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Resisting infection: How state capacity conditions conflict contagion

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Abstract

The collapse of Mobutu's Zaire and the arrival of father and son Kabila regimes in the Democratic Republic of the Congo (hereafter, the DRC) were hastened by the dramatic and tumultuous spread of violence from neighboring Rwanda. Mobutu's state's inability to manage the influx of Hutu refugees (with Interahamwe militia members interspersed) into the Kivu province of eastern Zaire from Rwanda's bloody genocide of 1994 or to compensate for the ratcheting up of their cross-border skirmishes with the Banyamulenge (Zairean Tutsi) population in 1996, exacerbated extant tensions and has since resulted in more than a dozen years of civil war. This example prompts us to ask: are countries with higher levels of state capacity better able to resist the spread of violence from neighboring territories into their own? The author argues that when falsely divided notions of spatial heterogeneity and dependence are interacted, contagion from neighboring conflicts becomes a risk of diminishing value for increasingly capable states. A model of civil war contagion affirms a conditional hypothesis, showing that state capacity modifies the likelihood that a state will become infected by a civil conflict occurring in neighboring territories.

Keywords

civil conflict, contagion, geography, state capacity

Introduction

The increasingly free flow of finance, goods, people, and information across borders illustrates the extent to which processes of globalization have redefined the international system. There are many opportunities and benefits associated with these processes, including enhanced employment opportunities, the establishment of agencies that span national boundaries and aid the achievement of collective action, and more convenient and affordable means of international travel. Nonetheless, processes of globalization have also exacerbated the difficulties encountered by those tasked with governing sovereign states. This article addresses one specific class of transnational threat to state sovereignty: the potential spread of violent political conflict across the borders separating states.

The collapse of Mobutu's Zaire and the arrival of father and son Kabila regimes in the Democratic Republic of the Congo (hereafter, the DRC) were hastened by the dramatic and tumultuous spread of violence from neighboring Rwanda. Mobutu's state's inability to manage the influx of Hutu refugees (with Interahamwe militia members interspersed) into the Kivu province of eastern Zaire from Rwanda's bloody genocide of 1994 or to compensate for the ratcheting up of their cross border skirmishes with the Banyamulenge (Zairean Tutsi) population in 1996, exacerbated extant tensions and has since resulted in more than a dozen years of civil war and the deadliest war since World War II.

The loss of central sovereign control also helps to explain the emergence and gradual spread of civil dissent and violence across a series of former Yugoslav nations in the wake of the collapse of communist Soviet Union. Numerous declarations of independence (including Croatia and Slovenia in June 1991, Macedonia in September 1991, and Bosnia-Herzogovina in January 1992) fuelled violence, migration, and mass killings that were illustrative of the Milosevic government's desperate attempts to demonstrate its capacity to manage. This cycle of spreading violence and regional autonomy has waxed and waned up to the present day, with Kosovo's declaration of independence from Serbia in February 2008. The examples from the DRC and the former Yugoslavia illustrate the threat that 'civil' conflict outside of the home territory poses to the state's sovereign authority. From the perspective of policy, however, there is a sense in both cases that a breakdown in capacity had left the state unable to halt the process of contagion. This article directly addresses this issue by asking: Are countries with higher levels of state capacity better able to resist the spread of violence from neighboring territories to their own? In essence, therefore, I argue that clustered patterns of conflict result from a conditional relationship between

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spatial heterogeneity (varying levels of state capacity) and spatial dependence (conflict in neighboring countries).

The article proceeds as follows. In line with recent literature, I begin by discussing spatial heterogeneity and spatial dependence as alternative explanations for the observation of civil conflict contagion. I then argue that the drawing of an analogy between conflict and disease implores us to consider the role of the state as an agent in preventing the onset and spread of conflict. Time-series–cross-sectional models of new civil conflict onsets among states with neighbors currently experiencing civil conflict demonstrate that an interactive relationship between the proximity of nearby conflict zones and a state's capacity to extract resources to secure itself significantly predicts when and where conflict contagion will occur. Finally, a discussion of the results foreshadows policy implications.

