Complex Illusions of Peace: An Interdisciplinary Approach to Conflict Reversion in Afghanistan, 1979-2014

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ABSTRACT

Illusions of Peace: An Interdisciplinary Approach to Conflict Reversion and the Case of Afghanistan

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Why do some intrastate conflict-affected states revert back to conflict, while others do not? This thesis aims to answer this question by proposing an interdisciplinary and multi-method approach to analyze the phenomenon of intrastate conflict reversion. I begin my analysis by highlighting the problematic approach of examining conflict reversion as 'frozen' or 'stuck' in equilibrium. Then, I address the shortcomings of applying 2-actor game theory models to the study of conflict reversion by linking ecological and social sciences under the theoretical framework of complexity theory. I introduce a novel model called the Competitive Efficiency Model (CEM) that embraces international relations (IR), ecology and complexity theory to simulate intrastate conflict dynamics through statistical and numerical modeling. I explain the applicability of the CEM by demonstrating mathematical principles of the model to both hypothetical scenarios and scenarios with real data. Next, I develop a set of cases from countries that experienced intrastate conflict (1946-2014). From these numerous cases, I select the case of Afghanistan (1979-2014) as an exploratory case study.

The thesis contributes to existing knowledge in four core areas of conflict dynamics within the IR discipline: (1) how the misconception of equilibrium to describe conflict dynamics can be detrimental to IR and conflict scholars' ability to interpret conflict processes; (2) how an interdisciplinary approach coalesced with IR, ecology, and complexity theory, can increase our understanding of conflict reversion; (3) how population dynamics from ecology theory can be applied to better understand conflict reversion; and (4) using a mixed methods approach of statistical, numerical and a historical narrative can uncover mechanisms behind conflict reversion.

This thesis concludes by summarizing key theoretical and empirical findings and main policy implications. I close by discussing some limitations within the thesis that has allowed room for future research on conflict reversion.

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GLOSSARY OF TERMS

Carrying capacity	The maximum capacity level a population can endure to survive and reproduce within a niche.
Competition Coefficient	Competitiveness is operationalized as a proportionality constant, α; represents the competitive efficiency of an actor groups.
Competitiveness	The interaction of warring actor groups that vie for popular support with the aim of achieving political power. Interchangeably used with competitive effect.
Competitive Efficiency Model	Competitive efficiencies are viewed as statistically significant parameter estimates that are hypothesized to be demonstrate a significant relationship with conflict reversion.
Competitive exclusion	One actor group defeats other competing actor groups (equilibrium is reached).
Competitive exclusion principle	The number of populations coexisting is not expected to exceed the number of resources available; that is, only the best competitor survives within a given niche.
Complexity/ Complex system	A system in which its elements are interdependent: removing one agent may affect the total system behavior to such an extent that the entire system is altered.
Complicated/ Complicated system	Understood as predictable systems, in which different components are added or taken apart and analyzed individually.
Dyad	Made up of two armed and opposing actors.
Dynamic (system)	A set of interconnected elements that changes and evolves over time. A change in each element depends on influences from other elements.
Efficiency	The ability to outcompete other warring actor groups, which has negative effects on weaker warring actor groups.

Emergence	The ability of agents to not only self-regulate but to also interdependently interact with other agents to form new interdependencies and new variables.
Efficient competitiveness	Prevents all competing actors with the exception of one from defeating their opponents.
Equilibrium	An outcome of all interacting variables and processes settling at a specific solution, point or outcome within the system of study.
External Actor	A formally organized state actor group that is involved with either helping the warring/competing groups to regulate the incompatibility (e.g., mediation) or directly involved in the conflict and is biased to one side.
Inefficient competitiveness	Failure to prevent competing actors from defeating their opponents, while maintaining the level of performance necessary for survival.
Intransitive competition	An actor does not view one option as strictly preferred to another.
Intraspecific competition	Competition within a group.
Interspecific competition	Competition between or among groups.
Macro level	Institutional order (i.e., group dynamics to interstate level behaviors; processes of conflict and violence that take place at the level of the sovereign state)/
Meso level	In between the micro and macro level is where patterns of behavior emerge to form organized events (i.e., processes at the community level; local forms of collective action).
Micro level	Individuals and their rules (i.e., processes that involve individual or small group participation).
Niche	The role and requirements a population fulfills to survive and reproduce within a system.

Non-linear	An independent variable does not have a constant effect on a dependent variable.
Onset (conflict)	New conflict with different dyad groups and/or fighting over different incompatibility from pervious conflict episode.
Oscillation	Repetitive variation of population activity of violence and peace through time.
Peace	<25 battle-related deaths per year within a defined and recognized territory.
Persistent (conflict)	Oscillating intensities of violence activity without definitive peace.
Phase	A relatively homogenous portion of a system under study.
Power	Measured as a multifaceted means to a goal of achieving political power.
Recurrent conflict	Conflict that experienced a period of peace within 1 year (i.e., <25 deaths/year), but resumed conflict under the same incompatibilities and the same warring actor groups.
Relapse (conflict)	Conflict that experienced a period of peace within 1 year (i.e., <25 deaths/year), but resumed conflict under the same incompatibilities and conflict ID, but with different warring actor groups.
Resource	The general population, which is not violently participating in the conflict.
Reversion of conflict	Oscillations of peace and violence across time. Both conflict relapse and recurrent conflict are categorized under the umbrella of a reversion of conflict.
Self-organization	The ability of agents to organize, adapt, and manage relations without an internal control.
Stable equilibrium	The system returns to equilibrium after a perturbation (*i.e.* shock).

System	Assemblage of components which interact, intercommunicate and are interdependent to make an integrated whole.
Transitive competition	An actor views one option as strictly preferred to another.
Unstable equilibrium	The system moves away from equilibrium after a perturbation.
Violence	≥25 battle-related deaths per year within a defined and recognized territory.

List of abbreviations

Title	Abbreviation
16 Air Assault Brigade	16AAB
Afghan National Army	ANA
Akaike information criterion	AIC
Baseline Fearon and Laitin's 2003 study	*bl* FL 2003
Central Intelligence Agency	CIA
Correlates of War	COW
Combined Actor Program	CAP
Competitive Efficiency Model	CEM
Counterinsurgent	COIN
Demobilization, disarmament and reintegration	DDR
Democratic Republic of Congo	DRC
Department of Defense	DOD
Ethnic Power Relations	EPR
Ethno-linguistic fractionalization	ELF
External actor	EA
Fearon and Laitin's 2003 study	FL 2003
Government actor	GA
Gross domestic product	GDP
Identification	ID
Improvised explosive device	IED
International Organization	IO
International Relations	IR
International Security Assistance Force	ISAF
Markov chain Monte Carlo	MCMC
Ministry of Defence	MOD
Minorities at Risk	MAR
Mozambican National Resistance	RENAMO
Multiple imputation by chained equations	MICE
Non-government Organizations	NGO
Non-state actor group	NSA

North Atlantic Treaty Organization	NATO
Operation Herrick 4	OH 4
Provincial Reconstruction Teams	PRT
Purchasing power parity	PPP
Rational choice theory	RCT
Revolutionary Armed Forces of Colombia	FARC
Religious fractionalization	RLF
Security sector reform	SSR
Union of Soviet Socialist Republics	USSR
United Kingdom	UK
United Nations	UN
United States	US
Uppsala Conflict Database Program	UCDP
Village Stability Operations	VSO
World Government Indicator Rule of Law	WGIRL

CHAPTER I.

Introduction

The Puzzle of Intrastate Conflict Reversion

1.1. Introduction

Why do some states revert back to intrastate conflict and why do others transition to peace? This thesis aims to answer this question by proposing an interdisciplinary approach to analyze the phenomenon of intrastate conflict[1] 'reversion'. Intrastate conflict[2] reversion is defined within this thesis as occurring in a conflict-affected state *that experiences oscillating peace and violence across time.*[3] In the *Handbook of Conflict Resolution,* Coleman argued that conflict reversion is best analyzed as a dynamic system[4] in which interconnected and interdependent elements follow simple rules.[5]

Consider the War in Afghanistan (2001-14). At present, the likelihood of conflict reversion is high.[6] A likelihood of conflict reversion stems partially from earlier counterinsurgent (COIN) tactics from the United States (US)-led North Atlantic Treaty Organization (NATO) coalition, which is inclusive of the British military. In 2006, the British military were deployed to the Helmand Province of Afghanistan as a reconstruction mission. With as little as 1,000 troops, the British military were part of the NATO 'Phase 3' expansion to southern Afghanistan.[7] Although the British military were sent to Helmand for the purposes of reconstruction, the British brigades consisted of young soldiers trained in heavy kinetic and conventional fighting

[1] Conflict is defined by the use of armed forces between at least two parties. Intrastate conflict is defined as conflict over the control of the entire state in regards to the type of political system, the replacement of the central government or a change in the central government's composition. *See* the Uppsala Conflict Data Program (UCDP) codebook, *see* Themnér, L. (2013) *UCDP/PRIO Armed Conflict Dataset Codebook*. Version 4-2013.

[2] Going forward intrastate conflict and conflict will be used interchangeably.

[3] Both 'conflict relapse' and 'recurrent conflict' are categorized under the umbrella of 'conflict reversion'. I define relapse and recurrence later in this chapter.

[4] A dynamic system is a "set of interconnected elements that changes and evolves over time. A change in each element depends on influences from other elements". *See* Coleman, P. (2006) "Conflict, Complexity, and Change: A Meta-Framework for Addressing Protracted, Intractable Conflicts-III". *Peace and Conflict*. *Journal of Peace Psychology* 12(4): 325-348.

[5] Coleman, P. (2014) "Intractable Conflict". In: Coleman, P., Deutsch, M., & Marcus, E. (eds.) *Handbook of Conflict Resolution: Theory and Practice*. 3rd Edition. San Francisco, John Wiley & Sons, Incorporated. pp. 708-744.

[6] Felbab-Brown, V. (2013) *Aspiration and Ambivalence: Strategies and Realities of Counterinsurgency and State Building in Afghanistan*. Washington D.C., Brookings Institution Press.

[7] Clarke, M (ed.) (2011) *The Afghan Papers: Committing Britain to War in Helmand, 2005-06*, RUSI Whitehall Paper, 77. London, Routledge Journals.

techniques, but *not* peacekeeping and reconstruction tactics. Moreover, the mission involved 100 counterterrorism US Special Forces who were involved in heavy fighting.[8] Consequently, the outcome of the mission was a reversal of reconstruction efforts. This unforeseen outcome aggravated relations between ground troops and civilians[9] as the mission quickly escalated from 'military operation' to persistent 'war'.[10]

During the mission in Afghanistan, British military leaders complained of "constant muddling through, making it up as we go along, being reactive, not proactive" and that formal orders were "riddled with errors".[11] Meanwhile, the Taliban adapted and applied a more efficient counter-strategy against British reorganization efforts by no longer confronting the West and their Afghan government directly; instead a surge of new technologies such as improvised explosive devices (IEDs) were applied.[12]Although the British military was able to reorganize and re-strategize, this effort took over two years, which allowed the Taliban to readjust and adapt to the changing conflict environment.

In May of 2012 President Obama signed the Strategy Partnership Agreement with President Karzai that would withdrawal 33,000 troops by September 2014. As NATO/US, troop levels dwindled, the US Department of Defense (DOD) made repeated warnings throughout 2013 and 2014 that the Afghan military was not prepared and was permitting the Taliban to "regain its initiative".[13] Civilian fatalities reached an all-time high, while the number of displaced persons doubled from 352,000 in 2010 to more than 630,000 in 2013 to over 1.2 million by 2014.[14]

As a consequence to high unemployment, static economic growth, diminished foreign investment and a massive reduction in reconstruction aid, the illicit poppy trade expanded to its height in 2014. Since 2014, local and central leaders within Afghanistan has institutionalized local-narco state administrations.[15] By 2016, both the Taliban and the central Afghan government compete for the manufacture of opium, which, at present, is the highest gross

[8] Clarke, M (ed.) (2011).
[9] Fergusson, J. (2008) *A Million Bullets: The Real Story of the British Army in Afghanistan*. London, Transworld Publishers.
[10] Farrell, T. & Gordon, S. (2009) COIN Machine: The British Military in Afghanistan. *Orbis*. 53(4), 665-683.
[11] Grey, S. (2010) *Operation Snake Bite: The Explosive True Story of an Afghan Desert Siege*. Penguin Books, London. p. 48-51.
[12] These IEDs have been blamed for the majority of British casualties and a major contribution to low British morale and popular support during the War. *See* Grey, S. (2010).
[13] Cutler, L. (2017) "President Barack Obama's Counterterrorism Strategy and Legacy: The Case of Afghanistan". *Political Science and Politics.* 50(1): 59-64. p. 60.
[14] Olivio, A. (2016) "Number of Displaced in Afghanistan Doubled Since 2013 to 1.2 Million, Report Says." *The Washington Post*. 31 May. Cutler, L. (2017).
[15] Ahmed, A. (2016) "Tasked with Combating Opium, Afghan Officials Profit from It". *The New York Times*. 16th February.

producing commodity within the country.[16] A combination of a poorly organized Afghan security forces (both military and policy) and high corruption within the central government have been major risk indicators for an increased likelihood of civil war reversion within the coming years.[17]

Why did the outcome of the War in Afghanistan, which should have been quick and relatively bloodless, result in a 13+ year conflict? As foreign powers lose interest in Afghanistan while attention turns to Syria and North Korea, how can the international relations (IR) discipline analyze the possibility and consequences of conflict reversion within Afghanistan? That is, what makes the case of Afghanistan susceptible to conflict reversion?

The thesis contributes to existing knowledge in four core areas of conflict studies within the IR discipline. First, this analysis identifies how the misconception of what constitutes and is operationalized as conflict reversion, persistence or termination can be detrimental to IR and conflict scholars' ability to interpret conflict processes that are more likely to lead to reversion. In particular, this research shows how examining conflict reversion through a rational choice perspective is inadequate for the advancement of the discipline's understanding of conflict reversion. I explain rational choice's short-comings and repercussions when interpreting states that experience conflict reversion as existing in "equilibrium".

Second, this thesis adopts an interdisciplinary approach, coalesced with IR, ecological, and complexity theory, to increase our understanding of conflict reversion and to explain why some states revert to conflict and others do not. Additionally, the research pinpoints where this thesis' novel interdisciplinary approach can advance the discipline by addressing gaps within current IR theoretical approaches.

Third, ecological theory is adapted to translate population dynamic modeling to social science phenomena. I then calibrate this ecological model to simulate human interactions. This novel model, I call the Competitive Efficiency Model (CEM) incorporates numerical and statistical modeling to simulate warring actor groups who compete for political power. These warring actor groups' *competitiveness* produces various dynamics within a conflict-affected state that pushes a conflict along a particular trajectory. The application of complexity theory to this argument is ever-more necessary as components such as feedback, emergence and

[16] Ahmed, A. (2016).
[17] Felbab-Brown, V. (2013).

interdependence become ever present in determining conflict outcomes, and especially why some conflict-affected states experience reversion and why others do not.

Competitiveness is measured by "competitive efficiencies", or how competitive an actor group is among other actor groups. Competitive efficiencies are statistically significant variables parameter estimates that are hypothesized to demonstrate a relationship with the dependent variable of this thesis: *conflict reversion*. The CEM then applies parameter estimates of hypothesized independent variables from non-linear statistical models of best fit. These estimates are then inputted into the CEM. I also demonstrate that differences in parameter estimates can reveal how competition among groups can impact conflict outcome through "equilibrium" analyses.

Lastly, a principal objective of this thesis is to address the importance of modeling dynamic behaviors to uncover mechanisms behind conflict reversion. Although many well-cited conflict scholars demonstrate possible variables or in some cases mechanisms that can lead to a peaceful outcome, many have selected cases that lead to peace, but not to conflict reversion.[18] Conversely, this thesis selects the case of Afghanistan (1979-2014) to illustrate the dynamics within a conflict-affected state that do not always lead to peace. Thus, the case of Afghanistan is applied in the final two chapters of this thesis to illustrate both qualitatively and quantitively why Afghanistan is prone to reversion.

Chapter I is organized as follows: the next section discusses the relevance and broader implications of this thesis to IR. Then, key concepts are introduced, which were developed through an interdisciplinary examination of conflict processes. Last, crucial theoretical points are discussed before laying out the analytical approach that guide this thesis' application of the theory and subsequent CEM simulation before describing the organization of the thesis.

1.2. The Relevance, Contribution and Importance of this Thesis to International Relations Theory and Policy

The relevance of this thesis is exemplified in cases like Afghanistan, which are unfortunately on the rise. Since the early 2000s, the problem of the conflict reversion has grown in importance within the IR discipline as an estimated 1.5 billion people live in post-conflict and conflict-

[18] *See for example*, Walter, B. (2002) *Committing to Peace: The Successful Settlement of Civil Wars.* Princeton, Princeton University Press; Fortna V. (2008) *Does Peacekeeping Work? Shaping Belligerents' Choices after Civil War*. Princeton, Princeton University Press; Pearson, F. *et al*. (2006) "Rethinking Models of Civil War Settlement." *International Interactions.* 32(2): 109-128.

affected states[19] and nearly all intrastate conflicts experience conflict reversion.[20] The dominant explanation to why there is a higher rate of conflict reversion within the last 20 years is that less stable conflict outcomes, such as negotiated settlements, are more common as many of these settlements are not implemented.[21] Therefore, what are the major risk indicators of conflict reversion?

Perhaps the most cited statistical studies of intrastate conflict are Fearon and Laitin[22] and Collier and Hoeffler's[23] research. Fearon and Laitin argued against previously held notions that post-Cold War civil conflict was rooted in ethnic and religious antagonisms. Rather, their statistical study found a strong relationship with onset and poverty, weak political infrastructure, instability, mountainous geographic terrain and large populations contributed to civil war rather than ethnic and religious antagonisms. Collier and Hoeffler's economic perspective argued that rebel groups proliferate when they have access to various economic opportunities (e.g., exploitation, high unemployment). Both quantitative studies applied statistical regression to test the significance of selected variables for the onset of civil war. However, *both studies were unable to explain why particular conflicts were recurrent and why others terminated*. For instance, opportunity costs were argued by both studies to explain when belligerents take up arms, however major disagreements were attributed to the kinds of opportunity costs (i.e., economic or political) in the government's ability to repress uprisings and rebellions.

