Exploring Operationalizations of Political Relevance

D. Scott Bennett
The Pennsylvania State University

November 14, 2005

Mail: Department of Political Science
318 Pond Building
University Park, PA 16802-6106
Tel: 814-865-6566
Fax: 814-863-8979
Email: sbennett@psu.edu

Abstract

During the past decade, researchers have commonly employed one of two sets of interstate dyads as the population of cases in quantitative analyses of international conflict, either “all dyads” or “politically relevant dyads.” The main argument against using the “all dyads” set is that includes many dyads where there is no chance of conflict, and so analysts using this set are examining many pairs of states in which the hypotheses in question are irrelevant. The criticism of politically relevant dyads is that this set does not capture 15-20% of the actual conflicts that actually occur. In this paper I examine the current operationalization of “political relevance” to see whether the operationalization can be slightly modified and encompass all actual conflicts. If it could be, then use of the modified politically relevant dyad case subset might be more appropriate or have advantages over what is currently employed. I conclude that while it is possible to improve upon current operationalizations of political relevance (in terms of capturing conflicts), it is difficult to reach a 100% capture rate. It is also clear from the analysis that the various politically relevant operationalizations do better at capturing wars than MIDs, and do better at capturing the actions of MID and war originators than MID and war joiners.

Note: An earlier version of this paper was originally presented at the 2001 American Political Science Association Meetings.
Introduction

During the past decade, researchers have commonly employed one of two sets of interstate dyads as the population of cases analyzed in quantitative analyses of international conflict. Some scholars examine all dyads, namely the set of pairings of all states with all other states. Other scholars examine only “politically relevant” dyads, defined as pairs of states where either the states are geographically contiguous (either on land, or over some relatively small amount of water), or where at least one is a major power. Beginning with one of these data sets, we typically estimate the probability of a militarized interstate dispute (MID), and then in some analyses, the probability of the MID escalating to war. The probability of conflict is believed to be higher among these “relevant” countries, as are the effects of typical independent variables we examine. While many of our most robust findings hold regardless of which subset of cases is employed as the base population, research has also found that some findings vary depending on which case subset is used (e.g. Bennett and Stam 2000a, Lemke and Reed 2001). This poses a problem for researchers doing dyad-year analysis, as the decision to use one set of dyads over the other is not inconsequential. Ideally, we should make the choice between these case subsets on theoretical grounds. However, in the absence of tight theory that specifies a very precise domain, arguments can be made in favor of both subsets, and the dilemma remains.

In this paper, I will explore a key empirical fact that seems to militate against using politically relevant dyads. This is the fact that, as appealing as the politically relevant dyad set may appear theoretically, using it means that we miss predicting a sizeable number of international conflicts because they occur outside that set of dyads. As empirically oriented scholars, it is difficult to argue in favor of analyses that we know ex ante will mispredict a variety of conflicts. The question I explore here is whether there are relatively simple modifications that
can be made to the operationalization of “political relevance” that will allow us to capture all cases of historical conflict. No scholarship exists which systematically explores the empirical consequences of varying different components of the politically relevant operationalization. If there are easy changes that we could make that significantly improve the concept as operationalized, it suggests that we might be able to use the (revised) politically relevant dyad case subset with more confidence. On the other hand, if such changes are not possible, then we will know that we must be very careful to consider the implications of using the concept for case selection.

All Dyads, or Politically Relevant Dyads? Theoretical and Empirical Arguments

Confronted with two commonly-used sets of cases that could be used for typical analysis, what is a researcher to do? The choice of which case subset to use should be made theoretically, and before analysis is conducted. While it is often desirable to run analysis on both case subsets as a robustness check, this results in double the analyses, and leaves a question of what conclusions we should reach if our results disagree in the two samples. So, if we can, we should select the set of cases in accord with our assumptions and the theory we are examining.

More precisely defining the sets of cases in question, the broadest population of cases in typical use in current quantitative conflict studies is the set of all dyad-years. This set of cases is generated by pairing each state in the international system (with state system members typically defined by the Correlates of War system membership list, e.g. Small and Singer 1982) with each other state, and creating one observation for every year in which both are system members. Examining just nondirected dyads, for 1816-2001, this yields 675,015 dyad-years for analysis. The definition of “political relevance” limits this set by including only dyads in which the two
states are contiguous (in some cases only on land, and in others across short distances of water\textsuperscript{1}), or where at least one member of the dyad is a major power. From 1816-2001, the politically relevant operationalization using land contiguity yields 86,393 cases (politically relevant dyad-years).

The main argument made for using the “all dyads” set for analysis is that in theory, any two countries could have a militarized dispute or crisis. Given that we want to explain when disputes (MIDs) occur, we want to include as a base population the universe where they could emerge. While it is more likely that states will mobilize and deploy military forces closer to their own territory, in an era of relatively cheap international transportation and global communication, states can at minimum make threats, and at maximum deploy military forces against others, around the world. Thus by using “all dyads,” we maximize coverage and ensure that our population for analysis includes any potential crisis dyads, including unlikely ones (and which we would seek to explain as “unlikely” through theory and testing).

The main argument made against using the “all dyads” set is that it includes a large number of dyads where there is little or no chance of conflict. According to this argument, we should focus our analysis on a smaller set of dyads within which our theories will apply much better there than in the paired, insignificant states in the “all dyads” set. If we consider either states that begin or join militarized interstate disputes (MIDs) (Ghosn et al. 2004), MID onsets occur in less than ½% of all dyad-years from 1816-2001. MIDs are clearly very rare. More importantly, however, they are rare in a systematic way. Militarized conflict between distant minor powers (e.g. within dyads such as Brazil-Thailand, Norway-Chile, or Belize-Bhutan) is much less likely than conflict between major powers, or adjoining states. Small states normally

\textsuperscript{1} The Correlates of War project contiguity data set provides 5 categories of contiguity, namely states that are contiguous on land, contiguous across 12 or less miles of water, between 13 and 24 miles of water, 25 and 150 miles of water, and between 151 and 400 miles of water.
do not have power projection capabilities, and many are poor and perhaps more concerned with internal, local, or regional affairs than trans-oceanic conflicts. Because conflict is so unlikely (at or approaching 0 probability), the argument goes, we should not include information about these dyads in our data sets.

