at risk of joining a MID cannot be the same day a potential joiner ceases to be at risk of joining that MID. We lose one case of joining due to this rule, which is Angola who entered the state system on November 11, 1975 and joined the target in MID# 1441 on November 11, 1975, which is the same day the MID ended.

- If a state entered the state system on December 31 of a year then we moved its entry day forward one day to January 1 of the next year. For example, Comoros (ccode 581) entered the state system on December 31, 1975 and we moved their entry day to

January 1, 1976. Because of the way the data need to be set up for survival analysis, the day a potential joiner becomes at risk of joining a MID cannot be the same day a potential joiner ceases to be at risk of joining that MID.

- If a MID had multiple initial belligerents but one of the initial belligerents exited before a potential joiner entered the state system, then that potential joiner is still at risk of joining the MID but is not at risk of joining the initiator-target dyad where one initial belligerent exited before the potential joiner became a member of the state system. For example, MID# 3507 involved three initial belligerents: Peru (initiator, ccode 135), Germany (target, ccode 255), and Japan (target, ccode 740), which form two separate dyads: Peru-Germany (135-255) and Peru-Japan (135-740). On May 7, 1945 Germany exited the MID, which is the same day that Denmark (ccode 390) re-entered the state system. As a result, Denmark is still at risk of joining the Peru-Japan dyad on either side, but is not at risk of joining the Peru-Germany dyad.

- In the MID data set, Ethiopia (ccode 530) is coded as having joined MID# 258 on January 24, 1941. However, Ethiopia is not considered a state until May 5, 1941. We coded the joining date as occurring on May 6, 1941.

- In the MID data set, Canada (ccode 20) is coded as having joined MID# 2606 on January 1, 1920. However, Canada is not considered a state until January 10, 1920. We coded the joining date as occurring on January 11, 1920.

Initial Belligerents

- MID# 22 between Russia (ccode 365) and Latvia (ccode 367) is coded as having ended on June 17, 1940. However, Latvia exits the state system on June 16, 1940. We changed the end day of this MID to June 16, 1940. Similarly, MID# 505 between Russia and Estonia (ccode 366) is coded as having ended on June 17, 1940. However, Estonia exits the state system on June 16, 1940. We changed the end day of this MID to June 16, 1940.

- MID# 3557 between Yugoslavia (ccode 345) and Bosnia (ccode 346) is coded as beginning on April 6, 1992. However, Bosnia did not enter the state system until April 7, 1992. We changed the start date of this MID to April 7, 1992.

- MID# 1083 between Morocco (ccode 600) and Algeria (ccode 615) is coded as beginning on July 2, 1962. However, Algeria did not enter the state system until July 5, 1962. We changed the start date of this MID to July 5, 1962.

- MID# 633 between Taiwan (ccode 713) and China (ccode 710) is coded as beginning on October 1, 1949. However, Taiwan did not enter the state system until December 8, 1949. We changed the start date of this MID to December 8, 1949.

- MID# 2006 between Taiwan (ccode 713) and the US (ccode 2) is coded as beginning on October 2, 1949. However, Taiwan did not enter the state system until December 8, 1949. We changed the start date of this MID to December 8, 1949.

- MID# 2186 between South Korea (ccode 732) and North Korea (ccode 731) is coded as beginning on May 5, 1949. However, South Korea did not enter the state system until June 29, 1949. We changed the start date of this MID to June 29, 1949.

- MID# 2007 between Taiwan (ccode 713) and the UK (ccode 200) is coded as beginning on October 18, 1949 and ending on November 16, 1949. However, Taiwan did not enter the state system until December 8, 1949. We dropped this MID from the data set.

- MID# 3599 between Yugoslavia (ccode 345) and Austria (ccode 305) is coded as beginning on May 2, 1919 and ending on June 9, 1919. However, Austria did not enter the state system until September 10, 1919. We dropped this MID from the data set.

- MID# 2856 between Syria (initiator, ccode 652), Italy (target, ccode 325), and France (target, ccode 220) is coded as beginning on April 16, 1958 and ending on April 17, 1958. However, Syria exits the state system on February 1, 1958 and does not re-enter the state system until September 29, 1961. We dropped this MID from the data set.

- MID# 3152 between Syria (ccode 652) and Turkey (ccode 640) is coded as beginning on March 5, 1958 and ending on April 13, 1958. However, Syria exits the state system on February 1, 1958 and does not re-enter the state system until September 29, 1961. We dropped this MID from the data set.

- MID# 108 between Italy (ccode 325) and Albania (ccode 339) is coded as beginning on April 7, 1939 and ending on April 8, 1939. However, Albania exits the state system on April 7, 1939 and does not re-enter the state system until November 17, 1944. We dropped this MID from the data set.

- MID# 1225 between Thailand (ccode 800) and Cambodia (ccode 811) is coded as beginning in November 1953 but its start day is missing. Since Cambodia enters the state system on November 9, 1953 we changed the start date of this MID to November 9, 1953.

Independent Variables

Capability

We use the Correlates of War (COW) Composite Index of National Capability (CINC) (Singer, Bremer, and Stucky 1972) to measure the capability of the initiator, target, and each potential joiner.[1] We adjust a potential joiner's capability contribution to account for distance (in miles) to the initial belligerents using the loss-of-strength gradient. Since our temporal domain is 1816-2001 we combined several distance data sets to take advantage of the best data set available for each time period. For the time period 1816-1874, we used

[1]There were several missing values in the CINC data: Panama (1903-1919, ccode 95), Brazil (1822-1825, ccode 140), Hanover (1837, ccode 240), Morocco (1912, ccode 600), Afghanistan (1919, ccode 700), and Bangladesh (1971, ccode 771). We replaced these missing values with the closest non-missing data point.

capital-to-capital distance (in miles, generated by EUGene). For the 1875-1945 time period, we used the Gleditsch and Ward (2001) minimum distance data (converted from km to miles using 1km=0.621371192 miles). In the Gleditsch and Ward (2001) data set minimum distances are recorded for states within 950km (or ≈590 miles). Thus, for states at distances greater than 950km from each other we used capital-to-capital distance (generated by EUGene). For the 1946-2001 time period, we used the minimum distance between states from the CShapes data set, which we converted from km to miles (Weidmann, Kuse, and Gleditsch 2010).

We first calculated the capability of the initiator(s) and target(s) in a MID. If there is only one initiator or one target then the capability of that initiator or target is simply the value of their CINC score for each year of the MID. If a MID lasts past December 31 of a given year then a state's CINC score can change, which means that a potential joiner's capability contribution to an initial belligerent can change as well.

We account for the fact that some MIDs have multiple initial belligerents by summing the CINC scores of the initial belligerents on each side. For example, MID# 56 had 6 initiators (the UK, ccode 200; France, ccode 220; Germany, ccode 255; Austria-Hungary, ccode 300; Italy, ccode 325; and Russia, ccode 365) with CINC scores 0.165821, 0.086936, 0.13223, 0.046542, 0.03087, and 0.107471, respectively. We calculate the capability of the initiators in this MID by summing their CINC scores, which results in a capability value of 0.56987. Also, MID# 56 had two targets (Greece, ccode 350; and Turkey, ccode 640) with CINC scores 0.002106 and 0.024258, respectively. We calculate the capability of the targets in this MID by summing their CINC scores, which results in a capability value of 0.026364. Additionally, if an initial belligerent exits a MID then their CINC score is no longer included in this calculation. For example, MID# 1213 began on March 19, 1964 and involved two states on the initiating side (the US, ccode 2; and the Republic of Vietnam, ccode 817) and one state on the target side (Cambodia, ccode 811). However, the US exits on October 25, 1964 but the MID lasts until April 28, 1965. The capability of the initiators in 1964 is the sum of the CINC scores of the US and the Republic of Vietnam, which are 0.20316 and 0.003521, respectively. The capability for the initiators of this MID in 1964 is 0.206681. However, the capability for the initiators of this MID in 1965 is just the CINC score for the Republic of Vietnam in 1965, which is 0.006533.[2]

Since a potential joiner can either join the initiator or target, we followed Bueno de Mesquita and discounted a potential joiner's capability contribution to the location where it is stronger (1981, 108). When there are only two initial belligerents (one initiator and one target) then the location where a potential joiner is stronger is simply the shortest distance to the initia-

[2]Since each observation in our data set represents a year in a MID, if an initial belligerent exits a MID that does not last past December 31 of a year then we cannot adjust the combined capabilities when there are multiple initiator(s) or target(s). For example, MID# 521 began on July 22, 1917 and ended on November 11, 1918. In this MID there was one state on the initiating side (Thailand, ccode 800) and two states on the target side (Germany, ccode 255; and Austria-Hungary, ccode 300). However, on November 3, 1918 Austria-Hungary exits the MID. Since Austria-Hungary exited the MID the year the MID ended we cannot update the combined CINC scores of the targets.

tor or target. For example, in MID# 4 between Albania (initiator, ccode 339) and the UK (target, ccode 200), the distance between the US (a potential joiner, ccode 2) and Albania is ≈4,068 miles and the distance between the US and the UK is ≈2,555 miles. Thus, when adjusting the US capability to account for distance we used the distance between the US and the UK. We account for the fact that some MIDs had multiple initial belligerents by finding the shortest distance between a potential joiner and all of the initial belligerents. For example, MID# 56 had 8 initial belligerents; 6 initiators (the UK, ccode 200; France, ccode 220; Germany, ccode 255; Austria-Hungary, ccode 300; Italy, ccode 325; and Russia, ccode 365) and 2 targets (Greece, ccode 350; and Turkey, ccode 640). The US distance from the initiators is ≈3,668; 3,832; 4,172; 4,428; 4,487; and 55 miles, respectively, and the US distance from the targets is ≈5,132 and 5,425 miles, respectively. Thus, when adjusting the US capability in this MID to account for distance we use the distance between the US and Russia (≈55 miles).

We followed the procedures used in Bueno de Mesquita (1981), whose indicator "depends on the number of days it takes to transport a major military operation" (104). Bueno de Mesquita (1981) defines the transportation ranges as 250 miles per day from 1816-1918, 375 miles per day from 1919-1945, and 500 miles per day after 1945.[3] We then adjusted a potential joiner's CINC score using the formula from Bueno de Mesquita (1981, 105):

$$\text{Adjusted CINC} = \text{CINC}^{\log_{10}[(\text{miles/miles per day})+(10-e)]} \tag{1}$$

Bueno de Mesquita notes that his loss-of-strength gradient assumes that a state's capability is not discounted within a radius of 680 miles from 1816-1918; 1,020 miles from 1919-1945; and 1,360 miles from 1946 onwards (Bueno de Mesquita 1981, 106-107). As a result, when the shortest distance a potential is from an initial belligerent is less than the radius for a particular time period we do not adjust that potential joiner's capability to account for distance. For example, in MID# 8, which occurred in 1856-1857, the shortest distance between the Netherlands (potential joiner, ccode 210) and an initial belligerent (the UK, ccode 200) is 223 miles. The capability of the Netherlands (in 1856) before accounting for distance is 0.010071. If we applied the loss-of-strength gradient above then the adjusted capability of the Netherlands would be 0.0150648, which is larger than the Netherlands original capability. Since distance should only decrease a potential joiner's capability we set the capability of the Netherlands in 1856 for this MID to its original capability (0.010071).

Our measure accounts for the difference in the probability that an initial belligerent wins if a potential joiner joins that initial belligerent and the probability that the initial belligerent wins if the potential joiner does not join (i.e., remains neutral). The capability contribution a potential joiner can make to the initiator(s) is calculated as the capabilities of the initiator(s) and potential joiner relative to the combined capabilities of the initiator(s), target(s), and potential joiner minus the capabilities of the initiator(s) relative to the initial belligerents:

[3]MID#'s 197, 1777, 2363, 2365, 2366, 2603, 2605, 2606, and 2704 begin in one transportation range and end in another transportation range. For example, MID# 197 begins in 1917 and ends in 1920. For these MIDs we used the transportation range based on the year the MID began.

$$\frac{C_I + C_{PJ}}{C_I + C_T + C_{PJ}} - \frac{C_I}{C_I + C_T} \tag{2}$$

where C_I, C_T, and C_{PJ} represent the capabilities of the initiator(s), target(s), and potential joiner, respectively. The term on the left represents the probability that the initiator wins if the potential joiner joins the initiator and the term on the right represents the probability that the initiator wins if the potential joiner does not join (i.e., remains neutral). The capability contribution a potential joiner can make to the target(s) is calculated as the capabilities of the target(s) and potential joiner relative to the combined capabilities of the initiator(s), target(s), and potential joiner minus the capabilities of the target(s) relative to the initial belligerents:

$$\frac{C_T + C_{PJ}}{C_I + C_T + C_{PJ}} - \frac{C_T}{C_I + C_T}. \tag{3}$$

The term on the left represents the probability that the target wins if the potential joiner joins the target and the term on the right represents the probability that the target wins if the potential joiner does not join (i.e., remains neutral).

We measure the maximum capability contribution a potential joiner could make to either initial belligerent by calculating the maximum contribution it can make to the initiator compared to the target:

$$\max\left(\frac{C_I + C_{PJ}}{C_I + C_T + C_{PJ}} - \frac{C_I}{C_I + C_T}, \frac{C_T + C_{PJ}}{C_I + C_T + C_{PJ}} - \frac{C_T}{C_I + C_T}\right). \tag{4}$$

Thus, if a potential joiner's capability contribution to the initiator (target) is greater than its capability contribution to the target (initiator) then we use that value to represent the capability contribution a potential joiner could make to either initial belligerent.

Geographic Proximity

Geographic proximity is measured by determining whether the potential joiner shares a common land border or is separated by 150 miles of water or less from the initiator or target (i.e., contiguous) as determined by the COW Direct Contiguity data set (Stinnett, Tir, Schafer, Diehl, and Gochman 2002). We create a binary variable that equals 1 if the potential joiner and an initial belligerent are contiguous and 0 otherwise. We create three variables: 1) potential joiner contiguous to either initiator or target, 2) potential joiner contiguous to initiator, and 3) potential joiner contiguous to target.

