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In this article I argue that much of the inconsistency in the scholarly literature on conflict escalation can be attributed to *selection bias*. To control this bias statistically, I use a censored probit model to evaluate hypotheses about conflict escalation over the time period of 1950–1985. I report four results. (1) Power parity and economic development are found to influence conflict nonmonotonically. (2) Although joint democracy and joint satisfaction with the status quo are found to have robust pacifying effects on the onset of conflict, the results suggest that they are unrelated to the escalation of disputes to war. (3) Allied pairs of states appear less likely to escalate their disputes. (4) Finally, the unified model suggests that it is essential for researchers interested in the escalation behavior of states to consider first how states become involved in disputes. Conflict onset and escalation appear to be related processes.

Many scholars have sought to isolate the causes of escalation, but discrepancies between the theoretical expectations and the empirical results persist. I attribute these discrepancies to a *selection effect*. Pairs of states do not become entangled in hostilities randomly. They instead select or are selected into disputes by a strategic process. Following previous empirical research focusing on selection effects (Achen 1986; Smith 1996a, 1996b, 1998, 1999; Gartner and Siverson 1996; Leeds and Davis 1997; Signorino 1999), I employ a statistical model to control for the interdependent relationship between the onset of disputes and escalation to war over the time period of 1950–1985. The results suggest that controlling for the selection effect statistically stipulates a link between the formal and empirical studies of escalation.

The scholarly literature on what causes escalation is mixed. Although some suggest that joint democracy inhibits escalation (Rousseau et al. 1996), others find that joint democracy actually makes dyads more escalatory (Senese 1997). There is also some disagreement about the effect of military capabilities on conflict onset compared to escalation (Morgan 1984, 1990, 1994; Morrow 1989; Fearon 1994b; Bueno de Mesquita, Morrow, and Zorick 1997). It seems reasonable to suspect that the factors that influence conflict onset may also affect escalation directly and/or indirectly. If this is the case, it is important to consider how the factors that influence onset and escalation may be related to each other. Constructing a unified statistical model offers a first cut at modeling the process of conflict. Similar to the formal literature (Morrow 1989; Bueno de Mesquita and Lalman 1992; Fearon 1994a, 1994b; Smith 1998, 1999) that describes explicitly the selection process by which states get into and escalate disputes, I address the same issue from an empirical perspective (Smith 1996b, 1998, 1999; Signorino 1999). Modeling such selection empirically manages sources of bias and allows one to make truer inferences about the conflict generating process.

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To summarize what follows, the first section of the paper discusses briefly the theoretical literature on escalation. Next I develop a strategy for modeling conflict onset and escalation simultaneously. In the third section I describe the data and variables I use in this study. I present and review the results from my empirical evaluations in the fourth section. I conclude with a brief summary of the results and their implications for international relations research.

Theories of Escalation

One weakness of the standard explanations of conflict is that few differentiate between onset and escalation. They instead theorize about how the probability of war changes, dependent upon some set of relevant variables. Morrow (1989) attributes much of the gap between theoretical expectations and empirical results to selection bias and model misspecification.[1] Some formal models of escalation anticipate that although some of the same factors influence conflict onset and escalation, their effects are not consistent across onset and escalation. Recent research focuses especially on the relationship between the distribution of capabilities, satisfaction with the status quo, and regime type and escalation (Rousseau et al 1996; Senese 1997; Bueno de Mesquita, Morrow, and Zorick 1997). I use two established explanations of interstate conflict to develop some hypotheses that relate these variables to conflict escalation: power parity and the democratic peace.

Power Parity

There are strong theoretical reasons to believe that the ratio of capabilities between states should influence the likelihood of conflict onset (Kugler and Lemke 1996).[2] Power parity theory argues that states become entangled in hostilities when they are dissatisfied with the status quo and have the ability to modify the status quo. When states have relatively equal amounts of power, they have the opportunity to change the status quo. If states are satisfied with the status quo, they have no incentive to initiate conflict regardless of their relative power (Lemke and Werner 1996). Likewise, dissatisfied states only initiate conflict when they are powerful enough to have a chance to win. Dissatisfaction with the status quo and power parity are thus expected to be related positively to the onset of hostilities. Once states are in a dispute, however, the effect of parity on escalation may differ. Within a dispute, when states have equal amounts of power, they may recognize that the costs of war are likely to be quite high and the outcome uncertain. Dyads characterized by parity within a dispute may be less prone to escalate to war.

