

Contentious Issues and Forecasting Interstate Disputes¹

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Abstract

Prediction remains an important aspiration in the study of international conflict. Efforts to examine the predictive ability of existing statistical models of interstate disputes, however, have generally found this disappointing. Closer inspection reveals that most of these efforts have built on foundations that consider constant predictors of opportunities for conflict or various features believed to make conflict less likely, and essentially black-boxed the contentious issues over which conflict potentially could arise. Moreover, efforts to consider measures of temporal and spatial dependence between observations have similarly disregarded their relationship to contentious issues. We examine how the risk of conflict depends on the presence of specific contentious issues and events that may change the conflict potential of contentious issues, and to what extent incorporating contentious issues and conflict management can help improve out-of-sample forecasting.

1 Introduction

Research on interstate conflict has often been justified by its potential to be able to anticipate and prevent future conflict between countries. Forecasting has a long tradition in international relations scholarship, if not in actual applications than at least in terms of aspirations (see Choucri and Robinson 1978; Singer and Wallace 1979). Although there are some notable and quite visible general efforts to predict political events (see Bueno de Mesquita 2002; Goldstone, Bates, Epstein, Gurr, Lustik, Marshall, Ulfelder and Woodward 2010; O'Brien 2010), most of these focus either on predicting outcomes in pre-identified situations where the relevant actors are not or broader forms of domestic instability rather than conflicts between states. Most remain very skeptical of the ability of academic researchers to anticipate or predict conflict between states.

Recent decades have seen a great deal of research on hypotheses on when militarized interstate conflict is believed to be more or less likely, primarily inspired by research on the so-called democratic peace or absence of conflict between democracies. Indeed, Google scholar reports over 5,000 scholarly works mentioning the term *militarized interstate dispute*, most of which use these data for some kind of empirical examination of a proposition. However, the evidence that this body of work has been helpful for forecasting conflict out-of-sample seems decidedly disappointing. For example, Ward, Siverson and Cao (2007) found that most of the recent statistical studies of militarized interstate disputes in prominent political science and international relations journals were unable to predict the outbreak of a single dispute out-of-sample (see also Beck, King and Zeng 2000).

Many researchers have sought to improve on the ability to forecast militarized inter-

state conflict by turning to alternative statistical methods. Beck, King and Zeng (2000), for example, consider whether neural networks can do better than generalized linear regression models in forecasting conflict, and find a marginally better performance. Even this marginal improvement is disputed (see in particular de Marchi, Gelpi and Grynaviski 2004). However, it seems clear that changes in estimation methods or statistical techniques per se have so far at best led to only limited improvements in out-of-sample predictive ability.

Our argument in this paper is that focusing on inappropriate methods as the key source of the problem in forecasting conflict may be the wrong diagnosis. A more fundamental problem is that models that disregard the motives for conflict to arise or only consider these in a relatively superficial manner are unlikely to provide a good basis for forecasting. Models that have been proposed in research on the democratic peace, notably the work of Russett and Oneal (2001), are primarily intended to examine whether certain characteristics of liberal institutions such as democracy and trade make conflict less likely. Although these may be appropriate for testing the original propositions of interest, they essentially “black-box” the contentious issues over which states may resort to violence or treat these as exogenous features. Our own first foray into out-of-sample prediction for a state level model indicated that spatial information about other conflict events helped to improve forecast (see Ward and Gleditsch 2002). Although this makes predictions of conflict conditional on other observed events rather than treating each conflict as an independent observation, it similarly ignores the issues over which such conflicts may have arisen initially.

We believe that greater attention to the reasons why conflicts may arise and the specific

incompatibilities that may generate the use of violence should help improve our ability to forecast conflict. Although we recognize that different models may be appropriate to evaluate particular propositions and forecasting, the enterprise of making predictions in our view also has great potential for winnowing bad ideas out of theories and hunches about the causes of conflict without retrospective biases (see Schrodtt 2002).