More specifically, the argument about identifying a set of politically relevant dyads for analysis is that the a priori probability of conflict is much higher in this set of identifiable dyads than between any two randomly selected states in the system, and that this probability is higher for sound theoretical reasons, namely that major powers and neighbors have the ability and interest to engage in militarized dispute behavior. Without such interest and ability, then non-politically relevant dyads are irrelevant for our analysis. If our variables do not affect the probability of conflict in these cases (so that the true coefficient on some variable is 0 in these cases), then our estimated coefficients/effects across all cases (including those where the variables do play a role) will be pulled toward 0. If the probability of conflict is truly 0 under all conditions in some dyad, then by definition it cannot be affected by changes in independent variables, and trying to assess how those variables affect the probability of conflict in that dyad is fruitless. This introduction of bias can only interfere with our analysis.

There is also an efficiency argument to made against the all dyads set, following King and Zeng (2001). It is inefficient to collect data on our variables of interest across all cases if we anticipate that the effect of those variables is 0 in a substantial number of them. Minor-minor, distant dyads make up the bulk of the cases in the “all dyads” subset. As a result, we should

---

2 For some discussion of the problem of irrelevant dyads and estimation of variable effects, see Beck, King, and Zeng (2000). For discussion of a strategy to correct for differential sampling of event and non-event cases (politically irrelevant dyads could be considered a form of (by definition) non-event cases, see King and Zeng (2001). King suggests that we may be able to engage in more efficient data collection by collecting data on all events of interest (conflicts) and a sample of non-conflict cases. If we could come up with a comprehensive definition of political relevance that defined cases where conflict was impossible, we could avoid data collection on those cases as well.
define a narrower set of cases, politically relevant dyads, which capture the set of dyads with the highest ex ante probability of conflict.

The criticism of focusing attention solely on politically relevant dyads that I explore here is that this set of dyads encompasses only approximately 75 to 85% of all militarized interstate dispute onsets. 15-25% of MIDs occur outside the geographic confines of contiguous states, or dyads with at least one major power (the variation in percentages depends on which MID data set is used and whether onsets, ongoing disputes, or states joining existing disputes are counted). Thus we know even before analysis begins that we will exclude (miss) a substantial portion of all interstate disputes. Bennett and Stam (2000a) find that our conclusions as to the effects of a number of independent variables on conflict are affected by the choice of all or politically relevant dyads, as well as the statistical estimators we use to study the problem. Prior research has also demonstrated that the differences in results we obtain are not solely due to random case selection, but that we are introducing a systematic selection bias into analysis when we employ politically relevant dyads. In particular, after discussing issues including measurement error and selection bias, Lemke and Reed (2001) demonstrate that employing the set of politically relevant dyads introduces a measurable selection bias in analysis, although the size of the bias appears to be small. The bias emerges because a variety of the factors theorized to cause conflict (such as capabilities, wealth, and possibly democracy) correlate quite strongly with the selection criteria for political relevance. Major powers by definition have greater capabilities and wealth than the average state, and they tend to be disproportionately democratic. States with many contiguous neighbors may also have higher levels of capabilities than states facing few potential threats, and recent work suggests that regime type tends to cluster geographically (e.g. Gleditsch 2002). Since we want to analyze these variables in our statistical models, and want to avoid bias, then
rather than exclude cases with configurations of these variables that make them unlikely to fight, we should build a properly specified model that takes into account their effects.\(^3\)

Clearly, the probability of conflict, and the expected effect of independent variables on that probability, is believed to be higher among “relevant” countries. But we are confronted with the empirical fact of missing cases of actual conflict. This suggests that it might be useful to approach the theoretical issue of case selection in an empirical manner, and seek to redefine not the theoretical conception of political relevance (for who can deny that we want to exclude irrelevant cases?), but its operationalization. Perhaps it is the case that our initial operationalization of political relevance has been too narrow, simply because we have not explored the operational side of the problem. Pursuing this line of argument, in this paper I explore the current operationalization of “political relevance” to see whether it could be slightly modified in a way that would encompass all actual conflicts. The interplay between the theoretical side of the concept and its implementation in practice may be quite important. I will further explore whether these operationalizations do a better job capturing MIDs or wars, whether they do better at capturing state decisions to start (originate) MIDs or wars or to join them, and how they affect a simple model of conflict.

**What to explore? Theoretical and operational underpinnings of “Political Relevance”**

---

\(^3\) At a level even of interpretation, care must be taken when discussing the effects of substantive variables when we have analyzed a set of politically relevant dyads. For instance, most studies of conflict that employ politically relevant dyads include the variable “contiguity” in the analysis, even though contiguity is used as a (partial) selection mechanism. Cases might be selected into the politically relevant set in a number of ways. They could be contiguous, and one or both states might be major powers. They could be non-contiguous, and one or both states might be major powers. Or, they could be contiguous, with neither state a major power. Interpreting the effect of contiguity in this subset must realize that the coefficient gives the effect of contiguity relative to cases that were not contiguous but were major powers. But this effect of contiguity is the effect on both dyads where at least one state is a major power, and dyads where neither was. Since there is overlap in the selection process between the major power and contiguity criteria, careful thought is needed to parse the various effects.
The underlying concept of politically relevant dyads as applied in current work may be seen as researchers seeking a “necessary condition” that permits conflict, or, in different terminology, provides at least a minimal opportunity for conflict to occur. We seek a measure that indicates that, if states are not politically relevant, they have no chance of fighting (at least, no chance given past historical experience). This condition could then be used to define a set of cases for analysis. If we could identify such criteria, it would allow us to better focus analyses and data collection tasks while safely ignoring other dyads. Seeking this necessary condition is focused more on opportunity than willingness (see Most and Starr 1989). If we have factors that we believe affect states willingness to fight, and we are modeling state decisions to engage in conflict, than we want to include cases where states could have fought (had opportunity) but were not willing, as well as those that were willing (and so where there was a conflict). These are important cases for analysis, as they are directly relevant to our theories about state decisions. In contrast, if states absolutely cannot fight (there is no opportunity) in some circumstance, then we should not include those cases in our data sets, because none of our “willingness variables” can have any effect on the outbreak of conflict. Even including a dummy variable marking “opportunity” in a data set of all dyads is inadequate to deal with the problem, even if interacted with “willingness” variables, because the “0” values on variables in such cases will dilute the effects we find in cases where there really was an opportunity for a conflict decision. It is important to distinguish theoretically between cases where conflict was literally impossible from those where it is simply low probability but did not occur.