Others found that Fearon and Laitin and Collier and Hoeffler's statistical methods did a very poor job of predicting civil war onsets.[24] For instance, research on out-of-sample heuristics better predicted the onset of intrastate war in comparison to studies that imply logistic in-sample statistical methods and even argued that the statistically significant variables can reduce

[19] International Dialogue on Peacebuilding and Statebuilding [IDPS] (2012) A New Deal for Engagement in Fragile States.
[20] Walter, B. (2010) "Conflict Relapse and the Sustainability of Post-Conflict Peace". *World Development Report 2011 Background Paper*; Walter, B. (2014) "Why Bad Governance Leads to Repeat Civil War". *Journal of Conflict Resolution*. 1-31.
[21] Toft, M. (2009) *Securing the Peace: The Durable Settlement of Civil Wars.* Princeton, Princeton University Press; Toft, M. (2010) "Ending Civil Wars: A Case for Rebel Victory?". *International Security.* 34(4): 7-36; Human Security Report Project (2012); Hironaka, A. (2008) *Neverending Wars: The International Community, Weak States, and the Perpetuation of Civil War.* Cambridge, Harvard University Press.
[22] Fearon, J., & Laitin, D. (2003) "Ethnicity, Insurgency, and Civil War". *American Political Science Review*. 97(1). 75-90.
[23] Collier, P., & Hoeffler, A., (2004) "Greed and Grievance in Civil War". *Oxford Economic Papers*. 56: 563 – 595.
[24] Ward, M., Greenhill, B., & Bakke, K. (2010) "The Perils of Policy by p-value: Predicting Civil Conflicts". *Journal of Peace Research.* 47(4): 363–375.

prediction.[25] Moreover, an in-depth analysis of statistical significance of highly cited conflict studies measured false positives against the true positive rate and found that the ability to improve the prediction of intrastate wars is modest at best.[26]

Additionally, other highly influential research has failed to investigate why certain conflicts are more prone to reversion. For example, from the case study selection in *Securing the Peace*, 22% of civil wars reverted to conflict while 78% did not.[27] Why did 78% *not* revert? Toft does not offer any explanations or allude to a particular mechanism to explain the almost 8 out of the 10 cases that did not experience conflict reversion. Similarly, Walter's research on conflict reversion did not explain what her question asks, which is why civil wars repeat, mostly from 2003 onwards.[28] Her most significant variables, "rule of law" and "political rights", demonstrates a significant result, but among other issues, a statistical association between "political and legal institutions" associated with conflict reversion does not explain to the reader why this is this case. Moreover, the large number of control variables in Walter's analysis leads to "bloated specifications that decrease efficiency without necessarily decreasing omitted variable bias",[29] meaning model uncertainty and the size of the model space is not handled appropriately. Of importance, Walter admits she cannot explain the mechanisms behind this relationship between variables. As Hedström and Swedberg argued, the more poorly social sciences are at "incorporating the actual generative mechanisms into the statistical model, the stronger the 'effect' of the variable will appear to be".[30]

Consequently, a major contributor to why scholars are unable to explain why some conflicts revert and others transition to peace is that there are numerous indicators of risk that demonstrate statistically significant relationships with intrastate conflict onset, reversion and termination, without much attention paid to the hypothesized mechanism(s) involved. Furthermore, many of these numerous indicators of risk are not agreed upon by IR scholars. Thus, this thesis *contributes to the study of intrastate conflict and war by exploring and modeling the dynamics and complexities behind why similar indicators of risk within conflict-affected states can lead to very different outcomes and how this interdisciplinary methodological approach is a step towards resolving unanticipated conflict outcomes.*

[25] Ward, M., Greenhill, B., & Bakke, K. (2010).
[26] Ward, M., Greenhill, B., & Bakke, K. (2010).
[27] Toft, M. (2009).
[28] Walter, B. (2014).
[29] Montgomery, J., & Nyhan, B. (2010) "Bayesian Model Averaging: Theoretical Developments and Practical Applications". *Political Analysis*. 18: 245-270. p.246-47.
[30] Hedström, P., & Swedberg, R. (eds.) (1998) *Social Mechanisms: An Analytical Approach to Social Theory.* Cambridge, Cambridge University Press. p. 11.

The importance of studying conflict reversion and its impact on policymaking was summed up by the United Nations (UN) High Commissioner for Refugees who stated that "we are witnessing a paradigm change"[31] in the frequency of intrastate conflict reversion. One of the central motives for this thesis is to demonstrate to policymakers why certain policies are successful in some cases and not in others based on three implications: (1) the repercussions of misinterpreting conflict states at equilibrium; (2) the importance of applying a complexity framework to the study of conflict dynamics; (3) and how codification errors of variables alter statically analyses and therefore, policy recommendation and implementation.

Practitioners are already well-aware of the complexities when resolving conflict reversion. Conflict-affected states, especially those states that experience a reversion to conflict, are highly changeable and adaptable, which can lead to unanticipated outcomes. For example, practitioners observed that these changes within a conflict-affected state 'self-organize' to manage situations without a centrally controlled chain-of-command. Thus, there are a select few who are campaigning for a *complexity theory* approach to peacekeeping and conflict management.[32] Consequently, policymakers find those who continue to apply linear, highly bureaucratic and universal approaches (e.g., neo-liberal state-building models) to a complex phenomenon as problematic[33]

Moreover, conflict has detrimental effects both regionally and for the international system as a whole.[34] For instance, internationally displaced persons from conflict-affected states (e.g., Syria, Sudan, Afghanistan, Iraq). are pouring into states already stressed from years of conflict (e.g., Turkey, Uganda, Pakistan).[35] Additionally, porous borders and weak state infrastructure

[31] United Nations High Commissioner for Refugees (UNHCR) (2015) *World at War: UNHCR Global Trends, Forced Displacement in 2014.* Geneva, UNHCR. p. 3.
[32] de Coning, C. (2013) "Complexity Theory: Implications for Measuring Peacebuilding Progress". In: Williams, A., *et al*. *Innovation in Operations Assessment: Recent Developments in Measuring Results in Conflict Environments.* North Atlantic Treaty Organization (NATO). The Hague, NATO Communications and Information Agency. p. 196-220.
[33] de Coning, C. (2013).
[34] United Kingdom Cabinet Office (2005) "Investing in Prevention: An International Strategy to Manage Risks of Instability and Improve Crisis Response". Prime Minister's Strategy Unit. February. Strategy Unit, Admiralty Arch, The Mall, London.
[35] For the first time since World War II the number of refugees displaced from their home state exceeded 50 million as a result of conflict and recurrent conflict. *See* Witte, G. (2015) "New U.N. Report says World's Refugee Crisis is Worse than Anyone Expected". *The Washington Post.*18th June.; Amnesty International (2015) *The Global Refugee Crisis: A Conspiracy of Neglect*. London, Amnesty International Publications. p. 2.

allow non-state actors (NSA)[36] to organize and compete with the centralized government for political power.[37]

1.3 Key Concepts Defined

This section discuses in further detail key concepts within this thesis. I discuss conflict reversion, competition, power, competitiveness, complexity, determinates of external actor groups, oscillations and oscillatory behavior and equilibrium.

1.3.1 Conflict Reversion

Conflict reversion is inclusive of two types of conflict: (1) recurrent conflict; and (2) conflict relapse. Both recurrent conflict and conflict relapse fall under the umbrella of conflict reversion (see table 1.1). In contrast to the literature,[38] I decided to separate these two definitions under the wider umbrella of conflict reversion as many conflicts are incorrectly coded as recurrent.[39] Of technical importance, the difference between persistence and reversion is how or if individuals code the conflict dynamic as ending with a period of peace. This period of peace is dependent on coder's battle-related death number threshold or expert understanding of whether or not a particular conflict ended. Table 1.1 demonstrates the difference between recurrent conflict and conflict relapse has to do with same and different warring actor groups.

Table 1.1. Typology of Conflict Reversion

Recurrent Conflict	Conflict that experienced a period of peace within 1 year (*i.e.* <25 deaths/year), but resumed conflict under the same incompatibilities and the *same* warring actor groups.
Conflict Relapse	Conflict that experienced a period of peace within 1 year (*i.e.* <25 deaths/year), but resumed conflict under the same incompatibilities, but with *different* warring actor groups.

[36] Non-state actors represent the leading authoritative figure from a homogenous group that follows unitary goals. This is an over-simplification and a wide deviation from reality, but, this assumption is appropriate for my empirical analysis.
[37] Reno, W. (2011) *Warfare in Independent Africa.* Cambridge, Cambridge University Press.
[38] Kreutz, J. (2010) "How and When Armed Conflicts End: Introducing the UCDP Conflict Termination Dataset". *Journal of Peace Research*. 47(2): 243-250; Call, C. (2012) *Why Peace Fail: The Causes and Prevention of Civil War Recurrence.* Georgetown University Press, Washington, D.C.; Walter, B. (2004) "Does Conflict Beget Conflict? Explaining Recurring Civil War". *Journal of Peace Research*. 41(3): 371-388. Walter, B. (2010).
[39] *See* Chapter IV for a more in-depth discussion of coding inconsistencies with illustrated examples.

1.3.2. Competition, Competitiveness, Power and Competitive Efficiency

Afghanistan's recent intrastate conflict experiences demonstrate the devastating consequences of how inefficient tactics and 'competitiveness' by warring actor groups can lead to persistent conflict (i.e., oscillating intensities of violence activity without definitive peace) and conflict reversion (i.e., conflict that oscillates between peace and violence). The term 'competitiveness' is influenced from both the biological sciences and IR theory. Within the biological sciences, a species is competitive enough among other species in order to acquire enough resources[40] to allow for survival and reproduction before death.[41] This is similar to most IR scholars' interpretation of competition as "opposition among social entities independently striving for something of which the supply is inadequate to satisfy all".[42] Similarly, competing or warring actor groups within a conflict-affected state are competing for survival to either claim a territory or claim political representativeness or dominance. Within this thesis, competitiveness or competition is defined as *the interaction of warring actor groups that vie for popular support with the aim of achieving political power*. The outcome of this competitive interaction is how 'efficient' that actor group's competitiveness or competitive effect.

The debate on defining power within IR theory and conflict studies is historically complex.[43] Within IR and conflict studies, power is widely perceived from a ration choice theory (RCT) approach. A RCT approach to power is understood as shifts in power distributions that can be catalyzed by decisions to acquire arms or the ability to declare war.[44] RCT presumes that the overall system is in equilibrium and that these power shifts transition the system from one phase of equilibrium to another in response to actors maximizing their utility through a set of preferences.[45] Power is usually measured from highly quantitative indices such as the Correlates of War Composite Indicator of National Capabilities score which measures a country's raw power and its relation to both hard power (e.g. militaristic) and soft power (e.g.,

[40] Resources are defined as "a factor which, through some range of availabilities, leads to higher population growth rates as its availability is increased and which is consumed, in the broad sense, by the population". *See* Tilman D (1980) "Resources: A Graphical-Mechanistic Approach to Competition and Predation". *Am Nat* 116: 362−393.
[41] Levin, S., *et al.* (Eds.) (2009) *The Princeton Guide to Ecology*. Princeton, Princeton University Press.
[42] *See* Wright, Q. (1954) *Problems of Stability and Progress in International Relations*. Berkeley, University of California Press. p. 146; Wright, Q. (1965) *A Study of War*. 2nd ed. Chicago, University of Chicago Press.
[43] To list all work and research attributed to defining power within IR theory goes beyond the premise of this thesis. Recommended readings include Keohane, R., & Nye, J. (2012) *Power and Interdependence*. 4th Edition Boston, Longman; Ikenberry, G. (2001) *After Victory: Institutions, Strategic Restraint and the Rebuilding of Order After Major Wars*. Princeton, Princeton University Press; Brown, M., Lynn-Jones, S., & Miller, S. (1995) (eds.) *The Perils of Anarchy: Contemporary Realism and International Security*; Cambridge, MIT Press. Powell, R. (1999); Giddens, A. (1984) *The Constitution of Society: Outline of the Theory of Structuration*. Cambridge, Polity Press.
[44] Powell, R. (1999).
[45] Fearon, J. (1995) "Rationalist Explanations for War." *International Organization*. 49(3): 379–414.

economic)[46] and formal modeling such as a RCT's expected utility models of war[47] to theoretical concepts such as power transitions theory.[48] Interstate conflict studies generally define power from a realist perspective in relation to military capabilities; meaning one competing party is able to coerce another competing party either by threat or by violent force in order to achieve some goal.[49] Power within an intrastate conflict is argued as defining the strategies insurgent and government actors apply toward a goal.[50] Thus, for the purpose of this thesis, *power is measured as a multifaceted means to a goal of achieving political power*.

The term *efficiency* is broadly defined as the ability to outcompete other warring actor groups, which has negative effects on weaker warring actor groups. This ability to outcompete or coexist with other actor groups is broadly defined as either having 'inefficient' or 'efficient' competitiveness. The terms inefficient and efficient are derived from economics, game theory and the natural sciences in which one group's competitive effect will suppress another's resource consumption (i.e., the ability for a warring actor group to win popular support).[51] In other words, efficiency is how useful an actor group's competitiveness or competitive effect is against other warring actor groups within a conflict-affected state.

I define inefficient competitiveness by an actor group as a *failure to prevent competing actors from defeating their opponents, while maintaining the level of performance necessary for survival.* Survival here means the ability for actor groups to compete with other actor groups by applying competitiveness at some capacity. Thus, actor groups that apply inefficient competitiveness prevents the termination of a conflict. Actor groups that apply inefficient competitiveness results in conflict environments that are persistent, or after a period of peace results in the conflict reversion. Conversely, I define actor groups with efficient competitiveness as the *prevention of all competing actors, with the exception of one, from defeating their opponents.* Thus, an actor group that applies highly efficient competitiveness against other competing actor groups who apply less efficient competitiveness will outcompete

[46] Kadera, K. & Sorokin, G. (2004) "Measuring National Power". *International Interactions: Empirical and Theoretical Research in International Relations.* 30:3: 211-230.
[47] Bueno de Mesquita, B. (1981) *The War Trap*. New Haven: Yale University Press.
[48] Organski, A. (1968) *World Politics*. 2d Ed. New York: Knopf.
[49] Mearsheimer, J. (1994-95) "The False Promise of International Institutions". *International Security*. 19(3): 59; Morgenthau, H., Thompson, K., & Clinton, D. (2005) *Politics Among Nations: The Struggle for Power and Peace*.7th edition. New York, McGraw-Hill; Mearsheimer, J. (1983) *Conventional Deterrence.* New York, Cornell University Press.
[50] Butler, C., & Gates, S. (2009) "Asymmetry, Parity and (Civil) War: Can International Relations Theories Help Us Understand Civil War?" *International Interactions*. 35(3): 330-340; Wood, R. (2010) "Rebel Capability and Strategic Violence against Civilians". *Journal of Peace Research*. 47(5): 601-614.
[51] Popular support is the resource for my model. Popular support (instead of arms or territory, for instance) has been used in many other studies that model insurgent and counterinsurgent dynamics. *See* Johnson, D., & Madin, J. (2008).

the less competitive actor groups and claim victory. In this scenario, conflict is unlikely to persist or revert.

1.3.3 Complexity and External Actor Groups

To better understand how competitiveness is an indicator in conflict reversion analyses, one must observe the types and number of warring actor groups within a conflict-affected state. Returning to the case of Afghanistan, the War in Afghanistan was also fought among various external actor (EA) groups that increased the overall 'complexity' of the conflict. Complexity is understood as *removing an agent (e.g., an individual or group) may affect the total system behavior to such an extent that the entire system is altered*.[52] A system is an "assemblage" of "components which interact, intercommunicate" and are interdependent to make an "integrated whole" (a conflict-affected state is a system).[53]

EA groups are defined as *a formally organized state actor group that is involved with either helping the warring/competing groups to regulate the incompatibility*[54] *(e.g., mediation) or directly involved in the conflict and is biased to one side*.[55] These EA groups include the British military and many other intelligence and military forces from various states and regions such as Pakistan, the US, the Middle East, and the NATO coalition. During the War in Afghanistan, these multiple EA groups were expected to function as a coordinated unit; instead these EA groups were uncoordinated and disjointed in the fight against the Taliban (and in some cases in support of the Taliban). These inefficient tactics or *inefficient competitiveness*, by the warring actor groups in combination with a multitude of competing groups for the control of Kabul and the population during the war has left Afghanistan vulnerable to conflict reversion.

1.3.4. Oscillations and Equilibrium

The dynamics of conflict and the propensity towards oscillations of peace and festering violence among competing actor groups is the phenomenon this thesis examines. An

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[52]Miller, J. & Page, S. (2007) *Complex Adaptive Systems: An Introduction to Computational Models of Social Life*. Princeton, Princeton University Press.

[53] Berryman, A., & Kindlmann, P. (2008) *Population Systems: A General Introduction*. Springer Science + Business Media B.V, p. 3.

[54] Incompatibility is defined as the incompatible positions between competing parties "concerning the type of political system, the replacement of the central government or the change of its composition". Government incompatibility is defined here in accordance with UCDP's definition. *See* http://www.pcr.uu.se/research/ucdp/definitions/. The 'type' of the political system can include constitutional changes, government overthrow, and/or a change in cabinet members, for example. *See* http://www.pcr.uu.se/research/ucdp/definitions/*See* the UCDP codebook, *see* Themnér, L. (2013).

[55] This definition was adapted from the UCDP's armed conflict codebook. *See* Pettersson, T. (2014) UCDP Actor Dataset Codebook, Version 2.2-2014. UCDP Department of Peace and Conflict Research, Uppsala University.

"oscillation" is *repetitive variation of population activity of violence and peace through time*. As previously mentioned, I define conflict reversion as periodic oscillations of peace and violence across time. I define states that experience conflict persistence as oscillating intensities of violent population activity[56] without definitive peace. A state that oscillates between peace and violence is measured in the changes of activity by different warring actor groups over time. For example, population X may have a population of 1,000, while population Y has a population of 5,000. Over time, population X may rise to 5,000 while population Y drops to 1,000. Then, after more time passes, population X drops again to 1,000 while Y rises to 5,000. *Activity* is measured in number of battle deaths among actor groups and the shifting back and forth in their proportionate numbers constitutes an oscillation as actor groups *compete* with other actor groups.

Therefore, I argue that a conflict-affected state's oscillatory behavior of warring actor groups is an outcome of the competing actor groups inability to settle at equilibrium. Similarly, I argue that competing actor groups within a conflict-affected state oscillate in power and abundance as a consequence of that actor group's competitiveness. Equilibrium is an *outcome of all interacting variables and processes settling at a specific solution, point or outcome within the system of study*. To illustrate equilibrium within a conflict-affected state, Afghanistan is a system and therefore, for purposes of this thesis, a conflict-affected state is the system under analysis. Agents (e.g., groups, individuals, etc.) are an example of some of the components that are interacting. The ability to 'shock' a system away from conflict to one of peace reflects the type of equilibrium a system is experiencing, and whether or not that system has or will reach equilibrium. Even after multiple perturbations (i.e., exogenous shocks) via major COIN initiatives against Afghanistan's violent trajectory, conflict persisted. Afghanistan's propensity for reversion post-US/NATO withdrawal is high because Afghanistan is a system that is *unable to settle at equilibrium*.

To illustrate equilibrium further, a 4- legged chair is stationary, and is in a 'phase' of stable equilibrium.[57] A phase is a relatively homogenous portion of a system under study. One can try to push the chair over, but this is difficult to do so without an excessive amount of force because of the chair's stability. Conversely, if the 4-legged chair is balancing on two legs, this chair is in unstable equilibrium. If someone walks by or if something as small as an insect lands

[56] The term 'activity' is used interchangeably with population.
[57] Conversation with Prof. Marten Scheffer. Department of Environmental Sciences, Wageningen University. February 2014.

on the chair, the chair will likely tip in response to the small forces that disrupt the unstable equilibrium. If that chair tips it will likely tip towards a new phase of equilibrium (e.g., the chair is on its side or a chair rests on all legs). If the chair is unable to settle at equilibrium and is experiencing forces that are both pulling toward and pulling away from equilibrium then this chair illustration is analogous to a rocking chair; that is, a rocking chair has three states of equilibria (chair is forward, backwards and in the middle) as it rocks back and forth among phases of equilibrium, just like conflicts that experience reversion and persistence through oscillating dynamics of peace and violence.