Regime Type

We measure regime similarity between a potential joiner and the initial belligerents using the Polity IV data set (Marshall and Jaggers 2002). We use the polity2 variable, which measures the difference between a state's democracy and autocracy scores, and that fixes polity scores to account for -77 (interregnum, coded as 0), -88 (transition, values are smoothed across the transition period), and -66 values (interruption, treated as missing). We also used the

modified Polity IV data provided by Gleditsch (2008) to initially fill in as many missing values as possible.

The following states are not included in the Polity IV data set: Dominica (ccode 54), Grenada (ccode 55), St. Lucia (ccode 56), St. Vincent and the Grenadines (ccode 57), Antigua and Barbuda (ccode 58), St. Kitts and Nevis (ccode 60), Monaco (ccode 221), Liechtenstein (ccode 223), Andorra (ccode 232), San Marino (ccode 331), Sao Tome Principe (ccode 403), Seychelles (ccode 591), Vanuatu (ccode 935), Kiribati (ccode 946), Tuvalu (ccode 947), Tonga (ccode 955), Nauru (ccode 970), Marshall Islands (ccode 983), Palau (ccode 986), Federated States of Micronesia (ccode 987), and Western Samoa (ccode 990). We dropped these states from our data set. Of these states, there is one state, Grenada, that was the target of a MID (# 3058). As a result of removing Grenada from the data set we dropped MID# 3058. In MID# 3058 there were 6 states that joined the initiator (Jamaica, ccode 51; Barbados, ccode 53; Dominica, ccode 54; St. Lucia, ccode 56; St. Vincent and the Grenadines, ccode 57; and Antigua & Barbuda, ccode 58) and 1 state that joined the target (Cuba, ccode 40). We lose those cases of joining as well. Egypt (ccode 651) is also not included in the Polity IV data set from 1855 to 1882. We dropped Egypt from our data set during this time period. As a result, we dropped one MID (# 3725) in which Egypt was the target.

Even after filling in as many missing values as possible using existing data, there were many that still remained. We used the following procedures to correct those missing values:

- Haiti (ccode 41): has a missing value in 1915 (the year it exits the state system). The polity2 value from 1859-1914 is -3. We coded the polity2 value in 1915 as -3.
- Dominican Republic (ccode 42): has missing values for 1914-15, 1916 (the year it exits the state system), and 1924 (the year it re-enters the state system). The polity2 value from 1894-1913 and from 1925-29 is always -3. We coded the polity2 value from 1914-16 and 1924 as -3.
- Mexico (ccode 70): has missing values for 1846-47 and 1863. The polity2 value from 1835-45, from 1848-62, and from 1864-66 is always -3. We coded the polity2 value in 1846-47 and 1863 as -3.
- Honduras (ccode 91): has missing values in 1907, 1912, 1919, and 1924. The polity2 value in 1906 is 0 and the polity2 value in 1908 is 5. We took the average of the two values (0+5/2=2.5) and coded the polity2 value in 1907 as 2.5. The polity2 value from 1908-1935 is always 5. We coded the polity2 value in 1912, 1919, and 1924 as 5.
- Nicaragua (ccode 93): has missing values for 1926-27. The polity2 value from 1909-1935 is always -3. We coded the polity2 value in 1926-27 as -3.
- Peru (ccode 135): has missing values for 1881-82. The polity2 value from 1879-1885 is always -3. We coded the polity2 value in 1881-82 as -3.
- Netherlands (ccode 210): has a missing value for 1940 (the year it exits the state system). The polity2 value from 1917-1939 and from 1945-2001 is always 10. We coded the polity2 value in 1940 as 10.

- Belgium (ccode 211): has missing values for 1914, 1939, and 1940 (the year it exits the state system). The polity2 value from 1913-1918 is always 7 and the polity2 value from 1930 to 2001 is always 10. We coded the polity2 value in 1914 as 7 and the values from 1939-40 as 10.

- Luxembourg (ccode 212): has missing values for 1940 (the year it exits the state system), 1944 (the year it re-enters the state system), and 1945. Except for these three missing values, the polity2 value is always 10. We coded the polity2 value in 1940 and from 1944-1945 as 10.

- Portugal (ccode 235): has missing values from 1816-1819. The polity2 value from 1820-1832 is always -3. We coded the polity2 values from 1816-1819 as -3.

- Germany (ccode 255): has a missing value in 1945 (the year it exits the state system). The polity2 value from 1933-1944 is always -9. We coded the polity2 value in 1945 as -9.

- Saxony (ccode 269): has a missing value in 1848. The polity2 value in 1847 is -9 and the polity2 value in 1849 is -7. We coded the polity2 value in 1848 as -8.

- Hungary (ccode 310): has missing values in 1944 and 1956. The polity2 value from 1920-1943 was always -1 and the polity2 value from 1948-1987 was always -7. We coded the polity2 value in 1944 as -1 and the polity2 value in 1956 as -7.

- Yugoslavia (ccode 345): has missing values from 1915-1917. The polity2 value in 1914 is 4 and the polity2 value in 1918 is 0. We coded the polity2 value to account for the fact that it decreased from 4 in 1914 to 0 in 1918 as: 3 in 1915, 2 in 1916, and 1 in 1917.

- Bosnia & Herzegovina (ccode 346): has missing values from 1995-2001. The polity2 value from 1992-1994 was always 0. We coded the polity2 value from 1995-2001 as 0.

- Greece (ccode 350): has missing values from 1916-1919. The polity2 value in 1915 was 1 and the polity2 value in 1920-21 was also 1. We coded the polity2 value from 1916-1919 as 1.

- Bulgaria (ccode 355): has a missing value in 1913. The polity2 value from 1908-1917 was always -9. We coded the polity2 value in 1913 as -9.

- Romania (ccode 360): has a missing value in 1916. The polity2 value from 1910-1937 was always -4. We coded the polity2 value in 1916 as -4.

- Estonia (ccode 366): has a missing value in 1918 (the year it enters the state system). The polity2 value from 1919-1932 was always 10. We coded the polity2 value in 1918 as 10.

- Norway (ccode 385): has a missing value in 1940 (the year it exits the state system). The polity2 value from 1905 to 2001 is always 10. We coded the polity2 value in 1940 as 10.

- Denmark (ccode 390): has a missing value in 1940 (the year it exits the state system). The polity2 value from 1915-2001 is always 10. We coded the polity2 value in 1940 as 10.

- Uganda (ccode 500): has a missing value in 1979. The polity2 value in 1978 was -7 and the polity2 value in 1980 was 3. We took the average of the two values ($-7+3/2=-2$) and coded the polity2 value in 1979 as -2.

- Ethiopia (ccode 530): has missing values in 1936 (the year it exits the state system) and 1941 (the year it re-enters the state system). The polity2 value from 1930-1935 and from 1942-1945 is always -5. We coded the polity2 value in 1936 as -5 and the polity2 value in 1941 as -5.

- Turkey (ccode 640): has missing values from 1918-1921. The polity2 value from 1909-1917 is -1 and the polity2 value in 1922 is 0. We coded the polity2 value to account for the fact that it increased from -1 in 1917 to 0 in 1922 as: -1 in 1918, 0 in 1919, 0 in 1920, and 0 in 1921.

- Syria (ccode 652): has a missing value in 1958 (the year it exits the state system). The polity2 value from 1951-1957 was always -7. We coded the polity2 value in 1958 as -7.

- Lebanon (ccode 660): has missing values from 1990-2001. The polity2 value from 1975-1989 was always 0. We coded the polity2 value from 1990-2001 as 0.

- Kuwait (ccode 690): has a missing value in 1990. The polity2 value from 1986-1989 is always -10. We coded the polity2 value in 1990 as -10.

- Afghanistan (ccode 700): has missing values from 1979-1988 and 2001. The polity2 value in 1978 was 0 and the polity2 value from 1989-1991 was always -8. We coded the polity2 value to account for the fact that it decreased from 0 in 1978 to -8 in 1989 as: 0 in 1979, 0 in 1980, -1 in 1981, -2 in 1982, -3 in 1983, -4 in 1984, -5 in 1985, -6 in 1986, -7 in 1987, and -8 in 1988. The polity2 value from 1996-2000 was always -7. We coded the polity2 value in 2001 as -7.

- China (ccode 710): has missing values in 1860 (the year it entered the state system), 1861, and 1937-1945. The polity2 value from 1862-1910 was always -6. We coded the polity2 value in 1860-1861 as -6. The polity2 value from 1914-1948 was always -5. We coded the polity2 value from 1937-1945 as -5.

- Japan (ccode 740): has a missing value in 1945. The polity2 value from 1868-1944 is always 1. We coded the polity2 value in 1945 as 1.

- Thailand (ccode 800): has a missing value in 1941. The polity2 value from 1935-1951 is always -3. We coded the polity2 value in 1941 as -3.

- Cambodia (ccode 811): has missing values from 1979-1987. The polity2 value from 1976-1978 is always -7 and the polity2 value from 1988-1989 is always 0. We coded

the polity2 value to account for the fact that it increased from −7 in 1978 to 0 in 1988 as: −7 in 1979, −6 in 1980, −5 in 1981, −4 in 1982, −3 in 1983, −2 in 1984, −1 in 1985, 0 in 1986, and 0 in 1987.

- Laos (ccode 812): has a missing value for 1953 (the year it enters the state system). The polity2 value in 1954 was 0. We coded the polity2 value in 1953 as 0.

- Republic of Vietnam (ccode 817): has missing values from 1965-1972. The polity2 value from 1954-1975 is always −3. We coded the polity2 value from 1965-1972 as −3.

The polity2 variable ranges from −10 to +10, to which we add ten, so that the scores range from 0 to 20. States with scores between 16 and 20 (inclusive) are coded as democracies and states with scores between 0 and 4 (inclusive) are coded as autocracies. We then create two binary variables, one that equals 1 if a potential joiner and an initial belligerent are both democracies and 0 otherwise, and one that equals 1 if a potential joiner and an initial belligerent are both autocracies and 0 otherwise. We then create two binary variables for each type of initial belligerent: 1) potential joiner and initiator or target democratic, 2) potential joiner and initiator or target autocratic, 3) potential joiner and initiator both democratic, 4) potential joiner and target both democratic, 5) potential joiner and initiator both autocratic, 6) potential joiner and target both autocratic.

Alliance

We measure whether a potential joiner has alliance obligations with an initial belligerent using the Alliance Treaty Obligations and Provisions (ATOP) data set (Leeds, Ritter, Mitchell, and Long 2002). The ATOP data set provides the precise obligations undertaken by each member of an alliance, which include defense pacts, offense pacts, neutrality pacts, nonaggression pacts, and consultation pacts. Defense and offense pacts obligate a member of an alliance to provide military assistance in the event of military conflict involving another member of the alliance. In contrast, neutrality, nonaggression, and consultation pacts only obligate members to cooperate short of direct military assistance. However, neutrality pacts involve an explicit promise not to join a conflict against an ally and to not facilitate an adversary's success in the event of a conflict with the ally. As a result, we include defense pacts, offense pacts, and neutrality pacts but exclude nonaggression and consultation pacts.

Since two states that are part of the same alliance do not necessarily undertake symmetric obligations, we coded the obligation of the potential joiner to the initiator(s) and target(s) of a MID and not vice-versa. For example, ATOP Alliance# 1400 involving the UK (ccode 2) and Portugal (ccode 235) began October 14, 1899 and ended April 4, 1949. In this alliance the UK had a defensive obligation to Portugal but Portugal did not have a defensive obligation to the UK. Thus, our variable that captures Portugal's defensive obligation to the UK is coded as 0 for any MIDs where the UK is the initiator or target during the time the alliance was in effect. For example, MID# 128, in which the UK was an initiator, began on January 11, 1905 and ended on December 6, 1905. In this MID, Portugal is

not coded as having a defensive obligation to the UK. The UK does have a defensive obligation to Portugal but Portugal is a potential joiner in this MID while the UK is an initiator.

An alliance begins and ends during a year. As a result, some alliances are not operative for a full year. Since a potential joiner can join on any day during a MID this creates two problems: 1) it is possible for an alliance to terminate before a MID began or go into effect after a MID ended, and 2) it is possible for an alliance to go into effect during a MID or terminate during a MID. The ATOP data contains a variable that marks whether or not an alliance commitment is in effect for the full year. To address the first problem we examined those MIDs where an alliance transition occurred and checked the start day and month of the alliance(s) using the ATOP id variables and the ATOP member level data set to make sure an alliance was in effect when the MID occurred. In terms of the second problem, if the alliance came into effect during a MID or ended during a MID, we coded the alliance as not being in effect. Thus, unless an alliance obligation was in effect for the full duration of a MID, it is coded as not being in effect even if the alliance later came into effect during the MID. Additionally, an alliance is coded as being in effect if it lasted until a state joined the MID or until a state exited the state system.

- If an alliance began the day a MID began then we coded the alliance as being operative. For example, MID# 3800 began on June 12, 1940 and ended on July 1, 1940. ATOP Alliance# 2505 between the UK (initiator, ccode 200) and Thailand (potential joiner, ccode 800) began on June 12, 1940, thus we coded the neutrality obligation as being operative during this MID.

- If an alliance ended the day a potential joiner exited the state system then we coded the alliance as being operative until the state exited the system. For example, MID# 3801 began on April 1, 1940 and ended on October 18, 1940. However, Estonia (potential joiner, ccode 366) exited the state system on June 16, 1940 and was no longer at risk of joining this MID. ATOP Alliance# 2455 between Germany (initiator, ccode 255) and Estonia began June 7, 1939 and ended June 16, 1940, thus we coded the neutrality obligation as being operative during this MID.

- If an alliance ended the day a MID ended then we coded the alliance as being operative. For example, MID# 3825 began on August 28, 1940 and ended on June 22, 1941. ATOP Alliance# 2470 between Germany (initiator, ccode 255) and Russia (potential joiner, ccode 365) began on August 23, 1939 and ended on June 22, 1941, thus we coded the neutrality obligation as being operative during this MID.