There is strong empirical support for this proposition (Lemke and Kugler 1996). Rough equality of power seems to increase the probability of conflict onset, and uneven power relations seem to decrease it. A few studies find a similar relationship between parity and escalation (Siverson and Tennefoss 1984; Moul 1988). Yet, some formal literature suggests that parity may have the opposite effect on escalation. Bueno de Mesquita, Morrow, and Zorick (1997) argue that although standard theories of world politics such as the balance of power and power parity suggest that the distribution of capabilities between states has a monotonic effect on the likelihood of war, their formal model predicts a nonmonotonic effect for power parity. Morgan (1990) argues specifically that, within a crisis, the greater the disparity of capabilities between the actors, the more likely the crisis will end in war.

The theoretical relationship between power parity and conflict onset goes along with the effect of status quo evaluations (Kugler and Lemke 1996; Lemke and Reed 1996). Within this framework, the international status quo is a recognized order of international interactions. The dominant power constructs the status quo so that it benefits from it. Following the Second World War, the United States established a status quo that encouraged political and economic liberalism through organizations such as the General Agreement on Tariffs and Trade (GATT), the International Monetary Fund (IMF), and so on. States dissatisfied with the status quo have incentives to initiate hostilities with the hope of modifying the international order.[3] Dissatisfaction with the status quo

[1] Some of the formal literature (Morrow 1989; Morgan 1990; Fearon 1994b; Bueno de Mesquita, Morrow, and Zorick 1997) goes so far as to suggest that the selection bias and misspecification in the empirical literature result in estimates with reversed signs. Morgan (1990), specifically, argues that although power parity is found to increase the likelihood of escalation in many studies, his formal model anticipates the opposite effect. Fearon (1994b) asserts that researchers should make a distinction between the effect of relative capabilities before and after a threat has been made, and he predicts that the sign on this variable may change after the initial threat.

[2] Parity is used in the context of dyads in this paper. A number of other studies examine the relationship between the distribution of power in the international system and the likelihood of interstate war. For a discussion of this literature see Powell (1996).

[3] There are also some formal expectations about status quo evaluations and interstate conflict. Powell (1996) argues that the probability of war is directly related to the level of dissatisfaction with the status quo. Powell's model suggests that dissatisfied states are unlikely to make counter-offers in a crisis situation. Rather, they tend to either accept the initial offer or to fight.

should increase the likelihood of conflict onset, and satisfaction with it should be pacifying. States satisfied with the status quo have nothing to fight over. Since few satisfied states should become involved in disputes, there should be little if any relationship between status quo evaluations and escalation.

The Democratic Peace

There are two general explanations for the observed peace between democratic states. Those who focus on domestic institutional structures argue that democratic leaders are confronted with political costs. Others argue democratic norms are at the root of the observed peace between pairs of democracies. Democracies socialize their leaders to manage political hostility through compromise and negotiation. This "live and let live" domestic norm is externalized to the realm of international interactions. Bueno de Mesquita and Lalman (1992) argue that joint democracy should decrease the incentives to engage in preemptive behavior, and Fearon (1994a) maintains that jointly democratic dyads should be able to signal their resolve more clearly. The formal models combined with the wealth of empirical evidence suggest that joint democracy may prevent war.

All of the explanations for the democratic peace suggest that jointly democratic dyads should be less prone to become involved in militarized disputes. The theoretical expectations for the effect of joint democracy on escalation, however, are somewhat mixed. The normative explanation arguably implies that jointly democratic dyads should be less likely to escalate their disputes to war. Yet, Fearon's (1994a) model suggests that democratic dyads should be less likely to initiate disputes; once they have committed to militarized action, those disputes may be more prone to escalate to war. Perhaps joint democracy may have little effect on escalation. Since few democratic dyads become involved in disputes, joint democracy may have a statistically insignificant effect on escalation.

Previous empirical results on this topic are mixed. Senese (1997) finds that jointly democratic dyads are more likely to escalate their disputes under some conditions, but Rousseau et al. (1996) find that joint democracy has a weak pacifying effect on escalation.[4] Most agree that joint democracy decreases the probability of conflict onset, but its effect on escalation is not as clear.