The clustering and contagion of conflict

Questions regarding the contagion of conflict across state boundaries are predicated upon observation of a non-random distribution of events globally. Such observations are made with increasing frequency in the literature on conflict processes (see e.g. Anselin & O'Loughlin, 1992; Braithwaite, 2006; Salehyan & Gleditsch, 2006; Buhaug & Gleditsch, 2008). These recent works build upon a considerable tradition in International Relations scholarship in which it has been argued that conflicts do not occur independently of one another. The work of Richardson (1960), for instance, demonstrates that conflict events follow a Poisson-style distribution. Traditionally, such claims are tested only in terms of anticipated temporal dependence – the belief that a state's conflict history strongly predicts its current (and, therefore, future) rate of conflict participation (Beck, Katz & Tucker, 1998; Davis, Duncan & Siverson, 1978). Only recently have studies of civil conflict begun to deal with the empirical observation that conflicts display not only a non-random temporal distribution but also a non-random spatial distribution.

Galton is often quoted as having stated more than a century ago that observations in data are best characterized as being dependent upon one another. More recently, Luc Anselin has argued that 'aggregate spatial data are characterized by dependence (spatial autocorrelation) and heterogeneity (spatial structure)'. Spatial dependence implies 'a link between value similarity and location similarity of observation points' (Anselin, 1988: 1). In other words, this term refers to the fact that similar values (e.g. high levels of conflict) tend to be located close to one another in geographic space (e.g. among neighboring states within a specific region of the world) and the fact that there is a functional relationship between neighboring observations.

Spatial heterogeneity, on the other hand, implies that the clustering of conflict occurs as a result of the uniqueness of each location. Locations differ, arguably, across a range of geographic and political indices. This heterogeneity of locations, in turn, can be detrimental to the validity of claims that data are spatially stationary. The essential distinction here, therefore, is that heterogeneity implies an *a priori* elevated likelihood of conflict at specific locations, whereas dependence suggests that an originally random distribution of likelihood across all locations is increased in some areas only once conflicts have broken out nearby. Rather than considering these to be mutually exclusive characteristics, this study conceives of dependence and heterogeneity as mutually conditional.

Buhaug & Gleditsch (2008) offer compelling evidence against the contagion hypothesis, claiming that civil conflicts coincide in spatially contiguous states only relatively rarely. They argue, instead, that civil conflicts typically cluster because the factors that increase the likelihood that a state will experience a civil conflict also cluster spatially; that, for instance, conflicts occur in regions of relative poverty and those with low levels of democratic governance – a finding that is consistent with the domestic-level conclusions of Hegre et al. (2001). As such, they claim to have demonstrated that clustering results from heterogeneous distributions of state characteristics rather than as a result of dependent links between conflict locations.

Gleditsch (2007) directly models transnational factors and linkages between states in a model of civil conflict onset. He concludes that civil conflicts appear to cluster because the sources of conflict tend to span national boundaries. That is to say that regional patterns of democratic regimes and the presence of transborder groups both dramatically increase the state-level incidence of conflict. These results are somewhat similar to Gleditsch's earlier work on regional patterns of interstate conflict, which demonstrates that zones of peace, democracy, and economic integration co-evolve (Gleditsch, 2002a).

Using geo-referenced civil conflict data, Buhaug & Gates (2002) were able to demonstrate that the size (they use the term *scope*) of the conflict zone is determined, in part, by *a priori* distributions of natural resources within the state. They note that the size of the state, the adjacency of civil conflict to the state's international borders, and the conflict's duration are also important predictors of the size of a civil conflict. A number of studies have subsequently demonstrated that distributions of natural resources follow a spatial heterogeneous pattern not dissimilar to that of conflict, thereby providing further intuitive evidence to suggest that conflict clusters are more likely to emerge where geopolitical attributes cluster (see e.g. Buhaug & Lujala, 2005; Gilmore et al., 2005; Lujala, Gleditsch & Gilmore, 2005; Lujala, Rød & Thieme, 2007).

In regard to spatial dependence, a not inconsiderable literature has produced evidence consistent with the conclusion that conflict in a neighboring country significantly increases the likelihood of conflict at home (Gleditsch et al., 2002; Ward & Gleditsch, 2002; Salehyan & Gleditsch, 2006; Buhaug & Gleditsch, 2008). Interstate contiguity, long shared boundaries, and proximate conflict arenas in neighboring countries are all factors identified as providing evidence of the spatial autocorrelation and spillover effects of international conflicts (Anselin & O'Loughlin, 1992; Murdoch &

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Sandler, 2002; Ward & Gleditsch, 2002). Despite concluding in support of the heterogeneity argument, evidence from Buhaug & Gleditsch (2008) is not entirely damning for the spatial dependence argument. They demonstrate, for instance, some support for the claims that where there appear to be signs of a contagion process, cross-border spillover can typically be explained by transboundary ethnic ties to the neighboring conflict zone and shared territorial assets subject to competition. The first of these findings aligns neatly with the conclusions of Salehyan & Gleditsch (2006), which clearly shows that the flow of refugees between states acts as a precursor to the spread of conflict across the boundary between the same states.