The idea behind the two specific current operational criteria of contiguity and major power status is that it is only when states are near enough to each other, or have some amount of

---

4 For some recent discussions of necessary conditions, see Braumoeller and Goertz (2000), and Goertz and Starr (2002).
power projection capability, that they have any ability to fight. We also assume typically that states near one another may have reasons to fight (e.g. issues in contention that could include the distribution of nearby resources, border location issues, or the presence of cross-national religious or ethnic groups), while major powers may have global interests that lead them to engage in conflicts with other actors around the world. The former of these concerns has to do with opportunity, while the second involves willingness. But with these underlying ideas in mind, there may be better criteria than the two specific operationalizations of contiguity or major power status to mark the opportunity of conflict, particularly if the current operational criteria are too restrictive and fail to capture circumstances that had obviously had opportunity (and willingness).

There is little doubt that contiguous and major power dyads are at higher risk of conflict than other dyads. But states may be able to fight even when not contiguous on land if they have only a small distance between them (perhaps across water, or perhaps through an ally of one or the other state). And the distance over which states are able to fight is likely to vary according to the capabilities of the states involved; the loose distinction between “major” and “minor” powers is unlikely to precisely capture this. In addition, even when states are distant, we know that there are circumstances in which they will engage in distant conflict, for instance when they come to the aid of allies, or interact through and over colonies, which historically have provided both a base for operations and a source of contention. This suggests that exploring variations on distance, on relationships through colonies, and on power is a useful way to start. Accordingly,

---

5 Maoz’s PRIE definition (Maoz 1996) offers one refinement of the idea of “major powers” to include regional power projection. More generally, using major powers to identify political relevance is somewhat circular as well. Major powers have been identified as those large states that are most active in international politics. However, when focusing on states’ activity, the inductive operationalization incorporates states that engage in frequent conflict. It should not surprise us when we find that major power status increases the probability of states engaging in international conflict given this circularity. By contrast, a definition of “large power” can be based on objective measures of capability and not behavior on our dependent variable of interest.
in this project I will explore variations on the operationalization of “political relevance” that include:

- Varying contiguity on land vs. over short water distances;
- Examining the effect of contiguity through colonies;
- Identifying a history of colonial or contiguous contact, even if states are not currently contiguous;
- Exploring the effect of distance to move beyond contiguity, for instance by using capitol to capitol distances and regional activity;
- Exploring variations on objective power measures (rather than relying on “major” vs. “minor” power status).

**Exploring operationalizations of political relevance**

The data explorations below will suggest that a better set of “conflict possible” dyads can be specified as dyads in which the involved states are either 1) above some absolute level of the Correlates of War capability score (which will include major powers), or 2) within some distance of each other (a distance that captures all regional dyads) either directly or by colonial contact. While the development of the thresholds for the operational components is done based on empirical data, this is theoretically only an extension to the existing definition of political relevance that includes one variant on possible measures of power and distance as proxies for “ability to fight.” It turns out that minor expansions on the “political relevance” definition can significantly improve the simple rules in use to capture all politically relevant dyads. However, it also turns out that it is very hard to develop an intuitive and reasonable criterion that can capture 100% of historical disputes short of resorting to the full “all dyads” population. There
are a handful of dyadic MIDs that appear simply unpredictable in terms of conventional conceptions of power, distance, power projection abilities, and identifiable conflicting interests. But it is also clear from the analysis that the various politically relevant operationalizations do better at capturing wars than MIDs, and better at capturing MID and war onsets than MID and war joinings. This suggests that there may be different processes at work when states make decisions to join conflicts, or when they decide to escalate conflicts to wars, than when they decide to initiate MIDs in the first place.

For assessing how well alternative operationalizations of relevance perform, I focus on the size of the population and the number of militarized disputes (and wars) captured within it. The key questions with each specific operationalization are 1) how many MIDs/wars are captured by the criteria as a percentage of all MIDs/wars (in the favorable extreme, we would like to capture 100% of conflicts given an operationalization), and 2) how many cases (dyad-years) are defined as politically relevant by the criteria (we would like to avoid many false positives, or cases that we identify as being potentially conflictual when they are not). I do not try to define an ex ante threshold for what percentage of “captured” conflicts is enough. Rather, the point of the analysis is to explore (short of perfection) how much improvement in “capture” is possible, and what tradeoffs are present in false negatives vs. false positives.