In fairness, much of the existing work on modelling conflict statistically has bypassed motivation altogether since it is genuinely difficult to establish what states may fight over and what their motivation may be. However, the fact that something is difficult does not mean that we should simply ignore it. Another tradition in research on conflict has sought to identify incompatibilities in terms of contentious issues such as territorial or maritime claims, and found considerable evidence that instances of such claims are more likely to see militarized activities. Even so, this research tradition has to date only looked at in-sample post-diction of conflicts, and so far not looked at whether information on contentious issues may be helpful for forecasting dyadic conflict out-of-sample. Here we explicitly consider whether taking into account information on contentious issues and conflict management can help improve on forecasting interstate conflict.

Although we focus on statistical approaches to interstate conflict in this paper, many of our arguments also apply to problems in traditional theories of conflict and qualitative approaches to prediction or anticipating future political events (see Tetlock 2005). Traditional theories of interstate conflict tend to focus on structural features presumed to influence the opportunities for conflict such as the distribution of power in the international system or relative balance of power and display little interest in the specific incompatibilities that may motivate the use of violence. However, while structural factors rarely change

rapidly, violent conflict tends to be episodic and hence cannot be adequately explained merely by reference to permissive conditions. Likewise, we believe our core argument also applies to a large extent to studies of civil war, which have tended to emphasize opportunities for conflict rather than motivation, and where the evidence for the predictive ability of existing statistical efforts seems similarly disappointing (see Greenhill, Ward and Bakke 2010).

2 Contentious Issues and Interstate Conflict

Formal models of conflict often begin with a representation of bargaining over some issue, where violence arises if the parties are unable to agree upon a division that both prefer to fighting (see Morrow 1986; Boulding 1963). Much of the existing empirical research on interstate conflict can be seen as relating the opportunities for peace to features that systematically influence the abilities of parties to find an agreement. This includes, for example, the greater costs of conflict when states have extensive economic linkages that would be lost in the event of a conflict, or the putatively greater transparency induced by democratic institutions of governance and political competition. Researchers will often “control” for other features believed to influence the opportunities and costs of conflict, such as the geographical distance between actors and their relative power. However, the bulk of research on interstate conflict, in particular research on the democratic peace, pays little attention to the incompatibilities themselves and whether it is possible to identify these empirically. Stated differently, if we concede that the presence of two democratic states as a sufficient condition for an absence of conflict in a dyad, knowing that at least one state in a dyad is not a democracy may well be a, perhaps trivial, necessary condition

for major conflict. Still, this does not provide much leverage for predicting where we may see conflict unless we know something about whether dyads have contentious issues over which conflict actually may be likely to arise or not.

An alternative research tradition has argued for a greater focus on substantive issues in the study of conflict, and highlighted a multitude of potential issues that could command attention in the international arena (see Mansbach and Vasquez 1981; Diehl 1992). Many of these issues might be considered potentially dangerous in the sense of raising the risk of the onset of militarized violence among states. Territorial claims have often been highlighted as the single most common motivation for conflict, and some researchers have argued that the bulk of military conflicts in recent have arisen over territorial issues (see Holsti 1991; Huth and Allee 2002). Looking only at the issues that are deemed to be important in observed conflicts does not give us an adequate understanding of the potential of such issues to generate conflict, as this alone does not tell us how often we see territorial claims that do not lead to militarized conflicts between states. However, we believe that it is possible, at least in principle, to catalogue incompatibilities or contentious issues, and that instances in which we see such issues in a dyad should see systematically higher rates of subsequent interstate conflict.

The fact that two states have a contentious issue could imply a higher risk of conflict, but obviously does not mean that violence is inevitable. If violent conflict is costly, then states also have incentives to avoid this through peaceful settlements, for example agreements that incorporate the likely outcomes of war. A territorial claim that has previously generated use of force may cease to create problems in dyadic relations upon the successful conclusion of a treaty. As such, we should expect the conflict potential of an incom-

patibility to vary systematically with conflict management efforts. Moreover, different incompatibilities or contentious issues may have different susceptibility to conflict management efforts. For example, territorial issues may lend themselves better for peaceful management through bilateral settlement efforts than disputes arising from transnational ethnic communities and conflict within countries, where the ability of states to guarantee and maintain initial agreements may be more limited due to actors that may be partly outside their control.