The conflict–disease analogy

This article is predicated upon the claim that an answer to the puzzle of patterns of conflict clustering may most accurately lie in the combination of spatial heterogeneity and dependence. To substantiate this claim, I now invoke a common analogy in order to fuse arguments that center upon state characteristics with those that prioritize dependent links. References to the disease-like characteristics of conflict abound in the media and policy-oriented communities; yet attempts at formalizing a rigorous test of this analogy within political science research are few and far between. The fundamental attractiveness of this analogy is apparent when one considers the epidemiological scale of statistics of conflict: (a) its impact upon mortality levels – since 1945, some 22 million deaths have resulted from over 160 violent conflicts around the world; (b) its apparently increasing impact upon 'innocent' lives – 5% of the victims of World War I were civilians, 50% in World War II, and 80% in Vietnam; (c) its pervasion of vulnerable populations – UNICEF estimates that in the 1990s alone, over 2 million children died as a result of violent conflict, a further 4–5 million were injured, and over 12 million were left homeless.

I posit that an analogy can be drawn not only between conflict and disease but also between the disciplines that study these phenomena: polemology (peace science) and epidemiology. Notably, just as the first goal of epidemiology is to study the distribution of disease in human populations, this article investigates the spatial distribution of one subpopulation of conflicts – civil wars. Moreover, there is a shared normative agenda to both fields. As Russett & Oneal (2001: 83) comment: 'their [the epidemiologists'] job is to find out how we can avoid illness and postpone death. Our job, in trying to understand international relations, is to find out how to prevent or mitigate violent conflict.'

The spread of civil violence across interstate boundaries can be likened (conceptually) to the spread of infectious diseases between human carriers. Countries in conflict are said to be contagious and are designated, accordingly, a risk to their neighbors. Individuals and populations develop resistance to infections. Similarly, I anticipate finding that the state is able to build a capacity to withstand conflict spilling into their sovereign territories from neighboring states. This ability to resist is, I argue, akin to an attribute of the state that is referred to, elsewhere in the literature, as *state capacity*. In this instance, I define state capacity as the endogenous resources that a state possesses that can be mobilized to deal with emergencies. As such, this concept encapsulates stability, control, protection from predation, the extraction of resources, and the ability to adapt and respond to unexpected crises.

In one final resort to the conflict–disease analogy, one can consider three sets of factors that help determine whether states will be infected by conflict; these factors parallel those that help doctors determine whether individuals are likely to be infected by a disease. First, just as individuals may be (perhaps genetically) predisposed to infection, so states have inherent characteristics that make them more likely to suffer from civil conflict. Second, in both scenarios proximity to infected actors increases the likelihood of exposure to infection. Third, individuals are more or less healthy at any given time, just as states are more or less capable at any given time. Accordingly, the probability that a state will become infected is a factor of the combination of genetic predisposition, immediate health, and extent of exposure to infected actors. The first and second of these factors are generally dealt with by Buhaug & Gleditsch (2008). The present study offers an extension by introducing an indicator of state capacity in order to interact the second and third factors – thereby splicing spatial heterogeneity and spatial dependence.

The modifying effect of state capacity on the potential for conflict contagion

Among the many priorities of the government is the task of defending the sovereign territories of their state from domestic and overseas threats. The central premise of this article is a simple one: that state capacity mitigates the likelihood of conflict contagion from neighboring territories and, therefore, helps the government achieve its goal of guaranteeing state sovereignty. A state's capacity affects its ability to block and/or peacefully absorb the artifacts of civil conflict that threaten to spill across international boundaries – these include flows of refugees of war, weapons and illicit materials smuggled across borders, and the physical actions of the war itself.

I argue that Buhaug & Gleditsch's (2008) thesis – that the observation of clusters of conflict can be attributed to the heterogeneous distribution of state characteristics that are associated with the prevalence of civil conflict, rather than to dependent links between conflict locations – neglects the potential modifying effect of the ability of the state to resist the potential for infection from a nearby civil conflict. If a state's inherent or developed capacity does indeed mitigate the detrimental impact of nearby conflict then the implication is that our models of conflict onset require inclusion of variables that capture this conditional relationship. Accordingly, this article addresses the notion that the proximity of nearby conflict (an indicator of spatial dependence) interacts with a state's

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capacity (an indicator of spatial heterogeneity) to determine the likelihood that a state will be infected by conflict in a neighboring state. Formally, this interaction is characterized by the statement of a conditional hypothesis that captures the direction of the relationship between its constitutive terms.