To assess these questions, I constructed a data set of all nondirected dyad-years from 1816-2001. I operationalized the onset of MIDs and wars in a given dyad-year using the occurrence of MIDs and wars (where both states had a MID level 5 hostility) as given by the Correlates of War 3.01 data set from 1992-2001 (Ghosn et al. 2004), and Zeev Maoz’s DyadMID data set v1.1 from 1816-1992 (Maoz 1999). I used EUGene v3.04 (Bennett and Stam 2000b) to generate this data set, and also extract information on contiguity (direct and colonial),
capabilities (measured by COW CINC score), and alliances. I coded only originating dyads in each MID as MID onsets. Ongoing years of a dispute were not counted as MID onsets. In additional analysis I included states that joined MIDs. Joining behavior may be different than initiating behavior in MIDs, as the existence of a challenge (MID onset) starts to define a particular conflict setting in terms of participants, venue, and issues. Some state A that might not initiate a challenge to a second state B might find the circumstances different enough once a MID has begun to decide to join the MID. Similarly, even if state A was unlikely to be a target of action from state B, once B was involved in a MID with C, B or C might decide to engaged in some militarized action toward A as part of the MID. Whether such actions are captured within the set of politically relevant dyads as well as are onsets is an empirical question for investigation.

I focus primarily on capturing MIDs rather than on wars because studies of conflict typically assumes that states will start a militarized dispute, and then some of those disputes will escalate to war. But the logic that suggests that some states are incapable of engaging in MIDs would seem to apply even more strongly to wars. MIDs may be considered to be a fairly low level of commitment to conflict, and use relatively few state resources (at least compared to a war). A verbal threat, for instance, may be issued against anyone in the interstate system; no level of physical capability (beyond a microphone, telephone, telegraph, or news camera) is necessary to issue the threat. Mobilizing and moving forces to a location at which they can engage in battle extended enough to inflict/receive at least 1000 battle deaths between the two (or more) participants is an order of magnitude higher. With this in mind, we should expect

---

6 Counting ongoing dispute years would only affect the results by increasing the count of both disputes captured and disputes missed, because if a political relevance operationalization captures (or misses) the first year of dispute, it will capture (or miss) all subsequent years of the dispute. The exception would be if the relationship between two countries changed over the course of a single dispute, for instance with one state becoming a major power, or the nature of the contiguity between the states changing. For a cleaner analysis, I count only dispute onsets.
operationalizations of political relevance to better separate dyads that have the opportunity to engage in wars from those who do not. To explore this possibility, I also created variables marking war onset and war joining, and explore how many of these cases are captured under the politically relevant criterion. Previewing, it does turn out to be the case that politically relevant dyads capture a somewhat higher proportion of war onsets (100% in some cases) than MID onsets.

Table 1 shows a series of expansions of and variations on operationalizations of political relevance. For each alternative operationalization, the table first shows the number of dyads that are defined as relevant, and the percentage of all dyad-years from 1816-2001 that this represents. For instance, if we operationalize “politically relevant” as dyads contiguous on land, this identifies 19,723 dyad-years as relevant, which is 2.9% of all dyad-years 1816-2001. These figures serve as something of a denominator in our resulting data set, as they show the number of cases that we would be considering as “conflict possible” dyads. Ultimately, we would like to have this number be as small as possible, to ensure the smallest possible data set. Temporarily skipping the column labeled “MID Onsets as % of subsets,” the table then shows under the columns under “MID Onsets” the number of MID onsets captured in this set of cases, as a count and then as the percentage of all MID onsets in the entire MID data set. Again looking at the table, there are 2361 dyadic MID onsets as defined above, and political relevance operationalized as land contiguity captures 1188 (50.3%) of these onsets. We would like this percentage captured to approach 100%. This would indicate that all actual MIDs occurred within the set of cases defined by the relevance criterion. Finally, returning to the 3rd numeric column of the table (“MID Onsets as % of subsets”), we see the percentage of dyad-years defined by the politically relevant operationalization that have MID onsets. Still under the operationalization of “land
contiguity,” 6.0% of the dyad-years within this set of politically relevant dyad-years had MID onsets. The better the operationalization does at capturing MIDs while minimizing total cases, the higher this number will be.

Subsequent columns show the number and percentage of MID joinings, war onsets, and war joinings captured in each subset of cases defined by the politically relevant operationalization in question.

**Current definition:** The first section of the table explores various elements of the current widely-used definition of political relevance. Starting with only dyads contiguous on land, the table shows that such dyads make up about 3% of all dyads, but within these dyads, we capture 50% of all MID onsets. MID onsets occur in nearly 6% of this defined set of contiguous dyads, making conflict still rather rare, but much more frequent than among the set of all dyads. State actions to join MIDs are only captured 23% of the time, though, considerably less frequently. This definition captures a higher percentage of war onsets (nearly 2/3), but only 27% of actions in joining wars. Clearly this first definition does better at capturing wars than MIDs, and onsets rather than joining actions.

I next expand political relevance by considering contiguity to include dyads across water (any category of contiguity), dyads where at least one state is a major power, and finally dyads that either have land contiguity or at least one member of the dyad as a major power. Through these, we see that the operationalizations gradually improve in their capture rate. However, as the operationalizations pick up more MIDs, they also pick up many dyad-years without MID onset. As a result, under the existing operationalization of political relevance, 85% of MID onsets are captured, but more of the set of “all dyad-years” (nearly 13%) are used, and MID onsets make up 2.3% of the overall captured set of dyad-years. In many ways, capturing so
much behavior by this relatively simple definition is remarkable. However, as I argued earlier, we should hope to do better than to miss nearly 15% of all MID onsets.

Expanding contiguity: A look at the list of MIDs excluded by the above definitions of political relevance suggested that many of the missed conflicts occurred between states that were not contiguous on land, but that were nevertheless close enough to reach each other easily, and also that several of the missed conflicts involved colonial relationships where military assets were in place despite long distances, or where the conflict of interest was over colonial borders rather than direct borders. Adding contiguity across as many as 400 miles of water, and adding the contiguity of actors via colonial possessions (both identified in the COW contiguity data set), expands the population of identified cases to 14.6% of all dyads, but increases the percentage of MIDs captured to 92.3%. The frequency of MIDs in the data set remains about the same, 2.2% of the cases. This operationalization does considerably less well at picking up joiners – only 76.6% of joining decisions are captured, suggesting that many states that join MIDs do so despite being more distant minor powers. A similar percentage of war joiners are captured in the operationalization, but his operationalization in fact does very well at picking up war onsets, missing only 2 out of 91 dyadic war onsets.