1.4. The Central Argument: Understanding Equilibrium is Essential to Understanding Conflict Reversion

How do we interpret the importance of equilibrium in understanding whether or not a conflict-affected state experiences conflict reversion? Understanding the processes that leads to conflict reversion is a major theoretical gap within IR. Specifically, IR and conflict studies scholars overwhelmingly applied RCT and game theory to solve for systems (e.g., conflict-affected states) that eventually settle at equilibrium; that is, this theory and formal model solve for stable solutions to a problem. Game theory applies RCT and assumes players are rational with conflicting interests that strategize against other players to obtain a particular goal, which allows for coordination and solving for equilibrium.[58] Game theory is used to demonstrate how a state suffering from conflict appears 'frozen'[59] because the dynamics of conflict have settled at equilibrium as a consequence of incomplete information.[60]

RCT interprets conflict as 'complicated' in which removing an element that is causing the conflict will prevent or terminate future or current conflicts.[61] 'Complicated systems' are *understood as predictable systems, in which different components are added or taken apart and analyzed individually*. For example, Western intervention efforts from the Balkans to the Congo have unintentionally allowed external actors to become part of the conflict dynamics that led to unanticipated outcomes.[62] These unintended consequences and a multitude of

[58] von Neumann, J., & Morgenstern, O. (1944) *The Theory of Games and Economic Behavior*. Princeton, Princeton University Press; Nash, J. (1951). "Non -Cooperative Games". *Annals of Mathematics*. 54: 286 -295.
[59] Bartoli, A., Bui-Wrzosinska, L., & Nowak, A. (2010) "Peace is in Movement: A Dynamical-Systems Perspective on the Emergence of Peace in Mozambique." *Peace and Conflict: Journal of Peace Psychology.* 16(2): 211-230
[60] The ability to solve for equilibrium is a consequence of applying particular assumptions within a game.
[61] *See for example,* Rapoport, A. (1960) *Fights, Games, and Debates.* Ann Arbor, University of Michigan Press; de Mesquita, B. (2002) *Predicting Politics*. Columbus, The Ohio State University Press.
[62] Regarding examples related to the Balkans *see* Petersen, R. (2011) *Western Intervention in the Balkans: The Strategic Use of Emotion in Conflict.* Cambridge: Cambridge University Press. Regarding examples related to the Congo *see* Autesserre, S. (2009) "Hobbes and the Congo: Frames, Local Violence, and International Intervention in the Congo". *International Organization*. 63: 249-280.

constantly adapting strategies adopted by competing invested parties produce a dynamic conflict environment that can be difficult to interpret.[63]

Consider the case of Mozambique. Shortly after gaining independence from Portuguese colonial rule in 1975, Mozambique lurched into a long and bloody civil conflict fought between the central government and the Mozambican National Resistance (RENAMO). Scholars who study conflict dynamics during Mozambique's Civil War (1975-1994) applied various models to explain different variables and causal mechanisms that contributed to the conflict. Many argued that the conflict was stuck in a cycle of conflict[64] (i.e., settled at equilibrium), which was difficult for peacekeepers to end. Even after multiple perturbations (i.e., exogenous shocks) via major peacekeeping initiatives against Mozambique's violent trajectory, conflict reverted because Mozambique was in a phase of equilibrium.

Although not clearly stated within the literature, one may deduce from the interpretation above that the conflict processes within Mozambique was at *stable* equilibrium. This failure to specify whether or not a system is in a phase of *stable* or *unstable* equilibrium is a major theoretical and conceptual gap within the IR and conflict studies literature. Knowing whether or not a state is experiencing a stable or unstable equilibrium is imperative as the effects of intervention and mediation efforts, external support, negotiated settlements, and so on, are successful dependent on the type of equilibrium a conflict-affected state is approaching. Equilibrium is stable if the system returns to this point after a perturbation (i.e., shock) and unstable if the system moves away from equilibrium after a perturbation.[65] If the system is in a steady state of equilibrium but experiences a strong perturbation (e.g., 2003 US-led invasion of Iraq, 2010 Afghan surge) the system can be pushed to a new equilibrium. Of consequence, ambiguity regarding equilibrium within IR has allowed many academics and practitioners to apply cause and effect measures for a variety of conflicts.

I argue against this analysis of the Mozambique war and the IR discipline's' interpretation of conflict as in a phase of equilibrium as a consequence of lacking a proper understanding of

[63] Regan, P. (2002) "Third-Party Interventions and the Duration of Intrastate Conflicts". *The Journal of Conflict Resolution* .46(1): 55-73; Doyle, M., & Sambanis, N. (2006) *Making War and Building Peace: United Nations Peace Operations*. Princeton, Princeton University Press.

[64] Bartoli, A., Bui-Wrzosinska, L., & Nowak, A. (2010); Collier, P., & Hoeffler, A., (2004); Collier, P.*et al.* (2003); Kaldor, M. (2012) *New and Old Wars: Organized Violence in a Global Era*. 3rd Edition. Cambridge, Polity; King, C. (1997) *Ending Civil Wars.* Adelphi Paper 308. The International Institute of Strategic Studies. Oxford, Oxford University Press; Reno, W. (2011).

[65] Scheffer, M. (2009) *Critical Transitions in Nature and Society*. Princeton, Princeton University Press.

what a system in equilibrium is and what equilibrium actually describes.[66] Rather, the inability to anticipate how mediation efforts can affect the outcome of a state experiencing intrastate conflict is reflective of that system's *inability to reach equilibrium*. Thus, a conflict-affected states that experience persistence and/or revert back to conflict are unable to settle at equilibrium. A system that is unable to settle at equilibrium means that solving for equilibrium lies between or among different equilibria and that a system is attracted to equilibrium but cannot settle at equilibrium because different counteracting forces are disrupting the system's trajectory toward equilibrium.

My interpretation of equilibrium is influenced by an applied mathematics and theoretical ecology approach to equilibrium dynamics, which are discussed in the following section. The next section returns to the main research question by introducing an interdisciplinary perceptive on how conflict-affected states such as Afghanistan persist and/or revert to conflict and the processes that allow states like Afghanistan to continue down a violent trajectory.

1.5. An Interdisciplinary Approach to Conflict Reversion

Theoretical inspiration behind inefficient competitiveness and oscillatory behaviors that lead to an inability to settle at equilibrium stems from a branch of the biological sciences called ecology. Ecologists study interactions among species populations, including how different species both cooperate and compete within their environment. Theoretical and empirical research within ecology found that competition for resources can generate oscillations when modeling species dynamics.[67] Previous ecological research theorized that a species group's 'niche', or the role and requirements a species fulfills to survive and reproduce within an ecosystem, could only hold as many species as there were resources available. This theory is known as the '*competitive exclusion principle*' and argues that *the number of species coexisting is not expected to exceed the number of resources available*; that is, only the best competitor

[66] Prominent scholars who argue for persistent and conflict that reverts because of 'stuck in a conflict trap', or equilibrium *see* Collier, P.*et al.* (2003) *Breaking the Conflict Trap: Civil War and Development Policy.* A World Bank Policy Research Report. Oxford University Press and the World Bank; Collier, P., & Hoeffler, A., (2004); Kaldor, M. (2012); King, C. (1997).

[67] May, R. (1977) "Thresholds and Breakpoints in Ecosystems with a Multiplicity of Stable States." *Nature* 269:471-477. May, R., & Leonard, W., (1975). Huisman, J., & Weissing, F (2001a) "Biological Conditions for Oscillations and Chaos Generated by Multispecies Competition". *Ecology*. 82(10): 2682–2695. Huisman, J., & Weissing, F (2001b) "Fundamental Unpredictability in Multispecies Competition". *The American Naturalist.* 157(5):488-494; Huisman, J., & Weissing., F.(1999).

survives within a given niche.[68] The theoretical argument behind the competitive exclusion principle is the assumption that competing species reach (stable) equilibrium.[69]

This ecological theory of competitive exclusion may help to understand how IR and conflict studies scholars are unable to unravel why certain conflicts are recurrent or relapse, while others are not; that is, IR and conflict studies perceive conflict as following the competitive exclusion principle, in that once conflict onset occurs, it is believed the seemingly dominant actor group (i.e., usually the central government) will naturally outcompete all other actor groups.[70] However, the major puzzle in intrastate conflict is the question of conflict reversion, and this seemingly natural competitive trajectory towards exclusion is paradoxically difficult to observe. Consequently, there may be more complex dynamics involved in intrastate conflict than the competitive exclusion principle allows for.

Interestingly, ecological theory and empirical evidence of ≥ 3 species surviving on as many or fewer resources within a niche can generate oscillating or chaotic dynamics of species abundance.[71] If at least three species compete for three or fewer resources, then oscillations are observed in numerical simulations. Furthermore, if there are more species and more or fewer resources, then chaotic oscillations are observed. Contrary to the competitive exclusion principle, these numerical simulations observed that up to nine species can be supported by only three resources,[72] which were later proved in a mathematical model.[73]

Ecologists concluded that these observations occurred because multiple species *did not reach stable equilibrium*.[74] The inability to reach stable equilibrium was a consequence of temporal variability in species abundance in response to varying dynamics within the niche under analysis; that is, when there were more species than resources or when there are ≥ 3 species and ≤ 3 resources, the species do not remain constant. In other words, a species' '*carrying*

[68]Ecologists argue that if two or more populations are limited by the same resource, then initial conditions of the population in combination with the population that is most efficient at maintaining reproduction rates at the lowest resource level will out-compete other species. *See* Hardin G (1960) "Competitive Exclusion Principle." *Scienc*e 131: 1292−1297.

[69] Tilman, D. (1982). Armstrong, R.., & McGehee, R. (1980) "Competitive Exclusion" . *The American Naturalist.* 115, 151–170; Hsu, S.B (1978) "Limiting behavior for competing species". *Society for Industrial and Applied Mathematics*. 34: 760–763; Li, B., & Smith, H. (2001) "How many species can two essential resources support?" *Society for Industrial and Applied Mathematics*. 62: 336–66.

[70] *See* Luttwak, E. (1999) "Give War a Chance." *Foreign Affairs*.

[71] May, R., & Leonard, W., (1975); Huisman, J., & Weissing., F.(1999); Huisman, J., & Weissing, F (2001a);

[72] Huisman, J., & Weissing, F (2001a).

[73] Li, B. (2001) "Periodic Coexistence in the Chemostat with Three Species Competing for Three Essential Resources". *Mathematical Biosciences.* 174: ,27–40.

[74] Tilman, D. (1982); Tilman D., Kilham S., & Kilham P. (1982) "Phytoplankton Community Ecology—The Role of Limiting Nutrients". *Annu Rev Ecol Syst* 13: 349−372.

capacity', *or the maximum number of individuals a species can reach, while still surviving and reproducing within a niche*, was not reached. These species were able to coexist because species abundance oscillated through time and none of the species were able to reach carrying capacity. Simultaneously, a coexistence of species inhibits any species to settle at equilibrium; meaning, the species were *competing and coexisting*. The inability to reach equilibrium was a consequence of temporal variability in population abundance in response to varying dynamics within the niche under analysis.

To create an analogy with IR and conflict studies, warring actor groups survive in persistent or revert to conflict because their competitiveness does not dominate one another's; instead their competitiveness are inefficient as each actor group allows competing actors to fight for power. As a result, oscillatory behavior and unintended consequences increases along with increased complexity within the system.[75] The resource within this thesis *is the general population, which is not violently participating in the conflict*. I argue that *a conflict-affected state's warring actor groups' oscillatory behavior is an outcome of the competing actor groups inability to settle at equilibrium*. Similarly, I argue that *competing actor groups within a conflict-affected state oscillate in power and abundance as a consequence of that actor group's competitiveness*. More specifically, I argue that an actor group is displaying or using inefficient competitiveness when that actor group is competitive enough to allow for survival and recruitment, but is not competitive enough to dominate or achieve political representation through that group's stated incompatibility. Thus, *hypothesized oscillating behaviors are a consequence of inefficient competition and are experienced by actor groups in persistent conflict or conflict reversion*. The actor groups survive because their competitiveness does not dominate one another's; instead their competitiveness is inefficient as each actor group allows competing actors to fight for power. As a result, oscillatory behavior and unanticipated consequences increase in relation to the increased complexity within the system (e.g., the more warring actor groups involved in the conflict, the more complex the conflict).[76] Therefore, when a state experiences conflict reversion or persistent conflict it is because of the inability of any competing actor group to claim dominance.

[75] Within the mathematical and ecological sciences this type of game produce oscillatory behaviors called "heteroclinic cycling". This theory is called the 'paradox of the plankton' from Hutchinson's 1961 article. Hutchinson was the first to question why so many phytoplankton species could coexist when the number of phytoplankton species exceeded the number of limiting resources, which was in direct opposition to the widely accepted competitive exclusion principle. Hutchinson theorized that these phytoplankton could coexist because they were not at equilibrium. *See* Hutchinson, G. (1961) "The Paradox of the Plankton". *The American Naturalist*. 95 (882):137-145.

[76] Hutchinson, G. (1961).

In contrast to Collier and others who argue that the reversion of conflict and persistent conflict is a sign of the system trapped in a cycle,[77] I argue that states that experience the reversion of conflict or persistent conflict are never "trapped",[78] but are actually in a phase of constant flux as demonstrated in variable levels of violence and varying dominance of competing actor groups.[79] Figure 1.1 illustrates different types of equilibria. My central argument is represented in the figure at right (Unstable equilibrium (settling near)) with arrows that are both attracting and repelling away from equilibrium (grey dot). Arrows that are pointing away from an equilibrium represents unstable equilibrium and arrows that are pointing towards an equilibrium represent stable equilibrium. I argue that Collier's theory of conflict traps, for example, do not accurately represent changing dynamics within a conflict-affected state, which are represented by arrows pointing towards stable equilibrium (i.e., black dot).

Figures 1.1[80] Different Equilibria Examples Hypothesized to Represent Different Conflict-Affected State Outcomes

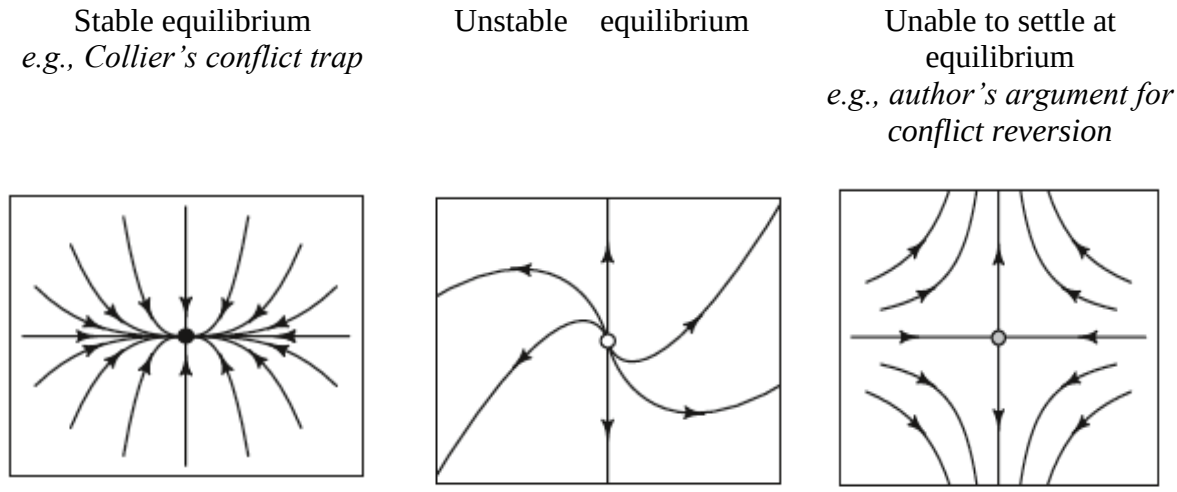


Figure 1.1. Different Equilibria Examples Hypothesized to Represent Different Conflict-Affected State Outcomes. The inability to anticipate how mediation efforts can affect the outcome of a state experiencing intrastate conflict is reflective of that system's inability to reach equilibrium.

The following section brings this interdisciplinary approach together under the theoretical framework of complexity theory.

[77] Collier, P., Hoeffler, A., & Rohner, D. (2009) "Beyond Greed and Grievance: Feasibility and Civil War". *Oxford Economic Papers*. 61(1): 1-27; Walter, B. (2004).
[78] Collier, P.*et al.* (2003).
[79] Similarly, Wood argued that variations in the level of competition among rival NSA influenced the fluidity of violence that were inflicted by NSA groups against civilians. *See* Wood, R., & Kathman, D. (2015) "Competing for the Crown: Inter-Rebel Competition and Civilian Targeting in Civil War" *Political Research Quarterly*. 68(1): 167-179.
[80] Figure 1.1 from Berryman, A., & Kindlmann, P. (2008).

1.6. Bringing it All Together: Understanding Conflict Reversion as a Complex System

To better understand how a system is unable to settle at equilibrium can be explained through the novel application of complexity theory. As mentioned in section 1.2, complexity is understood as removing an agent (e.g., an individual or group) may affect the total system behavior to such an extent that the entire system is altered. Thus, a complexity theory approach examines a system as a complex system, in which *its system elements are interdependent.* In contrast, many academics and practitioners apply cause and effect measures for a variety of conflicts. These systems of cause and effect are 'complicated' systems. As mentioned, complicated systems are understood as predictable systems, in which different components are added or taken apart and analyzed individually. Methodological and theoretical examples include those that were previously discussed such as Collier's conflict trap, game theory and RCT.

Alternatively, I argue that conflict reversion is an outcome of oscillatory behaviors of competing actor groups that are unable to settle at equilibrium because of the varying efficiency of competitiveness used by these actor groups. This interdisciplinary approach is coalesced under the theoretical framework of complexity theory. Complexity theory is a theoretical framework for understanding a conflict-affected state's inability to settle at equilibrium. To illustrate, Petersen observed that failed Western intervention efforts in the Balkans from 1989-2008 was a consequence of solutions attributed to linear, ranked and unchanging preferences from a RCT perspective.[81] These Western intervention efforts were a consequence of perceiving the post-Cold War Balkan states as complicated systems, rather than as complex systems. *The major difference between complicated and complex is that the former is the result of additive effects that produce linear behaviors, while a complex system is the result of interdependent effects that produce non-linear behaviors*.[82] This means that a complex system is composed of networks and agents that are not centrally controlled, but rather are 'self-organized' through simple rules that lead to complex, collective, and adaptive behavior.[83]

RCT applies highly static assumptions regarding individual attributes and preferences within a chosen environment. Alternatively, a conflict-affected state is a complex system in which

[81]Petersen, R. (2011).

[82] For an example of the application of linear methods within IR *see* King, G., Keohane, , R. & Verba, S. (1994) *Designing Social Inquiry Scientific Inference in Qualitative Research.* Princeton, Princeton University Press. For a critical discussion on the application of linear methods in IR *see* Hoffmann, M., & Riley J., Jr. (2002) "The Science of Political Science: Linearity or Complexity in Designing Social Inquiry". *New Political Science*. 24:2, 303-320.

[83] Mitchell, M. (2009) *Complexity: A Guided Tour*. Oxford, Oxford University Press.

intrastate conflict involves complex interrelated variables that are non-linear and can lead to unanticipated outcomes, such as conflict reversion.[84] A complex system is a set of interconnected and interdependent variables that change and evolve non-linearly over time, in which a change in each variable depends on influences and interactions from other variables.[85] Non-linearity implies that an independent variable does not have a constant effect on a dependent variable; meaning a change in the value of independent variable does not equate to an equal or similar change in value of the dependent variable.[86] For instance, multiple shocks or perturbations were applied by peacekeepers to disrupt Mozambique's long temporal period of conflict.[87] The established, but erroneous understanding that Mozambique existed in a specific type of equilibrium or 'frozen state', led peacekeepers to believe that they could shock the system away from conflict.[88] This failure to shock Mozambique away from conflict to a peaceful state of equilibrium was an indicator that the conflict state of Mozambique was experiencing non-linear relationships among variables rather than linear.[89]

Table 1.2 demonstrates the differences between complicated versus complex systems with examples and historical outcomes for reference. Chapter II will go into greater detail about complex systems and their applicability to IR and conflict studies.