States with low endogenous levels of capacity experience greater difficulty in generating effective countermeasures to threats against sovereign authority, state security, and the well-being of the population at large. The state's capacity is, after all, the endogenous resources it has accumulated that can be mobilized to help deal with emergent crises. Where resources can be brought to bear to prevent the arrival of refugees, limit the trade of weapons, and generally manage the boundaries of a state against nearby conflict, these nearby conflicts can be considered much lesser threats to the state. This intuition implores amendment to the general Galtonian notion that all events are related but that more proximate events are more closely related. Rather, I argue that more proximate events pose graver threats to the state where the state's inherent capacity is diminished.

The central contention of this study is, therefore, that the extent to which conflicts in neighboring states threaten to spread across borders, infecting previously peaceful societies, depends upon the inherent capacity of the state to resist contagion. Two aspects of state capacity, in particular, help to explain the ability to resist infection: (1) the ability to deploy coercive force to secure borders and manage the influx of refugees, weapons, and violence and (2) the ability to manage domestic sentiment and persuade populations locally of the need to participate in legal political opportunities rather than join or emulate rebellions observed within the neighborhood.

Accordingly, I specify three sequential research hypotheses. These three hypotheses address the independent effects of contagion and state capacity and then their interaction. In the first instance, there is an expectation that, *ceteris paribus*:

H1: Civil conflict onsets are increasingly likely among states that have neighbors experiencing civil conflict.

Second, I anticipate that:

H2: State capacity diminishes the likelihood with which states will experience new civil conflicts.

Finally:

H3: The likelihood of conflict contagion given that a neighbor is experiencing a conflict is decreased by increasing levels of state capacity.

Modelling a state's capacity to resist infection

The empirical portion of this article is built around six probit regression models in which conflict contagion and state capacity affect the likelihood of a new conflict breaking out in the state. All of the variables employed in these six models are detailed in Table I. This table includes details of descriptive statistics, variable operationalizations, and data sources.

Civil conflict onset

The dependent variable for this study is a binary indicator of conflict onset. This variable measures the onset of new, independent cases of civil violence between state governments and organized opposition groups that result in a minimum of 25 battle-deaths in a given year. This variable is coded from the UCDP/PRIO Armed Conflict Dataset (ACD), v3.0 (see Gleditsch et al., 2002, for more details). This operationalization is common within the civil war literature and is the same as that employed in notable publications on the topic of civil conflict contagion (see e.g. Buhaug & Gates, 2002; Buhaug & Gleditsch, 2008).

Proximate conflict

The first key explanatory variable capturing the opportunity for contagion, *Conflict in neighbor*, simply measures whether or not any of the state's contiguous neighbors is currently experiencing an ongoing civil conflict. A second variable, *Conflict at border*, captures the subset of these conflicts that extend territorially to the state's international boundary. This second variant is included in order to capture those conflicts within neighboring countries that one could conceive of as posing the gravest threat of contagion. This second variant indicates whether or not any single event or episode of violence in a conflict in a neighboring country abutted the state's boundaries. The data for both of these measures were collected by Buhaug & Gleditsch (2008: 224) by combining data from Buhaug & Gates (2002) with information on the locations of national boundaries from ArcGIS 8.3. These variables, interpreted independently, provide a means of testing Hypothesis 1.

State capacity

Various characteristics are posited as key components of a state's capacity. These alternative views can be drawn from a range of literatures within political science, economics, and sociology. For the sake of brevity, and because earlier works have dealt more comprehensively with matters of definition and measurement (see e.g. Hendrix, 2008), I will focus here upon the treatments this concept has received within the comparative politics literature. Within this context, the work of Theda Skocpol is perhaps most seminal. Skocpol (1985) identified five factors central to defining whether or not a state is capable: (1) sovereign integrity; (2) financial resources; (3) loyal and skilled officials; (4) stable administrative–military control; and (5) authority and institutional mechanisms to employ resources.