Adding History: A further examination of the cases missed at this point in the analysis suggested another reasonable expansion involving states’ historical proximity and colonial involvement. With some frequency, conflict occurs between former colonial powers, or between states and their former colonies, even when they were no longer in direct proximity. Expanding the identified set of dyads to include those that were previously as well as currently contiguous, either directly or by colonial involvement, captured 19 additional MID onsets, at the cost of identifying 1300 dyad-years that fell into this category. Joining continues to be less well
captured by this operationalization, while it captures one more war. In fact, the only war onset not captured within the set of politically relevant dyads at this point is the 1948 Iraq-Israeli war. We can explain the case away in various ways, including noting that this was one dyad of a multi-party war in which the other participants played a more important role than Iraq. But we also see the limitations of considering contiguity in particular. Iraq and Israel are closer than some other rival states, but they are not contiguous either on land or across water. To capture their interaction, we may need to expand geographic relationships between states in some way beyond just contiguous relationships.

**The PRIE alternative:** At this point it is worth discussing an existing alternative to the simple political relevance operationalization examined above. Zeev Maoz (e.g. 1996) has developed a slightly broadened conception of relevance known as the “politically relevant international environment” of a state. This still includes direct contiguity, indirect (colonial) contiguity, and global major power status, but also modifies the involvement of some medium-to-large states by recoding some actors as “regional powers.” Regional actors are considered to interact with all states in their region but not with the world at large. In some cases, COW “major powers” are “downgraded” to regional power status (e.g., Austria-Hungary is an important European actor but did not have global reach), while other non-major powers are upgraded to regional power status although they are not yet major powers (e.g. the United States between 1823 and 1898). If we define contiguity as land contiguity, then when we use this operationalization, it captures 84.4% of MID onsets. Expanding contiguity to include water contiguity, it captures 91% of MID onsets. Finally, if we expand the PRIE definition beyond Maoz’s original (1996) conception to include historical direct and colonial contiguity, then 91.8% of MID onsets are captured within a set comprising 12.6% of all dyads. The PRIE
measure actually performs slightly less well than the prior measure (contiguity and historical relationships with the more expansive COW major power definition) in terms of capturing MIDs, but also identifies somewhat less dyads, which increases the percentage of the population that are MIDs. Whether PRIE is inferior or superior to an expanded political relevance definition depends on whether the goal is capturing the most MIDs, or efficiency.

**Objective power measurements:** The above definitions rely on the intuitive identification of major powers by the COW project. As suggested in fn. 5, this list of major powers may be somewhat tautological when applied to predicting conflict, however. I shift here to an objective measure of identifying “large states” based solely on capabilities. Still using the COW identification of major power initially, I identified the CINC score of the smallest major power at any point from 1816-2001. The smallest major power had a CINC score of 0.0175, or about 1.75% of total system capabilities in that year. I then identified all dyads in which at least one state had at least this level of capability, and checked how the expanded set of politically relevant dyads fit. We see in Table 1 that this expanded operationalization (still including any level or type of contiguity anytime in previous history) identifies 21.4% of the cases as relevant, but expands the capture of MID onsets to nearly 95%. The jump in identified cases is larger than the increase in MIDs captured, and MIDs as a percentage of cases drops significantly, to 1.5%. For the first time, this expansion suggests a substantial tradeoff between capturing MIDs and identifying false positives. This modification does not help us capture joiners, or change the wars missed.

I further expanded the cutoff for “large power” to 1% of system capabilities. This expansion increased the percentage of MIDs captured by about one percentage point, but again
with a cost to power and efficiency, as almost 31% of all dyads are identified as relevant to reach this level.

*Expanding distance measurement:* Looking at the set of missed MIDs at this point in the analysis suggested that many of the missed conflicts were occurring between states more distant than captured in the contiguity criteria. Unfortunately, we have available only relatively crude tools that can be used to capture expanded conceptions of distance. I explored two alternative distance expansions. First, I simply added the interaction of all states within the same region (as defined by the COW state-system membership list) to relevance. Using the base definition of major powers and a history of any type of contiguity (which yielded 93.1% of MID onsets captured), this increases the MIDs captured to over 98%, but again at the cost of including many false positives (32.3% of dyad-years are identified as relevant). Second, instead of using the COW intuitive identification of regions, I examined distances between states measured as distance between national capitols. Marking states within 500 miles (but using the original COW major power definition) increases the captured MIDs from 93.1% to 93.5%. Expanding distance to 1500 miles captured 97.2%, and expanding to 3000 miles captured 98.3% of all MID onsets. We note that the 1500 mile expansion finally captures all war onset dyads (the capitols of Israel and Iraq are about 600 miles apart, although the shortest border-to-border distance is about 200 miles. But again, there is a major cost in terms of identifying false positives with these expansions; the most inclusive of these definitions identifies 39% of all dyads as relevant. Clearly, many of the MIDs that were missed earlier lay outside the contiguous area. But simply drawing a distance circle around state capitols is picking up conflictual dyads in a somewhat haphazard way. Clearly, too, assuming that all states can interact with all others within 3000 miles is absurd; while this is narrower than assuming states can interact over 12000+ miles as
would an “all dyads” set, it is still entirely unspecific. A much more accurate direction would be to better identify which non-contiguous dyads are able to fight, so as not to exclude them solely due to distance, but which might avoid the major addition of false positive cases.\(^7\) If measures of power projection capability for states were available (beyond simply aggregate capability measures), then capability could be combined with a loss-of-strength gradient to perhaps create a more reasonable cutoff that varies by state. Lemke’s (2002) work might serve as a model for such an effort.