[84] On the complexity and unpredictable nature of recurrent conflicts *see* Mutwol, J. (2009) *Peace Agreements and Civil Wars in Africa: Insurgent Motivations, State Responses, and Third-Party Peacemaking in Liberia, Rwanda and Sierra Leone.* Cambria Press, Amherst; Leatherman, J., *et al*. (1999) *Breaking Cycles of Violence*: *Conflict Prevention in Intrastate Crises.* West Hartford, Kumarian Press, Inc.
[85] Coleman, P. (2006).
[86] Richards, D. (ed.) (2000) *Political Complexity: Nonlinear Models of Politics*. Ann Arbor, University of Michigan Press.
[87] Bartoli, A., Bui-Wrzosinska, L., & Nowak, A. (2010).
[88] Bartoli, A., Bui-Wrzosinska, L., & Nowak, A. (2010).
[89] Bartoli, A., Bui-Wrzosinska, L., & Nowak, A. (2010)

Table 1.2. Differentiating between Complicated versus Complex Systems with Historical Examples

Components of Complicated Systems	**Complicated Example**	**Components of Complex Systems**	**Complexity Example**	**Historical Outcome**
Linear	Resource accumulation and lack of economic opportunity led to civil war in the Balkans	Non-linear (*produces asymmetric relations between variables*)	Lagged events and asymmetric relations produced unexpected collective behaviors that are attributed to initiating civil war in the Balkans	Multiple Balkan civil conflicts of various intensities
Predictable	President Obama's 2010 surge will decrease Taliban strength and increase COIN success	Emergence (*interactions between agents creates new interdependencies, new behaviors and new unexpected outcomes*)	President Obama's 2010 surge will decrease Taliban strength dependent on initial conditions and adaptability to conflict conditions on the battlefield	President Obama's 2010 surge resulted in short-term COIN success, while increasing Taliban strength and success in the long-term
Independence	The peacekeeping mission in Mozambique is best understood by cause-and-effect approaches	Interdependence (*agents in the system can influence others*)	Previous violence and the management of various peace initiatives impact future violence intensities and conflict management success	In 1992, the Mozambique Civil War finally came to an end after 15 years of conflict. Peacekeepers who adapted efforts to the changing conflict conditions on the ground are attributed to conflict termination
Order	US military generals lead through a hierarchal command structure	Self-organization (*coordination arises through feedback out of the local interactions between disordered agents*)	Taliban commanders lead through a decentralized command structure	War in Afghanistan led to slow adaptation of tactics by US military and quickly adapting tactics by the Taliban
Classical Game Theory	Warring actors have ranked preferences that do not change	Competitive Efficiency Model	Warring actors have preferences that change and adapt in response to other warring actor groups (a.k.a. competitive efficiencies)	Alliances shifts and splinter during the Afghan Civil War. These alliance shifts were a response to various warring actors' shift in competitive efficiencies (*see* table 6.7)

Complexity acknowledges non-linearity within model building and adjusts accordingly to possible and actual changing dynamics within the system. A major application of complexity theory is the recognition that not all conflict-affected states experience the same dynamics. Of importance, the CEM simulates components of a complex system to show how behaviors and patterns can emerge. Figure 1.2 illustrates oscillatory behavior of highly organized and internationally recognized NSA fighting among other highly organized and internationally recognized NSA within Afghanistan with the aim of achieving political power. Data is from the Uppsala Conflict Data Program (UCDP). Additional evidence from a very different case study, Sudan, demonstrates that after South Sudan became independent in 2011, conflict reignited two years later.[90] Thus, figure 1.3 illustrates two very different countries with different histories demonstrate similar complex dynamics.

Figure 1.2 NSA violence against other NSA within Afghanistan, 1989-2014

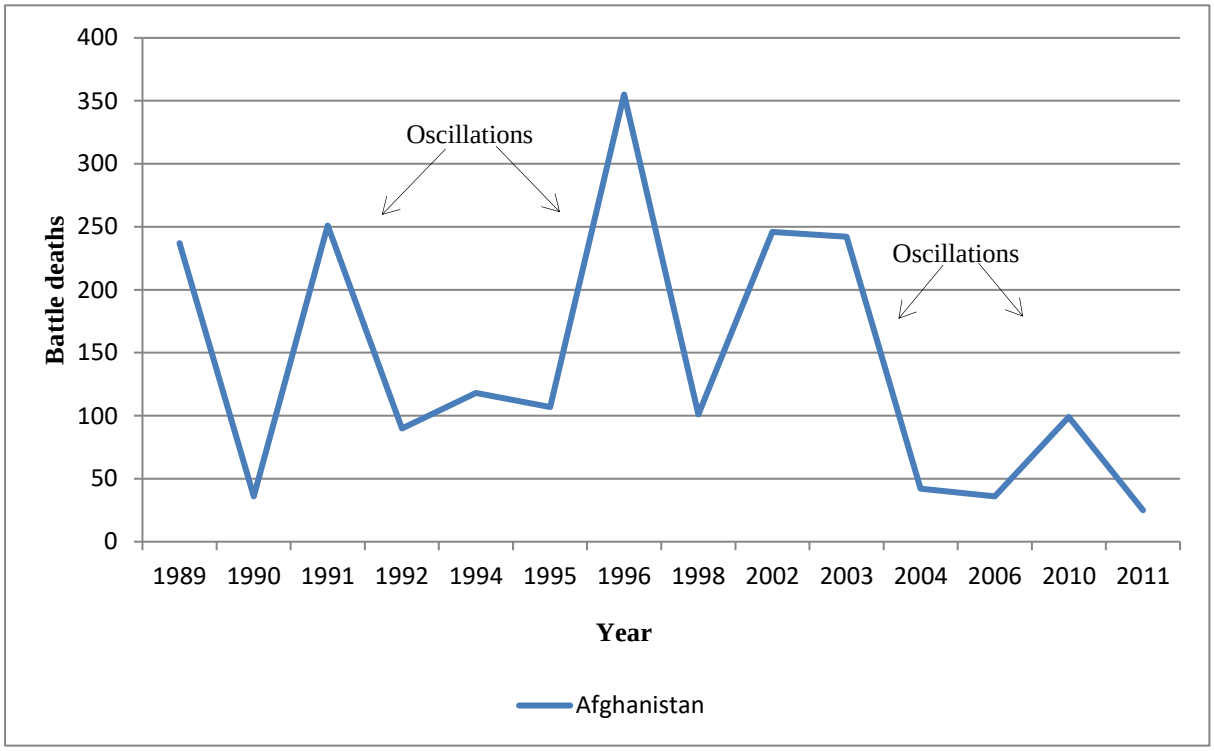


Figure 1.2. NSA violence against other NSA within Afghanistan represents NSA fighting among NSA dyads recorded from the UCDP Non-State Conflict Dataset v. 2.5-2015, 1989-2014 best estimate for deaths in a given year.

[90] Ajak, P. (2014) "South Sudan's Unfinished Business". *The New York Times.* 6th February.

Figure 1.3. Battle-related Deaths in Afghanistan and Sudan, 1989-2015

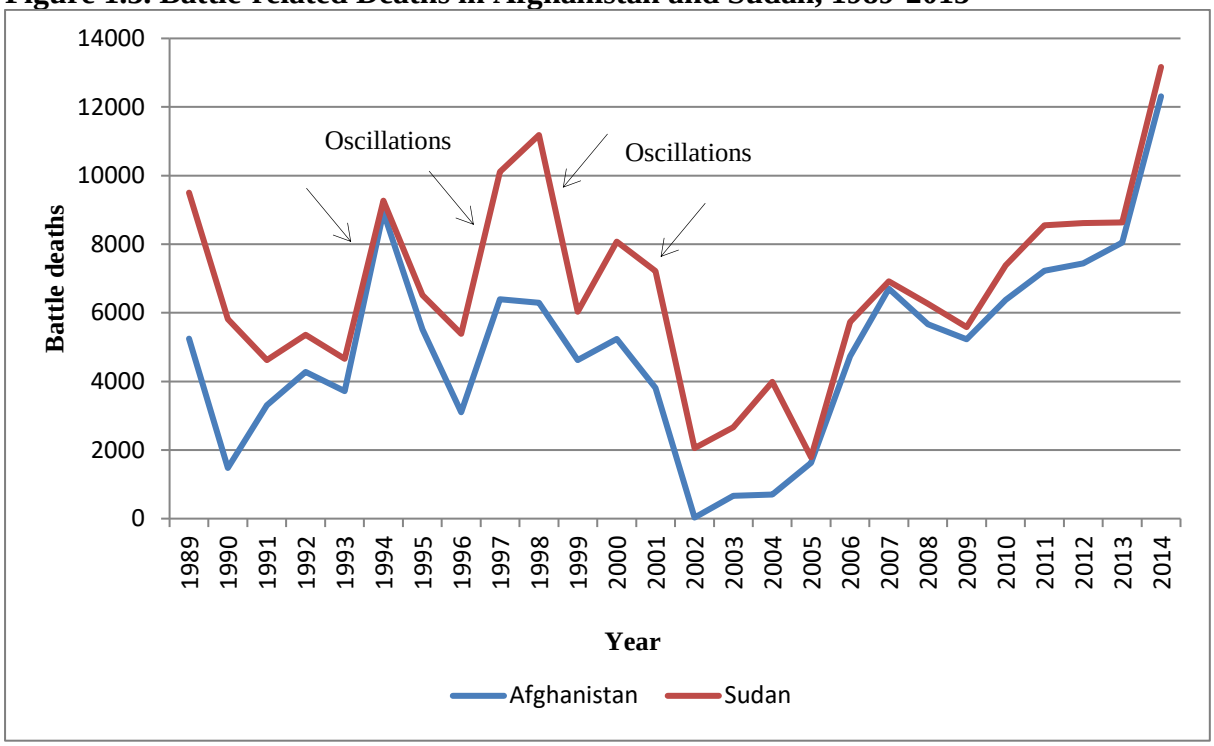


Figure 1.3. Battle-related Deaths in Afghanistan and Sudan illustrates the number deaths in the thousands recorded from the UCDP Battle-Related Deaths Dataset v.5-2015, best estimate for deaths in a given year. Data is from UCDP, which shows battle death counts among rebel groups and a government actor (e.g., military). Interestingly, figure 4 shows similar dynamics in both conflict-affected states that experienced a relapse of conflict.

Although both conflicts terminated at specific periods in both figures and in both cases (e.g., Afghanistan, 1989, 1996, Sudan, 2002), violence rarely reached an equilibrium point of 0 or demonstrate a constant battle-death value. If either Afghanistan or Sudan were stuck in a conflict trap, one would observe levels of violence at more consistent levels, rather than the observed oscillating levels. I argue that it is the interdependent behaviors of *competitive interactions* by competing actor groups that produced these oscillatory behaviors that prohibit these conflict-affected states from settling at equilibrium. Thus, the examples of Afghanistan and Sudan demonstrate that similar variations in violence represented oscillatory behaviors and constituted in a reversion of conflict in both countries.

To summarize this section, table 1.3. compares RCT's interpretation of various conflict outcomes with my interpretation of conflict dynamics. Although game theory and RCT are useful when studying many phenomena within IR (e.g., decision making by political leaders), there is demand for a novel method and theory that can advance the discipline of IR beyond ambiguous approaches and solutions for equilibrium. A complexity theory approach allows modeling of various equilibria to explain processes and behavior within a system. The next

section demonstrates how an interdisciplinary and complexity approach was brought together to model conflict dynamics through the Competitive Efficiency Model (CEM).

Table. 1. 3. Comparison of Rational Choice Theory's Interpretation of Equilibrium and Author's Complexity Framework Interpretation of Equilibrium

	Rational Choice Theory *(Multiple actors always converge to one dyad)*		***Author's Complexity Framework*** *(Multiple dyads do not always converge)*	
	Reached equilibrium	Unable to reach equilibrium	Reached Equilibrium	Unable to reach equilibrium
Military Victory	✓		✓	
Conflict Reversion	✓			✓
Conflict Persistence	✓			✓

1.7. The Competitive Efficiency Model

The CEM demonstrates how variables can interact within one another among multiplayers to produce dynamic behaviors as experienced within a conflict-affected state. The CEM applies a number of statistically significant variables to illustrate how these variables interact that impact the outcome of the system. These behaviors and subsequent conflict outcomes are hypothesized as a consequence of different competitive efficiencies used by actor groups within a conflict-affected state. This approach differs from the majority of IR research that prioritize the strength of statistical relationships as the dominant indicator for understanding relationships between different variables and conflict outcomes.

The CEM mathematically and visually models the dynamics of actor group activity in response to various competitive efficiencies with the aim of achieving political power. How does a group strategize to achieve political power? Arreguin-Toft is one of the few academics who specifically examined the dynamics of power within 'asymmetric conflicts' by focusing on strategy.[91] The CEM builds on Arreguin-Toft's prioritization of strategy over power[92] to understand how different competing parties' competitiveness interact and result in different

[91] Arreguin-Toft defined strategy as an "actor's plan for using armed force to achieve military or political goals", in which strategies are not static but are adaptable based on the conditions on the ground. *See* Arreguín-Toft, I. (2005) *How the Weak Win Wars: A Theory of Asymmetric Conflict.* Cambridge, Cambridge University Press; Siverson, R., & Starr., H. (1991) *The Diffusion of War: A Study of Opportunity and Willingness*. Ann Arbor, University of Michigan Press; Paul, T. (1994) *Asymmetric Conflicts*: War Initiation by Weaker Powers. Cambridge, Cambridge University Press.

[92] Arreguin-Toft's theory was heavily influenced from Mack's theory of asymmetric conflict in which relative power of competing actor groups determines competing actors' goals and motivations can result in conflict where the weaker power can claim victory. *See* Mack, A. (1975) "Why Big Nations Lose Small Wars: The Politics of Asymmetric Conflict". *World Politics.* 27(2): 175-200.Arreguín-Toft, I. (2005), pg. 200.

conflict outcomes. However, I diverge from Arreguin's-Toft's theory by arguing against his dichotomy of same and opposite approach of strategic interaction, which lacks a full explanation of how conflict dynamics lead to particular outcomes. Instead, the CCM simulates how competitiveness between and among actor groups interact to form interdependent relationships that leads to different conflict outcomes. Inefficient competitiveness is mathematically observed as oscillatory behavior and perceived as unanticipated outcomes by the competing parties involved. Of importance, this thesis does not attempt to follow why an actor group uses particular efficiencies of competitiveness

Table 1.4.1illustrates the hypothesized conflict outcomes that are tested by the CEM. If a system experiences both unanticipated behaviors by competing actor groups and the reversion of violent conflict, then the system is unable to settle at equilibrium. If the system is not experiencing unanticipated behavior because the system has either come to some sort of implemented peace agreement, for instance, then that system has reached stable equilibrium. Alternatively, a system may have reached a break in the fighting, but there is no formal agreement or the intensity of the fighting varies but has not resumed to battle-related deaths threshold of <25 battle deaths/year, then that system has reached unstable equilibrium. Thus, this system will either be easily pushed into a phase of conflict reversion or the system could reach equilibrium through the implementation of a formal peace agreement. Finally, if a system no longer experiences conflict reversion and no longer experiences unanticipated behaviors by the involved competing actor groups, then that system has reached stable equilibrium.

Thus, the two hypotheses this thesis tests are:

Hypothesis 1: Actor Groups that use an Inefficient Competitiveness Experience Oscillatory Behaviors, Resulting in Conflict Reversion

Hypothesis 2: A Dominant Actor Group who uses the Most Efficient Competitiveness Experiences Equilibrium, Resulting in Victory

These hypotheses are tested through the analysis of eight independent variables (*see* following section) that are hypothesized to contribute and increase complexity within a conflict-affected state).

Table 1.4. Intrastate Conflict Hypotheses			
		Unanticipated behaviors by competing actor groups?	
		Yes	No
Reversion of violent conflict?	Yes	*Unable to settle at equilibrium* (*e.g.* recurrent or persistent conflict)	*Approaching stable equilibrium* (*e.g.* criminally violent, post-conflict states)
	No	*Approaching unstable equilibrium* (*e.g.* stalemate, ceasefire)	*Reached stable equilibrium* (*e.g.* military or rebel victory)

In summary, a complexity theory approach models how variables *interact* to produce *emergent* behaviors. Applying the CEM to a conflict-affected state allows one to examine various trajectories actor groups follow in response to both the conflict environment and internal relationships. How these hypotheses will be tested is discussed in the following section.

1.8. Methodology and Research Design

The main research objective for this thesis is to quantitatively model the mechanism(s) behind why some conflict-affected states revert back to conflict while others do not. To do so, I use multiple methods: (1) secondary and primary research; (2) statistical analyses; (3) numerical modeling and simulation;(4) case study research and (5) applying a historical narrative. First, after drawing on qualitative and quantitative theoretical and empirical studies of intrastate conflict (*see* literature review in Chapter II) I conduct multiple logistic, multinomial regression, and rare logit analyses (*see* Chapter IV and Appendices A.3-A.9). These statistical analyses are to (a) demonstrate which conflict outcomes (i.e., onset, reversion and persistence) show significant relationships with important independent variables identified from the literature review; and (b) to estimate the parameters for model simulation. These regressions not only demonstrate to the reader how coding differences of the dependent variables can impact model fit, but also how different conflict dynamics show various relationships with independent variables. Chapters VI and VII combine these quantitative methods with a historical narrative perspective to discuss the conflict dynamics within Afghanistan from 1979-2014 from both a macro (1979-2000) and micro (2001-2014) complexity perspective. This mixed methods approach will tease out the how various actor groups were illustrating behaviors that were inefficient and then simulate the conflict dynamics under study with both real-world parameters and hypothetical parameters.

In sum, a combination of conventional (i.e., regressions) and novel methodologies (i.e., the CEM) demonstrate the weaknesses and strengths of conventional methodologies and how novel methods can help facilitate the advancement of IR and conflict studies.

The next few sub-sections discuss what this thesis will not cover, then briefly describe my variable and case study selection, before ending with the structure and organization of the thesis.

1.8.1. What this Thesis Will Not Cover

I would like to acknowledge other major theoretical contributions to the study of intrastate conflict and briefly explain why this thesis will not examine other theoretical debates within the literature. First, as my methodological contribution is primarily within modeling and statistical analysis, I emphasize the critique of these dominant quantitative approaches (e.g., RCT and game theory) within the IR literature. Other dominant approaches, such as neo-liberal institutionalism and neo-realism, will not be thoroughly analyzed, but are noted for their theoretical contribution to the field of conflict studies and their influence on my model development and variable selection.[93] Secondly, my contribution to the literature also centers on the theoretical construction and dynamics of equilibrium. Consequently, there are no other theoretical or methodological studies within conflict studies and IR that stress the conceptualization of equilibrium as thoroughly as RCT and game theory.

1.8.2. Variable Selection

I draw on past quantitative research to examine which variables would be most appropriate to better understand a conflict-affected state. I propose eight variables that are hypothesized to increase the complexity of a system, and therefore, increase the likelihood of conflict reversion. These variables are: (1) dyad number; (2) presence of EA groups; (3) political exclusion; (4) politically active groups; (5) rule of law; (6) relative rebel capacity; (7) bureaucratic quality; and (8) tax capacity. I briefly describe these variables below (a more thorough discussion is provided in Chapter IV) and in table 1.5 and list the main dependent variable in table 1.6.

First, 'dyad number' is the first independent variable under analysis to test my theoretical claim that an increase in actor groups, specifically three or more actor groups fighting in a conflict, increases the likelihood of conflict reversion (see Chapter III for full theoretical justification).

[93] One of the few exceptions is Peterson's work on the Balkans which he applied game theory to demonstrate how emotion and history feedback within an individual society to produce variation in the success or failure of Western intervention in the Balkans. Petersen, R. (2011).

Second, I hypothesize that if a state receives external support, then the likelihood of a reversion to conflict and/or a persistence of conflict increases as the conflict system becomes more complex.

Institutions are a major mechanism to why societies torn by warfare do not devolve into a phase of chaos, because institutions, even if they are maladaptive can provide a structure for stability. Institutions can also reinforce negative attributes such as violence and political exclusion of certain groups.[94] Thus, the third variable is the continuous variable 'political exclusion' Moreover, previous research found that the more active groups there are within a country case, then the risk for conflict onset and recurrence episodes increases.[95] Thus, the fourth independent variable is 'politically active groups'. I use both political exclusion and political activity variables as proxies from the Ethnic Power Relations (EPR) dataset[96] to measure political institutionalization.