3 Data on Contentious Issues and Interstate Conflict

To what extent is it possible to identify interstate incompatibilities or contentious issues empirically with existing data? The so-called Issue Correlates of War (ICOW) project, directed by Paul Hensel and Sara M. Mitchell (2010), has developed data on various interstate claims. These provide a possible way to evaluate whether information on contentious issues can help improve conflict forecasts. We do not believe that these are the only potential incompatibilities that may lead to the use of force, but these data allow for a proof of concept test in whether taking explicit information on incompatibilities into account can improve on forecasting from purely structural or issue free models.

The ICOW project data attempt to identify “explicit evidence of contention involving official representatives of two or more nation-states over some type of issue.” The existing data collected consider claims about territory, where two or more nation-states claiming sovereignty over a specific piece of territory, use or abuse of rivers, as well as maritime claims over the use of a specific maritime area. This helps bypass some of the problems in previous research that classifies issues post-hoc in observed conflicts. The ICOW data

also collect data on settlement attempts, including bilateral negotiations and third party settlement efforts such as mediation and arbitration. The ICOW project also claim to collect their data explicitly without reference to militarized conflict over the claims.

However, there are also various limitations with the existing ICOW data that make them less than ideal for examining the potential for forecasting based on incompatibility. First, the full coverage of the data is at the present essentially limited to the Western Hemisphere.¹ Second, the settlement attempts information included in these data only contain a count of the number of attempts, and do not indicate the specific content of a settlement such as whether it was accepted by the parties. Still, we believe that these data should at least provide for an initial assessment of our arguments about issues, conflict management, and forecasting disputes.

4 Empirical analysis

4.1 Data

To assess forecasts of interstate conflicts out-of-sample, we consider observed data on contentious claims, structural characteristics, and conflict history for the period 1900-1989, and then consider predictions for the 1990-2001 period, based on the 1989 covari-

¹River claims data are also available for the Middle East and some of the claims data have also been completed for Western Europe. However, we limit ourselves to the Western Hemisphere at the present given the unclear boundaries between Western and Eastern Europe, and since we do not want to consider forecasting conflict in the Middle East from river claims alone.

ates. We use this as a cross-validation experiment in which we validate our inferences with a different set of data than we used to generate them. Although it is not a true out-of-sample prediction in the sense that we do not know the response in the forecast period at the time of the prediction, we stress that we do not use any information about conflict or the covariates over the forecast period in generating the predicted probabilities for the outcomes.

Our conflict data are instances of militarized interstate dispute data taken from the Maoz (2005) dyadic dispute data. We look only at the initial onset of disputes, excluding ongoing disputes.

We construct a data set of all annual undirected dyadic observations in the Correlates of War state list after 1900, which forms the common basis for both the MID and ICOW data. Next, we consider whether the ICOW data classify the dyad as having a territorial, maritime, or river claim in a given year. We also include a count of the number of settlement attempts over the year. To consider the potentially conflict dampening effects of settlement attempts we evaluate the interaction between whether a dyad involves a claim and a dichotomous variable for whether the claim saw at least one settlement attempt.

To compare our results with existing work on MIDs, we also include a number of other characteristics that have been highlighted in the extant literature. Existing work suggests prior conflict history has a strong influence on the risk of disputes. Accordingly, we incorporate a dichotomous variable for whether the dyad has ever previously been involved in a dispute, a count of the number of successive years that the dyad has been observed without a dispute (often called *peaceyears* in the literature on armed conflict), as well as the square and cube of this variable (see Beck, Katz and Tucker 1998; Carter

and Signorino 2007).

Based on the weakest link argument in democratic peace specifications, we consider the lowest of the two democracy scores in a dyad, using the Polity data (see Jagers and Gurr 1995). We set all observations with special values on the Polity scale due to transitions or interregnums to the lowest value (i.e., -10), and include estimates predicted from the Freedom House data for some small countries not included in the Polity data. To avoid problems of reverse causality or conflict causing changes in institutions we look at the institutions in place at the start of the year (i.e., 1 January, or date of independence, if first year) for each observation.

We also include a measure of the relative power balance in a dyad by looking at the ratio of the lowest to the highest Composite Indicator of National Capabilities (CINC) value for the two states in the dyad, based on the COW capabilities data (see Singer 1987). Values closer to one on this ratio imply dyadic power balances closer to parity.