[4] Hart and Reed (forthcoming) also find a weak pacifying relationship between joint democracy and escalation.

Unobserved Variables

Much of the formal literature on escalation argues that selection into a dispute and subsequent escalation are influenced by unobservable variables such as resolve and the willingness to take risks (Morrow 1989). States frequently enter a dispute with limited information about their opponent's expected payoffs. They are unsure about their opponent's willingness to take risks or about their opponent's levels of resolve. Once this information is disclosed, it is likely to influence escalation. Since these unobserved variables are excluded from most empirical studies, model misspecification is a potentially severe problem. A unified statistical model of onset and escalation should recognize the influence that these unobserved variables may have on escalation.

One way to get a feel for how the unobserved variables that cause dyads to become involved in a dispute influence their escalation is to model onset and escalation jointly. If one models onset and escalation separately, one necessarily omits the potentially important but unobserved variables like risk propensity and resolve. Resolve, for instance, is relegated to the error term of both equations. There may be a statistical link then between the error terms that should closely mirror the theoretical link scholars posit when they refer to a continuous process of conflict moving from low stages like onset through higher stages like escalation. If one estimates this statistical link between the two error terms, it should hint at the strength of the actual link between the two phases of the conflict process. The full information maximum likelihood (FIML) statistical procedure employed in this article (and discussed at length below) explicitly estimates the statistical link (ρ) and thus allows me to make inferences about how interconnected onset and escalation are. Moreover, by estimating this statistical link, FIML allows me to correct for the influence of onset on escalation (which exists if the error terms are linked). I can thus manage the associated threat to statistical inference that should occur if I assume onset and escalation are independent when they are linked.

Perhaps the sign on ρ should be negative (Fearon 1994b). A negative sign on ρ suggests that the unobserved variables such as resolve, propensity to take risks, and prior beliefs that cause dyads to become involved in disputes have the opposite influence on subsequent escalation. Fearon argues: "If crises are characterized by private information and costly signaling, then states will 'select themselves' into or out of crises according to prior beliefs, and this fact will have implications for subsequent inferences and choices. One consequence is that the rationalist hypotheses that are true for general deter-

rence may be exactly reversed for immediate deterrence" (1994b, 245).

These theoretical expectations suggest the following directional hypotheses.

Hypothesis 1 *Pairs of states characterized by power parity are more likely to experience conflict onset, but they may be less likely to escalate their disputes to war.*

Hypothesis 2 *Pairs of states characterized by joint democracy are less likely to experience conflict onset, but once a dispute begins, the effect on escalation may be minimal.*

Hypothesis 3 *Pairs of states characterized by joint satisfaction with the status quo are less likely to experience conflict onset, but once a dispute begins, the effect on escalation may be minimal.*

Hypothesis 4 U*nobserved factors that cause states to become involved in a dispute may inhibit escalation.*

Unifying Onset and Escalation

Case selection plays an important role in studies of conflict escalation (Morrow 1989; Most and Starr 1989). Studies of escalation frequently treat cases in which there was no onset as omitted observations. Researchers typically identify a group of onset cases (crises or disputes) and then attempt to differentiate empirically between crises/disputes that did escalate and those that did not. If the variables that cause conflict onset and those that cause conflict escalation are unrelated, this approach creates no bias. If the covariates of onset and escalation are related, it is necessary to consider the nonevents where onset did not occur. To the degree that common variables determine both the onset of hostilities and the escalation of conflict, selecting cases based on conflict onset introduces potential selection bias.

Since studies that rely on a set of disputes produce a sample that has been nonrandomly selected, none of the usual statistical techniques including cross-tabulation or regression analysis produce reliable estimates (Achen 1986, 97). One way to manage the threat of selection bias is to estimate jointly the likelihood of dyads becoming involved in a dispute and escalating the dispute to war.