The significant heterogeneity of Skocpol's five components is reflected in the range of recent efforts to characterize this key concept: fair public goods provision (Bueno de Mesquita et al.,

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Table I. Descriptive statistics, operationalization, and sources for variables

Variable	*Obs.*	*Mean*	*Std. Dev.*	*Range*	*Operationallization*	*Source*
Conflict onset	5794	0.034	0.180	0 or 1	Dichotomous variable coded 1 for country-years in which the country in question experiences a new civil conflict onset	PRIO/UCDP http://www.prio.no/CSCW/Datasets/Armed-Conflict/
Conflict in neighbor	5794	0.431	0.495	0 or 1	Dichotomous variable coded 1 if at least one neighbor experienced a civil conflict in the previous period	Buhaug & Gleditsch (2008)
Conflict at border	5794	0.360	0.480	0 or 1	Dichotomous variable coded 1 if a neighboring conflict abutts the country's political boundary	Buhaug & Gleditsch (2008)
State capacity	4715	0.985	0.513	0.007 to 6.95	Continuous variable measuring the Government's ability to extract resources	Arbetman & Johnson (2008)
Neighborhood GDP (ln)	5794	8.077	0.864	6.25 to 10.33	Natural logarithm of the average income of each of the country's neighbors	Buhaug & Gleditsch (2008)
Democracy	5794	−0.469	7.503	−10 to 10	Index characterizing the country's political institutions from autocracy (−10) to democracy (10)	Polity Index: Gurr, Jaggers & Moore (1989)
Democracy squared	5794	56.508	31.540	0 to 100	Democracy*Democracy	Polity Index: Gurr, Jaggers & Moore (1989)
GDP per capita (ln)	5794	8.123	1.057	5.64 to 10.74	Natural logarithm of the average income within the country	Gleditsch (2002b)
Population size (ln)	5794	9.028	1.499	5.33 to 14.06	Natural logarithm of the total population of the country	Correlates of War (COW) Project: Singer, Bremer & Stuckey (1972)
Post-Cold War	5794	0.345	0.475	0 or 1	Dichotomous variable coded 1 for the years 1990–2001	Coded by author
Peace years	5794	16.136	14.696	0 to 55	Count of the number of years since 1960 or since the country last experienced a civil conflict, whichever is shortest	Buhaug & Gleditsch (2008)

2003), the ability to increase the costs associated with challenging the regime (Gates et al., 2006), government revenue and spending (Lektzian & Prins, 2008), government observance of contracts and investor-perceived expropriation risk (Fearon, 2005), institutional and economic capacity (Buhaug, 2006), fostered economic development (Engelbert, 2000), and the ability to penetrate society, regulate social relationships, and appropriate resources (Migdal, 1988). These factors have tended to boil down to the achievement of a combination of allegiance and coercion (Wintrobe, 1998; Buhaug, 2007), which has, itself, most credibly been defined as the endogenous resources a state can mobilize to deal with emergencies – the state's extractive capacity (Hendrix, 2008).

Accordingly, I employ a measure of the state's 'Relative Political Capacity' (hereafter, RPC), as described by Arbetman & Johnson (2008), in my operationalization of *State capacity*. The RPC was made popular as a measure of extractive capacity by Organski & Kugler (1980). In its present form, RPC can be considered akin to a measure of the relative success of the government in extracting resources. It is calculated as the ratio of the total value of actual extractions to the predicted value of extractions. Predicted extraction rates are calculated using a combination of predictors, including mining incomes, agricultural productivity, trade exports, and dependence upon oil exports. A full explanation is offered in Arbetman & Johnson (2008). This variable, interpreted independently, provides a means of testing Hypothesis 2.

It is important to note that this measure of extractive capacity is perhaps the best of a variety of imperfect measures of the full definition of state capacity offered earlier in this article. It is fair to conclude that this proxy allows us to account for the government's ability to control and extract resources and, thus, is reflective of its ability to adapt to and respond to unexpected crises. It is not necessarily the case, however, that it offers direct evidence of the overall stability of the state or its ability to protect against predatory actions from overseas.

Measuring the conditional relationship

The primary contribution of this article comes in the form of terms capturing the interaction between *State capacity* and *Proximate conflict*. Two variables, *State capacity*Conflict in neighbor* and *State capacity*Conflict at border*, to be interpreted in conjunction with their constitutive terms, enable a test of the article's third research hypothesis.