Finally, we also incorporate the natural log of the distance between two capital cities in a dyad.

4.2 In-sample results

Before turning to the regression estimates, we briefly provide some summary statistics of dispute occurrences, conditional on claims and prior disputes. There are a total of 239 years with dispute onset in our sample, out of a total of 24,792 dyad years. Out of these 239 disputes, 143 involved a dyad with a territorial claim. Other forms of claims are relatively less common in the dispute cases alone, but 175 of the 239 disputes take place in a dyad with one or more of the three forms of claims. Obviously, dyads with ongoing

claims do not see militarized disputes all the time; Only about 8.75% of the years with a territorial claims actually see an onset of a dispute. However, this share is much higher than the share of onset years in dyads without territorial claims, which is less than one-half of one percent.

We consider three different compound regression models of the risk of MID. Model 1 includes only the presence of territorial, maritime, and river claims, whether the outstanding claims see at least one settlement attempt, the interaction between the two, as well as the indicators of conflict history discussed above. Model 2 presents what we call a conventional or structural model of conflict, with the minimum democracy level of the two parties, the relative power balance, and distance in addition to the dyadic conflict history terms. A combined Model 3 incorporates all the covariates in Models 1 and 2. Table 1 reports the estimated coefficients for the three models in the training sample. Our main interest here is whether taking into account contentious issues and conflict management on contentious claim can improve on our ability to forecast conflict over conventional or structural models that disregard issues altogether, or only consider whether a dyad has previously seen a dispute or time since previous conflicts. As such, the fit for the estimation sample is less relevant than the differences in the prediction to the subsequent time period, but we first comment briefly on the estimation sample results.

The coefficient estimates yield strong support for the argument that we are more likely to see disputes in the presence of claims. This holds even when we control for prior conflict history, and as such cannot be dismissed as an artifact of dyads with previous disputes simply being more likely to see new disputes. These results, however, do not fully support the arguments about how conflict management should influence contentious issues. Al-

Table 1: Estimates of the risk of disputes

Variable	Model 1		Model 2		Model 3	
	Coef.	SE	Coef.	SE	Coef.	SE
Intercept	-4.598	0.167	-1.477	0.735	-2.587	0.78
Previous MID	1.657	0.185	2.274	0.177	1.533	0.196
py	-0.168	0.025	-0.23	0.025	-0.187	0.026
py ²	0.004	0.001	0.006	0.001	0.005	0.001
py ³	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Territorial claim	1.247	0.193	—	—	1.122	0.195
River claim	0.823	0.309	—	—	0.658	0.322
Maritime claim	0.563	0.205	—	—	0.512	0.211
Settlement attempt	2.336	0.571	—	—	2.446	0.573
Terr. claim × set. att.	-0.971	0.550	—	—	-1.078	0.555
Mar. claim × set. att.	-0.492	0.374	—	—	-0.528	0.38
River claim × set. att.	-1.671	0.539	—	—	-1.546	0.546
Lower democracy score	—	—	0.007	0.014	-0.021	0.015
Balance ratio	—	—	-0.058	0.287	-0.298	0.316
ln(distance)	—	—	-0.312	0.086	-0.237	0.092
Observations	24,792		22,230		22,230	
LR- χ^2	799.00 (df=11)		682.1 (df=8)		803.7 (df=14)	

though we find negative coefficients for the interaction between settlement attempts and issues, the large estimated coefficient for the raw component of settlement attempts still implies a net positive effect of settlement attempts. It is possible that this may pick up on the timing of settlement attempts during crises and situations where conflict may be more likely, and the risk of conflict is high especially if settlement attempts are unsuccessful. With regards to the features emphasized in conventional structural models, we also note that the evidence for democracy and power balances discriminating much with respect to the likelihood of disputes seems very limited in this sample. Neither of the two are significantly different from 0 by conventional standards.

Does taking contentious issues into account improve our ability to account for disputes in-sample? MIDs are obviously rare events, and there are thus likely to be few instances where the expected risk of a dispute would be larger than that of peace in the sense of no dispute in a period as short as a single year. Table 2 summarizes the results at a prediction threshold of $p > 0.25$, restricted to the common set of observations across the

three models. As can be seen, we find that the traditional model identifies 8 actual disputes - with 219 missed disputes and 29 false positives - while the issue based model identifies 45 actual disputes at the same threshold, with 182 missed disputes and 81 false positive. Here, the combined model identifies 46 disputes, but also has 10 more false positives.