- In many cases, there were multiple alliances between an initial belligerent and a potential joiner during a MID. For example, MID# 324 began on March 7, 1915 and ended on November 27, 1916. During this MID, Bulgaria (initiator, ccode 355) and Germany (potential joiner, ccode 255) were involved in two different alliances. ATOP Alliance# 2013 was a defense pact that began on September 6, 1914 and ended on September 30, 1918. ATOP Alliance# 2030 was a defense and offense pact that began on September 6, 1915 and ended on September 30, 1918. In this case we coded the presence of a defense pact between Bulgaria and Germany because there was at least one alliance in

which a defense pact was present prior to the onset of the MID and did not end during the MID. We did not code for the presence of an offense pact because the offense pact was part of an alliance (# 2030) that was not in effect when the MID began. Thus, if an initial belligerent and potential joiner were involved in multiple alliances, we coded the presence of an alliance obligation if at least one of the alliance obligations was in effect when the MID began and did not terminate during the MID.

- For some alliances the start or end day of the alliance is missing. In these cases we assumed the start or end day of the alliance occurred on the 15th of the month. For example, MID# 503 began on September 23, 1939 and ended on October 18, 1939. During this MID, Russia (initiator, ccode 365) and Lithuania (potential joiner, ccode 368) were involved in two different alliances. ATOP Alliance# 2185 began on September 28, 1926 and ended in October 1939. We assumed this alliance ended on October 15, 1939. As a result, the neutrality obligation between Russia and Lithuania in this alliance was coded as not being in effect because the alliance ended during the MID. ATOP Alliance# 2485 began in October 1939 and ended on June 15, 1940. We assumed this alliance began on October 15, 1939. As a result, the defensive obligation between Russia and Lithuania in this alliance was coded as not being in effect because the alliance began during the MID.

We include three binary variables for defensive, offensive, and neutrality obligations. We create three binary variables, one that equals 1 if a potential joiner had a defensive obligation with an initial belligerent and 0 otherwise, one that equals 1 if a potential joiner had an offensive obligation with an initial belligerent and 0 otherwise, and one that equals 1 if a potential joiner had a neutrality obligation with an initial belligerent and 0 otherwise. We then create three binary variables for each type of initial belligerent: 1) potential joiner and initiator or target have a defensive obligation, 2) potential joiner and initiator or target have an offensive obligation, 3) potential joiner and initiator or target have a neutrality obligation, 4) potential joiner and initiator have a defensive obligation, 5) potential joiner and target have a defensive obligation, 6) potential joiner and initiator have an offensive obligation, 7) potential joiner and target have an offensive obligation, 8) potential joiner and initiator have a neutrality obligation, and 9) potential joiner and target have a neutrality obligation.

Rivalry

We measure whether a potential joiner has a rivalry with an initial belligerent using the operationalization of rivalry by Thompson (2001). We create a binary variable that equals 1 if a potential joiner and an initial belligerent are strategic rivals and 0 otherwise. We then create three variables: 1) potential joiner is a strategic rival with either the initiator or target, 2) potential joiner is a strategic rival with the initiator, and 3) potential joiner is a strategic rival with the target. Note: the Thompson (2001) rivalry data end in 1999. We assumed these rivalries lasted until 2001.

Previous Major Power Joining

We measure the participation of a major power using a binary variable that records whether or not a major power joined a MID. Major powers between 1816 and 2001 are determined using the COW State System Membership List (Correlates of War Project 2008). Since each observation in our data set represents a year in a MID, we code the first major power that joins as not being affected by the joining of a previous major power. However, all other potential joiners' decisions are coded as being affected by the joining of a major power. For example, if a major power joined a MID, then all potential joiners are coded as 1, except the first major power that joined the MID. If a non-major power joined a MID, then all potential joiners are coded as 0, that is, as not being affected by the participation of a major power. We create three variables: 1) major power joined on the side of the initiator or target, 2) major power joined on the side of the initiator, and 3) major power joined on the side of the target.

For example, MID# 12 began on March 11, 1938 and ended on September 30, 1938. On August 26, 1938 the UK (a major power, ccode 200) joined on the side of the target. Since the UK is the first major power to join the MID, we coded the decision of the UK as not being affected by the joining of a major power. All other potential joiners are coded as 1 for the major power joining on the target side variable. In this MID two other major powers joined on the side of the target; France (ccode 220) on September 7, 1938 and the Soviet Union (ccode 365) on September 16, 1938. As with all other potential joiners (including Belgium, ccode 211, who also joined on September 7, 1938), France and the Soviet Union are coded as being influenced by a major power joining on the side of the target. However, since no major powers joined on the side of the initiator in this MID, the major power joining on the initiator side variable is coded as 0 for all potential joiners.

As another example, consider MID# 154, which began on September 26, 1850 and ended on November 29, 1850. On October 11, 1850, Bavaria (ccode 245) and Württemberg (ccode 271) both joined the side of the target. Since both of these states are minor powers the major power joining on the target side variable is coded as 0 for both states. On October 28, 1850, Russia (ccode 365) joined on the side of the target. Since Russia is the first major power to join the MID, we coded the decision of Russia as not being affected by the joining of a major power. All other potential joiners are coded as 1 for the major power joining on the target side variable. Since France (ccode 220) does not join until November 8, 1850, the major power joining on the target side variable is coded as 1, that is, France is considered as being influenced by a major power (Russia) joining on the target side. As in the example above, since no major powers joined on the side of the initiator in this MID, the major power joiner on the initiator side variable is coded as 0 for all potential joiners for the entire MID.

- When the first major power to join a MID does so on the day the MID ended we counted this joining as influencing the joining decisions of all other potential joiners. For example, in MID# 3877, Italy (ccode 325) joined the side of the initiator on June 1, 1942, which is the day the MID ended. We coded the major power joining on the initiator side variable as 1 for all other potential joiners. Since no major powers joined

on the side of the target in this MID, the major power joining on the target side variable is coded as 0 for all potential joiners for the entire MID.

- If two major powers joined a MID on the same day, we counted each major power's joining decision as having not been influenced by the other's. For example, in MID# 25, the UK (ccode 200) and France (ccode 220) both joined the side of the target on August 10, 1831. We coded the major power joining on the target side variable as 0 for each state. All other potential joiners are coded as 1 for the major power joining on the target side variable. Since no major powers joined on the side of the initiator in this MID, the major power joining on the initiator side variable is coded as 0 for all potential joiners for the entire MID. Similarly, if a major power and non-major power joined on the same day (as in MID# 13), we counted each state's joining decision as having not been influenced by the other's.

- If multiple major powers joined a MID on different dates and on different sides, then we counted each state's joining decision as being influenced by the other's decision to join the same side but not by their decision to join the opposing side. For example, in MID# 115, France (ccode 220) joined the target on April 22, 1859 while Germany (ccode 255) joined the initiator on June 24, 1859. Thus, the major power joining on the target side variable is coded as 1 for all potential joiners (including Germany), except France. Thus, the German decision to join the target is considered to have been influenced by France's prior decision to join the target. In contrast, the German decision to join the initiator is not considered to have been influenced by France's decision to join the target. Thus, the major power joining on the initiator side variable is coded as 1, that is, all potential joiners are considered to have been influenced by the German decision to join the initiator. As a result, all potential joiners are considered to have been influenced by a major power joining the initiator and the target, except for France's decision to join the initiator or target and Germany's decision to join the initiator.

- Although we have separated World War II into two MIDs, since a major power joined both the side of the initiator and the side of the target in MID# 999, we coded all potential joiners in the second MID (# 258) as being influenced by major power joining in the first MID (# 999).

Table 1: Operationalization of Independent Variables.

	Join Either Initiator or Target	*Join Initiator*	*Join Target*
Opportunity Variables			
Capability	$\max(\frac{C_I+C_{PJ}}{C_I+C_T+C_{PJ}} - \frac{C_I}{C_I+C_T}, \frac{C_T+C_{PJ}}{C_I+C_T+C_{PJ}} - \frac{C_T}{C_I+C_T})$	$\frac{C_I+C_{PJ}}{C_I+C_T+C_{PJ}} - \frac{C_I}{C_I+C_T}$	$\frac{C_T+C_{PJ}}{C_I+C_T+C_{PJ}} - \frac{C_T}{C_I+C_T}$
Geographic Proximity	PJ is Contiguous to I or T	PJ is Contiguous to T	PJ is Contiguous to I
Willingness Variables			
Regime Type	PJ and I or T Democratic	PJ and I Democratic	PJ and T Democratic
	PJ and I or T Autocratic	PJ and I Autocratic	PJ and T Autocratic
Alliance	PJ has Defense Pact with I or T	PJ has Defense Pact with I	PJ has Defense Pact with T
	PJ has Offense Pact with I or T	PJ has Offense Pact with I	PJ has Offense Pact with T
	PJ has Neutrality Pact with I or T	PJ has Neutrality Pact with I	PJ has Neutrality Pact with T
Rivalry	PJ has Rivalry with I or T	PJ has Rivalry with T	PJ has Rivalry with I
Previous Major Power Joining	Major Power Joined Either I or T	Major Power Joined I	Major Power Joined T

Note: I, T, and PJ refer to the initiator, target, and potential joiner, respectively.

Summary Statistics: All Triads

Number of MIDs: 2,332
Number of MIDs in data set: 1,274 (including the MID we added for WWII)

Table 2: Number of MIDs with Multiple Originators.

Number of Originators	Number of MIDs
2	1,195
3	51
4	16
5	4
6	4
7	1
8	1
9	1
11	1

Number of observations: 219,896

Number of MIDs where a potential joiner joined: 183
Number of MIDs where joining occurred on both the initiator and target side: 29
Number of MIDs where joining only occurred on the initiator's side: 66
Number of MIDs where joining only occurred on the target's side: 88

Number of cases where a potential joiner joined the initiator or target: 565
Number of cases where a potential joiner joined the initiator: 318
Number of cases where a potential joiner joined the target: 247

Range of number of joiners on initiator side: 1 to 22 (MID# 4137 had 22 joiners)
Range of number of joiners on target side: 1 to 14 (MID# 51 had 14 joiners)

Table 3: Summary Statistics: Join Either Initiator or Target.

Variable	Minimum	Maximum	Mean	Standard Deviation	% 0's	% 1's
Capability	7.56e-07	0.97	0.11	0.18	-	-
Geographic Proximity	0	1	-	-	92.03	7.97
Democracy	0	1	-	-	82.73	17.27
Autocracy	0	1	-	-	70.79	29.21
Defense Pact	0	1	-	-	91.02	8.98
Offense Pact	0	1	-	-	99.34	0.66
Neutrality Pact	0	1	-	-	99.42	0.58
Rivalry	0	1	-	-	97.08	2.92
Previous Major Power Joining	0	1	-	-	89.15	10.85

Table 4: Summary Statistics: Join Initiator.

Variable	Minimum	Maximum	Mean	Standard Deviation	% 0's	% 1's
Capability	2.74e-09	0.95	0.06	0.13	-	-
Geographic Proximity	0	1	-	-	95.73	4.27
Democracy	0	1	-	-	89.93	10.07
Autocracy	0	1	-	-	79.80	20.20
Defense Pact	0	1	-	-	94.34	5.66
Offense Pact	0	1	-	-	99.55	0.45
Neutrality Pact	0	1	-	-	99.59	0.41
Rivalry	0	1	-	-	98.50	1.50
Previous Major Power Joining	0	1	-	-	94.88	5.12

Table 5: Summary Statistics: Join Target.

Variable	Minimum	Maximum	Mean	Standard Deviation	% 0's	% 1's
Capability	1.83e-09	0.97	0.09	0.16	-	-
Geographic Proximity	0	1	-	-	95.09	4.91
Democracy	0	1	-	-	90.18	9.82
Autocracy	0	1	-	-	82.30	17.70
Defense Pact	0	1	-	-	95.08	4.92
Offense Pact	0	1	-	-	99.75	0.25
Neutrality Pact	0	1	-	-	99.81	0.19
Rivalry	0	1	-	-	98.20	1.80
Previous Major Power Joining	0	1	-	-	92.81	7.19

Table 6: Correlation Matrix of Joining Decisions.

	Join Initiator	Join Target
Join Initiator	1.00	-
Join Target	-0.001	1.00

Table 7: Correlation Matrix of Independent Variables: Join Either Initiator or Target.

	Capability	Geographic Proximity	Democracy	Autocracy	Defense Pact
Capability	1.00	-	-	-	-
Geographic Proximity	0.05	1.00	-	-	-
Democracy	0.01	-0.001	1.00	-	-
Autocracy	-0.01	0.04	-0.29	1.00	-
Defense Pact	0.02	0.19	0.14	0.02	1.00
Offense Pact	-0.002	0.08	-0.03	0.01	0.24
Neutrality Pact	0.02	0.14	0.003	0.01	0.03
Rivalry	0.13	0.40	-0.04	0.02	0.09
Previous Major Power Joining	-0.05	-0.01	0.0004	0.03	0.02

Table 8: Correlation Matrix of Independent Variables: Join Either Initiator or Target.

	Offense Pact	Neutrality Pact	Rivalry	Previous Major Power Joining
Capability	-	-	-	-
Geographic Proximity	-	-	-	-
Democracy	-	-	-	-
Autocracy	-	-	-	-
Defense Pact	-	-	-	-
Offense Pact	1.00	-	-	-
Neutrality Pact	0.07	1.00	-	-
Rivalry	0.07	0.08	1.00	-
Previous Major Power Joining	-0.02	-0.01	-0.01	1.00

Table 9: Correlation Matrix of Independent Variables: Join Initiator.

	Capability	Geographic Proximity	Democracy	Autocracy	Defense Pact
Capability	1.00	-	-	-	-
Geographic Proximity	0.06	1.00	-	-	-
Democracy	-0.03	-0.01	1.00	-	-
Autocracy	0.01	0.01	-0.17	1.00	-
Defense Pact	0.01	0.08	0.16	0.04	1.00
Offense Pact	-0.004	0.01	-0.02	0.02	0.25
Neutrality Pact	-0.01	0.05	0.0001	0.02	0.03
Rivalry	0.12	0.37	-0.02	-0.001	0.06
Previous Major Power Joining	-0.04	0.002	0.08	-0.01	0.03

Table 10: Correlation Matrix of Independent Variables: Join Initiator.

	Offense Pact	Neutrality Pact	Rivalry	Previous Major Power Joining
Capability	-	-	-	-
Geographic Proximity	-	-	-	-
Democracy	-	-	-	-
Autocracy	-	-	-	-
Defense Pact	-	-	-	-
Offense Pact	1.00	-	-	-
Neutrality Pact	0.06	1.00	-	-
Rivalry	0.05	0.03	1.00	-
Previous Major Power Joining	-0.01	-0.01	-0.0001	1.00

Table 11: Correlation Matrix of Independent Variables: Join Target.