*Combinations of Distance and Capability:* Further gains in identification were made by simultaneously expanding the required capitol-to-capitol distance included, and expanding capabilities to 0.0175 and 0.01 CINC scores. The most expansive of these combinations captured 99.3% of MID onsets, nearly the entire population of MIDs, but this came at the cost of identifying over 50% of all dyad-years in the interstates system as “relevant,” again showing a clear point of diminishing returns to expansion in this way.

*Joiners vs. Originators:* Throughout the results in Table 1, it is clear that joiners are captured less well within any set of politically relevant dyads than MID or war originators. This suggests that the behavior of states in joining conflicts is different than their behavior in initiating them. Perhaps we simply need to exclude joining dyads from consideration within the same framework of political relevance.\(^8\) Moreover, if decisions to join conflicts do not fit into the same conceptions of states taking action that we typically consider, then we should separate the analysis of dispute joining from dispute origination in studies of all conflict related dependent

---

\(^7\) I also used data from Gleditsch and Ward’s (2001) “minimum distance” database, which measures the minimum border to border distance between states rather than capitol to capitol distance for states within 950 miles of one another. The results did not change dramatically when minimum distance was used. That is, when expanding the cases identified as relevant based on minimum distance falling under some threshold rather than between-capitol distances, the accuracy or power of the definition did not substantially improve.

\(^8\) Lemke and Reed (2001) make a similar observation in their exploration of political relevance.
variables in empirical research. This suggestion follows that of Bennett and Stam (2000a), but here there is different and direct evidence of a difference in conflict behavior even in using political relevance in the way that most scholars employ it.

**Effects on empirical analysis.** One concern about including irrelevant dyads (where conflict is truly impossible) is how our inferences about the effect of key variables might shift in different samples. As previously noted, Lemke and Reed detect a significant but small bias in estimation using their version of political relevance rather than all dyads. I estimated a common model of MID onset estimated against different operationalizations of political relevance. The analysis included the balance of capabilities (operationalized as the CINC score of the larger state in the dyad divided by the total), the lower polity score of the two states (with polity scores drawn from Polity IV, Marshall and Jaggers 2002), a dummy variable marking whether the two states in the dyad had any type of alliance (alliances drawn from the COW alliance data set v 3.03, Gibler and Sarkees 2002), Signorino and Ritter’s weighted S political similarity score (Signorino and Ritter 1999), the lower of the per capita energy consumptions of the two states (with energy consumption and total population data taken from the COW national capabilities data set v 3.02, Singer, Bremer, and Stuckey 1972), and a “peace years” variable and associated cubic splines (see Beck, Katz, and Tucker 1997). These data were all generated from EUGene v 3.07 (Bennett and Stam 2000b). The results (presented in Table 2) suggest that while our inferences about most of these common variables remain the same using most politically relevant definitions, a few important changes are observed over defined data sets, and the size of estimated coefficients varies significantly.

Table 2 presents five analyses, moving from the narrowest operationalization of politically relevant dyads through the set of all dyads. The smallest analysis contains about
84,000 cases, while the largest incorporates 8 times more at over 647,000 cases. The two variables that do not show much change across these analyses are democracy (i.e. low polity score, which is always statistically significant and negative, and with no systematic pattern as to when it has a larger magnitude), and energy/capita (which is never statistically significant). Other variables change greatly in coefficient magnitude and sign. For instance, the effect of alliances on conflict is estimated to be non-significant when we employ the two narrowest versions of politically relevant dyads, but in all dyads and the two more expansive politically relevant sets, its effect on conflict is positive and significant. We can see that the coefficients on the balance of capabilities, political similarity (S), and land contiguity change monotonically across the analyses. Translating coefficients into the relative odds of conflict, the effect of the balance of forces on the probability of MID onset is estimated as about four times greater within the politically relevant subset than in the all dyads set, while the effect of S is about three times greater within the all dyads set, and the effect of contiguity is estimated at about 6 times greater within all dyads than politically relevant dyads. These are sizable changes, and underscore that it is necessity to think through what the reference set of dyads is when discussing variable effects, and to anticipate the effects of different subset selection on our estimated substantive effects.

*Missing pieces?* From examining the set of MIDs that were still missed when the final, most expansive operationalization was used, it seems clear that it will be very difficult to reach a 100% accurate discriminatory criteria. Some cases in a few specific time periods stand out as having some commonalities on the remaining list, including dyads involved in acts taken against Yugoslavia in the 1990s, dyads of minor powers with Japan in the mid-1800s, a few WWII dyads, Cuba vs. Congo, South Africa, and Morocco in the late 1970s, and several MIDs involving Taiwan and Israel. We know that these cases involve some global hotspots, although
the identities of the partner countries in these dyads seem harder to predict. But other dyads missed in the final cut include Lithuania and Equatorial Guinea in 2000; Norway and Australia in 2001; and Uganda and Israel in 1976. While some (but not all) of these dyads are clearly minor incidents or incidents where the states in question are working in conjunction with others, we cannot assume that all such cases will be. It is difficult to imagine how we would identify these dyads. Some could be captured with an expansion such as “countries with troops present in a region (e.g. Cuba) are considered as interacting with the other states in that region.” This is reasonable, as a troop presence indicates willingness and gives opportunity to have conflict with states in a region. However, in the absence of a historical troop-deployment database, using this as a general operationalization may be difficult. Others could be captured by a rule such as “states on voyages of colonialism and discovery should be considered relevant in interaction with the targets of such discovery,” but it is hard to see how we would know when states interact with such targets short of conflict. And some dyads might require even more specific (but simultaneously still vague) rules like “dyads where terrorism may involve the two states should be considered relevant.” This definition would encompass many, many dyads, even if it were truly operationalizable. In the end, after examining missed dyads such as those listed above, I suggest that it is probably impossible to capture all MIDs in any set of dyads short of all. This may not be a major problem, as the interactions of the missed dyads are typically of low salience or low conflict (i.e. with little or no chance of escalation to war; war onsets are captured 100% by several operationalizations). But it does leave the problem for analysts of deciding how expansive a definition is too expansive. That problem is almost certainly not solvable analytically or empirically.
Conclusions