Table 2: Actual by predicted disputes, in-sample

	Model 1		Model 2		Model 3	
	$\hat{p} < 0.25$	$\hat{p} > 0.25$	$\hat{p} < 0.25$	$\hat{p} > 0.25$	$\hat{p} < 0.25$	$\hat{p} > 0.25$
No dispute	21,922	81	21,974	29	21,912	91
Dispute	182	45	219	8	181	46

A receiver operating characteristic or ROC curve provides one way to evaluate the discriminatory ability of models without choosing a specific threshold. The ROC curve compares the share of correctly identified 0s and 1s for different prediction thresholds. A 50-50 guess would give points along the diagonal 45 degree. A perfect prediction with no false negatives and no false positives would fall in the upper left corner. The further that the ROC for a corresponding model is above the $y = x$ line, the better the discriminative ability of a model. Figure 1 shows that a model based on contentious issues consistently outperforms a conventional model in the relevant ranges for the in-sample estimates. Although the combined model does somewhat better than the issues model without the additional conventional structural features, the degree of improvement over the issues model without the conventional factors is relatively limited.

Separation plots provide a different way of displaying these results (Greenhill, Ward and Sacks 2009). In these plots, the dark and light panels correspond to the actual instances of the events and non-events respectively, ordered such that the corresponding predicted values increase from left to right. The solid line indicates the level of the actual

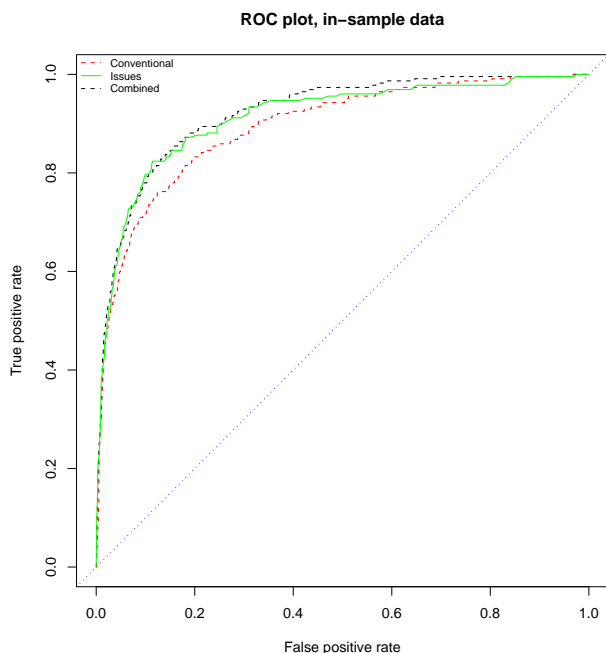


Figure 1: In-sample ROC curve

predicted probabilities for each observation. A good model would produce a plot where all the events are clustered at the right-hand side of the plot and all the non-events at the left-hand side. As the relationship between the level of predicted probability and whether the event occurs or not in a separation plot becomes weaker, the worse the actual discrimination for the predictions of a model. We present the in-sample plots for three models in Figure 2. Although the bulk of the actual disputes fall within the highest levels of the predicted probabilities for all the three models, we can see that highest predicted probabilities are generally much larger for the issues based model 1 in panel (a) and the combined model 3 in panel (c). By contrast, the conventional structural model 2 in panel (b) assigns lower predicted probabilities for the observations with the highest predicted probabilities, and we have a larger number of actual disputes among observations with low predicted probabilities.