Since the outputs of the onset and escalation processes are observed discretely, maximum likelihood estimation provides a useful framework for just such a model (Fisher 1922; King 1989). In the analysis that follows, I code onset as occurring when $dyad_i$ is involved in a dispute at $time_t$, and I code escalation as occurring if the dispute becomes a war. There are thus two realizations of the dependent variable that both take on the value of 0 or 1. Three outcomes are possible: (1) $dyad_i$ does not experience conflict onset; (2) $dyad_i$ experiences onset, but the dispute does not escalate to war; (3) $dyad_i$ experiences conflict onset and the dispute escalates to war.[5]

I utilize a censored probit that accounts for selection to model this process statistically (Greene 1996a). Let y_1^* be a latent variable that measures conflict onset, and let y_2^* be a latent variable that measures escalation. I assume that y_i^* is influenced by a vector of observed explanatory variables X_i and a disturbance term u_i. The latent variables y_1^* and y_2^* are not observed. Instead, we observe the dichotomous realizations of y_1 and y_2 (disputes and wars). The following model structure is proposed.

$$y_1^* = X_1\beta_1 + u_1$$
$$y_2^* = X_2\beta_2 + u_2$$

We can only observe escalation, y_2, if there is a dispute, $y_{1i}^* > 0$. That is,

$$Conflict - Onset = \begin{cases} 1, & \text{if } y_1^* > 0 \\ 0, & \text{if } y_1^* \le 0 \end{cases}$$

$$Escalation = \begin{cases} observed, & \text{if } y_1 = 1 \\ unobserved, & \text{if } y_1 = 0 \end{cases}$$

The disturbance terms u_1 and u_2 are assumed to follow a joint normal distribution with $E[u_1] = E[u_2] = 0$, $Var[u_1] = Var[u_2] = 1$ and $Cov[u_1, u_2] = \rho$. With these assumptions, the log-likelihood function reads[6]

$$\ln L = \sum_{y_1=0} \ln\left(1 - \Phi\left(\beta_1' X_1\right)\right) + \sum_{y_1=1, y_2=0} \ln \Phi_2\left(\beta_1' X_1, -\beta_2' X_2, -\rho\right) + \sum_{y_1=1, y_2=1} \ln \Phi_2\left(\beta_1' X_1, \beta_2' X_2, \rho\right)$$

[5] It is impossible (given the coding rules on the two dependent variables) for there to be a war without first having a dispute. Thus, the model operates as though the dependent variables are outputs of a sequential process rather than being determined simultaneously.

[6] This likelihood function is based on the work of Meng and Schmidt (1985) and has been used by Dubin and Rivers (1989). It is a simple modification of a bivariate probit model that accounts for selection. The likelihood function is maximized in full-information maximum likelihood (FIML). FIML treats all equations and parameters jointly and is efficient among all estimators with normally distributed disturbances (Greene 1996a). To check for the robustness of the results the models were also estimated in limited information maximum likelihood (LIML). Even though LIML is less efficient than FIML, the results are robust. These models can be estimated in Limdep 7.0 and are discussed in chapter 22 of the Limdep 7.0 manual.

Table 1 A Unified Model of Onset and Escalation

Variable	$\hat{\beta}$ (S.E.)	$\hat{\beta}$ (S.E.)	$\hat{\beta}$ (S.E.)	ΔPr
Onset α	−0.486 (0.033)‡		−0.484 (0.032)‡	—
Power Parity	0.353 (0.083)‡		0.356 (0.090)‡	+0.13
Joint Democracy	−0.611 (0.066)‡		−0.611 (0.066)‡	−0.18
Joint Satisfaction	−0.166 (0.065)‡		−0.165 (0.066)‡	−0.06
Alliance	0.040 (0.052)		0.042 (0.054)	—
Development	−0.010 (0.005)†		−0.010 (0.005)†	−0.15
Interdependence	−1.472 (3.420)		−1.432 (4.368)	—
Escalation α		−0.543 (0.056)‡	0.648 (0.096)‡	—
Power Parity		−0.086 (0.218)	−0.333 (0.189)†	−0.05
Joint Democracy		−1.279 (0.440)‡	−0.305 (0.342)	—
Joint Satisfaction		−0.582 (0.316)‡	−0.051 (0.303)	—
Alliance		−0.864 (0.166)‡	−0.637 (0.153)‡	−0.08
Development		0.057 (0.012)‡	0.048 (0.009)‡	+0.21
Interdependence		−34.504 (28.944)	−3.887 (14.829)	—
ρ Selection Effect			−0.772 (0.053)‡	
Log-Likelihood	−2810.693	−436.185	−3194.134	
Sample Size	20990	947	20990	

Note: Statistically significant parameter estimates are denoted by † ($p \leq .05$) and ‡ ($p \leq .01$).

where Φ is the distribution function of the univariate normal and Φ_2 is the bivariate normal distribution function. The first term on the right-hand side relates to the censored observations for dyads that never become involved in a militarized dispute. The second and third terms relate to the dyads that are in a dispute that does not escalate to war and those disputing dyads that do escalate to war, respectively.