	Capability	Geographic Proximity	Democracy	Autocracy	Defense Pact
Capability	1.00	-	-	-	-
Geographic Proximity	0.06	1.00	-	-	-
Democracy	0.04	-0.001	1.00	-	-
Autocracy	-0.004	0.01	-0.15	1.00	-
Defense Pact	0.02	0.07	0.16	0.03	1.00
Offense Pact	-0.02	0.01	0.001	0.01	0.21
Neutrality Pact	-0.002	0.04	0.0002	0.01	0.03
Rivalry	0.12	0.35	-0.01	0.01	0.05
Previous Major Power Joining	-0.02	-0.01	-0.03	0.03	-0.03

Table 12: Correlation Matrix of Independent Variables: Join Target.

	Offense Pact	Neutrality Pact	Rivalry	Previous Major Power Joining
Capability	-	-	-	-
Geographic Proximity	-	-	-	-
Democracy	-	-	-	-
Autocracy	-	-	-	-
Defense Pact	-	-	-	-
Offense Pact	1.00	-	-	-
Neutrality Pact	0.07	1.00	-	-
Rivalry	0.02	0.03	1.00	-
Previous Major Power Joining	-0.01	0.002	-0.01	1.00

Summary Statistics: Politically Relevant Triads

A triad is defined as being politically relevant if: 1) the potential joiner is contiguous to at least one of the initial belligerents, or 2) the potential joiner or one of the initial belligerents is a major power.

Number of politically relevant MIDs in data set: 1,274 (including the MID we added for WWII)

Table 13: Number of MIDs with Multiple Originators.

Number of Originators	Number of MIDs
2	1,195
3	51
4	16
5	4
6	4
7	1
8	1
9	1
11	1

Number of politically relevant triads (observations): 88,916 ($\approx 40\%$ of all triads)

Number of MIDs where a potential joiner joined: 183
Number of MIDs where joining occurred on both the initiator and target side: 29
Number of MIDs where joining only occurred on the initiator's side: 66
Number of MIDs where joining only occurred on the target's side: 88

Number of cases where a potential joiner joined the initiator or target: 511
Number of cases where a potential joiner joined the initiator: 294
Number of cases where a potential joiner joined the target: 217

Range of number of joiners on initiator side: 1 to 22 (MID# 4137 had 22 joiners)
Range of number of joiners on target side: 1 to 14 (MID# 51 had 14 joiners)

Table 14: Summary Statistics: Join Either Initiator or Target.

Variable	Minimum	Maximum	Mean	Standard Deviation	% 0's	% 1's
Capability	8.70e-07	0.97	0.09	0.19	-	-
Geographic Proximity	0	1	-	-	80.28	19.72
Democracy	0	1	-	-	80.55	19.45
Autocracy	0	1	-	-	71.93	28.07
Defense Pact	0	1	-	-	84.93	15.07
Offense Pact	0	1	-	-	98.52	1.48
Neutrality Pact	0	1	-	-	98.66	1.34
Rivalry	0	1	-	-	93.29	6.71
Previous Major Power Joining	0	1	-	-	86.86	13.14

Table 15: Summary Statistics: Join Initiator.

Variable	Minimum	Maximum	Mean	Standard Deviation	% 0's	% 1's
Capability	2.74e-09	0.95	0.05	0.13	-	-
Geographic Proximity	0	1	-	-	89.44	10.56
Democracy	0	1	-	-	88.31	11.69
Autocracy	0	1	-	-	82.14	17.86
Defense Pact	0	1	-	-	90.77	9.23
Offense Pact	0	1	-	-	98.94	1.06
Neutrality Pact	0	1	-	-	99.07	0.93
Rivalry	0	1	-	-	96.52	3.48
Previous Major Power Joining	0	1	-	-	92.84	7.16

Table 16: Summary Statistics: Join Target.

Variable	Minimum	Maximum	Mean	Standard Deviation	% 0's	% 1's
Capability	1.83e-09	0.97	0.07	0.16	-	-
Geographic Proximity	0	1	-	-	87.86	12.14
Democracy	0	1	-	-	90.05	9.95
Autocracy	0	1	-	-	82.79	17.21
Defense Pact	0	1	-	-	92.42	7.58
Offense Pact	0	1	-	-	99.48	0.52
Neutrality Pact	0	1	-	-	99.55	0.45
Rivalry	0	1	-	-	95.92	4.08
Previous Major Power Joining	0	1	-	-	92.78	7.22

Table 17: Correlation Matrix of Joining Decisions.

	Join Initiator	Join Target
Join Initiator	1.00	-
Join Target	-0.003	1.00

Table 18: Correlation Matrix of Independent Variables: Join Either Initiator or Target.

	Capability	Geographic Proximity	Democracy	Autocracy	Defense Pact
Capability	1.00	-	-	-	-
Geographic Proximity	0.13	1.00	-	-	-
Democracy	0.01	-0.03	1.00	-	-
Autocracy	-0.03	0.08	-0.31	1.00	-
Defense Pact	0.03	0.17	0.20	0.01	1.00
Offense Pact	0.02	0.06	-0.05	0.02	0.26
Neutrality Pact	0.04	0.13	-0.004	0.02	0.03
Rivalry	0.22	0.37	-0.07	0.03	0.07
Previous Major Power Joining	-0.07	-0.06	0.03	0.03	0.04

Table 19: Correlation Matrix of Independent Variables: Join Either Initiator or Target.

	Offense Pact	Neutrality Pact	Rivalry	Previous Major Power Joining
Capability	-	-	-	-
Geographic Proximity	-	-	-	-
Democracy	-	-	-	-
Autocracy	-	-	-	-
Defense Pact	-	-	-	-
Offense Pact	1.00	-	-	-
Neutrality Pact	0.07	1.00	-	-
Rivalry	0.06	0.08	1.00	-
Previous Major Power Joining	-0.03	-0.02	-0.03	1.00

Table 20: Correlation Matrix of Independent Variables: Join Initiator.

	Capability	Geographic Proximity	Democracy	Autocracy	Defense Pact
Capability	1.00	-	-	-	-
Geographic Proximity	0.13	1.00	-	-	-
Democracy	-0.03	-0.03	1.00	-	-
Autocracy	0.01	0.04	-0.17	1.00	-
Defense Pact	0.02	0.06	0.22	0.02	1.00
Offense Pact	0.01	-0.01	-0.03	0.04	0.30
Neutrality Pact	-0.003	0.03	-0.01	0.04	0.03
Rivalry	0.21	0.36	-0.04	0.01	0.05
Previous Major Power Joining	-0.06	-0.02	0.12	-0.05	0.04

Table 21: Correlation Matrix of Independent Variables: Join Initiator.

	Offense Pact	Neutrality Pact	Rivalry	Previous Major Power Joining
Capability	-	-	-	-
Geographic Proximity	-	-	-	-
Democracy	-	-	-	-
Autocracy	-	-	-	-
Defense Pact	-	-	-	-
Offense Pact	1.00	-	-	-
Neutrality Pact	0.06	1.00	-	-
Rivalry	0.04	0.02	1.00	-
Previous Major Power Joining	-0.02	-0.02	-0.02	1.00

Table 22: Correlation Matrix of Independent Variables: Join Target.

	Capability	Geographic Proximity	Democracy	Autocracy	Defense Pact
Capability	1.00	-	-	-	-
Geographic Proximity	0.14	1.00	-	-	-
Democracy	0.04	-0.003	1.00	-	-
Autocracy	-0.01	0.03	-0.15	1.00	-
Defense Pact	0.01	0.06	0.25	0.01	1.00
Offense Pact	-0.01	-0.006	-0.02	0.02	0.23
Neutrality Pact	0.004	0.03	-0.003	0.02	0.03
Rivalry	0.21	0.35	-0.02	0.01	0.03
Previous Major Power Joining	-0.03	-0.01	-0.06	0.07	-0.05

Table 23: Correlation Matrix of Independent Variables: Join Target.

	Offense Pact	Neutrality Pact	Rivalry	Previous Major Power Joining
Capability	-	-	-	-
Geographic Proximity	-	-	-	-
Democracy	-	-	-	-
Autocracy	-	-	-	-
Defense Pact	-	-	-	-
Offense Pact	1.00	-	-	-
Neutrality Pact	0.07	1.00	-	-
Rivalry	0.02	0.03	1.00	-
Previous Major Power Joining	-0.01	0.003	-0.02	1.00

Estimated Models

When estimating a Cox proportional hazards model it is important to test each covariate for violations of the proportional hazards assumption. As Box-Steffensmeier and Zorn note, "estimating proportional hazards models when hazards are in fact nonproportional results in biased coefficient estimates and decreased power of significance tests" (2001, 974). In each of our competing risks models, we tested for violations of the proportional hazards assumption by examining the correlation coefficient between survival time and the scaled Schoenfeld residuals (Box-Steffensmeier and Zorn 2001, 977). If the significance level of the correlation coefficient was ≤ 0.10, we deemed a covariate to have violated the proportional hazards assumption. For any covariate that violated the proportional hazards assumption we interacted the offending covariate with the natural log of time (Box-Steffensmeier and Jones 2004, 136; Box-Steffensmeier and Zorn 2001, 978; Box-Steffensmeier, Reiter, and Zorn 2003). Note: if a covariate violated the proportional hazards assumption in one model we corrected for it in the other models as well.

We estimated several competing risks models using different samples to determine the robustness of the results. In general, the results are fairly robust to changes in the samples. The results for the full sample of triads is shown in Table 27, while Table 29 shows the results for the politically relevant triads sample (these results are the same as Table 1 in the article). Next, we estimated models on both samples without World Wars I and II. Since there is a significant amount of joining in both of these wars it is important to discern whether these two wars disproportionately influence our results. We lose 37 joining instances in the all triads sample, 19 who joined the initiator and 18 who joined the target. We lose the same number of joining instances in the politically relevant triads sample because a major power is an initial belligerent in both wars so all of the potential joiners are politically relevant. The results for these samples can be found in Tables 28 and 30, respectively. Tables 24 to 26 contain a summary of the results across the four samples with variable effects that are not consistent across the samples in bold. Below we describe how the results change across the samples.

Join Either Initiator or Target Model

In the Join Either Initiator or Target model, the results are fairly robust across the four samples. Across all of the samples, many of the variables have the same sign and significance level. The only exceptions are 1) geographic proximity did not violate the proportional hazards assumption in the politically relevant triads sample without World Wars I and II and so we did not include an interaction between geographic proximity and the natural log of time in that sample, 2) offense pact is only significant (at the 90 percent level) in the all triads sample, 3) the interaction of rivalry and the natural log of time is negative in the models where rivalry violated the proportional hazards assumption but is only significant (at the 99 percent level) in the politically relevant sample without World Wars I and II and since rivalry did not violate the proportional hazards assumption in the politically relevant triads sample we did not include an interaction between rivalry and the natural log of time in that sample, and 4) the interaction of previous major power joining and the natural log

of time is negative in all the samples but is only significant (at the 95 percent level) in the two samples where all triads are included.

Join Initiator Model

In the Join Initiator model, the results are also fairly robust across the four samples. Across all of the samples, many of the variables have the same sign and significance level. The only exceptions are 1) capability is only significant (at the 95 percent level) in the politically relevant triads sample, 2) the interaction of capability and the natural log of time is positive in the all triads sample without World Wars I and II but negative in the other three samples, 3) geographic proximity did not violate the proportional hazards assumption in the politically relevant triads sample without World Wars I and II and so we did not include an interaction between geographic proximity and the natural log of time in that sample, 4) rivalry did not violate the proportional hazards assumption in the politically relevant triads sample and so we did not include an interaction between rivalry and the natural log of time in that sample, and 5) the effect of previous major power joining is negative in the politically relevant triads sample without World Wars I and II but positive in the other three samples.

Join Target Model

In the Join Target model, the results are also fairly robust across the four samples. Across all of the samples, many of the variables have the same sign and significance level. The only exceptions are 1) geographic proximity is only significant (at the 95 percent level) in the politically relevant triads sample with World Wars I and II, 2) geographic proximity did not violate the proportional hazards assumption in the politically relevant triads sample without World Wars I and II and so we did not include an interaction between geographic proximity and the natural log of time in that model, 3) the effect of autocracy decreases the risk of joining in the all triads and politically relevant triads samples but increases the risk of joining in the full and politically relevant triads samples without World Wars I and II, 4) the effect of autocracy decreases over time in the politically relevant triads sample without World Wars I and II but increases over time in the other three samples, 5) rivalry is significant (at the 99 percent level) in both politically relevant triads samples but is not significant in both of the full samples, and 6) the effect of rivalry increases over time in the all triads sample, significantly increases over time (at the 95 percent level) in the all triads sample without World Wars I and II, does not change over time the politically relevant triads sample, and decreases over time in the politically relevant triads sample without World Wars I and II.

Table 24: Summary of Results Across Samples: Join Either Initiator or Target.

	All Triads	All Triads No WWI & WWII	Politically Relevant Triads	Politically Relevant Triads No WWI & WWII
Capability	$+^{**}$	$+^{**}$	$+^{**}$	$+^{**}$
Capability x Ln(Time)	$-^{**}$	$-^{**}$	$-^{**}$	$-^{**}$
Geographic Proximity	$+^{**}$	$+^{**}$	$+^{**}$	$+^{**}$
Geographic Proximity x Ln(Time)	$-^{**}$	$-^{**}$	$-^{**}$	
Democracy	$+^{**}$	$+^{**}$	$+^{**}$	$+^{**}$
Democracy x Ln(Time)	$-^{**}$	$-^{**}$	$-^{**}$	$-^{**}$
Autocracy	$+^{**}$	$+^{**}$	$+^{**}$	$+^{**}$
Autocracy x Ln(Time)	$-^{**}$	$-^{**}$	$-^{**}$	$-^{**}$
Defense Pact	$+^{**}$	$+^{**}$	$+^{**}$	$+^{**}$
Defense Pact x Ln(Time)	$-^{**}$	$-^{**}$	$-^{**}$	$-^{**}$
Offense Pact	$+^{\dagger}$	$+$	$+$	$+$
Neutrality Pact	$+$	$+$	$+$	$+$
Rivalry	$+^{**}$	$+^{**}$	$+^{**}$	$+^{**}$
Rivalry x Ln(Time)	$-$	$-$		$-^{**}$
Previous Major Power Joining	$+^{**}$	$+^{**}$	$+^{**}$	$+^{**}$
Previous Major Power Joining x Ln(Time)	$-^{*}$	$-^{*}$	$-$	$-$

Note: Significance levels (two-tailed): †: 10% $*$: 5% $**$: 1%

Table 25: Summary of Results Across Samples: Join Initiator.