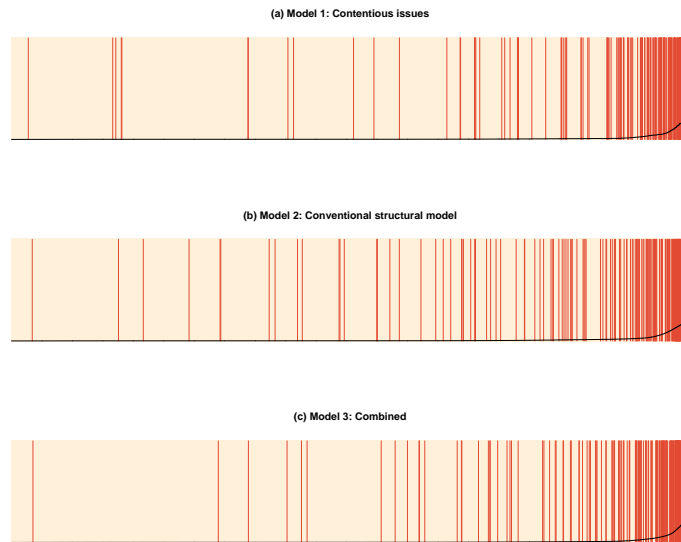


Figure 2: In-sample separation plots

4.3 Out-of-sample results

We now turn to examine whether contentious issues and conflict management can provide any help in predicting disputes out-of-sample. There are only 19 dyads that see disputes in the Western Hemisphere over the period 1990-2001, out of a total of 595 dyads, and we thus have a relatively limited set of conflicts in the out-of-sample forecasting set.

Simple descriptive statistics reveal that 15 out of these 19 MID dyads involved dyads with contentious claims active in 1989. Out of 15 territorial claims, 10 saw disputes over the period 1990-2001. In the same period, 2 out of 3 river claims saw disputes, while among the maritime claims, 12 out of 26 — or slightly less than half — experienced disputes. By comparison, as many as 65 of the dyads that have previously experienced disputes saw conflict history alone over predicts the incidence of disputes.

We now turn to predictions from the models with the 1989 covariates and how these compares to the actual record of disputes over the period 1990-2001. A simple test of the predictive abilities of the model would be whether the annual disputes probabilities for

1989 are able to aggregate up to predicted probabilities of a dispute over the test interval. This would suggest that war would be more likely than peace over the interval, i.e., we would have an aggregate of the annual probabilities that exceed 0.5 for the 11 year interval, or $\hat{p}^* > 0.5$, where $\hat{p}^* = 1 - (1 - \hat{p})^{11}$. These results are summarized in Table 3. In this instance, we find a somewhat similar pattern of results for the predicted and observed outcomes as in the in-sample data, but the better performance of the issues based models is considerably greater out-of-sample. The contentious issues model 1 identifies 10 out of the 19 disputes, with only 3 false positives. By contrast, the conventional model 2 identifies 8 disputes, but also has a substantially higher number of false positives. The combined model 3 identifies 11 of the 19 disputes, but also has one additional false positive (i.e., 4), compared to model 1. Although the number of disputes is relatively small in this sample, the differences between the models and improvement from considering contentious issues are quite compelling, especially for such a simple model. The results also suggest that more complex models are not necessarily better, and yields the well-known statistical result that more complex models which run the risk of over-fitting in-sample often do notably worse out-of-sample.

Table 3: Actual by predicted disputes, out-of-sample

	Model 1		Model 2		Model 3	
	$\hat{p}^* < 0.5$	$\hat{p}^* > 0.5$	$\hat{p}^* < 0.5$	$\hat{p}^* > 0.5$	$\hat{p}^* < 0.5$	$\hat{p}^* > 0.5$
No dispute	573	3	379	11	383	4
Dispute	9	10	8	8	8	11

Given the low number of disputes in the prediction set, the out-of-sample ROCs look distinctively jagged (see Figure 3). However, it is generally the case that the issue based model performs better than a conventional structural model. The separation plots for the

three models shown in Figure 4 show the bulk of events concentrated at the highest levels of predicted probabilities. Still, we can note a smaller number of false negatives for the issues based models, and see more missed conflicts with lower predicted probabilities for the conventional structural model.