There are at least three alternatives to the bivariate probit specification. The standard approach adopted in the empirical literature is to model dispute onset and escalation separately using either two logits or probits (i.e., one equation for onset and a separate one for escalation). The weakness of this strategy is that it explicitly assumes that onset and escalation are independent. Technically, these studies constrain ρ to 0. If this assumption of independence turns out to be wrong, the estimates of the models will be inconsistent. If some of the same variables influence both onset and escalation, then the indirect effect that onset has on escalation must be modeled.

An alternative modeling strategy uses an ordered probit or logit. This technique includes the information about onset and escalation in the same model, but it assumes that the directional effects of the independent variables are constant across onset and escalation. If this assumption of monotonicity is violated, results are also inconsistent. Finally, it is possible to utilize a two-stage model based on the work of Heckman (1979) and utilized by Huth (1996). In this technique two logits or probits are estimated. The predicted probabilities from the first model (onset) are saved and transformed into Mill's inverse ratio. This new variable is included in the second model (escalation). Including Mill's inverse ratio as an independent variable in the escalation model accounts for the probability of any dyad being selected into an analysis of dispute escalation. The weakness of this approach is that the model is heteroskedastic and thus inefficient. In spite of the limitations, this technique was employed to check for the robustness of the results reported below. The substantive and statistical results are similar to those reported in the third column of Table 1. This suggests that my main conclusions about onset influencing escalation and about the nonmonotonic effects of the variables are not a function of the FIML technique. Since the censored probit is efficient among all estimators and allows for the explanatory variables to have nonmonotonic effects, it seems most appropriate for the task here.

Data and Variables

I use a sample of cases from Oneal and Russett (1997). The unit of observation is the relevant dyad year. I observe dyads over the time period of 1950–1985[7], using the Militarized Interstate Dispute (MID) data to opera-

[7] Since the results are limited to the Cold War period, it should be noted that these results are tentative and may not generalize to other time periods or to other designations of dyads within the 1950–85 time frame.

tionalize both conflict onset and escalation (Jones, Bremer, and Singer 1996). A MID is an international interaction that involves threats, displays, or actual uses of force that are explicit, overt, and government sanctioned. I code a dyad as being involved in a dispute, as having experienced conflict onset, when a MID occurs. I code dyads as escalating if the MID advanced to war as defined by the Correlates of War (COW) project. These are both dichotomous variables that I assign a value of 1 when a dispute or war occurs and 0 otherwise.[8]

Explanatory Variables

Three variables are of special theoretical interest in this study: power parity, status quo evaluations, and joint democracy. To control for other variables that may influence the conflict generating process, I include three additional variables: alliance ties, economic interdependence, and changes in economic development.

Power Parity To indicate dyads characterized by parity, I divide the relative power of the weaker state by the relative power of the stronger state. I represent both states' power with the Correlates of War Project's Composite Capabilities Index. This index ranges between 0 and 1. I code dyads at parity if the ratio of capabilities is greater than or equal to 0.80; 0 otherwise. Many other studies operationalize the ratio of capabilities as the power of the stronger state in the dyad divided by that of the weaker state. I employ the dichotomous indicator because it allows the model to converge more efficiently.

Status Quo Evaluations I operationalize status quo evaluations in terms of alliance similarity to the dominant power (Bueno de Mesquita 1975; Kim 1991). Following Lemke and Reed (1996, 1998), I compare the alliance portfolios of all the states in the system to that of the United States after World War II, because the U.S. was what power parity theory calls the dominant power. This measure gauges each state's satisfaction with the systemic status quo. I calculate τ_B for each state in the system. The statistic ranges from –1 to +1, with a score of +1 indicating perfect similarity between the state's alliance portfolio and that of the dominant power. As the score becomes less positive, approaching –1, the dissimilarity of the alliance portfolios is greater. Again, following Lemke and Reed (1996), I code states as satisfied with the status quo if τ_B is positive and dissatisfied otherwise. In this data set there are 5450 jointly satisfied dyads.