	All Triads	All Triads No WWI & WWII	Politically Relevant Triads	Politically Relevant Triads No WWI & WWII
Capability	+	+	$+^{*}$	+
Capability x Ln(Time)	−	+	−	−
Geographic Proximity	$+^{**}$	$+^{**}$	$+^{**}$	$+^{**}$
Geographic Proximity x Ln(Time)	$-^{**}$	$-^{**}$	$-^{**}$	
Democracy	$+^{**}$	$+^{**}$	$+^{**}$	$+^{**}$
Democracy x Ln(Time)	$-^{**}$	$-^{**}$	$-^{**}$	$-^{**}$
Autocracy	$+^{**}$	$+^{**}$	$+^{**}$	$+^{**}$
Autocracy x Ln(Time)	$-^{**}$	$-^{**}$	$-^{**}$	$-^{**}$
Defense Pact	$+^{**}$	$+^{**}$	$+^{**}$	$+^{**}$
Defense Pact x Ln(Time)	−	−	−	−
Offense Pact	+	+	+	+
Neutrality Pact	$+^{**}$	$+^{**}$	$+^{**}$	$+^{**}$
Rivalry	$+^{**}$	$+^{**}$	$+^{**}$	$+^{**}$
Rivalry x Ln(Time)	$-^{**}$	$-^{**}$		$-^{**}$
Previous Major Power Joining	+	+	+	−
Previous Major Power Joining x Ln(Time)	+	+	+	+

Note: Significance levels (two-tailed): †: 10% $*$: 5% $**$: 1%

Table 26: Summary of Results Across Samples: Join Target.

	All Triads	All Triads No WWI & WWII	Politically Relevant Triads	Politically Relevant Triads No WWI & WWII
Capability	$+^{**}$	$+^{**}$	$+^{**}$	$+^{**}$
Capability x Ln(Time)	$-^{**}$	$-^{**}$	$-^{**}$	$-^{**}$
Geographic Proximity	$+^{**}$	$+^{**}$	$+^{**}$	$+^{*}$
Geographic Proximity x Ln(Time)	$-^{**}$	$-^{**}$	$-^{**}$	
Democracy	$-$	$-$	$-$	$-$
Democracy x Ln(Time)	$+$	$+$	$+$	$+$
Autocracy	$-$	$+$	$-$	$+$
Autocracy x Ln(Time)	$+$	$+$	$+$	$-$
Defense Pact	$+^{**}$	$+^{**}$	$+^{**}$	$+^{**}$
Defense Pact x Ln(Time)	$-^{**}$	$-^{**}$	$-^{**}$	$-^{**}$
Offense Pact	$+^{**}$	$+^{**}$	$+^{**}$	$+^{**}$
Neutrality Pact	$+$	$+$	$+$	$+$
Rivalry	$+$	$+$	$+^{**}$	$+^{**}$
Rivalry x Ln(Time)	$+$	$+^{*}$		$-$
Previous Major Power Joining	$+^{**}$	$+^{**}$	$+^{**}$	$+^{**}$
Previous Major Power Joining x Ln(Time)	$-^{**}$	$-^{**}$	$-^{**}$	$-^{**}$

Note: Significance levels (two-tailed): †: 10% $*$: 5% $**$: 1%

Table 27: Competing Risks Model of Third Party Joining, 1816-2001: All Triads.

	Join Either Initiator or Target	*Join Initiator*	*Join Target*
Capability	7.43**	1.28	9.78**
	(0.70)	(0.95)	(0.81)
Capability x Ln(Time)	-1.14**	-0.004	-1.44**
	(0.15)	(0.19)	(0.18)
Geographic Proximity	3.42**	3.57**	3.00**
	(0.60)	(0.67)	(0.74)
Geographic Proximity x Ln(Time)	-0.38**	-0.35**	-0.45**
	(0.12)	(0.13)	(0.16)
Democracy	3.26**	7.73**	-0.86
	(0.63)	(0.87)	(0.80)
Democracy x Ln(Time)	-0.69**	-1.56**	0.17
	(0.12)	(0.18)	(0.16)
Autocracy	1.96**	3.75**	-0.09
	(0.56)	(0.90)	(0.51)
Autocracy x Ln(Time)	-0.42**	-0.75**	0.05
	(0.11)	(0.17)	(0.10)
Defense Pact	2.43**	2.29**	4.36**
	(0.44)	(0.49)	(0.68)
Defense Pact x Ln(Time)	-0.29**	-0.12	-0.68**
	(0.09)	(0.10)	(0.14)
Offense Pact	0.38†	0.26	1.92**
	(0.21)	(0.32)	(0.37)
Neutrality Pact	0.40	1.89**	0.63
	(0.26)	(0.27)	(0.52)
Rivalry	1.43**	3.74**	0.60
	(0.48)	(0.73)	(0.68)
Rivalry x Ln(Time)	-0.09	-0.56**	0.22
	(0.10)	(0.16)	(0.15)
Previous Major Power Joining	2.52**	1.47	6.19**
	(0.47)	(0.96)	(0.64)
Previous Major Power Joining x Ln(Time)	-0.19*	0.05	-0.80**
	(0.09)	(0.18)	(0.12)
No. of observations	219,896	219,896	219,896
No. of joining cases	565	318	247
Time at risk	33,617,786	33,617,786	33,617,786
Log-Likelihood	-5302.38	-2901.30	-2295.39
Wald $\chi^2_{(16,16,16)}$	2126.57**	1685.12**	1097.22**

Notes: Significance levels (two-tailed): †: 10% *: 5% **: 1%
Coefficients with robust standard errors in parentheses.

Table 28: Competing Risks Model of Third Party Joining, 1816-2001: All Triads (without World Wars I and II).

	Join Either Initiator or Target	*Join Initiator*	*Join Target*
Capability	6.93**	1.01	9.36**
	(0.73)	(0.98)	(0.87)
Capability x Ln(Time)	-1.02**	0.07	-1.35**
	(0.15)	(0.20)	(0.19)
Geographic Proximity	3.49**	3.69**	3.05**
	(0.63)	(0.70)	(0.76)
Geographic Proximity x Ln(Time)	-0.39**	-0.37**	-0.46**
	(0.13)	(0.14)	(0.16)
Democracy	3.77**	8.45**	-1.04
	(0.70)	(0.94)	(0.86)
Democracy x Ln(Time)	-0.79**	-1.72**	0.22
	(0.14)	(0.20)	(0.17)
Autocracy	2.49**	4.30**	0.03
	(0.63)	(0.96)	(0.52)
Autocracy x Ln(Time)	-0.53**	-0.85**	0.02
	(0.12)	(0.19)	(0.10)
Defense Pact	2.28**	1.95**	4.71**
	(0.47)	(0.48)	(0.72)
Defense Pact x Ln(Time)	-0.25**	-0.03	-0.75**
	(0.09)	(0.10)	(0.15)
Offense Pact	0.34	0.28	1.83**
	(0.22)	(0.32)	(0.41)
Neutrality Pact	0.37	1.89**	0.57
	(0.28)	(0.27)	(0.59)
Rivalry	1.39**	3.66**	0.31
	(0.48)	(0.74)	(0.66)
Rivalry x Ln(Time)	-0.10	-0.56**	0.27*
	(0.10)	(0.16)	(0.14)
Previous Major Power Joining	2.40**	1.03	6.60**
	(0.47)	(0.98)	(0.68)
Previous Major Power Joining x Ln(Time)	-0.19*	0.11	-0.93**
	(0.09)	(0.18)	(0.13)
No. of observations	219,364	219,364	219,364
No. of joining cases	528	299	229
Time at risk	33,469,114	33,469,114	33,469,114
Log-Likelihood	-4977.78	-2723.63	-2150.48
Wald $\chi^2_{(16,16,16)}$	1985.69**	1603.44**	943.52**

Notes: Significance levels (two-tailed): †: 10% *: 5% **: 1%
Coefficients with robust standard errors in parentheses.

Table 29: Competing Risks Model of Third Party Joining, 1816-2001: Politically Relevant Triads.

	Join Either Initiator or Target	*Join Initiator*	*Join Target*
Capability	6.86**	2.11*	8.69**
	(0.64)	(1.02)	(0.81)
Capability x Ln(Time)	-1.01**	-0.27	-1.16**
	(0.14)	(0.22)	(0.17)
Geographic Proximity	3.55**	4.12**	2.53**
	(0.56)	(0.68)	(0.67)
Geographic Proximity x Ln(Time)	-0.54**	-0.60**	-0.46**
	(0.10)	(0.13)	(0.13)
Democracy	3.06**	6.87**	-0.79
	(0.59)	(0.95)	(0.86)
Democracy x Ln(Time)	-0.64**	-1.34**	0.19
	(0.11)	(0.19)	(0.17)
Autocracy	1.78**	3.74**	-0.16
	(0.56)	(0.93)	(0.51)
Autocracy x Ln(Time)	-0.37**	-0.70**	0.06
	(0.11)	(0.18)	(0.10)
Defense Pact	2.30**	2.23**	3.96**
	(0.42)	(0.53)	(0.71)
Defense Pact x Ln(Time)	-0.29**	-0.16	-0.63**
	(0.08)	(0.10)	(0.14)
Offense Pact	0.27	0.11	1.61**
	(0.21)	(0.32)	(0.38)
Neutrality Pact	0.40	1.75**	0.60
	(0.25)	(0.26)	(0.47)
Rivalry	0.94**	1.28**	1.31**
	(0.13)	(0.20)	(0.22)
Previous Major Power Joining	1.90**	0.33	4.97**
	(0.47)	(1.24)	(0.67)
Previous Major Power Joining x Ln(Time)	-0.11	0.18	-0.61**
	(0.09)	(0.22)	(0.13)
No. of observations	88,916	88,916	88,916
No. of joining cases	511	294	217
Time at risk	13,048,024	13,048,024	13,048,024
Log-Likelihood	-4518.52	-2538.17	-1879.05
Wald $\chi^2_{(15,15,15)}$	1348.18**	1064.59**	719.12**

Notes: Significance levels (two-tailed): †: 10% ∗: 5% ∗∗: 1%
Coefficients with robust standard errors in parentheses.

Table 30: Competing Risks Model of Third Party Joining, 1816-2001: Politically Relevant Triads (without World Wars I and II).

	Join Either Initiator or Target	*Join Initiator*	*Join Target*
Capability	6.49**	1.08	8.61**
	(0.67)	(1.07)	(0.83)
Capability x Ln(Time)	-0.92**	-0.04	-1.15**
	(0.14)	(0.23)	(0.18)
Geographic Proximity	1.10**	1.45**	0.56*
	(0.12)	(0.16)	(0.21)
Democracy	4.06**	8.34**	-1.04
	(0.71)	(0.90)	(0.92)
Democracy x Ln(Time)	-0.84**	-1.65**	0.25
	(0.14)	(0.19)	(0.18)
Autocracy	2.92**	4.51**	0.39
	(0.66)	(0.98)	(0.55)
Autocracy x Ln(Time)	-0.60**	-0.85**	-0.05
	(0.13)	(0.19)	(0.11)
Defense Pact	2.56**	2.15**	4.86**
	(0.44)	(0.47)	(0.79)
Defense Pact x Ln(Time)	-0.34**	-0.12	-0.81**
	(0.09)	(0.09)	(0.16)
Offense Pact	0.25	0.15	1.24**
	(0.22)	(0.31)	(0.43)
Neutrality Pact	0.39	1.66**	0.44
	(0.27)	(0.25)	(0.62)
Rivalry	2.58**	4.61**	1.61**
	(0.45)	(0.69)	(0.59)
Rivalry x Ln(Time)	-0.39**	-0.78**	-0.09
	(0.09)	(0.15)	(0.12)
Previous Major Power Joining	1.60**	-0.72	5.80**
	(0.50)	(1.30)	(0.70)
Previous Major Power Joining x Ln(Time)	-0.09	0.34	-0.83**
	(0.09)	(0.24)	(0.14)
No. of observations	88,384	88,384	88,384
No. of joining cases	474	275	199
Time at risk	12,899,352	12,899,352	12,899,352
Log-Likelihood	-4229.75	-2366.32	-1745.46
Wald $\chi^2_{(15,15,15)}$	1345.56**	1026.60**	648.39**

Notes: Significance levels (two-tailed): †: 10% *: 5% **: 1%
Coefficients with robust standard errors in parentheses.

Results: Politically Relevant Triads

Many of our variables violate the proportional hazards assumption, which means that a variable's effect on the risk of joining changes over time. In order to account for a variable's changing effect we included an interaction between that variable and the natural log of time. Thus, in order to interpret a variable's effect on the risk of joining we need to calculate its inflection point, that is, the point in time when its effect changes from positive to negative or negative to positive and when the variable and its interaction with time is statistically significant (Licht 2011). If a variable does not violate the proportional hazards assumption then it does not have an inflection point, that is, it is either always positive or always negative. In addition, if a variable that did not violate the proportional hazards assumption is statistically significant then it is significant for the entire range of analysis time and if it is not statistically significant then it is not statistically significant for the entire range of analysis time.