Fifth, to complement past research on the connection between conflict reversion and access to state protection and legal accountability,[97] I use the World Bank's World Government Indicator 'Rule of Law' to capture the perceptions of citizens' confidence in the rule and law enforcement. Sixth, the ability to provide security is operationalized as power ratios (i.e., relative rebel capacity) provided by the UCDP Dataset[98] and calculations by Wood.[99] Power ratios demonstrate how a competing actor group's 'fighting capacity', 'mobilization capacity' and 'control' are used to demonstrate an ability to kinetically protect citizens. Therefore, proxies for security are another hypothesized indicator related to increased complexity.

Lastly, economic variables related to conflict reversion are robust (i.e., GDP per capita). As I am modeling variables hypothesized to be significantly related with conflict reversion from a complexity theory framework, theory on influential and interdependent relations between

[94] Ben-Dor, G. (1975) "Institutionalization and Political Development: A Conceptual and Theoretical Analysis". *Comparative Studies in Society and History*. 17(3): 309-325; Wolff, S. (2010) "Building Democratic States after Conflict: Institutional Design Revisited'; *International Studies Review* 12(1): 128–41; Kurtenbach, S., & Mehler, A. (2013) "Introduction: Institutions for Sustainable Peace? Determinants and Effects of Institutional Choices in Divided Societies". *Civil Wars*, 15(1): 1-6.
[95] Cederman, L., & Girardin, L. (2007).
[96] Cederman, L.-E, Wimmer, A., & Min, B. (2010). "Why do Ethnic Groups Rebel? New Data and Analysis". *World Politics*. 62(1): 87-119. Wimmer, A., Lars-Erik Cederman, L-A., & Min, B. (2009) "Ethnic Politics and Armed Conflict: A Configurational Analysis of a New Global Data Set". *American Sociological Review*. 74: 316–337.
[97] Walter, B. (2014).
[98] Cunningham, D., Gleditsch, K., & Salehyan, I. (2009). "It Takes Two: A Dyadic Analysis of Civil War Duration and Outcome. *Journal of Conflict Resolution*. 1-28; Harbom, L., Melander, E., & Wallensteen, P. (2008) "Dyadic Dimensions of Armed Conflict, 1946—2007". *Journal of Peace Research.* 45(5) 697-710 .
[99] Wood, R. (2010).

political and economic institutionalization provides a good baseline for variable selection. I control for GDP and use 'bureaucratic quality' and 'tax capacity' as proxies for economic opportunity from Hendrix's dataset.[100]

Table 1.5. Complexity Variables Under Analysis

Independent Variable	*Increases system complexity*	*Definition*	*Database*
Political activity	✓	Access to political representation	EPR
Political exclusion	✓	Politically excluded groups	EPR
Relative rebel capacity	✓	Power ration between NSA and GA	UCDP
Rule of law	✓	Access to state protection and legal accountability	WGI
Bureaucratic quality	✓	State capacity to carry out government functions	Hendrix (2010)
Tax capacity	✓	State capacity to tax	Hendrix (2010)
Dyad number	✓	Number of warring groups	UCDP
EA involvement	✓	If EA are involved in the conflict	UCDP

Table 1.6. Main Dependent Variable of Interest for CEM

Dependent Variable	*Database*
Conflict reversion (1-year period of peace)	UCDP

1.8.3. Case Study Selection

I develop a set of cases from a list of countries from 1946-2014 that experienced intrastate conflict over government incompatibility. The set of cases are compiled from the UCDP Armed Conflict Dataset v.4-2015,[101] the UCDP Dyadic Dataset v. 1-2015[102] (i.e., a

[100] Hendrix, C. (2010) "Measuring State Capacity: Theoretical and Empirical Implications for the Study of Civil Conflict". *Journal of Peace Research.* 47(3): 273-285.
[101] Pettersson, T., and Wallensteen, P. (2015) "Armed Conflicts, 1946-2014". *Journal of Peace Research* 52(4); Gleditsch, N., *et al*. (2002) "Armed Conflict 1946-2001: A New Dataset". *Journal of Peace Research* 39(5).
[102] Harbom, L., Melander, E., & Wallensteen, P. (2008).

disaggregated version of the UCDP Armed Conflict Dataset) and the UCDP Conflict Termination Dyadic Dataset v.2010-1. To assist with reducing bias regarding both the variable and case study selection, I also draw on the highly-applied dataset of Fearon and Laitin (FL 2003) from their 2003 study, "Ethnicity, Insurgency, and Civil War".[103]

Additionally, I apply the UCDP Conflict Termination Dyadic Dataset v.2010-1, 1946 – 2009, which provides information on specific start and end dates for conflict activity and means of termination for each conflict episode at the dyad-level and corresponding UCDP Dyadic Dataset v1– 2015. Next, I separate interstate conflict from intrastate as coded by the UCDP. Then, I separate intrastate conflict by incompatibility (i.e., territory, government, territory and government) and their outcomes in the following UCDP categories: recurrent, ceasefire/stalemates, peace agreement, low activity and victory. Furthermore, some conflicts transition from one category to another, so I also include those conflicts that either formally terminated through a peace agreement or terminated due to low activity, but then transitioned from a conflict over government incompatibilities to a post-conflict state suffering from high criminal violence. [104]

Lastly, I present Afghanistan as an exploratory case study that is representative of all major hypotheses put forward within this thesis (table 1.2). Afghanistan is analyzed longitudinally to compare why and how particular conflict outcomes materialized. Also, Afghanistan is an ideal case as it involves conditions ripe for recurrence and relapse including variables such as widespread poverty, stagnant economic growth, a weak central government, mountainous territory, widespread involvement of external actors, heterogeneous population, and a history of intense conflict. Thus, Afghanistan is the most appropriate case as it has been involved in a long war of high contemporary relevance.

1.9. Organization of the Thesis

Following the introductory chapter, this thesis is structured as follows:

Chapter II situates where and how complexity theory contributes to both IR and the conflict studies literature. The first half of Chapter II discusses both qualitative and quantitative studies that have contributed to intrastate conflict dynamics, specifically conflict reversion, and the major gaps within these theories and models. Following this discussion, I introduce the most

[103] Fearon, J., & Laitin, D. (2003).
[104] On the relation and dynamics between political and criminal violence *see* Kalyvas, S. (2015) "Civil Wars and Organized Crime: Insights from the Intersection of Two Phenomena". *Journal of Conflict Resolution*. 59(8): 1517-1540.

widely accepted theories and models applied to understanding conflict reversion: rational choice and game theory. Although rational choice and game theory are the dominant theoretical framework and methods for analyzing conflict reversion, I critique where rational choice and game theory are unable to explain conflict reversion. I then introduce complexity theory, and argue for complexity theory's ability to advance the discipline's understanding of conflict reversion.

Chapter III proposes a new theoretical explanation to why some states experience conflict reversion. I begin by highlighting the problematic approach of applying 2-actor game models to the study of conflict reversion. Next, I examine the complementary link between ecological and social systems to resolving this 2-player problematic approach. I then introduce a novel model, called the Competitive Efficiency Model (CEM) that combines eco-socio system dynamics and modeling techniques to help explain conflict reversion. This model is adapted from the natural sciences in a novel way to demonstrate the mechanism behind why certain conflicts recur or relapse. Additionally, I explain the applicability of the CEM by demonstrating mathematical principles of the model to hypothetical scenarios.

Chapter IV discusses the research design and preliminary statistical analyses of the thesis. First, I operationalize conflict. Then, I develop a set of cases from a list of countries from 1946-2014 that experienced intrastate conflict over government incompatibility. The set of cases are compiled from the UCDP Armed Conflict Dataset v.4-2015, the UCDP Dyadic Dataset v. 1-2015 and the UCDP Conflict Termination Dyadic Dataset v.2010-1. Also, to assist with reducing bias regarding both the variable and case study selection, I also draw on the highly-applied datasets of Fearon and Laitin from their 2003 study, "Ethnicity, Insurgency, and Civil War". From these numerous cases, I outline my cases study rationale and select the case of Afghanistan (1979-2014) as an exploratory case study that is representative of all major hypotheses put forward within this thesis. Next, I justify the selection of particular independent variables and how these variables are utilized for CEM simulation and hypothesis testing. Lastly, this chapter gives further evidence that not all conflict dynamics should be treated alike and that different conflict dynamics share many indicators of risk, but also differ in important ways.

Chapter V applies the statistically significant independent variables from Chapter IV as controls. I then add these controls to regress eight independent variables that are hypothesized to increase complexity within a conflict-affected state. These variables are: (1) dyad number; (2) presence of EA groups; (3) political exclusion; (4) politically active groups; (5) rule of law;

(6) relative rebel capacity; (7) bureaucratic quality; and (8) tax capacity. I then revisit my two main hypotheses, which are subsequently tested by the CEM. Parameter estimates from regression models of best fit are simulated by the CEM. I then demonstrate how one can model estimated parameters from statistical analyses to produce complex behaviors through the simulation of the CEM.

Chapters VI & VII combines what was learned from Chapters II-V and applies these analyses to the case of Afghanistan. The different conflict and political processes in Afghanistan are divided across four temporal periods of conflict phases that represent different equilibria: (1) 1979-1989; (2) 1989-2001; (3) 2001-2006; and (4) 2006-2014. I use a complexity theory framework to tease out how the Taliban organized and proliferated to become the dominant NSA force concurrent with one of Afghanistan's most chaotic and violent periods. Drawing on literature from Chapter II and literature specific to the conflicts within Afghanistan, I explain how failures from the Afghan central government allowed for the rise and dominance of Afghan NSA. I use a historical narrative approach to interpret mechanisms behind the variation of Afghan conflict outcomes (and therefore variation on the dependent variables). Additionally, I simulate parameter estimates specific to quantitative data collected from the case of Afghanistan to complement the simultaneous historical narrative.

Chapter VIII: summarizes key theoretical and empirical findings and main policy implications. I close by discussing some limitations within the thesis that has allowed room for future research on conflict reversion. Overall, I discuss how this thesis contributes to the IR discipline by challenging RCT's interpretation of equilibrium, a deemphasis on economic factors and a shift to basic human security as priority and political inclusion as secondary to decreasing the likelihood of reversion. Also, this thesis emphasizes an adaptable process rather than a cause and effect process for conflict management and peacekeeping literature.

CHAPTER II.

Literature Review

Intrastate Conflict as a Complex System

2.1 Introduction

This chapter gives an overview and analysis of the main drivers of conflict reversion and conflict dynamics (i.e., onset, reversion, persistence) more broadly. The first half of this chapter covers the major theoretical and empirical studies that contribute heavily to the development and advancement of intrastate conflict studies and the IR discipline. The purpose of this first half of the chapter is to gain a fuller understanding of why I choose a variety of indicators stemming from institutional, security-related and economic indicators to describe my competitiveness parameter. Additionally, the literature review reveals that research on conflict dynamics does not consider dynamic relations among variables or a thorough understanding of equilibrium. These omissions often overlook major contributory factors in determining why some conflicts are recurrent or relapse compared to others that terminate.[105] Thus, the second half of this chapter introduces the reader to complexity theory with empirical examples that will help the reader understand the applicability of complexity to intrastate conflict dynamics.

2.2. Dominant Empirical Contributions to Conflict Dynamics

Empirically, the majority of research finds that peace agreements or negotiated settlements are less stable than military victories as peace agreements are subject to credible commitment problems.[106] Commitment problems are a consequence of previous warring groups who come to a negotiated settlement, but are unable to implement or commit to peace because of a fear of defection. Peace agreements are built on trust between and among competing parties and this trust is severely damaged during conflict.[107] Therefore, the incentive for a competing party to defect and continue to fight is high, which can lead to persistent conflict or conflict reversion.[108]

[105] There are some exceptions related to understanding the dynamics of conflict. *See* Goldstone, J., Kaufmann, E., & Toft, M. (2012) *Political Demography: How Population Changes are Reshaping International Security and National Politics*. Oxford, Oxford University Press.
[106] Kreutz, J. (2010); Walter, B. (2002); Walter, B. (2004). Arguments for the durability of post-Cold War peace agreements via power-sharing, *see* Hartzell, C., & Hoddie, M. (2007) *Crafting Peace: Power-Sharing Institutions and the Negotiated Settlement of Civil Wars*. University Park, Pennsylvania State University Press; Pearson, F. *et al*. (2006).
[107] Kirshcher, S. (2014) *Trust and Fear in Civil Wars: Ending Intrastate Conflicts*. Lanham, Roman and Littlefield.
[108] Toft, M. (2010).

Conflicts that end in victory are most likely the result of strong authoritative governments with large armies, which are able to swiftly quell NSA rebellion.[109] Alternatively, others argue that victories by rebel groups are found to uphold a more sustainable peace.[110] Military victories allow for the defeat by one or all of the competing parties,[111] which affords a more stable state as the victor is able to monopolize violence.[112] Victory also excludes other parties from competing for political power. Although victories are argued to be the most stable outcomes, victories are increasingly the least represented of all intrastate conflict outcomes.[113]

In general, empirical evidence demonstrates that intrastate conflicts that end in government victory tend to be a consequence of autocratic, militarily powerful regimes in which no or little external intervention was present.[114] In contrast, victory by NSA tend to rely on favorable geographic factors (e.g., mountainous terrain, porous borders) and intervention efforts in support of NSA group(s).[115] Therefore, the rise of indeterminate outcomes, such as peace agreements (which were less likely until the end of the Cold War),[116] is a consequence of external parties' evolving participation in the conflict process (e.g., migration, external support of NSA, government regimes, etc.), and therefore an increase overall complexity within a conflict-affected state.

Subsequently, scores of variables and indicators are applied and attributed to understand why conflict emerges, changes, and how conflicts terminate. Conflict-affected states are associated with a variety of statistically significant variables that demonstrate in repeat analyses to correlate with the onset, duration and reversion of conflict. Call concluded through statistical regressions and case study analyses there is a *significant difference between variables that are correlated with conflict onset and variables correlated with recurrence*.[117]

[109] Goodwin , J., & Skocpol, T. (1989), "Explaining Revolutions in the Contemporary Third World." *Politics and Society*. 17(4): 489-509; Kreutz, J. (2010).
[110] Toft, M. (2009); Mason, D., Weingarten, Jr., J., & Fett, P. (1999) "Win, Lose, or Draw: Predicting the Outcome of Civil Wars". *Political Research Quarterly;* 52(2):239–68; Mason T., *et al*. (2011) "When Civil Wars Recur: Conditions for Durable Peace after Civil Wars*." International Studies Perspectives* 12(2): 171–89.
[111] Licklider, R. (1995) "The Consequences of Negotiated Settlements in Civil Wars, 1945-1993". *The American Political Science Review*. 89(3):681-690.
[112] Fortna, V. (2004) "Does Peacekeeping Keep Peace? International Intervention and the Duration of Peace after Civil War". *International Studies Quarterly*. 48(2): 269-292.
[113] Human Security Report Project (2012).
[114] Toft, M. (2009).
[115] Fearon, J. (2010); Fearon, J., & Laitin, D. (2003).
[116]Walter, B. (2014).
[117] Call, C. (2012).

Table 2.1 summarizes the main literature on civil war dynamics, which are related primarily to political and militaristic and socio-economic risk factors.[118] Table 2.1 also includes the variables under interest for CEM simulation that are hypothesized to increase complexity within an conflict-affected state and the likelihood of conflict reversion. Of interest, the majority of academics and researchers who contribute to quantitative research in this area are influenced by a RCT perspective.

[118] Political grievances are inclusive of politics of identity and polarization theories.

Table 2.1. Summative Quantitative and Qualitative Review of Civil War Dynamics[119]	
Indicators	**References**
Political indicators	
Power-sharing agreements/ Power exclusion	Sisk, 1996; Roeder & Rothchild 2005; Hartzell & Hoddie 2003, 2007; Call, 2012; Walter, 2002; Tull & Mehler, 2005; O'Leary & Silke, 2007
Non-majoritarian democratic system	Mukherjee, 2006
Weak state institutions	Fearon & Laitin, 2003; Ghani & Lockhart, 2009; WDR, 2011
Capacity	Doyle & Sambanis, 2006; Walter, 2014
Coercion/military indicators	
Third-party guarantees	Walter & Snyder, 1999; Walter, 1997, 2002, 2004; Hartzell & Hoodie, 2003
International military capacity (multi-dimensional) to support negotiated settlements	Doyle & Sambanis, 2006; Collier, *et al*., 2003; Fortna, 2004
State with large military	Fortna, 2004
Existence of DDR Program / Existence of SSR Program	Toft, 2010; Collier, *et al*, 2003; Collier, 2003; Humphreys & Weinstein, 2008; Toft, 2009
Military spending	Collier & Hoeffler, 2004
Socio-economic indicators	
Grievances	Collier & Hoeffler, 2004; Sambanis, 2001;
Low infant mortality rate	Walter, 2004; WDR, 2011
Low GDP per capita	Collier *et al*, 2003; Fearon & Laitin, 2003; Sambanis, 2004; WDR, 2011
Economic growth	Collier *et al*, 2003; Fearon & Laitin, 2003; Nitzschke & Malone, 2012; Paris, 2004; Flores & Nooruddin, 2009; Esteban, & Ray, 1994; Carment,, Pres & Samy, 2011; Auvinen, 1997; Smith, 2004; Brock, et al., 2012; WDR, 2011
Sociological	Keen, 2008; Silke, 2007; Conteh-Morgan, 2004; Fukuda-Parr, & Messineo, 2012; Lake & Rothchild, 1998a, 1998b; Brock, et al., 2012
Ethnolinguistic fractionalization (ELF)	Collier & Hoeffler, 2000
Identity wars	Doyle & Sambanis, 2000; Lake & Rothchild, 1998
Conflict dynamics	
Duration of war	Walter, 2004; Fortna, 2004; Kalyvas, 2006
Partition	Walter, 2004; Sambanis, 2000
Diaspora, refugee influxes	Collier, *et al*, 2003; Lyons, 2006; Newland, 1993
War ending in victory	Collier *et al*, 2003; Mason & Fett, 1996; Suhrke & Samset, 2007; Quinn, Mason, & Gurses, 2007; Licklider 1995; Hartzell &Hoddie, 2003
Environmental indicators	
Environmental degradation	Hauge, Wenche, & Ellingsen, 1998; Butler & Gates, 2012
Resources	Mehlum, K., & Torvik, M, 2006
Competitive Efficacy Model	
Political exclusion	Call, 2012; Cederman, Wimmer & Min, 2010
Rule of Law	World Development Report, 2011
Power ratios	Wood,2010; Harbom, Melander, & Wallensteen,2008
Presence of peacekeepers/ multiple dyads	Högbladh, Pettersson, & Themnér, L. 2011
Bureaucratic quality	Hendrix, 2010
Tax capacity	Hendrix, 2010

[119]Author's reviewed contribution and *see* Call, C. (2012), p. 29.