[8] The data I use contain 20990 cases. Dispute onset occurs in 947 cases, and 213 of these 947 disputes are coded as escalating to war.

Joint Democracy I use Polity III's index of democracy to operationalize joint democracy (Jaggers and Gurr 1995). I code states as democratic if they score 6 or above on the eleven-point scale of democracy and jointly democratic if both states score a 6 or above on the Polity III eleven-point scale.[9]

Alliance COW alliance data indicates the presence of an alliance in the dyad (or if the states in the dyad are indirectly allied by both sharing an alliance with the United States). I code the alliance variable as 1 if the members of the dyad have a defense pact in common; otherwise, 0. Allied dyads are often argued to be less conflict prone. As might be expected, there is a relatively high correlation between the alliance and status quo evaluations variables.

Economic Interdependence Oneal and Russett (1997) argue that economic interdependence decreases the likelihood of a dyad becoming involved in militarized disputes (Polachek 1980; Gasiorowski 1986). A high level of economic interdependence within a dyad is assumed to increase the level of constraints, and thus the costs of conflict are expected to be greater. This measure of the degree of economic interdependence within a dyad is calculated relative to national income (Oneal and Russett 1997). The lower dependence score between the two states in the dyad is included in the model.

Economic Development Economic development is also a dyadic indicator. It is the rate of economic growth of the less developed member of the dyad. Oneal and Russett (1997) calculate the average annual change in real GDP per capita for the states in the dyad over the previous three-year period. They argue that states experiencing an economic decline may have an incentive to become involved in foreign conflict in order to divert attention away from domestic concerns (Ostrom and Job 1986; James 1988; Russett 1990).

Peace Years To test and correct for temporal dependence, I estimate the onset phase of the model with consideration of potential time-related problems (Beck, Katz, and Tucker 1998). I control for temporal dependence by including in the onset phase of the model dummy variables representing the years of peace a dyad

[9] Oneal and Russett (1997) utilize an alternate indicator of dyadic democracy that ranges from –10 to +10. To check for the robustness of the results, I re-estimated the models with this alternative index of democracy. Both specifications of joint democracy yield similar results.

has experienced since its last militarized interstate dispute. I construct a variable that counts the number of years since a dyad was last in a dispute. This variable ranges from 0 to 34 years. From this variable I create thirty-five temporal dummy variables. I include thirty-four temporal dummy variables in the onset phase of the model.[10]

Empirical Evaluations

The first column of Table 1 reports results from the statistical model of conflict onset. As anticipated by much of the empirical literature, power parity has the expected positive effect on conflict onset. Dyads characterized by joint democracy and/or joint satisfaction with the status quo are less likely to be involved in disputes. Economic development is also found to have a pacifying effect on conflict onset.

I continue by estimating the escalation phase of the equation without statistically controlling the effect of conflict onset. I present the coefficients from this model in the second column of Table 1 for comparison with estimates from the unified model. Without statistically controlling the effect of conflict onset, joint democracy, joint satisfaction with the status quo, and alliance have the expected pacifying effect on escalation. Power parity is found to be unrelated to escalation, and developing dyads appear more prone to escalate their disputes.

I estimate the unified model and present the results in the third column of Table 1. One can compare the results from the unified model with the separate models of onset and escalation presented in first and second columns.[11] Comparing the estimates of the unified model to those of the independent probits illustrates the bias introduced by nonrandom selection.

The estimates of the unified model demonstrate that onset and escalation are related. The likelihood ratio test demonstrates that the unified model provides a much better approximation of the conflict generating process than the independent probits.[12] The coefficient on ρ, the correlation between the disturbances in the two phases of the model, indicates how the processes of onset and escalation relate to each other. Since onset and escalation are assumed to be independent in the first two columns, ρ is constrained to zero. In the unified model, however, ρ is statistically significant and negative. The coefficient on ρ is over sixteen times the size of its standard error, suggesting that the null hypothesis that onset and escalation are independent ($\rho = 0$) can be confidently rejected. Substantively, the negative sign on ρ suggests that the unmeasured variables that get dyads into a dispute actually inhibit the escalation of those disputes to war.