Control variables

One variable, *Neighborhood GDP*, is included as a means of capturing regional heterogeneity in a key characteristic that Buhaug & Gleditsch (2008) show helps to explain the

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Table II. Onset of intrastate conflict, 1960–2001

	1	*2*	*3*	*4*	*5*	*6*
Conflict in neighbor	0.153*	0.136	0.474**			
	(2.17)	(1.76)	(2.97)			
Conflict at border				0.113	0.087	0.576**
				(1.60)	(1.13)	(3.55)
State capacity		−0.151	0.054		−0.157*	0.099
		(−1.91)	(0.47)		(−1.97)	(0.98)
State capacity*Conflict in neighbor			−0.378*			
			(−2.36)			
State capacity*Conflict at border						−0.567**
						(0.169)
Neighborhood GDP	−0.011	−0.031	−0.036	−0.009	−0.027	−0.036
	(−0.17)	(−0.43)	(−0.51)	(−0.14)	(−0.38)	(−0.51)
Democracy	−0.001	−0.004	−0.005	−0.002	−0.004	−0.007
	(−0.25)	(−0.62)	(−0.83)	(−0.26)	(−0.68)	(−1.08)
Democracy squared	−0.003**	−0.003	−0.003*	−0.003*	−0.003	−0.003*
	(−2.62)	(−1.95)	(−2.08)	(−2.58)	(−1.95)	(−2.11)
GDP per capita (ln)	−0.132*	−0.113	−0.109	−0.137*	−0.119	−0.114
	(−2.33)	(−1.85)	(−1.76)	(−2.43)	(−1.95)	(−1.85)
Population size (ln)	0.121**	0.123**	0.122**	0.123**	0.126**	0.126**
	(5.51)	(0.023)	(5.15)	(5.59)	(5.31)	(5.18)
Post-Cold War	0.251**	0.208**	0.204*	0.260**	0.214**	0.218**
	(3.51)	(2.63)	(2.57)	(3.63)	(0.080)	(0.080)
Peace years	−0.006*	−0.005	−0.004	−0.007*	−0.005	−0.003
	(−2.46)	(0.003)	(−1.30)	(−2.50)	(−1.59)	(−1.17)
Constant	−1.747**	−1.627**	−1.816**	−1.72**	−1.60**	−1.82**
	(−3.84)	(−3.31)	(−3.58)	(−3.80)	(−3.29)	(−3.64)
Log pseudo-likelihood	−790.88	−664.19	−661.60	−791.94	−665.10	−659.48
N	5794	4715	4715	5794	4715	4715

Probit estimates with robust absolute z scores in paretheses; ln, natural logarithm; *p < 0.05, **p < 0.10.

emergence of conflict hot spots. This variable captures the mean income per capita of each of the state's contiguous neighbors. These data come from Buhaug & Gleditsch (2008). A series of variables are included in the model specification that are intended to capture the characteristics that make the state more or less susceptible to a new conflict onset – thus, also acting as proxies for patterns of spatial heterogeneity. *Democracy* and *Democracy squared* measure the position of the state along the polity index (Gurr, Jaggers & Moore, 1989). The squared term is included in order to capture the non-linear relationship commonly highlighted by the literature in which the most and least democratic countries are shown to be best able to resist new conflict onsets. *GDP per capita* details the average state-wide level of income (Gleditsch, 2002b). *Population size* is a (logged) count of the total population of the state (Singer, Bremer & Stuckey, 1972). Finally, *Post-Cold War* and *Peace years* control for the years since the collapse of the Berlin Wall (1990–2001) and the number of years that have passed since the state last experienced civil conflict (or the number of years since 1960 – the first year of the study). The use of robust standard errors and peace-years variables is designed to help control for temporal and panel dependence in the data.

Model specifications

Six logistic regression models are specified. The first three models employ the first indicator of proximate conflict – *Conflict in neighbor*. The first of these includes this variable along with a baseline specification. Model 2 then adds to this the measure of *State capacity*. Model 3 then adds, again, the interaction of these two terms. Models 4, 5, and 6 then run the same specification but with *Conflict at border* replacing *Conflict in neighbor*.

Empirical conclusions and implications

The results of the six logistic regression models are detailed in Table II.[1] Each model demonstrates which factors affect the relative risk of a new civil conflict onset among a sample of most countries between 1960 and 2001. First and foremost, Model 1 demonstrates that states with neighbors experiencing ongoing civil conflicts are more likely than those without proximate conflicts to experience their own civil conflict – as demonstrated by the positive and statistically significant

[1] All analyses were run using STATA 8.0.

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parameter coefficient on the variable, *Conflict in neighbor*. This provides corroborative evidence for Hypothesis 1. When replaced by an indicator of *Conflict at border*, however, we do not find statistically significant evidence of conflict contagion – though the estimate (in Model 4) is positive.