Intrastate conflict onset, reversion and persistence are associated with weak formal institutions.[120] The consequence of intrastate conflict formal and informal institutions affords NSA a niche (i.e., the role and requirements a population fulfills to survive and reproduce) within informal networks and institutions in exchange for power.[121] Weak state institutions are a reflection of both formal (e.g., laws, organizations) and informal (e.g., shared beliefs) rules and norms, which are implemented and enforced by state and non-state actors.[122] Within a post-conflict state, specific variables such as legal accountability, an empowered public, and transparent institutional procedures are correlated with a stronger government and a decreased likelihood of conflict reversion.[123] Thus, both formal and informal institutions are a reflection of a state's capacity to either deter or facilitate violence. [124]

Socio-economic factors related to poverty are argued to complement and exacerbate conflict onset, persistence and reversion inclusive of mortality (*i.e.* infant and life expectancy) and literacy rates.[125] Paris,[126] Collier,[127] Fearon and Laitin,[128] and Nitzschke and Malone[129] argued for prioritizing economic development, especially post-conflict development, to quell and/or reduce the likelihood of conflict reversion. However, these economic variables are difficult to separate between cause and effect as most countries that experience intrastate conflict are

[120] King, C. (2005) "The Uses of Deadlock: Intractability in Eurasia". In: Crocker, C., Hampson, F., & Aall, P. (eds.) *Grasping the Nettle: Analyzing Causes of Intractable Conflict*. Washington, D.C., United States Institute of Peace Press. pp. 269-294; Carment, D., Prest, S., & Samy, Y. (2011) "The Causes and Measurement of State Fragility". In: Naude, W., Santos-Paulino, A., & McGillivray, M. (eds.). *Fragile States: Causes, Costs and Response.* Oxford, Oxford University Press. pp. 43-67; Keen, D. (2008) *Complex Emergencies*. Cambridge, Polity Press; O'Leary, B., & Silke, A. (2007) "Conclusion. Understanding and Ending Persistent Conflicts: Bridging Research and Policy". In: O'Leary, B., & Tirman, B. (eds.) *Terror, Insurgency, and the State: Ending Protracted Conflicts*. Philadelphia, University of Pennsylvania Press. pp. 387-426. p. 400-403; Conteh-Morgan, E. (2004) *Collective Political Violence: An Introduction to the Theories and Cases of Violent Conflicts*. New York, Routledge; Smith, D. (2004) "Trends and Causes of Armed Conflict". *Berghof Handbook for Conflict Transformation*. pp. 1-16; Fukuda-Parr, S., & Messineo, C. (2012); Brock, *et. al.(*2012); Carment, D., Prest, S., & and Samy, Y. (2007) "Assessing Fragility: Theory, Evidence and Policy". *Politorbis.* 42 (1): 13-19; *WDR 2011* (2011).

[121] Fukuda-Parr, S., & Messineo, C. (2012); Newland, K. (1993) "Ethnic Conflict and Refugees". In: Brown, M. (ed.) *Ethnic Conflict and International Security*. Princeton, Princeton University Press; Hauge, W. & Ellingsen, T. (1998); Auvinen, J. (1997) "Political Conflict in Less Developed Countries 1981–1989". *Journal of Peace Research*. 34(2): 177–195.

[122] WDR 2011 (2011). p. xvi.

[123] Walter, B. (2014).

[124] Ghani, A., & Lockhart, C. (2009) *Fixing Failed States: A Framework for Rebuilding a Fractured World.* Oxford, Oxford University Press. p. 108.

[125] *See* Walter, B. (2004).

[126] Paris, R. (2004) *At War's End: Building Peace after Conflict*. Cambridge: Cambridge University Press.

[127] Collier, P. (2003).

[128] Fearon, J., & Laitin, D. (2003).

[129] Nitzschke, H., & Malone, D. (2012) "Economic Dimensions of Civil War". In: Brown, G., & Langer, A., (eds.) *Elgar Handbook of Civil War and Fragile States.* Cheltenham, Edward Elgar Publishing Limited. pp. 72-92.

economically stagnant and/or poor economic institutions collapse in the wake of conflict.[130] Thus, the ability for a state to increase economic growth during and after a conflict is severely hindered.

Political factors that enforce coercive efforts like third party agreements, demobilization, disarmament and reintegration (DDR) and security sector reform (SSR) are more mixed.[131] Alternatively, political factors that are engaged with exclusionary elements within the governing body are associated with reversion,[132] while successful political factors such as power-sharing are more likely if third-party guarantees are part of the negotiation.[133] Conversely, others argue that power-sharing results in unintended consequences including the resurgence of violence and civil war.[134] For example, power-sharing was applied to Afghanistan following the 2001 US and NATO invasion. As a consequence, rebel incentives for violence in order to gain political and material standing became the preferred method for gaining political power. Roeder and Rothchild called this phenomenon "the dilemma of power-sharing" and argued that "power-dividing" (that is, the "separation of powers in…political institutions") are more likely to lead to sustainable peace and a democratic government.[135]

Recent work on conflict dynamics led to several important findings, including political exclusion/inclusion as the key risk factor for conflict reversion, while widely accepted risk factors for onset such as economic factors, social and/or regime type (e.g., democratization policies) were not predictors of reversion.[136] These findings demonstrate strong evidence

[130] Sambanis, N. (2004a). On economic recovery and investment *see* Flores, T., & Nooruddin, I. (2009) "Democracy under the Gun: Understanding Postconflict Economic Recovery". *Journal of Conflict Resolution*, 53(1): 3–29.
[131] Collier, P. (2003); Humphreys, M., & Weinstein, J. (2008) "Who Fights? The Determinants of Participation in Civil War," *American Journal of Political Science*. 52 (2) 436-455; Toft, M. (2009); Esteban, J-M., & Ray, D. (1994) "On the Measurement of Polarization" *Econometrica*. 62 (4): 819-851.p. 824.
[132] Call, C. (2012).
[133] Support for power-sharing agreements toward enduring peace is a consequence of a post-Cold War emphasis on supporting negotiated peace settlements versus the Cold War era tactic of supporting a regime or rebel group by a hegemonic state. *See* Hartzell, C., & Hoddie, M. (2007); Sisk, T. (1996) *Power Sharing and International Mediation in Ethnic Conflicts* Washington, D.C., U.S. Institute of Peace Press; Walter, B. (2002); Sambanis, N. (2001) "Do Ethnic and Nonethnic Civil Wars Have the Same Causes?: A Theoretical and Empirical Inquiry (Part 1)". *Journal of Conflict Resolution.* 45(3): 259-282.,
[134] Rothchild D., & Roeder, P. (2005) "Power-sharing as an Impediment to Peace and Democracy," In: Rothchild D., & Roeder, P (eds.) *Sustainable Peace: Power and Democracy After Civil Wars* Ithaca, Cornell University Press. pp. 29-50; Tull, D., & Mehler, A. (2005) "The Hidden Costs of Power-Sharing: Reproducing Insurgent Violence in Africa". *African Affairs*. 104(416): 375-398; Roeder, P., & Rothchild, D. (2005) "Dilemmas of State-Building in Divided Societies". In: Roeder, P., & Rothchild, D. (eds.). *Sustainable Peace: Power and Democracy After Civil Wars*. Ithaca, Cornell University Press. pp. 1-25; Roeder, P. (2005) "Power Dividing as an Alternative to Ethnic Power Sharing". In: Roeder, P., & Rothchild, D. (eds.). *Sustainable Peace: Power and Democracy After Civil Wars*. Ithaca, Cornell University Press. pp. 51-82. p. 56
[135] Roeder, P., & Rothchild, D. (2005); p. 6. Roeder, P. (2005), p. 76.
[136] Call, C. (2012).

against the highly-debated ELF risk factor as significant for onset but significant for reversion. Thus, this finding has led to a major contribution within the literature regarding the differences between risk factors associated with onset and/or recurrence.

Environmental factors such as drought and flooding have led to some intrastate conflict experts to explore how the environment plays a role in various conflict processes.[137] However, this area is quite new, so causal mechanisms between environmental degradation and conflict onset, reversion or conflict duration are unknown or have not been thoroughly analyzed.

Lastly, variables correlated with the dynamics of conflict-affected states include states that experienced prior conflict[138] and more mixed results between the severity of the conflict and conflict recurrence.[139] Conflict dynamics such as the length of a conflict, conflict severity and outcome of the conflict have all been shown to be important indicators of recurrence. Longer wars were found to extend the period of peace,[140] while others found an inconclusive relationship between conflict recurrence and the length of conflict.[141] The severity of conflict has shown to produce a negative correlation with conflict reversion,[142] however others have not found a relationship.[143] Thus, *indicators related to conflict dynamics is still heavily debated and inconclusive.*

In summary, there are two areas of concern that stem from quantitative studies attributed to intrastate conflict: (1) the literature has not satisfactorily demonstrated the significance of separating conflict categories into different dependent variables and how doing so can affect statistical findings (the exception is Call's 2012 book); and (2) statistical regressions only partially advance the study of conflict. Generally, quantitative IR tests a large number of variables for statistical significance at the expense of predictive power.[144] This emphasis and over-reliance on significant variables hinders a comprehensive understanding of why some conflicts are recurrent or relapse. This is where my approach can help. Complexity theory can be utilized to produce models, which use statistically significant results to develop baselines

[137] Hauge, Wenche, & Ellingsen, 199; Butler & Gates, 2012; Mehlum, K., & Torvik, M, (2006) "Institutions and the Resource Curse" *The Economic Journal*. 116: 1–20.
[138] For example, longer wars allow both parties to exhaust material and psychological credit, which increased the chance of a durable peace. *See* Fortna, V. (2004). On information problems resulting in different types of violence and the extension or termination of civil war *see See* Kalyvas, S. (2006). For an overall view on prior conflict intensity and civil war outcome *see* Pearson, F. *et al*. (2006).
[139] Doyle, M., & Sambanis, N. (2006).
[140] Fortna, V. (2004).
[141] Doyle, M., & Sambanis, N. (2006).
[142] Doyle, M., & Sambanis, N. (2006).
[143] Walter, B. (2004).
[144] Ward, M., Greenhill, B., & Bakke, K. (2010).

and thresholds as inputs offer a more holistic and dynamic model. Universal statistical benchmarks are widely reported within conflict and peace studies, but building a model that demonstrates general mechanisms must capture the importance of various interacting variables, dependent on the context and temporal snapshot of the case under analysis. Moreover, there are inconsistencies within the quantitative empirical literature related to different risk factors that contribute to conflict reversion versus onset. These inconsistencies arise from the operationalization and measurement of variables, which affect statistical significance (*see* Chapter IV), while variables found to be associated with conflict and violence can be highly subjective.[145] Lastly, statistical models are sometimes developed to generate predictions, but an over-reliance on statistical significance does not guarantee accurate prediction. Some argue that other factors such as the type of control variables used are attributed to inconsistent results[146] while others argue against the unreliable nature of databases.[147]

Although there are common themes and agreement on statistically significant variables, the literature is in contention with contradictory quantitative results from numerous studies. Much of the research on conflict reversion is lacking and suffers from lack of data, bias, context, coding differences and measurement errors. These faults are a major indictor to why many studies find inconsistent and contradictory results in much of the research on intrastate conflict.

2.3. Dominant Theoretical Contributions to Conflict Dynamics

Theoretically, the dominant explanation to why there is a higher rate of conflict reversion within the last 15-20 years is that less stable conflict outcomes, such as negotiated settlements, are more common as many of these settlements are not implemented.[148]At present, conflict theorists argue that conflicts that end in a peace agreement are more likely to recur because competing parties have the ability and capacity to resume armed conflict;[149] that is, negotiated settlements allow competing parties to maintain their organizational structure and capacity within the post-conflict environment, even if SSR is included within the settlement.[150] Others,

[145] For example, Fearon reported different results using the same data as Collier and Hoeffler in determining whether or not there is a link between economics and conflict. *See* Fearon, J. (2005). Fearon, J., & Laitin, D. (2003). Collier, P., & Hoeffler, A. (2002) "On the Incidence of Civil War in Africa." *Journal of Conflict Resolution*. 46 (1): 13-28. Collier, P., & Hoeffler, A., (2004).

[146] Dixon, J. (2009) "Emerging Consensus: Results from the Second Wave of Statistical Studies on Civil War Termination". *Civil Wars.* 11:2, 121-136.

[147] Hegre, H., *et. al* (2011) "Predicting Armed Conflict, 2010-2050". *The Peace Research Institute Oslo (PRIO)*. 21st November.

[148] Toft, M. (2009); Toft, M. (2010); Human Security Report Project (2012). Hironaka, A. (2008).

[149] Wagner, R.. (1993) "The Causes of Peace". In: Licklider, R. (ed.) *Stopping the Killing: How Civil Wars End*. New York, New York University Press. p. 235-268.

[150] Licklider, R. (ed.) (1993) *Stopping the Killing: How Civil Wars End*. New York, New York University Press.

such as Licklider, theorize that durable peace is possible if a peace agreement is the outcome of conflict.[151] For instance, strengthening the size of the governing coalition to allow for greater political inclusion early in the post-conflict state allows for a successful peace process.[152]

During the Afghan Civil War (1992-1998) and during the US and NATO-led occupation of Afghanistan (2001-2014), refugees flowed in and out of Afghanistan, Iran, Pakistan, and other neighboring states. The surge of refugees along the Northwest Frontier during the Soviet invasion brought tension and conflict into Pakistan. While armed insurgents sought refuge in Pakistan, young Taliban fighters were recruited for jihad. Scholars attribute these societal, economic and political breakdowns as important factors which "diffused"[153] across state territorial boundaries and destabilized neighboring states.[154] Subsequently, conflict onset and reversion are widely viewed as a consequence of social injustices directed at specific groups when there is a breakdown within a society,[155] while others view conflict as a response to norm emergence that spreads domestically and internationally[156] via "diffusion" and/or "escalation" or clustering.[157]

While some scholars argue ethnic conflict is a result of 'ancient hatreds', and ethnic passions,[158] others argue that these factors do *not* directly cause conflict.[159] Rather, Bates argued that conflict is a consequence of an erosion of state institutions and organizations that perpetuate violence.[160] Consequently, the collective fears of the population spread in combination with unmet needs (e.g., justice, security, resources) that can lead to aggression and

[151] Mukherjee, B.. (2006) "Why Political Power-sharing Agreements Lead to Enduring Peaceful Resolution of Some Civil Wars, but not Others?" *International Studies Quarterly* 50(2): 479-504.
[152] Joshi M., & Mason T. (2011) "Civil War Settlements, Size of Governing Coalition, and Durability of Peace in Post-Civil War States". *International Interactions*. 37 (4):388-413.
[153] Diffusion "occurs when conflict in one area alters the likelihood of conflict elsewhere" in that "information flows that condition the beliefs of ethnic groups in other societies" (p. 4). Escalation "Occurs when additional, foreign participants enter an otherwise 'internal' conflict" and is "driven by alliances between transnational kin groups as well as by intentional or unintentional spillovers, irredentist demands, attempts to divert attention from domestic problems or by predatory states that seek to take advantage of the internal weaknesses of others". p.4. Houweling, H., & Siccama, J. (1988); Lake, D., & Rothchild, D. (1998a) "Spreading Fear: The Genesis of Transnational Ethnic Conflict". In: Lake, D., & Rothchild, D. (eds.) *The International Spread of Ethnic Conflict: Fear, Diffusion, and Escalation*. Princeton, Princeton University Press. pp. 3-32. p.4
[154] Houweling, H., & Siccama, J. (1988) *Studies of War*. Boston.
[155] Merton, R. (1938) "Social Structure and Anomie". *American Sociological Review*. 3(5): 672-682.
[156] Finnemore, M., & Sikkink, K. (1998) "International Norm Dynamics and Political Change" *International Organization*. 52(4): 887-917.
[157] Lake, D., & Rothchild, D. (1998a), p.4.
[158] Kaplan, R. (1994) "The Coming Anarchy". *The Atlantic*.
[159] Brown, M. (ed.) (1996) *The International Dimensions of Internal Conflict*. Cambridge, MIT Press. Fearon, J. (2005) "Primary Commodity Exports and Civil War". *Journal of Conflict Resolution*. 5 (49): 483-507; Bates, R. (2008) *When Things Fell Apart: State Failure in Late-Century Africa*. Cambridge, Cambridge University Press. p. 10-11, 13; Lake, D., & Rothchild, D. (1998a).
[160] Bates, R. (2008).

conflict.[161]Similarly, Gurr's relative deprivation theory argued that marginalization of certain groups result in a destabilization of a group's expectations of economic and political opportunity and availability of economic and political power.[162] These inequalities, in combination with cultural differences and socioeconomic or political inequalities, are found to increase tensions among different groups within a population that lead to resentment, and in some cases, to conflict.[163] Without a strong central government to provide security, individuals turn to ethnic or tribal communities for security, economic opportunities and other basic needs.[164] For example, poverty and conflict are linked with conflict onset, reversion and persistence because of weak and limited military and government capacity, the ability for rebel groups to mobilize, and economic and security incentives that are "embedded in social structures".[165] Such states suffer from various "gaps" (i.e., capacity, security or legitimacy) within state institutions, which can induce conflict.[166] The inability for a state to fill these gaps opens a vacuum where individuals, many of whom are NSA, to manipulate and capitalize on cultural symbols, grievances and identities in order to mobilize groups.[167] For instance, Afghanistan is a textbook example of perpetual poor governance led by self-interested elites who preserve or expand their power through clientele political networks.[168] Consequently, Afghanistan's political, economic and security institutions have relied heavily on patronage networks that support nepotism, political corruption and criminal networks. Likewise, within post-colonial sub-Saharan Africa, previous maladaptive political conditions led to the collapse and breakdown of political order as authoritarian governments increasingly grew predatory at a cost to citizen security.[169]

Conflict creates a strong disincentive to invest domestically and internationally leading to eventual unemployment, and an increased likelihood of corruption in response to public goods

[161] Lake, D., & Rothchild, D. (1998a). Lake, D., & Rothchild, D. (1998b) "Ethnic Fears and Global Engagement". In: Lake, D., & Rothchild, D. (eds.) *The International Spread of Ethnic Conflict: Fear, Diffusion, and Escalation*. Princeton, Princeton University Press. pp. 339-350.
[162] Gurr, T. (1970) *Why Men Rebel*. Princeton, Princeton University Press.
[163] Stewart, F. (2012) "Horizontal Inequalities and Conflict". In: Brown, G., & Langer, A., (eds.) *Elgar Handbook of Civil War and Fragile States.* Cheltenham, Edward Elgar Publishing Limited. pp. 93-109. Burton, J. (1990) *Conflict: Resolution and Provention*. New York, St. Martin's Press.
[164] Brock, et. al.(2012) *Fragile States: Violence and the Failure of Intervention*. Cambridge, Polity Press.
[165] Hegre, H. & Holtermann, H. (2012), p. 46.
[166] Call C. (2011) "Beyond the 'failed state': Toward Conceptual Alternatives". *European Journal of International Relations*. 17: 303.
[167] Robinson, W., & Tajfel, H. (eds.) (1996). *Social Groups and Identities. Developing the Legacy of Henri Tajfel*. Oxford, Routledge; Stryker, S., & Statham, A. (1985) "Symbolic Interaction and Role Theory". In: Lindzey, G., & Aronson, E. (eds.) *The Handbook of Social Psychology*. 3rd Edition. New York, Random House. pp. 311-78.
[168] Brock, *et. al.(*2012).
[169] Bates, R. (2008), p. 7.

shortages and government funds.[170] Economic failure in combination with elite competition over resources can lead to intrastate conflict.[171] Collier called this economic-conflict cycle the "conflict trap" in that countries become trapped in a vicious cycle of diminished economic incentives that facilitates conflict and in turn further exacerbates poverty.[172]

Others caution that conflict apparently diffusing is actually a response to simultaneous political changes or economic and environmental crises.[173] This imbalance of access to economic and political power is largely driven by the distribution of resources. "Resource curse" theorists view an abundance of resources as a major risk indicator for that country to experience violent, internal conflict.[174] Degradation causes competition for resources and leads to conflict[175] as natural disasters can increase the risk of conflict.[176] For example, the misuse and/or over-exploitation of environmental resources can degrade the environment and reduce the availability of essential resources such as water.