Many formal models focus on the effect of uncertainty on escalation. States are uncertain about important variables such as risk propensity, resolve, and prior beliefs. These variables likely affect the probability of conflict onset. Unfortunately, such characteristics are unobservable at worst or difficult to measure at best. Virtually all empirical studies of onset and escalation fail to include them as explanatory variables. Thus, these variables almost certainly appear in the disturbance term of the first phase of the model. The sign on ρ provides an estimate of the effect of these variables on the escalation process. If joint resolve is one of the unmeasured variables, the estimate of ρ suggests that jointly resolved dyads are unlikely to become involved in a dispute. If a dispute occurs between two states with a high degree of resolve, however, that dispute should be more prone to escalate to war. Perhaps leaders get into disputes to gather private information about the other side with the expectation of being able to stop short of war.

The estimates from the unified model are almost identical to those of the independent probits for conflict onset. This is as expected since the escalation behavior of dyads should not influence the prior likelihood of onset.

The differences between the unified model and the independent probits are striking. The unified model suggests that although both joint democracy and joint satisfaction with the status quo have a powerful pacifying effect on conflict onset, *they do not influence escalation.* When ρ is constrained to 0 (as in the second column) however, they both appear to have a pacifying effect on escalation. This result is somewhat surprising given the strong priors relating joint democracy to peaceful interactions. Perhaps the result is related to the joint democracy index. The joint democracy index, based on the Polity III data, suggests that there is only one jointly democratic dyad that escalates a dispute to war (Turkey and Cyprus 1974). Since the coding of this case is questioned by some scholars (Ray 1995), it is useful to explore the result further. To test for the robustness of the results, the models were re-estimated using an alternative index of joint democracy.[13] The results are robust against this

[10] Two of these dummy variables are dropped from the analysis because of collinearity.

[11] I include temporal dummy variables in the models but they do not appear in Table 1.

[12] The equation for the likelihood ratio test in this case is

$$Llratio = -2(LL_{independent\text{-}onset} + LL_{independent\text{-}escalation} - LL_{unified\text{-}model}).$$

[13] The weak link index of democracy utilized by Oneal and Russett (1997) was employed as an alternate operational definition of joint democracy. Even with this alternate index, joint democracy does not appear to have a statistically significant effect on escalation.}

departure from the original index of joint democracy. Since the result does not appear to be driven by the measurement of joint democracy, it is useful to consider why joint democracy does not appear to influence escalation once onset is considered.

The difference between the unified model and the independent probits is that the unified model corrects for selection. That is, the unified model controls for the indirect effect of joint democracy on conflict escalation through its direct effect on conflict onset. When onset is excluded from models of escalation, the impact of joint democracy on escalation is inflated. Because the effects of joint democracy on onset and on escalation are positively correlated, the joint democracy coefficient in the escalation phase picks up some of the effect of joint democracy through conflict onset. Once I control for onset, the escalation effect disappears. This result does not refute the democratic peace proposition. It suggests instead that jointly democratic dyads avoid war because they rarely become involved in militarized disputes.

The sample of disputes analyzed here is not characterized by the majority of jointly democratic dyads. Only 6 percent of the dyads in the subsample of disputes are jointly democratic, compared to 23 percent of the dyads in the full data set. Few jointly satisfied dyads are involved in disputes as well. Prior to onset, 26 percent of the dyads are jointly satisfied. Within the subsample of disputes, only 14 percent are jointly satisfied. Jointly democratic or jointly satisfied dyads are more peaceful. They rarely become involved in disputes and thus have little opportunity to wage wars.