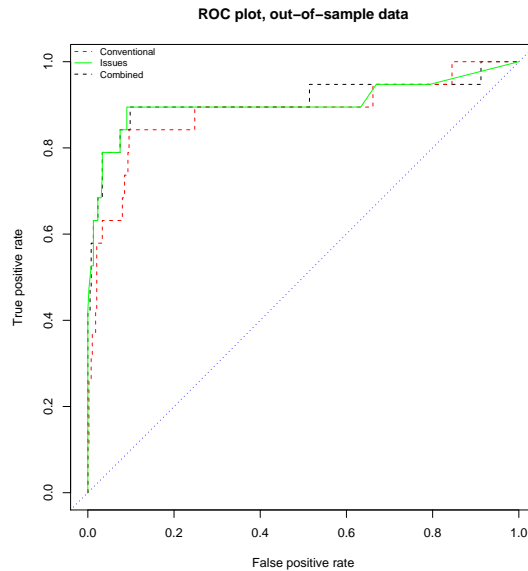


Figure 3: Out-of-sample ROC curve

Beyond examining how the overall predicted probabilities compare with the actual outcomes it is instructive to look at the record of the actual disputes to see in what instances the models discriminate relatively better and whether the disputes are something that these models realistically can be expected to anticipate as likely events. More specifically, the narratives provided by the MID data for the most recent updates allows us to evaluate if the actual disputes that take place are incidents that one should expect a model of this type to identify as well as whether other type or information may be helpful. The lower right cell of Table 4 lists the dyads correctly predicted by Model 1 to experience disputes over the period and the specific dispute numbers. By comparison, the structural model 6 without information on claims misses the disputes between USA and Canada,

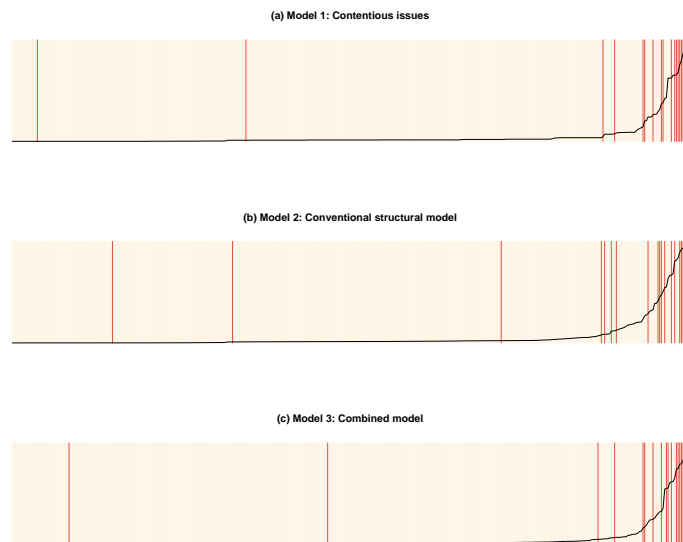


Figure 4: Out-of-sample separation plots

Nicaragua and Colombia, and Guyana and Suriname, all of which have outstanding territorial and maritime claim (as well as river claims in the case of the USA and Canada). The structural Model 2 does, however, call Haiti and the Dominican Republic as a high risk dyad, based on a recent dispute between the two, while this is not identified as a high risk dyad by Model 1 as the two states have no outstanding claims. However, this is part of a multilateral dispute where the Dominican Republic joins a US led naval blockade to restore the rule of Haitian President Aristide after he was deposed in a coup rather than events initiated by the Dominican Republic. Thus, the apparently successful prediction of model 2 is perhaps better seen as a fluke.

The lower left cell of Table 4 lists the disputes that took place over the period that were missed by model 1. As alluded to above, many of the missed dyadic dispute cases originate from MID 4016, or incidents generated by the efforts to restore the rule of Haitian President Aristide. Clearly, this is not a dispute related to any contentious territorial, maritime, or river claim, so it is unreasonable to expect the issue based model here should

Table 4: Actual versus predicted dispute dyads, out-of-sample

	$\hat{p}^* < 0.5$	$\hat{p}^* > 0.5$
No dispute	(573 dyads)	USA-Nicaragua USA-Panama Chile-Argentina
Dispute	USA-Haiti (4016) Haiti-Dominican Republic (4016) Belize-Guatemala (4014, 4015, 4150, 4151, 4152) El Salvador-Nicaragua (4153) USA-Venezuela (4261) Trinidad-Venezuela (4149, 4154, 4155) USA-Peru (3550) Haiti-Argentina (4016)	USA-Canada (3972, 4183) USA-Cuba (3950, 4196) Honduras-El Salvador (4010) Honduras-Nicaragua (3988, 4011, 4012, 4140, 4141, 4171, 4259, 4327) Nicaragua-Costa Rica (4146, 4147) Nicaragua-Colombia (4145, 4263) Colombia-Venezuela (4009, 4172, 4219, 4262) Venezuela-Guyana (4260) Guyana-Suriname (4156, 4157) Ecuador-Peru (3987, 4013, 4143, 4144, 4189)