Second, we can see that the measure of *State capacity* is negatively associated with the onset of new conflicts. In Model 2, this parameter estimate falls very narrowly short of the standard level of statistical significance. In Model 5, however, this threshold is achieved. This evidence confirms the expectation of Hypothesis 2 – that the onset of new civil conflicts is diminished among states with greater levels of inherent capacity.

In order to assess the validity of the third test hypothesis – specifying that the relationship between proximate conflict and new conflict onsets is conditional upon state capacity – it is necessary to explore the results of Models 3 and 6. Following the advice of Brambor, Clark & Golder (2006), I am keen to note that interpretation of the interactive terms, *State capacity*Conflict in neighbor* and *State capacity*Conflict at border*, and their constitutive terms is not as straightforward as for the remaining (unconditional) independent variables of which these two models are comprised. In the case of the two constitutive terms, *Conflict in neighbor* (Model 3), *Conflict at border* (Model 6), and *State capacity* (both models), their respective parameter coefficients only capture the effect of these variables upon the likelihood of civil conflict within the state when the other constitutive term is equal to zero. In the extreme hypothetical, we may be able to conceive of a state without any capacity whatsoever – indeed we could think of popular press portrayals of Somalia, Democratic Republic of Congo, Sudan, and Afghanistan over recent years. The RPC variable in this case, however, ranges from 0.0069 to 6.9479. Thus, strictly speaking, we have no empirical examples where *State capacity* is equal to zero. It is worth noting, however, that in both models the measure of proximate conflict is positive and statistically significant, suggesting that among states without inherent capacity, conflict contagion is highly likely. This conclusion should, of course, only be reached with great caution.

We can, however, offer a direct interpretation of the *State capacity* parameter estimates in both models. In both cases, this variable is positive but not statistically significant. This suggests that when the state has no neighbors experiencing conflict (Model 3) or when no conflict is located up to the state's boundary (Model 6), there is no direct statistical significance in the relationship between state capacity and new conflict onsets. This result is entirely consistent with – though not directly evidence for – our test hypotheses.

A more rigorous interpretation of the interactive terms in these two models is offered by the graphs in Figures 1 and 2, respectively. These two figures are produced using the approach recommended by Brambor, Clark & Golder (2006). This approach calculates quantities of interest via a loop command that identifies the change in the likelihood of a new conflict onset that is associated with a one unit increase in the respective proximate conflict variables across the observed range of the *State capacity* variable. Ten thousand draws of this loop command were run in order to facilitate the generation of associated 95% confidence intervals to enable assessment of the significance of these estimated marginal effects.

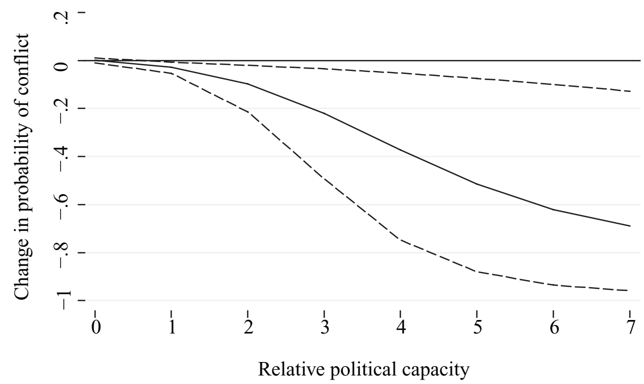

Figure 1. Marginal effects of state capacity on conflict onset: Changing *Conflict in neighboring country* from 0 to 1

Figure 1 illustrates the conditional relationship between the change in the probability of a new conflict onset and the relative political capacity of the state. This graph demonstrates that increasing the *Conflict in neighbor* variable from 0 to 1 is associated with a statistically significant decrease in the probability of new conflict across almost the entire range of the *State capacity* variable. The statistical significance of this relationship is demonstrated by the fact that the confidence intervals are distinct from 0 when *State capacity* is greater than approximately 0.75. It is clear from this graph that as *State capacity* increases above about 2, there is a dramatic decrease in the likelihood of conflict contagion. It is important to note that the RPC variable is quite heavily skewed towards 0. The variable ranges from 0.007 (United Arab Emirates in 1975) to 6.947893 (Zambia in 1994), with a mean of 0.985 and a standard deviation of 0.513. Indeed the 50th, 75th, and 95th percentiles fall at 0.89, 1.26, and 1.87, respectively. It is important to note, however, that approximately 60% of values exceed 0.75 and are, therefore, in the statistically significant range according to Figure 1.