In this analysis I have examined how well various operationalizations of the concept of “political relevance” capture the occurrence of MIDs and wars between 1816 and 2001 while minimizing the total number of dyad-years to be analyzed. The goal was to determine whether relatively simple changes in the operationalization could lead to a major improvement in how the concept does at capturing conflictual dyads. The conclusion from this analysis seems to point to modifications of distance criteria and incorporating political involvement through colonies and history as worthy of use and/or further research. Expanding the operational criteria seems to be of possible benefit to IR, but the analysis also reveals that we need more sophisticated ways of identifying who will fight across long distances. While some simple changes do improve the operationalization, too much expansion to capture long distance conflicts also dilute its efficiency, and even the broadest conception of distance misses a variety of MIDs in disparate dyads. Figuring out what makes some distant dyads likely to fight is a key to further progress here, because the tradeoff for simply expanding distance is too great. Additional work on minimum distance data could lead to some refinements here, as would additional work on the empirics of the “loss of strength gradient” (which is why we employ a distance cutoff at all). It is also clear that even though it would fit history empirically, we do not want to impose ex post criteria (such as “during WWII”) to the operationalization, as this would run counter to the theoretical applications we want to pursue.

It is very important to note that joining dyads (in both wars and MIDs) seem rather different than originating dyads, as they are captured much less well within the politically relevant set of cases, however operationalized. This suggests that scholars need to pay close attention to research design decisions concerning how joining states are handled, and to whether
their theories should be expected to apply to joiners as well as they do to conflict originators. Much as scholars of conflict onset have realized that they are missing MIDs when they use politically relevant cases, scholars of conflict joining should realize that politically relevant states are not the only ones to join conflicts, and that we should examine a broader set of states as potential conflict joiners.

It is also interesting to note that the slightly less common “relevant” case selection mechanism of PRIE (Maoz 1996) performs approximately as well as political relevance. Depending on what comparison is made, this operationalization captures slightly less MIDs, but also identifies a smaller number of dyad-years as politically relevant. There is not clear guidance on whether the PRIE or “politically relevant” measure should be employed.

As a balanced operationalization that makes a reasonable tradeoff between capturing MID onsets and expanding the set of dyads identified as politically relevant, I read the information in this analysis as suggesting the use of an only slightly expanded operationalization of the currently used version of political relevance. This is the version which operationalizes political relevance as dyads where either is a major power, or where the states are currently or historically contiguous at any level (including over water), either directly or via colonial possessions. This operationalization captured 93% of MIDs within about 102,000 dyads. There are still an unfortunately high number of missed MIDs in this set (162), but the capture in this measure surpasses all versions but those which expand the population by setting quite arbitrary capability and distance limits, and which expand the size of the set of cases by tens of thousands by doing so. Until we can work on distance-adjusted capability measures, the expansion of the population by using just distance or capability seems to large for those wanting to still employ politically relevant dyads.
More work with distance-adjusted capabilities remains for the future. Another expansion of relevance might examine states that are contiguous to another state through alliance (rather than colonial) ties. This would capture some distant dyads without casting too wide a net, although it remains for future work to see how many MIDs are captured by this rule. As a factor that can be quickly altered by states, alliance behavior is also somewhat different from the factors examined here (distance, borders, and power status) which typically change slowly. But it may give another indicator of “proximity by proxy,” which, like better distance adjustments, might improve the fit of the measures discussed here.


King, Gary and Langche Zeng. “Logistic Regression in Rare Events Data.” *Political Analysis* 9 (Spring): 137-163.


Maoz, Zeev.  1999. "Dyadic Militarized Interstate Disputes, version 1.1." Available at ftp://spirit.tau.ac.il/zeevmaoz/dyadmiddoc


### Table 1
Exploring Criteria for Political Relevance, 1816-2001

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Subset of Dyads Identified</th>
<th>Cases Captured</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>MID Onsets</td>
</tr>
<tr>
<td>All Cases</td>
<td>675015 100%</td>
<td>2361 100%</td>
</tr>
<tr>
<td>Elements of current definition - contiguity, power status, and existing combination</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Land contiguity</td>
<td>19723 2.9%</td>
<td>1188 50.3%</td>
</tr>
<tr>
<td>• Any type of contiguity</td>
<td>32881 4.9%</td>
<td>1505 63.7%</td>
</tr>
<tr>
<td>• Either is major power</td>
<td>71770 10.6%</td>
<td>1081 45.8%</td>
</tr>
<tr>
<td>• Existing Politically Relevant (land contiguity or at least one is major power)</td>
<td>86393 12.8%</td>
<td>2011 85.2%</td>
</tr>
<tr>
<td>Expand contiguity definition - by distance and colonies</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Any level (distance category) of direct contiguity, or at least one is major power</td>
<td>95933 14.2%</td>
<td>2122 89.9%</td>
</tr>
<tr>
<td>• Add: any type of colonial contiguity</td>
<td>98441 14.6%</td>
<td>2180 92.3%</td>
</tr>
<tr>
<td>Adding history - previous contiguity and colonial relationships</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Current or historical direct or colonial contiguity, any level, or at least one major power</td>
<td>101703 15.1%</td>
<td>2199 93.1%</td>
</tr>
<tr>
<td>Existing PRIE (politically relevant international environment) definition</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• PRIE: direct or colonial land contiguity, or regional or major power per Maoz (1996)</td>
<td>70338 10.4%</td>
<td>1992 84.4%</td>
</tr>
<tr>
<td>• PRIE: any type of direct or colonial contiguity, or regional or major power per Maoz (1996)</td>
<td>81800 12.1%</td>
<td>2,149 91.0%</td>
</tr>
<tr>
<td>• PRIE: any type of current or historical direct or colonial contiguity, or regional or major power per Maoz (1996)</td>
<td>85184 12.6%</td>
<td>2,168 91.8%</td>
</tr>
<tr>
<td>Measure of Major Power</td>
<td>Count</td>
<td>Percentage</td>
</tr>
<tr>
<td>------------------------</td>
<td>-------</td>
<td>------------</td>
</tr>
<tr>
<td>Expanding measure of major power</td>
<td>144697</td>
<td>21.4%</td>
</tr>
<tr>
<td></td>
<td>206566</td>
<td>30.6%</td>
</tr>
<tr>
<td>Expanding distance measurement - region</td>
<td>217821</td>
<td>32.3%</td>
</tr>
<tr>
<td>Expanding distance measurement - mileage</td>
<td>108508</td>
<td>16.1%</td>
</tr>
<tr>
<td></td>
<td>164976</td>
<td>24.4%</td>
</tr>
<tr>
<td></td>
<td>262419</td>
<td>38.9%</td>
</tr>
<tr>
<td>Expanding distance and capabilities</td>
<td>252559</td>
<td>37.4%</td>
</tr>
<tr>
<td></td>
<td>293652</td>
<td>43.5%</td>
</tr>
<tr>
<td></td>
<td>339011</td>
<td>50.2%</td>
</tr>
</tbody>
</table>
Table 2: Logit analysis of MID onset under different case subsets