We can calculate a variable's inflection point using standard techniques for interpreting interaction terms (Licht 2011). A variable's constitutive effect provides the risk of joining when the interaction term is zero, which occurs when ln(t)=0 or t=1, which is the first day of a MID. Thus, a variable's constitutive effect does not tell us anything about how that effect changes over time. Additionally, if the constitutive and interaction terms have opposite signs then the effect changes from positive to negative or negative to positive at some point over the range of analysis time. If we exponentiate the ratio of coefficients, we can identify the point in time when the estimated effect changes. For example, consider the constitutive and interaction coefficients for geographic proximity in the Join Either Initiator or Target model, which are 3.55 and -0.54, respectively (see Table 29 or Table 1 in the article). In this case the inflection point occurs after day 735:

$$T_{\Delta} = e^{\frac{|\beta_{\text{constitutive}}|}{|\beta_{\text{interaction}}|}} = e^{\frac{|3.55|}{|-0.54|}} \approx 737 \tag{5}$$

Thus, after 737 days have passed in a MID, the effect of geographic proximity on the risk of joining either the initiator or the target changes from positive to negative. It is important to know how many cases of joining occur when the effect is positive and how many occur when the effect is negative. In the Join Either Initiator or Target model there are 511 cases of joining and 5 percent occur after day 737, while the remaining 95 percent occur before day 737, suggesting that geographic proximity increases the risk of joining in nearly all MIDs. Table 31 shows the day the effect of a variable changes, the direction of that change, as well as the percentage of joining cases that occurred before and after the inflection point. For most variables the effect changes from positive to negative, a couple change from negative to positive, two variables have no inflection point (the effect is always positive), and one variable's inflection point marks a sharp increase in the effect of that variable but the effect does not change signs (it is always positive).

As with any interaction term, it is important to calculate whether a variable's effect is statistically significant across the entire range of the interacted variable. In this case, we need to calculate what range of analysis time our variables' effects are statistically significant.

Table 32 shows the range of days a variable's effect is statistically significant (at the 95 percent level) along with the percentage of joining cases that took place during that range of days as well as the range of days a variable's effect is not significant and the percentage of joining cases that took place during that range of days. Table 33 uses the information in Tables 31 and 32 and shows the percentage of joining cases where a variable has a positive and statistically significant (at the 95 percent level) effect on the risk of joining and the percentage of joining cases where a variable has a negative and statistically significant effect on the risk of joining.

In addition to calculating the inflection point for a variable that violates the proportional hazards assumption, it is important to know how the effect of that variable changes over time and what range of analysis time the variable's effect is statistically significant (Licht 2011). One way to examine a continuous variable's effect on the risk of failure over time is to calculate the percentage change in the hazard ratio for a given change in the variable. Formally, the percentage change in the hazard ratio is:

$$\%\triangle \mathrm{h_i(t)} = (e^{(\mathrm{X_i}-\mathrm{X_j})(\beta_1+\beta_2 \ln(\mathrm{t}))} - 1) \times 100 \tag{6}$$

where X_i and X_j are the values of the variable chosen to calculate the percentage change in the hazard ratio. The only continuous variable that violates the proportional hazards assumption is a third party's capability. This variable is highly skewed toward zero and so the values chosen to calculate the percentage change in the hazard will be quartiles, specifically the median percentage change in the hazard of joining when a third party's capability increases from the first to second (or median) quartile and from the second to third quartile. Figure 1 shows the median percentage change in the hazard of joining across the range of analysis time when a third party's capability increases from the first to second quartile while Figure 2 shows the median percentage change in the hazard of joining when a third party's capability increases from the second to third quartile (these figures are the same as Figure 1 in the article). These figures were generated following the procedures outlined in Licht (2011). Each figure shows the effect an increase in a third party's capability has on the risk of joining either the initiator or target, the risk of joining the initiator, and the risk of joining the target. The dashed line displays the median percentage change in the hazard, while the solid lines correspond to the 95 percent confidence interval. A variable's effect is statistically significant when the confidence interval does not include zero. An area that is shaded grey indicates that the variable's effect is statistically significant in that range of analysis time, while an area in white indicates that the variable's effect is not statistically significant in that range of analysis time.

One way to examine a binary variable's effect on the risk of failure over time is to use the combined coefficient. Formally, the combined coefficient is: $\beta_{\text{constitutive}} + (\beta_{\text{constitutive}} \times \ln(\mathrm{t}))$. "The combined coefficient describes the direction and magnitude of the variable's effect on the hazard rate over time at a specific value (usually $x_i = 1$) held constant over time" (Licht 2011, 232). Figures 3 through 7 show the combined constitutive and interaction effect across the range of analysis time for each of the binary variables that violated the proportional hazards assumption (Figures 4 and 5 are the same as Figure 2 in the article). These

figures were generated following the procedures outlined in Licht (2011). Each figure shows the effect a variable has on the risk of joining either the initiator or target, the risk of joining the initiator, and the risk of joining the target. The dashed line displays the combined coefficient, while the solid lines correspond to the 95 percent confidence interval. A variable's effect is statistically significant when the confidence interval does not include zero. An area that is shaded grey indicates that the variable's effect is statistically significant in that range of analysis time, while an area in white indicates that the variable's effect is not statistically significant in that range of analysis time.

Since the combined coefficient does not provide the substantive effect a variable has on the risk of joining, we calculated the percentage change in the hazard ratio for each binary independent variable that violated the proportional hazards assumption at different points in time during a MID (see Table 34). Formally, the percentage change in the hazard ratio is the same as in Equation 6 where $X_i = 1$ and $X_j = 0$. The time points displayed are: 1, 10, 30, 60, 90, 120, 150, and 180 days; and 1, 2, 3, 4, and 5 years.[4] Numbers in bold indicate that the percentage change in the hazard ratio is statistically significant at the 95 percent level.

Dependent Risks

In the competing risks model that we estimate, we assume (as is standard) that the risks, conditional on the covariates, are independent. However, if the decision to join the initiator, conditional on the covariates, is not independent from the decision to join the target, then the assumption that we can treat the choices as randomly censored is violated. In this case, a dependent risks model is appropriate (Gordon 2002, Fukumoto 2009, Han and Hausman 1990, Hill, Axinn, and Thorton 1993). To the extent that our model is well specified the issue of dependent risks is less of a concern. The dependent risks issue is really one of model specification (Box-Steffensmeier and Jones 2004, 179). However, as far as we know there is no way to directly test whether the risks are independent nor any statistical software that we are aware of to estimate a dependent risks model that is readily available. However, Allison (1984) and Box-Steffensmeier and Jones (2004) note that the multinomial logit (MNL) model is the discrete-time complement of our continuous time competing risks model. Thus, we estimated a MNL model using our two joining outcomes. The dependent variable has three categories; Remain Neutral, Join the Initiator, Join the Target. In order to identify the model, the omitted category is Remain Neutral. We also included a measure of time, specifically the natural log of time, to account for any duration dependency.

We note that the MNL model also makes the assumption regarding the independence of competing risks, that is, conditional on the covariates, the ratio of the probabilities of any two alternatives are independent of all of the other alternatives. This is known as the independence of irrelevant alternatives assumption (IIA), which is analogous to the assumption

[4]The number of days used to calculate years 2, 4, and 5 are based on the closest point in time where a failure occurred since the hazard rate can only be calculated at a specific point in time if a failure occurred. Specifically, 729 days was used for 2 years, 1,458 days was used for 4 years, and 1,821 days was used for 5 years.

that the risks are conditionally independent in our continuous time Cox model. However, unlike our continuous time model, in the discrete-time competing risks model we can test for the validity of the IIA assumption using the tests devised by Hausman and McFadden (1984) and Small and Hsiao (1985). Overall, the results of these tests indicate that we fail to reject the null hypothesis that the outcomes are independent. However, Cheng and Long note: "In a variety of substantive applications, we have found that even with reasonable model specifications, these tests often reject IIA when the alternatives seem distinct and that they do not reject IIA when the alternatives can reasonably be viewed as close substitutes" and conclude that "the tests are not useful for assessing IIA" (2007, 586). As a result, we also estimated a multinomial probit (MNP) model, which does not make the IIA. The signs of the coefficients and levels of statistical significance are similar to the results from the MNL model and no inferences we would draw based on these results would change from those obtained from a MNL model. Based on tests of the IIA assumption following the MNL model and comparison of the results between that model and a MNP model, we have some additional confidence that we can treat our competing risks as independent.

Table 31: Inflection Points: Politically Relevant Triads.

	Model	Inflection Point (Day)	Direction of Δ	% Joining Cases Before Inflection Point	% Joining Cases After Inflection Point
Capability	Pooled	923	+ to −	98%	2%
	Initiator	2523	+ to −	100%	0%
	Target	1837	+ to −	100%	0%
Geographic Proximity	Pooled	737	+ to −	95%	5%
	Initiator	930	+ to −	98%	2%
	Target	253	+ to −	83%	17%
Democracy	Pooled	120	+ to −	66%	34%
	Initiator	170	+ to −	73%	27%
	Target	61	− to +	52%	48%
Autocracy	Pooled	118	+ to −	66%	34%
	Initiator	207	+ to −	78%	22%
	Target	14	− to +	32%	68%
Defense Pact	Pooled	2,662	+ to −	100%	0%
	Initiator	none	always +	-	-
	Target	553	+ to −	92%	8%
Previous Major Power Joining	Pooled	none	always +	-	-
	Initiator	6	+ to rising +	11%	89%
	Target	3,712	+ to −	100%	0%

Table 32: Range of Days Variable Effects are Statistically Significant: Politically Relevant Triads.

	Model	Days Effect Significant	% of Joining Cases Significant	Days Effect Not Significant	% of Joining Cases Not Significant
Capability	Pooled	1-486; 2,508-4,778	92%; 0%	487-2,507	8%
	Initiator	1-89	60%	90-4,778	40%
	Target	1-820	98%	821-4,778	2%
Geographic Proximity	Pooled	1-425; 2,005-4,778	90.22%; 0.39%	426-2,004	9.39%
	Initiator	1-440; 4,171-4,778	91.5%; 0%	441-4,170	8.5%
	Target	1-101; 1,243-4,778	69.12%; 0.92%	102-1,242	29.96%
Democracy	Pooled	1-71; 186-4,778	55%; 24%	72-185	21%
	Initiator	1-122; 246-4,778	65%; 18%	123-245	17%
	Target	-	-	1-4,778	100%
Autocracy	Pooled	1-45; 214-4,778	47%; 20%	46-213	33%
	Initiator	1-123; 438-4,778	64.6%; 8.5%	124-437	26.9%
	Target	-	-	1-4,778	100%
Defense Pact	Pooled	1-779	97%	780-4,778	3%
	Initiator	1-4,778	100%	-	-
	Target	1-245; 2,901-4,778	83%; 0%	246-2,900	17%
Previous Major Power Joining	Pooled	1-4,778	100%	-	-
	Initiator	31-4,778	55%	1-30	45%
	Target	1-1,305	99%	1,306-4,778	1%

Table 33: Percentage of Joining Cases Variable Effects are Statistically Significant: Politically Relevant Triads.

	Model	% of Joining Cases + and Significant	% of Joining Cases − and Significant
Capability	Pooled	92%	0%
	Initiator	60%	0%
	Target	98%	0%
Geographic Proximity	Pooled	90.22%	0.39%
	Initiator	91.5%	0%
	Target	69.12%	0.92%
Democracy	Pooled	55%	24%
	Initiator	65%	18%
	Target	0%	0%
Autocracy	Pooled	47%	20%
	Initiator	64.6%	8.5%
	Target	0%	0%
Defense Pact	Pooled	97%	0%
	Initiator	100%	-
	Target	83%	0%
Previous Major Power Joining	Pooled	100%	-
	Initiator	55%	-
	Target	99%	0%

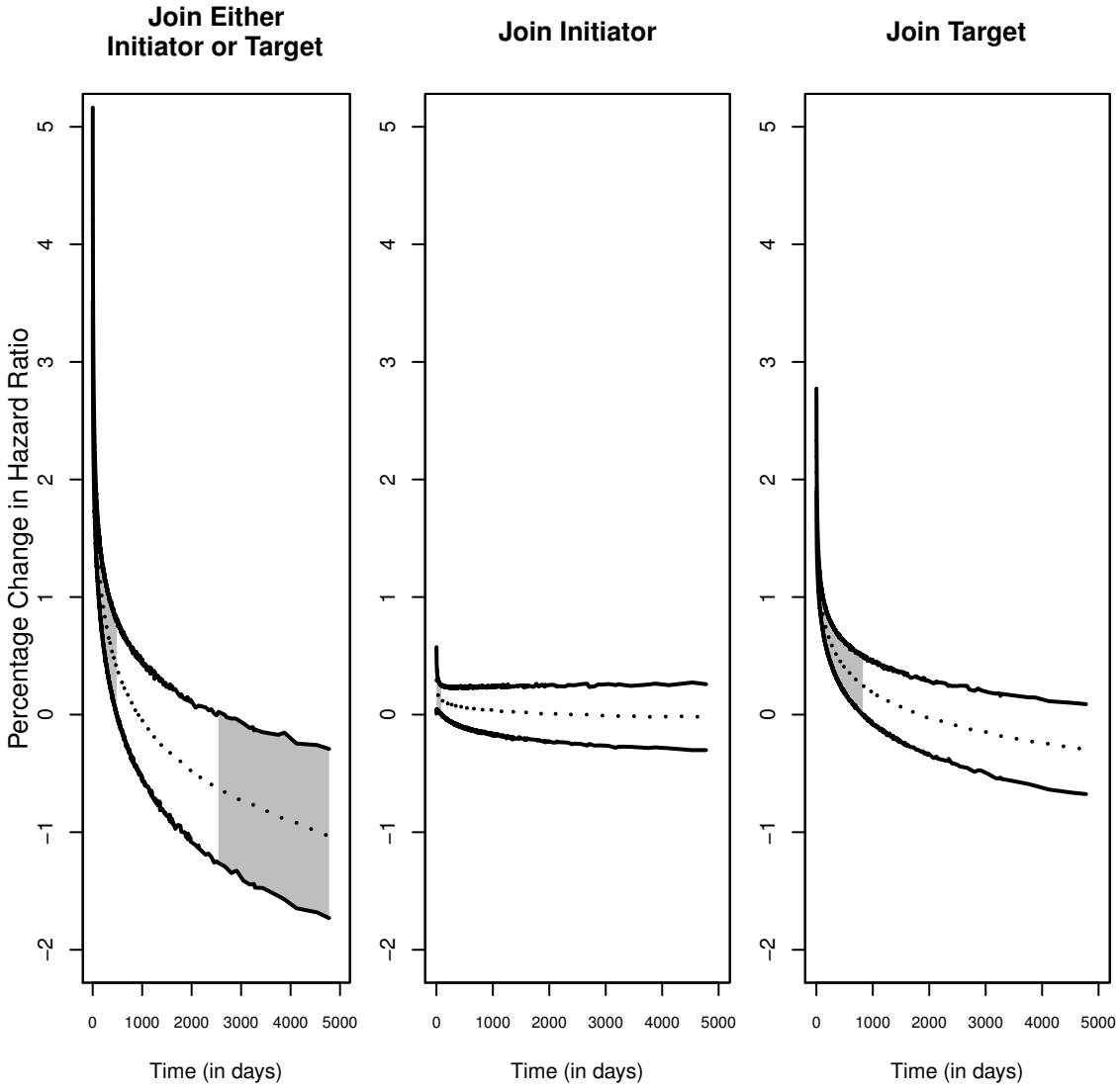

Figure 1: Effect of Capability on the Risk of a Third Party Joining During an Ongoing MID. The dashed line displays the median percentage change in the hazard of joining when a third party's capability increases from the first to second quartile, while the solid lines correspond to the 95 percent confidence interval. An area that is shaded grey indicates that the variable's effect is statistically significant, while an area that is white indicates that the variable's effect is not statistically significant.