Studies that begin with dyads that are already in disputes assume that the mean propensity to escalate for jointly democratic and jointly satisfied dyads in disputes is the same as the mean propensity to escalate for jointly democratic and jointly satisfied states in the full sample of dyads involved and uninvolved in disputes. The unified model suggests that this is a tenuous assumption. The case is made clear with respect to the nonmonotonic effect of parity. Power parity appears to influence the behavior of dyads differently depending on whether they are in disputes or not. Balance of power theorists suggest that as one side in a dispute becomes more powerful, the probability of war increases monotonically. Power parity theorists, however, assert that as states approach an equal distribution of power, the probability of war increases monotonically. The unified model shows that there is no simple monotonic relationship between power distributions and war. The effect of parity is instead nonmonotonic as anticipated by Bueno de Mesquita, Morrow, and Zorick (1997). Dyads characterized by parity are more likely to experience militarized conflict, but less prone to escalate their disputes to war.

The unified model suggests that power parity has a pacifying effect on escalation, but when ρ is constrained to 0 there appears to be no relationship between power parity and escalation. Again, once the indirect effect of parity is controlled for, its direct effect on escalation is clearer. Economic development, like power parity, has a nonmonotonic influence on conflict. Although developing dyads are less likely to be involved in disputes, they are more prone to escalate their disputes to war.

The fifth column of Table 1 presents changes in the probability of onset and escalation when the variable of interest moves from its minimum to its maximum value. These probabilities are calculated by holding the dichotomous variables at their modes and the continuous variables are their means.[14] Joint democracy has the largest substantive effect on conflict onset. Moving from not jointly democratic to jointly democratic decreases the probability of conflict onset by 18 percent. Developing dyads are also less prone to experience onset. The probability of onset is decreased by 15 percent if the dyad is developing. Joint satisfaction with the status quo is modestly pacifying on conflict onset, decreasing the probability of onset by 5 percent. Power parity significantly increases the likelihood of onset. Dyads characterized by power parity are 13 percent more likely to become involved in disputes than dyads characterized by a disparate distribution of power.

Only power parity, alliance, and development have statistically significant effects on escalation. Dyads characterized by power parity are less prone to escalate disputes to war. Power parity decreases the probability of escalation by 5 percent (statistically controlling its positive effect on onset). Dyads that share an alliance are also less escalatory. Sharing an alliance dampens the probability of escalation to war by 8 percent. Developing dyads are found to be more escalatory, increasing the probability of escalation by 21 percent. Consider for example an especially dangerous dyad characterized by an uneven distribution of capabilities that does not share an alliance tie. If this dyad's rate of development is declining, the probability that it will escalate to war is .006. If this dyad's rate of development is increasing, however, the probability of escalation increases to .22. Consider likewise a dyad characterized by an average level of development and with no alliance tie. When this dyad is at parity the probability of escalation is .07. With an uneven distribution of capabilities, however, the probability of the same dyad escalating is .12.

[14] The probabilities for the escalation phase of the model are calculated by holding ρ at -0.77. For a discussion of calculating the marginal effects in a bivariate probit see Greene (1996b).

Conclusion

The central result of this research is that conflict onset and escalation are related processes. The unified model of onset and escalation demonstrates this empirically and also suggests that the determinants of conflict influence escalation differently than they do onset. This result can be interpreted in at least two ways. Perhaps once a dispute starts, the process that generates escalation is different from that of onset. Contextual or background variables may play a larger role in onset, and the interdependent relationship between states in a dispute may be more important for escalation. Theories such as power transition, the democratic peace, and other models that rely on contextual variables may *set the stage* for interstate conflict onset. Once onset occurs, game theory, spatial models of conflict, and other formal approaches that focus on strategic interaction may provide a much richer explanation of escalation. It may be, however, that since almost all established theories do not distinguish between conflict onset and escalation, there may be little they can tell us about violence short of war. Perhaps future research might code onset at a higher level of conflict and then evaluate its impact on the process of escalation. If a large negative correlation still exists between the onset and escalation processes, there may be some need to revise current theories of world politics to account for the differences between onset and escalation. Although some formal models specify explicitly the relationship between variables that influence both conflict onset and escalation, a more rigorous theoretical framework is needed. This framework might link the traditional contextual theories of conflict onset with the more formal theories of escalatory strategic interactions between states once a dispute is underway.

In conclusion, the unified model of onset and escalation demonstrates that it is essential for researchers interested in escalation to consider first how states become involved in disputes. The onset of disputes and the escalation of disputes are interconnected but distinct phases of an integrated conflict process. It is crucial that studies of conflict onset and escalation should reflect both their relationship to each other and the possibly different effects that various variables have on each.

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