Although many of these previously discussed theories are highly influential in the advancement of conflict studies, there are several gaps within the literature and questions that remain which I will now address. First, social organization doesn't explain conformity, social interaction or group dynamics,[177] while constructivism is highly linearized as norms are not the only indicator that explains emergence and spread of norms. Subsequently, transnational linkages which links conflict diffusion may actually be a response to simultaneous political changes or economic and environmental crises.[178] Relative depravation is unsatisfactory because groups who are deprived do not always protest through violent aggression, but rather are provoked depending on the level and time period of frustration. Moreover, Gurr's theory has not been empirically

[170] Hegre, H. & Holtermann, H. (2012).
[171]Collier, P., & Hoeffler, A., (2004).
[172] Collier, P. (2003) *The Bottom Billion: Why the Poorest Countries are Failing and What Can Be Done About It*. Oxford, Oxford University Press.
[173] Saideman, S. (1998) "Is Pandora's Box Half Empty or Half Full? The Limited Virulence of Secessionism and the Domestic Sources of Disintegration". In: Lake, D., & Rothchild, D. (eds.) *The International Spread of Ethnic Conflict: Fear, Diffusion, and Escalation*. Princeton, Princeton University Press. pp. 127-150.
[174] Auty, R. (1993) *Sustaining Development in Mineral Economies: The Resource Course Thesis*. London, Routledge.
[175] Hauge, Wenche, & Ellingsen, T. (1998) "Beyond Environmental Scarcity: Causal Pathways to Conflict". *Journal of Peace Research* 35:299-317.
[176] Brancati, D. (2007) "Political Aftershocks: The Impact of Earthquakes on Intrastate Conflict". *Journal of Conflict Resolution*. 51:715-43; Drury, A., & Olson, R. (1998) "Disasters and Political Unrest: A Quantitative Investigation". *Journal of Contingencies and Crisis Management*. 6: 155-61; Nel, P., & Righarts, M. (2008) "Natural Disasters and the Risk of Violent Civil Conflict". *International Studies Quarterly*. 51: 159-84.
[177] Cohen, A. (1955) *Delinquent Boys: The Culture of the Gang.* Glencoe, Free Press.
[178] Saideman, S. (1998).

demonstrated as an independent explanation for intrastate conflict.[179] Examining inequalities among groups dismisses any notion of vertical inequalities and overlooks history and interdependent relationships between and among group members. Regarding the resource curse hypothesis, if the distribution of resources leads to rebellions and intrastate conflict, then why do not all who feel socio-economically deprived protest or take action against the central government? Furthermore, some researchers do not find a direct relationship with conflict and environmental degradation.[180] If resource abundance is to blame for violent, internal conflict then what of those states that boast a stronger institutionalized government and are resource rich but are not experiencing violent conflict? Institutional failure could be argued as a cause for violent conflict within state, rather than an abundance of diamonds or oil, for instance. Finally, little is known about the causal mechanisms regarding conflict associated with geological disasters.

The previous theories I briefly introduced in this section have ebbed and flowed in popularity over the past decade to explain conflict onset, reversion and persistence. *These findings may indicate that there is not a single cause leading to conflict reversion;* rather is a mix of institutional (both political and economic) and security-related variables that contribute to conflict reversion. In the next section I discuss major findings within RCT literature and address these gaps by introducing complexity theory.

2.4. Rational Choice and Classical Game Theory: The Dominant, Theory and Method for Explaining Conflict Reversion

RCT and game theory are applied in IR and conflict studies for both theory advancement and as a tool to understand the consequences of player strategies by solving for equilibrium. Game theory is most powerful when it is applied for the advancement of empirical and theoretical knowledge, rather than as a reconstructive model of a past event.[181] RCT and game theorists argue that equilibrium is a prediction made by the formal modeler[182] and is therefore "the pivotal concept in analytical political science".[183] Game theory is complementary to RCT as it

[179]Brunnschweiler, C., & Bulte, E. (2008b) "The Resource Curse Revisited and Revised: A Tale of Paradoxes and Red Herrings". *Journal of Environmental Economics and Management.* 55 (3): 248-264; Brunnschweiler, C., & Bulte, E. (2008a) "Linking Natural Resources to Slow Growth and More Conflict". *Science* 320 (5876):616 –617.
[180] Theisen, U. (2008) "Blood and Soil? Resource Scarcity and Internal Armed Conflict Revisted". *Journal of Peace Research*. 45: 801-18; Brown, G., & Langer, A. (2012) *Elgar Handbook of Civil War and Fragile States*. Edward Elgar Publishing.
[181] Snidal, D. (1985), p. 25-26.
[182] Walt, S. (1999) "Rigor or Rigor Mortis?: Rational Choice and Security Studies". *International Security* 23(4): 5-48.
[183] Ordeshook, P., & Shepsle, K. (eds.) (1982) *Political Equilibrium*. Hingham, Kluwer Boston Inc, Nijhoff Publishing. p. xii

assumes rationality of players in which players have goals that are realized through various strategies. Game theory applies techniques for analyzing individual player decisions and payoffs by anticipating what other players will do within a game.[184] Players reach equilibrium when all players' preferences are maximized and players will not change the order of their preferences. Players interact through various strategies to achieve goals which results in equilibrium solutions.

Solving for equilibrium demonstrates that the model is able to predictably solve outcomes based on the assumptions and preferences by players within the game. That is, an outcome of equilibrium mathematically illustrates that the assignment of strategies to players within the game are maximized, given that the other players' assigned strategies are also maximized and have no incentive to deviate from their assignments. Therefore, solving for equilibrium allows specific criterion for identifying actor choices from a set of choices that actors pursue. These choices or preferences are based on assumptions of expected utility with the ultimate aim of behavioral prediction.

RCT is individualistic, meaning outcomes of decisions are the collective product of individual choices in which actors maximize their utility given a set of preferences and a fixed array of complete (i.e., rank order preferences for different outcomes) choices that are transitive. Choices that are transitive means that a rational actor views one option as strictly preferred to another. That is, if $x_a > x_b > x_c \ldots . > x_z$, then $x_a > x_c$. Moreover, rational choice approaches to conflict weighs the cost that conflict inflicts on the actors in comparison to more peaceful alternatives through cause and effect relationships.[185] RCT interprets the conflict as 'complicated' in which removing an element that is causing the conflict will prevent or terminate future or current conflicts.[186]

Game-theoretic models are the primary tool for analyzing conflict and the preferences actors apply based on a series of assumptions which can also be relaxed (e.g., the amount information known/unknown and probability distributions over all outcomes that are possible). These preferences and assumptions all lead to outcomes of equilibrium, in which most conflict studies involve a 2-player contest (e.g., two states or a government player and a rebel player), such that the probability of player winning, given that efforts (e.g., ammunition expenditures, size of

[184] Walt, S. (1999).
[185] Kydd, A. (2010) "Rationalist Approaches to Conflict Prevention and Resolution". Annual Review of Political Science. 13: 101-121.
[186] Rapoport, A. (1960).

military force, etc.) vary. Consequently, game theory and rational choice prioritizes the use of information by player A as dependent on what player B does and vice versa.

The amount of information provided to the players determines the equilibrium of the system.[187] Solving for a Nash equilibrium is one consequence of assuming players hold a "common conjecture"; that is players can anticipate other player's strategies.[188] Thus, if communication of equal interests is assumed between players before the game is played, then players will coordinate to settle on what is called a 'Pareto-optimal equilibrium' (the preferred option is more better or more efficient compared to one's current condition). The difference between types of game theory equilibria has to do with the information a player has about itself and its strategies and the information a player has about other players and their strategies; that is, game theory assumes Nash equilibrium is possible because players assume rationality and play different strategies accordingly, even if interests (i.e., preferences) and goals differ. In contrast, a Pareto-optimal equilibrium only occurs if players have identical interests. Information players have on themselves and other players is key to what type of strategy that player will use in a game[189] and the key for many IR and conflict studies researchers in advancing the literature of why some states experience conflict reversion based on decisionmakers' information availability and strategies played.[190]

2.4.1. Rational Choice Applied to Intrastate Conflict Reversion

The majority of researchers and academics who examine conflict reversion, do so as a system settling at equilibrium through the theoretical framework of RCT. Presently, much of the conflict literature argues that warring actor groups break out into war because war is used as a tool to resolve disagreements through the mechanisms and models of bargaining theory,[191] credible commitments[192] and/or misrepresentation of information, which are utilized as incentives to use force preemptively.[193] Conflict onset can be a consequence of uncertainty, in

[187] Riker, W. (1980) "Implications for the Disequilibrium of Majority Rule for the Study of Institutions". *American Political Science Review*. 74:432-47; Green, D., & Shapiro, I. (1994) *Pathology of Rational Choice Theory: A Critique of Applications in Political Science*. New Haven, Yale University Press.
[188] Morrow, J. (1994) *Game Theory for Political Scientists*. Princeton, Princeton University Press.
[189] Information is complete when all players understand the game as reflected by player certainty. Information is incomplete when players do not know their strategy or the strategies of other players, which is reflected by uncertainty and can lead to a misperception of how the game is played. *See* Morrow, J. (1994).
[190] Fearon, J. (1995). Kaufmann, C. (2005).
[191] Powell, R. (2004) "Bargaining and Learning while Fighting;." *American Journal of Political Science*. 48(2): 344–361. Mason, T., & Fett, P. (1996).
[192] Walter, B. (2002).
[193] Filson, D., & Wer (2002) "A Bargaining Model of War and Peace: Anticipating the Onset, Duration, and Outcome of War." *American Journal of Political Science*. 46(4): 819–837

which uncertainty arises over the distribution of power.[194] This approach to conflict onset enables RCT to shift the discourse from wars as a 'game ending move'[195] to the study of conflict processes.[196] For instance, intrastate conflict onset is argued by Collier and others to be a cost-benefit calculation related to a conflict-affected state's GDP.[197] Cost-benefit calculations are derived when opportunity costs of conflict decrease, while the probability of conflict onset increases. RCT argues that if one can identify the incentives of the competing parties then one can quell the violence and find a suitable resolution to the conflict.[198] Hence, rational choice examines the uncertainty of warfare (i.e., incomplete information) to model actor preferences, signaling, capabilities, deception and a host of other strategies in competition with another player.[199]

When there is a lack of 'credible commitments', prewar or post-war bargaining can fail and war is the consequence.[200] Information and commitment problems are emphasized within the rational choice literature as the two dominant areas that explain conflict reversion.[201] Within a game scenario, if information is incomplete, then players weigh payoffs in regards to capabilities, which can be deceptively construed, against the other player(s).[202] Commitment problems are an outcome of returning to conflict after a negotiated settlement because competing parties' shift in power will inevitably change their position at the negotiating table. Credible commitment problems are a consequence of competing parties maintaining the capacity to continue fighting because one or multiple competing parties were not defeated during the conflict. These power shifts bring competing parties to arms in order to secure any future losses.[203]

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[194] Powell, R. (2004).
[195] Fearon, J. (1995)/
[196] Powell, R. (1999).
[197] Collier, P., Hoeffler, A., & Soderbom, M. (2004) "On the Duration of Civil War". *Journal of Peace Research*. 41(3):253-73; Humphreys, M., & Weinstein, J. (2008).
[198] This argument is also prevalent within the spoiler literature. *See* Greenhill, K., & Major, S. (2007) "The Perils of Profiling: Civil War Spoilers and the Collapse of Intrastate Peace Accords". *International Security*. 31 (3): 7–40.
[199] Brito, D., & M. Intriligator (1985) "Conflict, War and Redistribution". *American Political Science Review* 79(4);943–57.
[200] On pre-war commitment problems *see* Reiter, D.(2003) ''Exploring the Bargaining Model of War.'' *Perspectives on Politics* 1 (1): 27-43. On post-war commitment problems *see* Walter, B. (2002).
[201] Powell, R. (1999).
[202] Powell, R. (2002) "Bargaining Theory and International Conflict." *Annual Review of Political Science*. *5*(1), 1-30.
[203] Garfinkel, M., & Skaperdas, S. (2000) "Conflict without Misperceptions or Incomplete Information: How the Future Matters". *Journal of Conflict Resolution* 44(6): 793–807.

Fearon's formal analysis of conflict and cooperation propelled the advancement of RCT and game theory within IR and conflict studies. He applied a bargaining model to demonstrate why two parties go to war, rather than negotiate.[204] To interpret this phenomenon of a player choosing to commit to war, which is far costlier than committing to negotiation, Fearon modeled war as an outcome if (1) the deception of information dissemination is applied to allow a competing player to try and gain a better deal or (2) when 'commitment problems' deter a player from negotiating when the other player is perceived as untrustworthy.[205] He concluded that missing or the manipulation of information can contribute to players choosing war over peace or when the players perceive a competing player as unable or unwilling to commit to the terms within a negotiated settlement, then war is the outcome over peace.

Although RCT and game theory are still dominant, these methods are unable to reliably predict or explain the uncertainty that consumes actors in conflict-affected states.[206] RCT assumes that both groups want compromise to avoid war, which places too much emphasis on information diffusion rather than understanding the historical causes of conflict. Rational choice focuses on individual relations and preferences within static institutional constraints, which are linear, additive and do not account for dynamic, multiple elements.[207] Additionally, RCT methodologies are "poorly-suited" for longer temporal sequences, and face difficulty when switching in and out of multi-levels of analysis.[208] Also, a focus on individual choices rather than the group stands is in contrast to how segmented societies operate, which are prevalent in many states plagued by conflict reversion. For example, tribal and ethnic loyalties take precedence over the individual in Afghanistan; therefore, applying a rationalist framework to understand how the Taliban emerged is obsolete.[209] Moreover, within conflict and peace studies, the majority of RCT studies involve state-centric strategic interactions, which is inappropriate for analyzing intrastate conflict.[210] For instance, many game theory methods emphasize interstate war onset and not intrastate conflict onset or reversion.

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[204] Fearon, J. (1995).
[205] Of importance, political psychologists argued twenty years prior before Fearon's article was published that competing parties actively deceive one another as a consequence of international anarchy. *See* Art, R., & Jervis, R. (1976) *International Politics*. Boston, Little, Brown Publishers. Walt, S. (1999).
[206] Lake, D. (2010) "Two Cheers for Bargaining Theory: Assessing Rationalist Explanations of the Iraq War". *International Security.* 35 (3): 7–52.
[207] Byrne, D., & Callaghan, G. (2014) *Complexity Theory and the Social Sciences: The State of the Art.* Routledge, London; Byrne, D. (1998) *Complexity Theory and the Social Sciences: An Introduction*. London, Routledge.
[208] Pierson, P., & Skocpol, T. (2003) "Historical Institutionalism in Contemporary Political Science". In: Katznelson, I., & Milner, H. (eds.). *Political Science: State of the Discipline (Centennial Edition)*. W.W. Norton & Company, New York. pp. 639-721. p.706.
[209] Barfield, T. (2010) *Afghanistan: A Cultural and Political History*. Princeton University Press, Princeton.
[210] Reiter, D. (2003).

As mentioned in the introduction of this thesis, game theory and RCT do not explain whether or not an outcome of equilibrium is stable or unstable, while an emphasis on RCT has diverted attention from the processes and dynamics of conflict to its onset or termination. Moreover, what about particular scenarios of splintering or alliances among players in which more than two players are common within a system? The difficulty in applying RCT to conflict studies that RCT believe understanding a system is demonstrated by modeling the solution of equilibrium, in which intentions by individual players, given intentions by other players are optimized. However, as information is imperfect and never complete, a Pareto-optimal equilibrium is impossible.[211]

An emerging theory first introduced in the natural sciences is gaining traction in the social sciences to explain unanticipated outcomes in IR. The following section introduces the reader to complexity theory, its characteristics and elements and how complexity theory is the appropriate theory for not only this thesis, but how the application of complexity theory can be beneficial to the study of conflict as a whole. Complexity theory uses important components of RCT such as the importance of information, but instead of limiting the application of formal modeling to the solution of equilibrium, complexity theory allows for the solution of multiple equilibria or no equilibria, in addition to solving for equilibrium within a system of interest.

2.5. Introduction to Intrastate Conflict as a Complex System

Why should we apply complexity theory to better understand conflict reversion? Rather than dividing a problem into several parts of a cause-and-effect relationship, complexity theory looks at the problem holistically, as an interactive, dynamic, and adaptable system of relations between variables and how they are interconnected and affect one another. Complexity emphasizes relationships between and among components rather than each individual part. This means, that complexity focuses more on how individual components self-organize to generate behaviors that produce emergent patterns that cannot be predicted from individual components alone. Self-organization is the feature of a complex system that prevents the system from becoming chaotic. Emergence is the growth of new behaviors from existing relationships. Emergence can sometimes be perceived by those not familiar with a complexity approach as randomness because emergence can be unanticipated. For instance, Kavalski argued that ‘randomness’ effects of interdependent relations within the international system are

[211] Esteban, J-M., & Ray, D. (2001) “Collective Action and Group Size Paradox”. *American Political Science Review*. 95(3): 663-672.

not random, but are following similar patterns of behavior when viewing these relations and effects from a complex systems approach.[212]

Complexity theory has been applied as a conceptual and ontological framework within IR to explain a variety of phenomena.[213] Complexity acknowledges real-world phenomena as non-linear and small perturbations in the system can lead to large effects, multiple options, recurring patterns and trends, and are adaptable, heterogeneous, and rely on feedback. Fundamental characteristics attributed to complexity include interdependent relationships, unanticipated consequences, non-linearity, self-organization, emergence, adaptation, path dependence, and feedback, which includes negative feedback (counteracts the effect of an exogenous or endogenous shocks) and positive feedback (exogenous or endogenous shocks are amplified).[214]

Complexity theory grew in popularity from the natural and physical sciences during the 1930s through the 1950s, and became popularized within IR after the Cold War.[215] Over the past several years complexity theory has been applied to a variety of studies and ontological debates within IR.[216] Many political and IR theorists acknowledged that the international system is not static but is a dynamic, emergent and adaptable system that interact with variables and display networked patterns.[217] During the 1990s and early 2000s, complexity *characteristics* and the

[212] Kavalski, E. (2007) "The Fifth Debate and the Emergence of Complex International Relations Theory: Notes on the Application of Complexity Theory to the Study of International Life". *Cambridge Review of International Affairs*. 20(3): 435-454.

[213] For a review *see* Bousquet , A., & Curtis, S. (2011) "Beyond Models and Metaphors: Complexity Theory, Systems Thinking and International Relations". *Cambridge Review of International Affairs.* 24, 1: 43-62. From a conceptual framework perspective *see for example,* Rosenau, J. (1990) *Turbulence in World Politics: A Theory of Change and Continuity*. Hempstead, Harvester Wheatsheaf; Rosenau, J. (2003) *Distant Proximities: Dynamics Beyond Globalization*. Princeton, Princeton University Press; Rosenau, J., & Earnest, D (2006) "Signifying Nothing? What Complex Systems Theory Can and Cannot Tell Us About Global Politics". In: Harrison, B. (ed.) *Complexity in World Politics: Concepts and Methods of a New Paradigm*. Albany, State University of New York Press. pp. 143-164; Kavalski (2007); Jervis, R. (1997) *System Effects: Complexity in Political and Social Life*. Princeton, Princeton University Press; Grisogono, A-M. (2006) *The State of the Art and the State of the Practice: The Implications of Complex Adaptive Systems Theory for C2*. Land Operations Division, Defence Science and Technology Organisation. June. Miller, J. & Page, S. (2007).

[214] Ruloff, D. (1975) "The Dynamics of Conflict and Cooperation between Nations. A Computer Simulation and Some Results". *Journal of Peace Research*. 12 (2) Special Issue: Peace Research in Switzerland. pp. 109-121. p. 109-110; Vallacher, R. *et al*. (2010) "Rethinking Intractable Conflict: The Perspective of Dynamical Systems". *American Psychologist*. 65(4): 262-278; Turchin, P. (2006) *War and Peace and War: The Life Cycles of Imperial Nations*. New York, PI Press.

[215] Kavalski, E. (2007); Geyer, R. (2003)"Beyond the Third Way". *British Journal of Politics and International Relations*. 5:2, 237–257; Gaddis, J. (1992-93) "International Relations Theory and the End of the Cold War". *International Security*.17:3, 5–58. Cioffi-Revilla, C. (1998) *Politics and Uncertainty*: *Theory, Models and Applications*. Cambridge, Cambridge University Press.