Numbers in parentheses indicate MID dispute numbers

identify this as this does not include any information on regime claims. However, one could at least in principle envision collecting information of incompatibilities of this type. Belize and Guatemala is an interesting case, illustrating how territorial claims may be dormant for long periods. Although Guatemala has territorial claims on Belize and did not recognize the country until 1990, no actual militarized interstate are recorded up through 1989. However, according to the MID narratives, the previously dormant situation became activated following the 1993 announcement that the UK would close its last military base and the government suspended a territorial accord signed by its predecessor before ratification. Although these events happen after the end of our estimation period (i.e., after 1989), one could at least in principle imagine that forecasts could be improved conditional on information on issue evolution of this type. Disputes 4153 between El Salvador and Nicaragua, 4261 between the USA and Venezuela, and 4149, 4154, and 4155 between Venezuela and Trinidad and Tobago are fishing disputes that follows long periods without MIDs, and hence unlikely based on the model. No information is available on MID 3550 in the MID narratives.

The upper right cell of Table 4 lists the false positives, i.e., the cases where the model

predicted disputes but no disputes actually took place. Although the US and Nicaragua had a long history of conflict over the Sandinista government in the 1980s, bilateral relations improved following the democratic elections in 1990 won by the opposition. Although our model does not include claims over regimes, one could again imagine that such claims could be identified empirically and that information on elections and leadership turnover could be used to update forecasts. USA-Panama is another example where the political dynamics changed fundamentally following the 1989 US invasion, quickly followed by competitive elections. The third dyad, Argentina-Chile, is a good example of how contentious issues can be settled peacefully. Although Argentina and Chile have a long history of border claims and disputes, bilateral relations improved notably in the 1990s and most of the outstanding border issues were settled bilaterally. The last remaining border issues, the Laguna del Desierto, was decided in favor of Argentina by international arbitration in 1994. Again, more information on conflict management and the specific nature of settlement attempt could help provide information on declining risk of conflict to update forecasts.

5 Conclusion

In this paper we have highlighted how many of the models that have been considered for predicting interstate disputes are unlikely to provide a suitable basis for forecasting interstate conflict since they provide no or only limited information on incompatibilities or motives why conflict occurs. The empirical analysis and results shown in this paper are primarily a proof of concept, suggesting that forecasting can be improved by greater attention to theories of conflict, and that the prospects for forecasting may not be as bleak

as commonly assumed. We are dealing with a small number of cases and limited data in this simple experiment, and we do not claim to provide new theoretical contributions to our insights on how claims may generate violence between states. Still, we believe that our results provide a great deal of support for the idea that our ability to forecast conflict can be improved by greater attention to theories of conflict and emphasizing the contentious issues over which conflict may arise. Existing work suggested some classes of claims issues that may give rise to use of violence, and tracking such these issues should help us better identify potential dyads that actually have a risk of dispute than more structural or historically driven opportunity models. Although the data here are quite limited in spatial and temporal scope, this is something that in principle could be done across a broad range of issues and types of conflict.

However, we do not want to overstate the dynamic element in the simple models that we have examined here. Although taking into account contentious issues seem promising in a forecasting context, claims are to some extent enduring structural features. Although these are ex ante observable, looking at claims alone does not tell us anything about the dynamics of conflict or the specific events in evolution of bilateral relations such as the timing of crisis and conflict management efforts. Although we were unable to find much evidence of clear declines in risk following conflict settlement attempts in the ICOW data, more data on the form and content of how such settlement attempts could at least in principle help us understand shifts in relations between actors and create better conditional forecasts. Combining an issues based approach to identifying dyad and risk with event data, or other information on the evolution of issues, may help further in taking into account the escalatory and de-escalatory moves that are likely to precipitate the use of

violence.

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