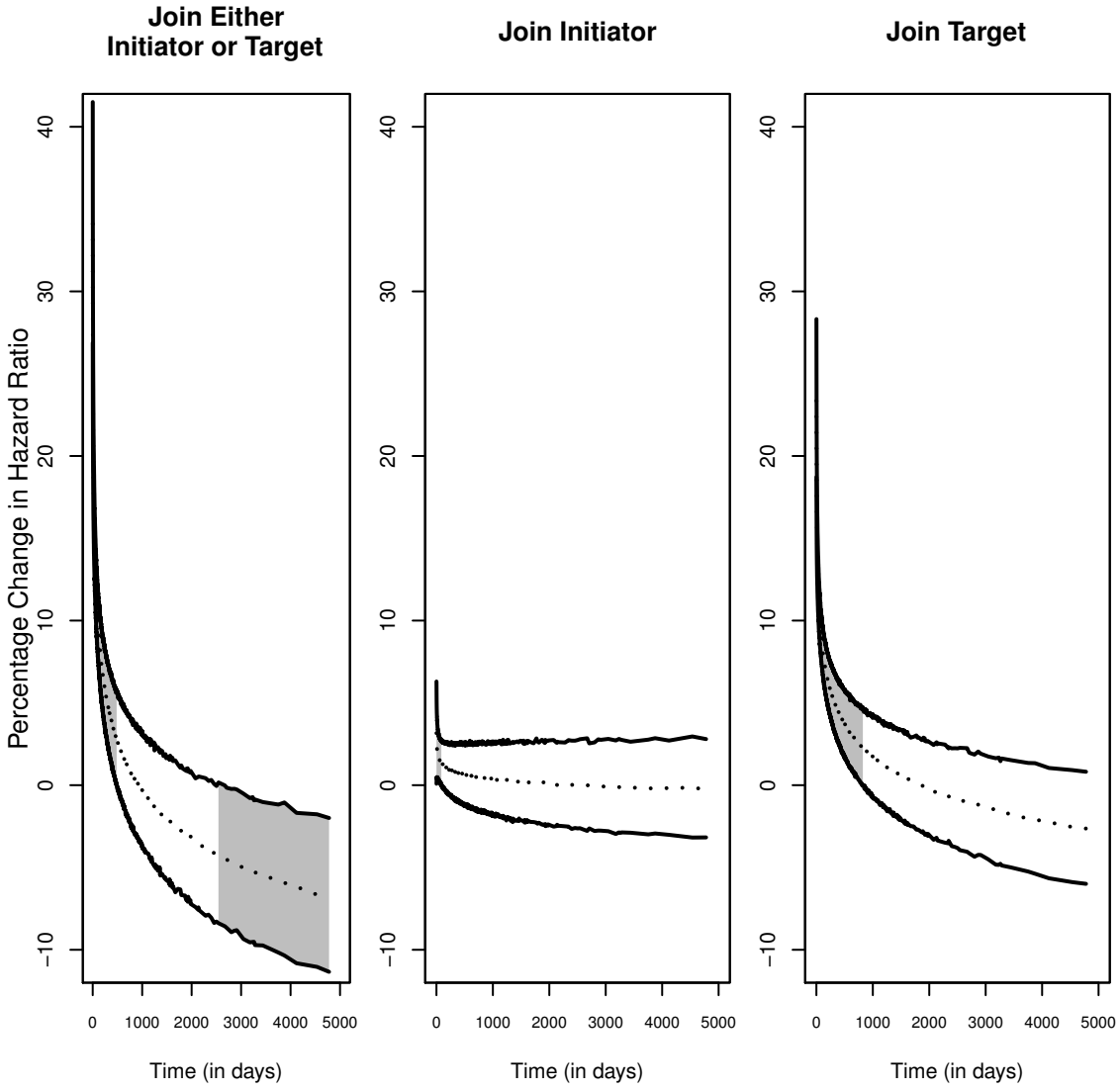

Figure 2: Effect of Capability on the Risk of a Third Party Joining During an Ongoing MID. The dashed line displays the median percentage change in the hazard of joining when a third party's capability increases from the second to third quartile, while the solid lines correspond to the 95 percent confidence interval. An area that is shaded grey indicates that the variable's effect is statistically significant, while an area that is white indicates that the variable's effect is not statistically significant.

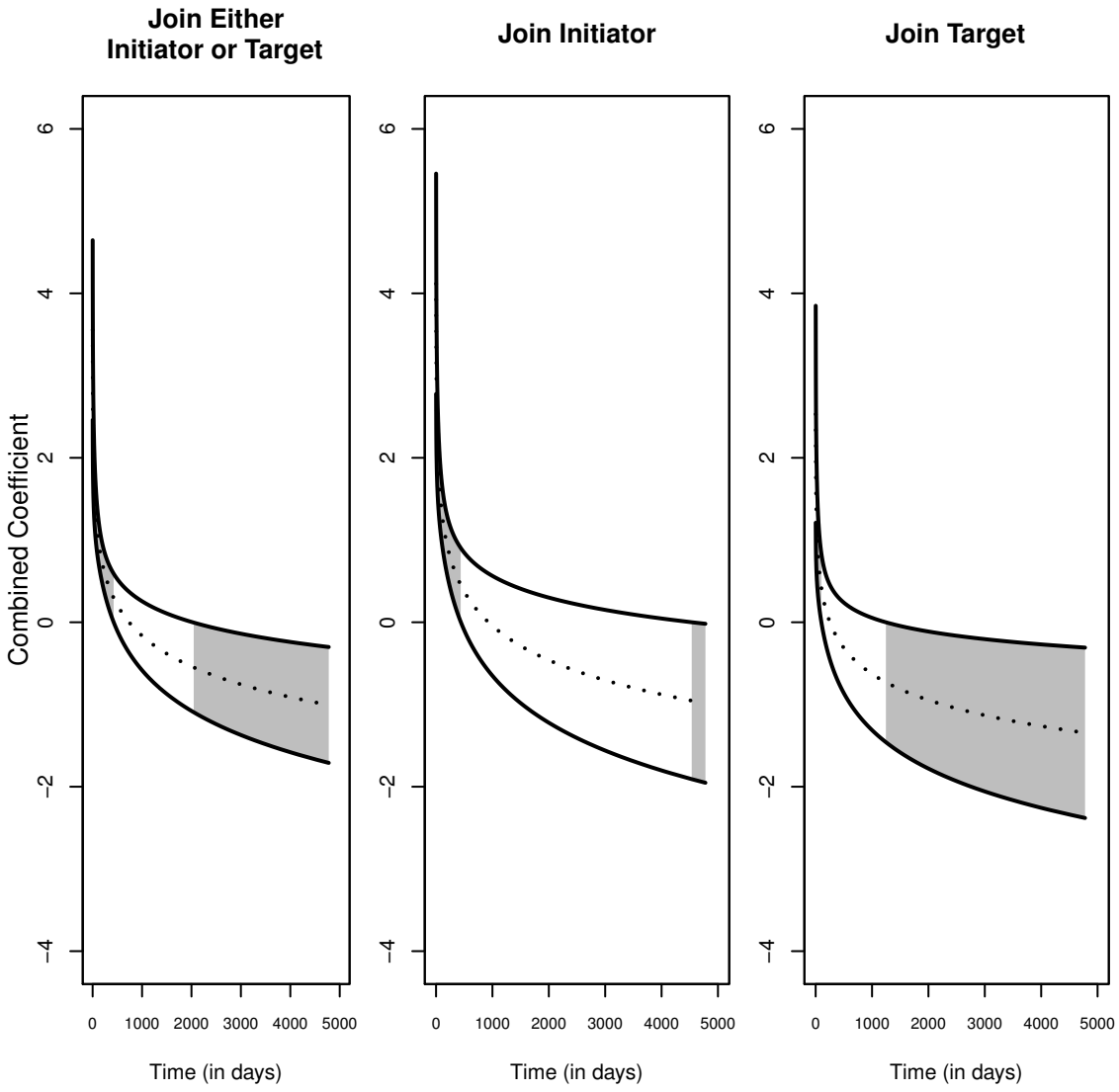

Figure 3: Effect of Geographic Proximity on the Risk of a Third Party Joining During an Ongoing MID. The dashed line displays the combined coefficient, while the solid lines correspond to the 95 percent confidence interval. An area that is shaded grey indicates that the variable's effect is statistically significant, while an area that is white indicates that the variable's effect is not statistically significant.

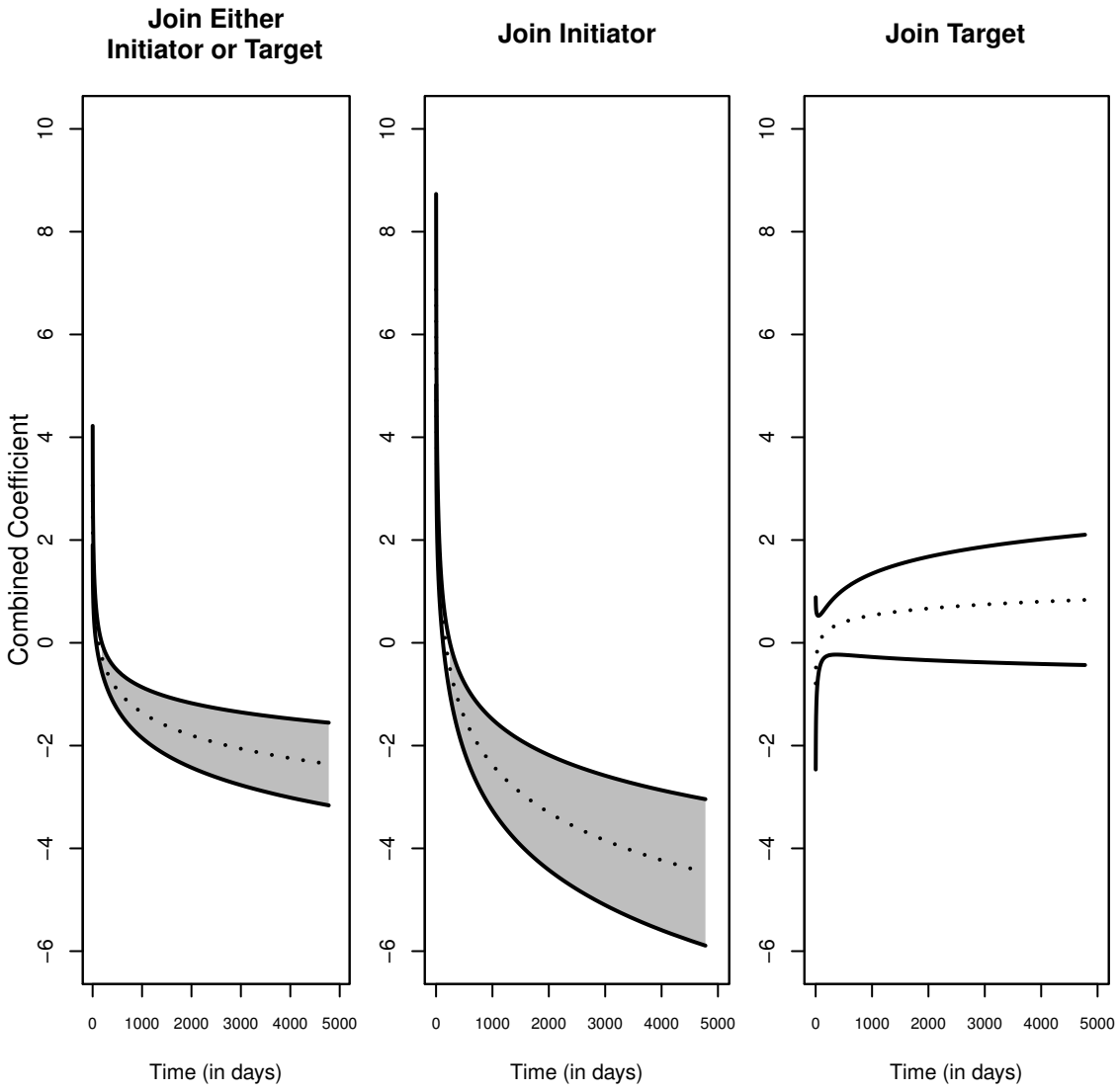

Figure 4: Effect of Democracy on the Risk of a Third Party Joining During an Ongoing MID. The dashed line displays the combined coefficient, while the solid lines correspond to the 95 percent confidence interval. An area that is shaded grey indicates that the variable's effect is statistically significant, while an area that is white indicates that the variable's effect is not statistically significant.