<table>
<thead>
<tr>
<th>Politically Relevant Dyads*</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>CINC balance (max/total)</td>
<td>-2.008</td>
<td>-1.817</td>
<td>-1.692</td>
<td>-0.949</td>
</tr>
<tr>
<td></td>
<td>(6.07)**</td>
<td>(6.16)**</td>
<td>(5.49)**</td>
<td>(3.30)**</td>
</tr>
<tr>
<td>Low polity score</td>
<td>-0.021</td>
<td>-0.022</td>
<td>-0.020</td>
<td>-0.013</td>
</tr>
<tr>
<td></td>
<td>(3.32)**</td>
<td>(3.79)**</td>
<td>(3.54)**</td>
<td>(2.37)*</td>
</tr>
<tr>
<td>Alliance (any type)</td>
<td>-0.020</td>
<td>-0.019</td>
<td>0.212</td>
<td>0.284</td>
</tr>
<tr>
<td></td>
<td>(0.19)</td>
<td>(0.19)</td>
<td>(1.98)*</td>
<td>(2.64)**</td>
</tr>
<tr>
<td>S score</td>
<td>-0.415</td>
<td>-0.436</td>
<td>-0.855</td>
<td>-1.305</td>
</tr>
<tr>
<td></td>
<td>(3.30)**</td>
<td>(3.52)**</td>
<td>(6.45)**</td>
<td>(9.38)**</td>
</tr>
<tr>
<td>Low energy/capita</td>
<td>-0.014</td>
<td>-0.015</td>
<td>-0.011</td>
<td>-0.013</td>
</tr>
<tr>
<td></td>
<td>(0.51)</td>
<td>(0.84)</td>
<td>(0.52)</td>
<td>(0.54)</td>
</tr>
<tr>
<td>Direct Land Contiguity</td>
<td>1.125</td>
<td>1.154</td>
<td>1.912</td>
<td>2.513</td>
</tr>
<tr>
<td></td>
<td>(8.47)**</td>
<td>(9.89)**</td>
<td>(15.54)**</td>
<td>(22.67)**</td>
</tr>
<tr>
<td>Peace years</td>
<td>-0.328</td>
<td>-0.334</td>
<td>-0.343</td>
<td>-0.350</td>
</tr>
<tr>
<td></td>
<td>(17.58)**</td>
<td>(18.83)**</td>
<td>(18.58)**</td>
<td>(18.65)**</td>
</tr>
<tr>
<td>Peace years spline 1</td>
<td>-0.002</td>
<td>-0.002</td>
<td>-0.002</td>
<td>-0.002</td>
</tr>
<tr>
<td></td>
<td>(10.38)**</td>
<td>(11.14)**</td>
<td>(10.77)**</td>
<td>(11.22)**</td>
</tr>
<tr>
<td>Peace years spline 2</td>
<td>0.001</td>
<td>0.001</td>
<td>0.001</td>
<td>0.001</td>
</tr>
<tr>
<td></td>
<td>(8.08)**</td>
<td>(8.71)**</td>
<td>(8.18)**</td>
<td>(8.57)**</td>
</tr>
<tr>
<td>Peace years spline 3</td>
<td>-0.000</td>
<td>-0.000</td>
<td>-0.000</td>
<td>-0.000</td>
</tr>
<tr>
<td></td>
<td>(2.92)**</td>
<td>(3.26)**</td>
<td>(2.28)*</td>
<td>(2.35)*</td>
</tr>
<tr>
<td>Constant</td>
<td>-0.760</td>
<td>-0.900</td>
<td>-1.467</td>
<td>-2.296</td>
</tr>
<tr>
<td></td>
<td>(2.17)*</td>
<td>(2.83)**</td>
<td>(4.24)**</td>
<td>(6.97)**</td>
</tr>
</tbody>
</table>

Observations 84457 99074 200941 326842 647695

Robust z statistics in parentheses; * significant at 5%; ** significant at 1%

---

* 1: Political Relevance operationalized as land contiguity, or at least one major power
  2: Political Relevance operationalized as land or sea contiguity between state or colonies (current or historically), or at least one major power
  3: Political Relevance operationalized as land or sea contiguity between state or colonies (current or historically), or at least one capability >0.0175
  4: Political Relevance operationalized as land or sea contiguity between state or colonies (current or historically), or at least one capability >0.0175, or distance < 3000mi.