Figure 2 demonstrates that the effect of increasing *State capacity* is not as consistently nor dramatically associated with decreasing probability of new conflict onsets when the proximate conflict abuts the state's political boundaries. It is notable, however, that the negative relationship is significant across much of the range of the *State capacity* variable. Moreover, in this instance, we find that the relationship is *positive* and significant among very low levels of *State capacity*. When there is a neighbor experiencing a conflict that has spread right up to the political boundary of the state, the least capable states are increasingly likely to experience a new conflict onset.

It is possible to additionally assess the impact of the additional control variables included in each of the model specifications. First, the measure of regional heterogeneity,

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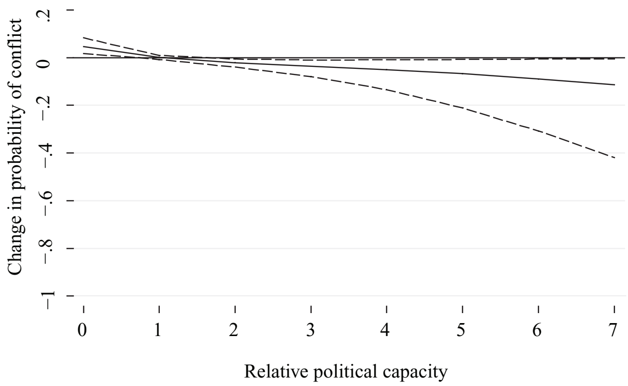

Figure 2. Marginal effect of state capacity on conflict onset: Changing *Conflict at border* from 0 to 1

Neighborhood GDP, is far from achieving statistical significance in each of the six models. Second, the *Democracy* and *Democracy squared* variables indicate that middle levels of the Polity scale – representing 'anocracies' – are associated with higher likelihood of new conflict onsets. This result is entirely consistent with earlier studies (see e.g. Gleditsch et al., 2002; Buhaug & Gleditsch, 2008). Third, there is a fairly consistent, negative relationship between the state-level measure of average income levels, *GDP per capita*, and the prospects for new conflict onsets. Though, in Models 2, 3, 5, and 6 – when controlling for *State capacity*, this variable falls marginally shy of common levels of significance. Fourth, we can see that the prospects for new conflict onsets are higher among those states with greater populations. Each of these findings suggests – in line with the conclusions of Buhaug & Gleditsch (2008) – that state heterogeneity has a greater bearing upon new conflict onsets than does regional heterogeneity. Fifth, we can see that the prospects for new conflict onsets are significantly increased in the post-Cold War period. This is, again, consistent with the bulk of empirical evidence in the literature (see e.g. Gleditsch et al., 2002). Finally, peace is demonstrated to be temporally dependent in Models 1 and 4. However, the *Peace years* variable drops below the threshold for statistical significance once we additionally control for *State capacity*.

Overall, this article has presented considerable evidence in support of a fairly intuitive conditional hypothesis. This hypothesis – and the empirical evidence verifying its accuracy – suggests that future researchers will need to account for both patterns of spatial heterogeneity *and* conditions of spatial dependence. This intuition is predicated upon an appeal to the spatiality of conflict. This process remains incomplete. Future work needs, for instance, to concentrate energies upon disaggregating this geography yet further. Just as earlier studies have sought to disaggregate details about the geography of civil conflict (Buhaug & Gates, 2002), so work is required to disaggregate indicators of state capacity. As a start, it may prove prudent to amend the current study to account for core–periphery relation. Measuring the distance of the neighboring conflict to the state capital, for instance, could help control for situations in which conflicts in neighboring countries are waged at a considerable distance from the power base in the home country – such as is the case for the Democratic Republic of Congo.

As noted earlier in this text and by Thies (2010), state capacity to withstand contagion may be endogenous. Future work could look to uncover the extent to which this is the case by designing a simultaneous equations approach that can disaggregate the reciprocal relationship between these two key variables. Given that the measure of state capacity employed here – RPC – is quite robust to short-term fluctuations in the economy – as it includes measures of sector performance and long-term extraction of resources – I am less concerned that it is dramatically affected by the occurrence of conflict outside of the state's boundaries. Nonetheless, further investigation is warranted to assess whether or not the anticipation of conflict spilling over from neighboring countries alters the government's extraction strategy. It is feasible, in fact, that the anticipation of conflict spilling over increases the level of extraction pursued by the government, thus enhancing their ability to withstand infection from abroad. If this is the case, it would make the test of this study's core hypotheses even tougher.

Replication Data

The dataset and do-files for the empirical analyses in this article can be found at http://www.prio.no/jpr/datasets.

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