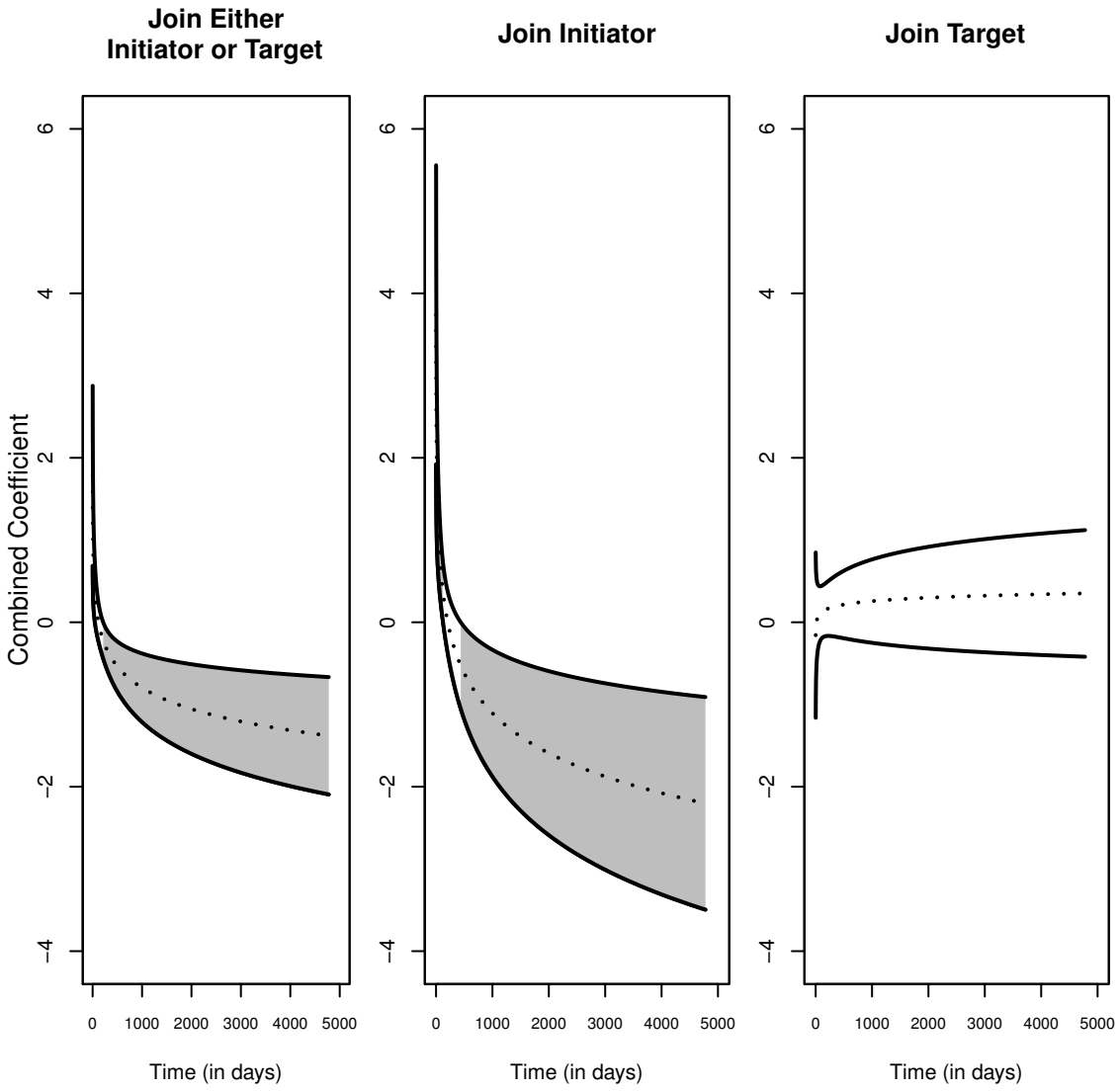

Figure 5: Effect of Autocracy on the Risk of a Third Party Joining During an Ongoing MID. The dashed line displays the combined coefficient, while the solid lines correspond to the 95 percent confidence interval. An area that is shaded grey indicates that the variable's effect is statistically significant, while an area that is white indicates that the variable's effect is not statistically significant.

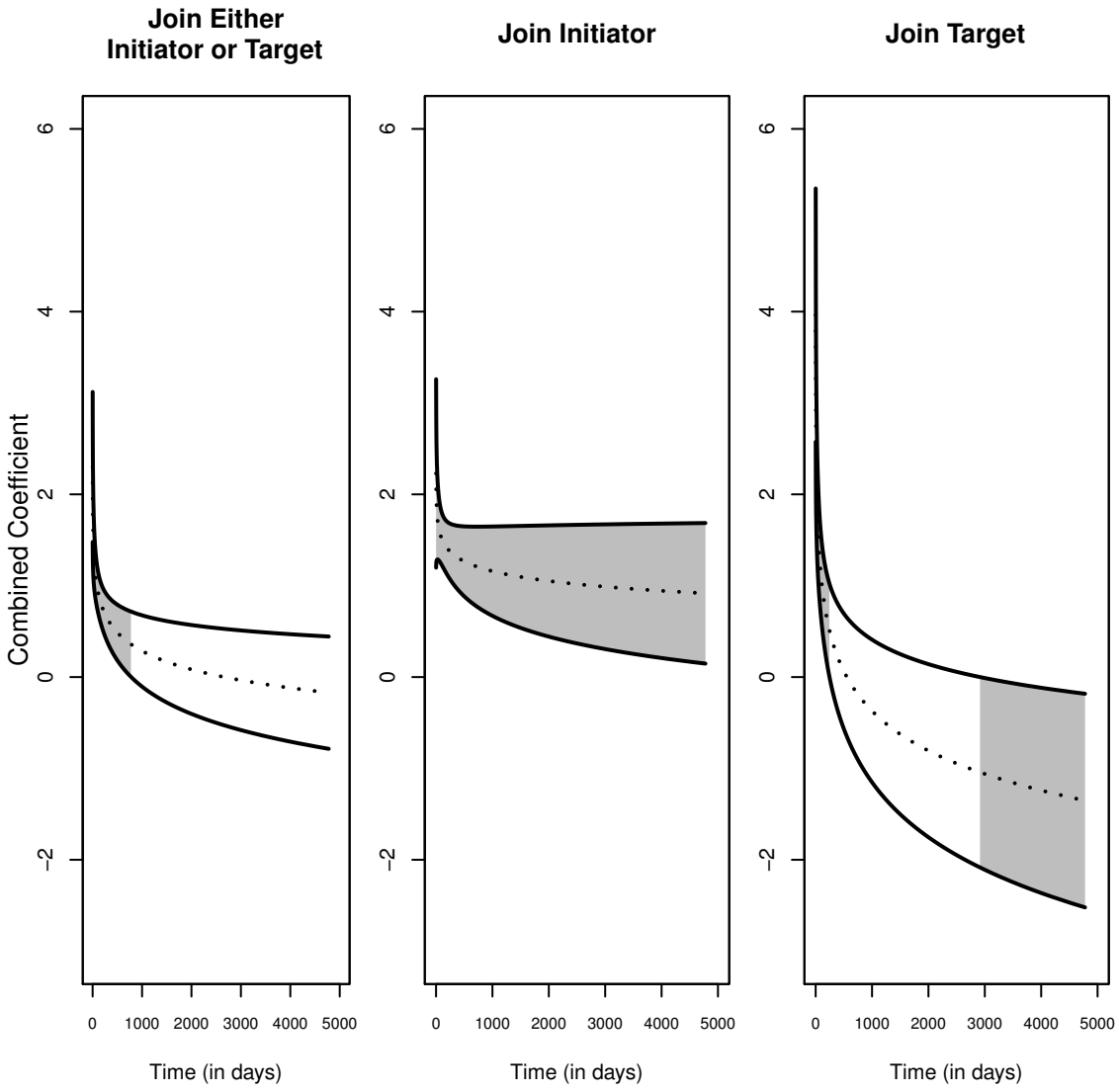

Figure 6: Effect of Defense Pact on the Risk of a Third Party Joining During an Ongoing MID. The dashed line displays the combined coefficient, while the solid lines correspond to the 95 percent confidence interval. An area that is shaded grey indicates that the variable's effect is statistically significant, while an area that is white indicates that the variable's effect is not statistically significant.

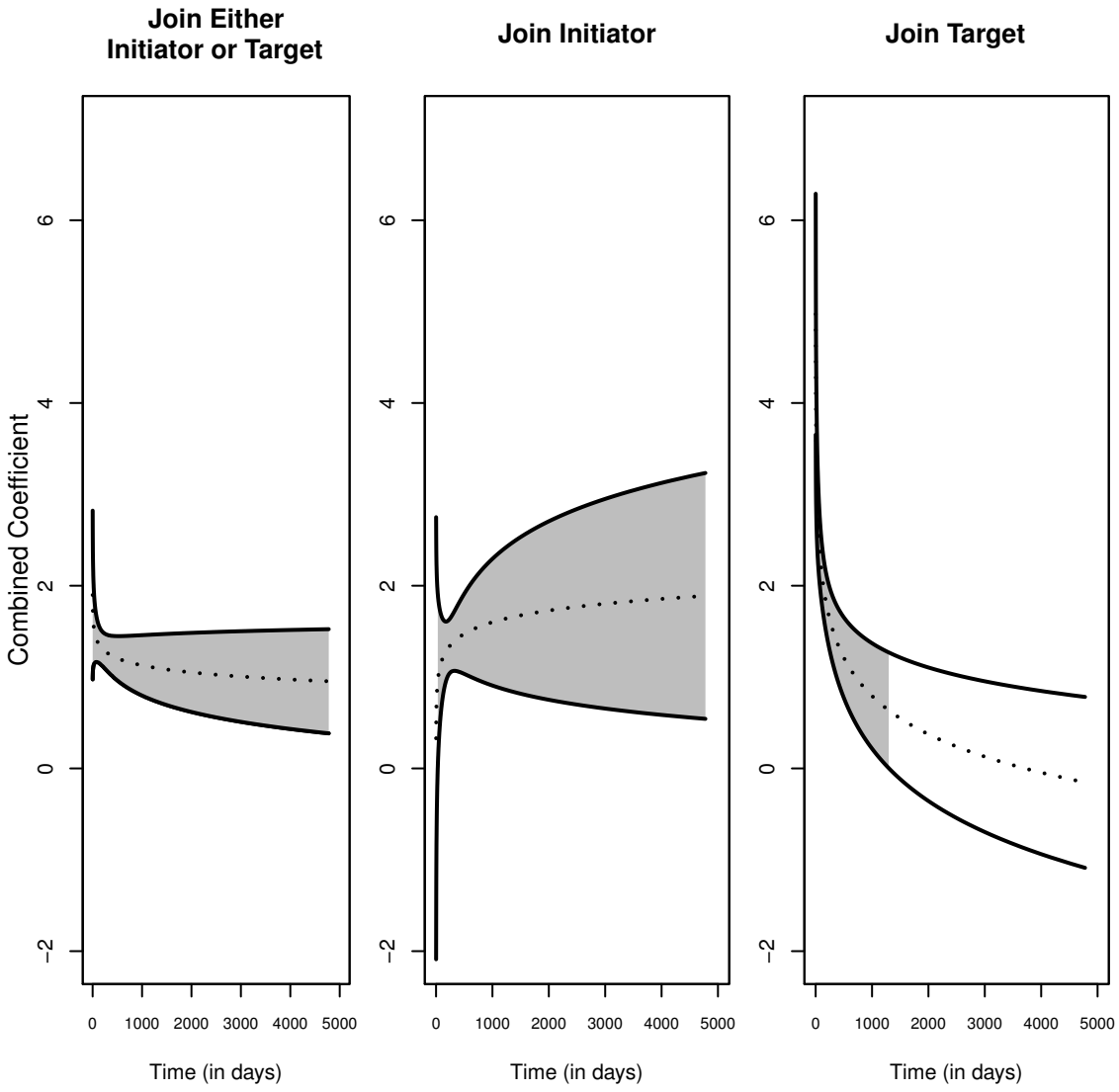

Figure 7: Effect of Previous Major Power Joining on the Risk of a Third Party Joining During an Ongoing MID. The dashed line displays the combined coefficient, while the solid lines correspond to the 95 percent confidence interval. An area that is shaded grey indicates that the variable's effect is statistically significant, while an area that is white indicates that the variable's effect is not statistically significant.

Table 34: Percentage Change in the Hazard Ratio for Binary Independent Variables that Violated the Proportional Hazards Assumption at Different Time Points During a MID.

	Days	1	10	30	60	90	120	150	180	365	729	1095	1458	1821
	Model													
Geographic Proximity	Pooled	**3,392**	**911**	**460**	**286**	**210**	**166**	**136**	**114**	**46**	1	-19	-31	-39
	Initiator	**6,035**	**1,433**	**691**	**421**	**308**	**243**	**200**	**169**	**76**	16	-9	-24	-33
	Target	**1,155**	**338**	**165**	**93**	**60**	41	27	17	-15	-38	-49	**-55**	**-59**
Democracy	Pooled	**2,037**	**390**	**142**	**56**	20	0	-13	-23	**-51**	**-69**	**-76**	**-80**	**-82**
	Initiator	**96,332**	**4,323**	**916**	**302**	**134**	**59**	18	-8	**-64**	**-86**	**-92**	**-94**	**-96**
	Target	-55	-29	-13	0	8	14	19	23	41	61	74	84	92
Autocracy	Pooled	**493**	**151**	**67**	29	11	-1	-9	-15	**-34**	**-49**	**-56**	**-61**	**-64**
	Initiator	**4,107**	**737**	**287**	**138**	**79**	**46**	25	10	-33	**-59**	**-69**	**-75**	**-78**
	Target	-15	-2	5	9	12	14	15	17	22	27	30	32	34
Defense Pact	Pooled	**898**	**410**	**270**	**202**	**169**	**147**	**131**	**119**	**79**	**46**	30	19	12
	Initiator	**829**	**550**	**449**	**393**	**363**	**343**	**328**	**316**	**273**	**235**	**214**	**201**	**190**
	Target	**5,152**	**1,139**	**522**	**303**	**212**	**161**	**127**	**102**	30	-16	-35	-46	-53
Previous Major Power Joining	Pooled	**567**	**416**	**357**	**323**	**304**	**291**	**282**	**274**	**246**	**220**	**206**	**196**	**189**
	Initiator	39	113	160	**195**	**218**	**236**	**250**	**262**	**312**	**368**	**404**	**431**	**453**
	Target	**14,327**	**3,483**	**1,744**	**1,112**	**849**	**697**	**596**	**524**	**307**	**168**	**109**	76	54

Note: Numbers in bold indicate percentage change in the hazard ratio is statistically significant at the 95 percent level.

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