[216] Bousquet , A., & Curtis, S. (2011); Jervis, R. (1997).

[217] Cederman, L. (1997) *Emergent Actors in World Politics: How States and Nations Develop and Dissolve*. Princeton, Princeton University Press. Jervis, R. (1997); Hoffmann, M., & Riley J., Jr. (2002) .

processes and emergence of rebellions and civil wars were introduced within political science, IR and the conflict resolution literature, but rarely complexity theory itself.[218]

Regarding complexity theory's specific application to conflict, David Kilcullen argued in *Counterinsurgency,* that COIN doctrine could be best improved by analyzing irregular warfare through complexity theory.[219] He contended that insurgencies are no longer limited within the confines of a territorial border, but are globalized and that this has increased their complexity. Similarly, Mackinlay argued that COIN forces are slow to adapt to insurgent tactics because insurgents are no longer isolated (e.g., social media, globalization effects) and insurgent forces no longer confront conflict in the traditional sense.[220] Rather, insurgencies proliferate within an archaic, decentralized and interconnected network that has evolved its tactics towards utilization of the Internet and in response to a large influx of Muslim migration to the West. These vast and interconnected insurgency networks permit the insurgents to adapt quickly and effectively against COIN forces.

To illustrate a complexity theory approach to modern COIN conflict, retired US Army general, Stanley McChrystal, applied an informal version of complexity theory to better understand why the US struggled to defeat 21st century insurgencies in Iraq and Afghanistan. McChrystal argued that it was the US's military's inability to adopt small teams that "foster cross-silo collaboration" in order to develop resiliency to the unknown enemy.[221] Figure 2.1 illustrates McChrystal's interpretation of the US Army's structure (on the left) as a complicated, hierarchical system, versus a NSA actor group's (on the right) complex and adaptive structure, reflective of the Iraqi and Afghan insurgents. Because of the US military's hierarchical and bureaucratic structure, the US military had a difficult time adapting to the highly dynamic and at many times unpredictable battlegrounds of Iraq and Afghanistan.

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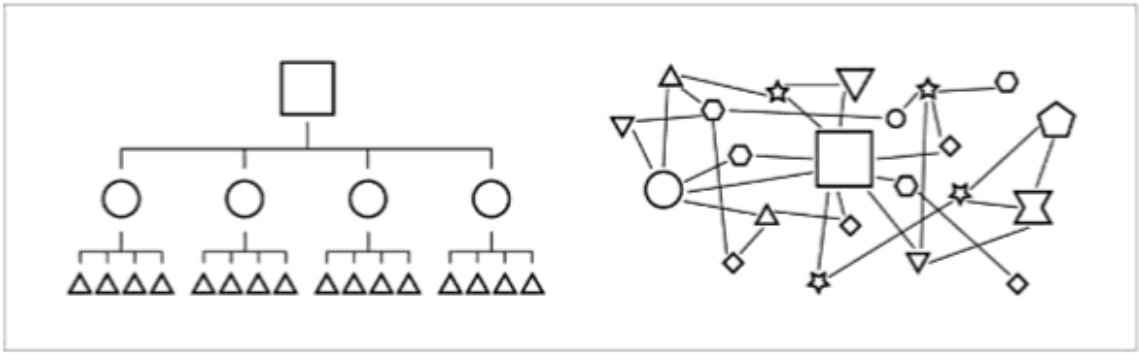
[218] Foran, J. (1993) "Theories of Revolution Revisited: Toward a Fourth Generation?" *Sociological Theory*. 11(1): 1-20; Goldstone, J. (2001) "Toward a Fourth Generation of Revolutionary Theory". *Annual Review of Political Science*. 4:139–87; Goldstone, J. (ed.) (2003) *Revolutions: Theoretical, Comparative, and Historical Studies*. 3rd Edition. Belmont, Wadsworth/Thomson Learning. Ertman, T. (1997) *Birth of the Leviathan : Building States and Regimes in Medieval and Early Modern Europe*. Cambridge, Cambridge University Press.

[219] Kilcullen, D. (2010) *Counterinsurgency*. Oxford, Oxford University Press

[220] Mackinlay, J. (2009) *The Insurgent Archipelago: From Mao to bin Laden.* New York, Columbia University Press.

[221] McChrystal, S. (2015) *Team of Teams: New Rules of Engagement for a Complex World.* New York, Penguin Publishing Group. p. 25.

Figure 2.1. McChrystal's Complicated versus Complex Systems on the 21st Century Battlefield[222]



A complex system is one in which its elements are interdependent, has emergent qualities, and removing one agent may alter the entire system's trajectory.[223] For example, a change in one country's policy could in principle alter the international system's entire trajectory. Unlike linear methodologies, explaining IR endogeneity is of importance, rather than a hindrance.[224] Because of central complexity components, such as feedback and non-linear interactions, endogeneity is not a problem in modeling, but part of understanding the IR phenomenon under analysis.[225]

Complexity theory examines the international system as self-organizing in which relationships develop at the micro level (i.e., individuals and their rules) and emerge into patterns of behavior that give rise to institutional order at the macro level (i.e., group dynamics to interstate level behaviors). The macro level is defined, according to Balcells and Justino, as "processes of conflict and violence that take place at the level of the sovereign state" (e.g., peace agreements, establishment of elections and institutions, etc.); and the micro level as "conflict processes that involve individuals" or households (e.g., individual or small group participation in violence, recruitment, support for the government or NSA, etc).[226] In between the micro and macro level is where patterns of behavior emerge to form organized events. This in-between level is called the meso level and this level is defined from Balcells and Justino as "processes that take place at the community level or at the level of local social groups and organizations" (e.g., local forms of collective action).

[222] Figure from McChrystal, S. (2015), p. 25.
[223] Miller, J. & Page, S. (2007).
[224] Hoffmann, M., & Riley J., Jr. (2002).
[225] Hoffmann, M., & Riley J., Jr. (2002).
[226] Balcells, L., & Justino, P. (2014) "Bridging Micro and Macro Approaches on Civil Wars and Political Violence: Issues, Challenges, and the Way Forward". *Journal of Conflict Resolution.* . 58(8):1343-1359. p. 1345.

Many IR and political science scholars have applied this concept of studying various levels of behavior to explain political phenomena such as the emergence and spread of collective violence. For instance, Della Porta is one of the only IR academics who examined micro, meso and macro levels simultaneously to explain the emergence of patterns of anti-social behavior, which can organize into political violence.[227] Additionally, Schelling's mathematical and formal modeling approach helped explain emergent and self-organizing behaviors in order to facilitate a better understanding of how agents can interact and create unanticipated behaviors through incremental steps.[228] Similarly, Turchin demonstrated from a biological, historical and political point of view that societal rise and collapse mechanisms can be examined from multiple levels through feedback.[229]

Likely the most cited complexity application to IR is Jervis' *System Effects*.[230] Jervis argued that studying social interactions and politics as a system (which was heavily influenced by complexity theory), can scholars truly understand uncertainty and relations among and between actors within the international system. He also argued against the linear approach to IR, in that linear models can lead to false conclusions by scholars because of a misinterpretation of dynamic events that lead to alternative outcomes. However, it wasn't until Axelrod's agent-based model that Jervis' argument against linear methods in IR was truly applied.[231] Axelrod demonstrated how cooperation, norms, alliance formation and nations emerges in simple agent-based models through the application of complexity theory. Although Axelrod's model was simple, important components of complexity such as feedback, interdependence, and emergence were observed.

The following sections disaggregates important components of complexity to demonstrate this theoretical framework's contribution to understanding conflict dynamics.

2.5.1. Path Dependence and Feedback

Path dependency is a combination of emergence and resilience in which initial conditions matter causing various actors and institutions to evolve at different speeds.[232] For instance, Paul Collier and Nicholas Sambanis observed that "[o]nce violence is initiated, it may follow a path-

[227] della Porta, D. (1995) *Social Movements, Political Violence and the State: A Comparative Analysis of Italy and Germany.* Cambridge, Cambridge University Press.
[228] Schelling, T. (1978) *Micromotives and Macrobehavior*. New York, Norton.
[229] Turchin, P. (2003) *Historical Dynamics: Why States Rise and Fall*. Princeton, Princeton University Press.
[230] Jervis, R. (1997).
[231] Axelrod, R. (1997) *The Complexity of Cooperation: Agent Based Models of Competition and Collaboration*. Princeton, Princeton University Press.
[232] Jervis, R. (1997).

dependent process."[233] Both Weinstein and Bates examined violence and conflict from a path-dependent perspective that emphasized actor choices to explain patterns of violence and state failure.[234]

Understanding how the previous elements maintain momentum is called feedback.[235] Feedback is complementary to understanding conflict reversion because of the importance history plays in reinforcing particular mechanisms that strengthen or reduce the likelihood of similar or divergent future scenarios. Because conflict is dynamic it can vary in the level of intensity and actors involved causing a conflict to become highly complex.[236] However, feedback can constrain various behaviors and parameters within a system, diverting the system away from chaos and reinforcing certain parameters and variables over time. Also, feedback affects actions and behaviors at the macro level; for instance, normative rules are reinforced through feedback, which constrain reactions and new directions proposed by various agents and organizations at the institutional level. As a consequence of the effects of feedback, some academics argue that interventions should be placed as a supportive role in conflict resolution, rather than in a reactionary, managerial role.[237]

Change becomes difficult because of feedback, specifically the consequences of positive feedback in conflict-affected states that experience conflict reversion. Variables that are connected through positive feedback intensify connections within the current state, while variables connected through negative feedback inhibit or can reverse the current state by constraining other variables.[238] Positive feedback reinforces norms associated with conflict and violence, which makes conflict gradually difficult to interrupt and terminate. Such strong

[233] Collier, P., & Sambanis, N. (2002) "Understanding Civil War: A New Agenda". *The Journal of Conflict Resolution*. (46)1: 3-12. p. 5.
[234] Weinstein, J. (2006) *Inside Rebellion : The Politics of Insurgent Violence.* Cambridge, Cambridge University Press. Bates, R. (2008), p. 97-8.
[235] The concept of feedback has been robustly applied within IR, especially from a historical institutionalist (HI) approach. HI perceive violence as a consequence of interdependent relationships between institutions and individuals. However, HI lack common definitions, methods and parameters that contain multiple contradictions and disagreements. Also, a major flaw is an inability to explain how institutions are created and adopted and an inability to explain uncertainty. *See* Steinmo, S., Thelen, K.,& Longstreth, F. (eds.) (1992) *Structuring Politics: Historical Institutionalism in Comparative Analysis*. Cambridge, Cambridge University Press; Pierson, P., & Skocpol, T. (2003); Pierson, P. (2004) *Politics in Time: History, Institutions, and Social Analysis*. Princeton, Princeton University Press; Capoccia, G., & Kelemen, D. (2007) "The Study of Critical Junctures: Theory, Narrative, and Counterfactuals in Historical Institutionalism". *World Politics*. 59:341-69; Sanders, E. (2008) "Historical Institutionalism". In: Rhodes, R., Binder, S., & Rockman, B. *The Oxford Handbook of Political Institutions*. Oxford, Oxford University Press.
[236] Coleman, P. (2006).
[237] de Coning, C. (2013).
[238] Coleman, P., Vallacher, R., Nowak, A & Bui-Wrzosinska, L. (2007) "Intractable Conflict as an Attractor: A Dynamical Systems Approach to Conflict Escalation and Intractability". *American Behavioral Scientist*. 50(11): 1454-75; Coleman, P. (2006); Vallacher, R. *et al*. (2010); Bouchard, M. (2011) "The State of the Study of the State in Anthropology". *Reviews in Anthropology*. 40:3, 183-209.

stable equilibrium phases (e.g., previous conflict, weak institutions) pull the system into a state of violence. Over time, it becomes increasingly problematic to propel the system from a stable equilibrium of violence to one of peace.[239] For example, Prunier argued that the conflict and later genocide in Rwanda was a consequence of following a trajectory that persisted through feedback mechanisms of indoctrinated violence inflicted by both a highly authoritarian state and domestic polarization that was impossible to resolve linearly.[240]

To conclude, previous conflict, unintended consequences and the role of sequence identify important conditions and mechanisms from the past for understanding present and future outcomes and institutional change.[241] Previous conflict, unintended consequences and the role of sequence identify important conditions and mechanisms from the past for understanding present and future outcomes and change in institutions.[242] Sequence of events contributes to unpredictability and an inability to reverse course.[243] This means that as events occur, they are dependent on what previously transpired. Feedback loops can promote the emergence of strong, resilient attractors that absorb or repel various events, shocks and information that flows in and out of the conflict-affected state.[244] A state that experienced a history of conflict is plagued with these reinforcing feedback loops of mistrust and violence that push the state further away from peace. In contrast, conflict-affected states that are on route toward peace, such as Rwanda, are experiencing feedback as a reinforcing mechanism, which increases and strengthens the likelihood of peace overtime.

2.5.2. Self-organization and Emergence

The characteristic of self-organization describes the ability of agents to organize, adapt, and manage relations without an internal control (i.e., an individual or group). Agents within a complex system are influencing, rather than controlling the system.[245] A lack of internal control is a consequence of non-linear and dynamic interactions. The more agents involved the more unpredictable and numerous the interactions become. When agents begin to collectively work together, emergent behaviors develop as agent actions combine to form groups. These groups

[239] Coleman, P., Vallacher, R., Nowak, A & Bui-Wrzosinska, L. (2007).
[240] Prunier, G. (1997) *The Rwanda Crisis: History of a Genocide.* Columbia University Press, New York; Jones, B. (2001) *Peacemaking in Rwanda: The Dynamics of Failure*. Lynne Rienner Publishers, Boulder.
[241] Pierson, P. (2004).
[242]Cederman, L. *et al* (2010). Jervis, R. (1997); Lieberman, E. (2001) "Causal Inference in Historical Institutional Analysis: A Specification of Periodization Strategies". *Comparative Political Studies*. 34:1011-1035. Fioretos, O. (2011) "Historical Institutionalism in International Relations". *International Organization*. 65(2): 367-399. However, recent research by Walter found no such relationship. *See* Walter, B. (2014);
[243] Pierson, P. (2004); Fioretos, O. (2011).
[244] Pierson, P. (2004); Fioretos, O. (2011); Vallacher, R. *et al*. (2010), p. 267-8.
[245] Solé , R., & Bascompte, J. (2006) *Self-Organization in Complex Ecosystems*. Princeton, Princeton University Press.

collectively produce behaviors that emerge into patterns. Although the outcome may be observed as unpredictable, behaviors at the local level form collective behaviors that eventually emerge to institutional evolution and normative behaviors. For instance, constantly shifting alliances throughout the 1990s in Afghanistan meant that there was no single group that claimed political dominance as the civil war dragged on. [246] However, by the late 1990s the Taliban self-organized and persuaded various fighting factions to join the Taliban. The Taliban's ability to self-organize is accredited to consolidating power and receiving external support from Pakistan.

Self-organization is highly dependent on temporal sequences and path dependence, in which behaviors and interactions change and adapt through time and are dependent on a system's history. Thus, one cannot apply a formulaic solution to conflict resolution, even in the same state, because time has changed how agents and institutions respond to the crisis. Over time, various interdependencies develop between individuals and families, among groups and organizations, institutions, and eventually the state itself. This mutual adaptation allows for the emergence of self-organized, interdependent communities that become increasingly complex.[247] These communities are affected by both internal and endogenous conditions and variables, which demonstrate the necessity of a multilevel understanding of conflict.

Self-organization demonstrates how a system is not static, but is always changing and gives rise to emergence. Emergence is a characteristic that involves the ability of agents to not only self-regulate but to also interdependently interact with other agents to form new interdependencies and new variables. These emergent patterns of behavior illustrate how interactions with different agents form new behaviors in contrast to agents acting independently. Emergence and self-organization is in contrast to linear, complicated systems which do not demonstrate such characteristics. Non-linearity, emergence, and self-organization all interact to create patterns and eventual order within the system, which is observed in institutional structure of a system.[248] This characteristic of new variables and behavior within a complex system differentiates from a complicated system. In a complicated system, new variables do not emerge; that is, the whole is equal to the sum of its parts. Conversely, within complex systems the whole can be greater or less than its parts because of the element of

[246] Christia, F. (2012) *Alliance Formation in Civil Wars*. Cambridge, Cambridge University Press.
[247] Ansell, C. (2013) "Ecological Explanation". In: Berk, G., Galvan, D., & Hattam, V. (eds.) *Political Creativity: Reconfiguring Institutional Order and Change*. Philadelphia, University of Pennsylvania Press. pp. 55-77. p. 56.Axtel, R. (2014): *Economics of Spontaneous Order, Self-Organization and Emergence.* [Lecture]. Oxford University. 11th March, Hilary Term.
[248]de Coning, C. (2013).

emergence.[249] A conflict-affected state is a complex system because variables are constantly changing and new variables emerge. Emergence allows patterns of behavior to develop into organized behaviors that contribute to both the resiliency of a system and that system's sustainability through the mechanism of feedback. A conflict-affect state becomes resilient against either conflict reversion or peace because emergence produces diversity among structures and agents, which influence complex, non-linear relationships.

2.5.3. Non-Linearity and Interdependence

A 'vast majority' of social science theorists question the unpredictability of the social world, in which linear models are unable to explain various social phenomena.[250] Moreover, the sheer diversity of linear and non-linear definitions between the natural and social sciences erroneously apply linearity to explain a social phenomenon.[251] A linear model assumes the same variables simulated at one value remain static from the beginning of the simulation to its end, and independence between parameters and variables are obvious. In contrast, a non-linear model applies 'dependent parameters' that vary and are *not* static, while interdependence between parameters and variables are vital. Moreover, a non-linear system is one in which the outcome cannot be predicted through cause and effect relationships between variables; that is, a non-linear is system produces asymmetric relations between variables.[252]

To illustrate the misapplication of linearity within IR, consider the civil war in Mozambique (1977-1992). Bartoli and others argued that Mozambique's state of conflict was "frozen" in contrast to the "movement" of the state of peace.[253] Mozambique was applied to explain the significance of catalysts and why the case of Mozambique was difficult to shift from the downward spiral of conflict to a peaceful state. The conflict environment in Mozambique did not allow for the "possibility for movement" and was blocked by "enmity positions" centered on power struggles.[254] War-torn Mozambique was characterized as existing in a strong state of equilibrium.[255] Bartoli argued that actions between a few actors at the micro-level became a catalyst in the facilitation toward peace. However, I argue that in a non-linear dynamical system

[249] Cilliers, P. (1998) *Complexity and Postmodernism: Understanding Complex Systems*. London, Routledge.
[250] Kemp, S. (2009) "Unpredictability and Nonlinearity in Complexity Theory: A Critical Appraisal". *E:CO* 11;1, 84-93.
[251] McLennan, G. (2006) *Sociological Cultural Studies: Reflexivity and Positivity in the Human Sciences.* Houndmills, Palgrave Macmillan.
[252] Jervis, R. (1997).
[253] Bartoli, A., Bui-Wrzosinska, L., & Nowak, A. (2010); Vallacher, *et al.* (2013) *Attracted to Conflict: Dynamic Foundations of Destructive Social Relations*. Springer-Verlag, Berlin.
[254] Bartoli, A., Bui-Wrzosinska, L., & Nowak, A. (2010).
[255] For a fuller explanation on attractors and attraction in regards to conflict studies *see* Vallacher, *et al.* (2013).

the state is never "frozen". Bartoli's interpretation falsely perceives conflict as a frozen state and misinforms policymakers and academics alike. Rather, a state of conflict is in constant flux as demonstrated in variable levels of violence, for example. Additionally, unintended consequences by external actors and a multitude of constantly adapting strategies adopted by competing invested parties produced a dynamic conflict environment that was difficult to interpret.

To illustrate this theory further, Cederman simulated non-linear systems to demonstrate small perturbations, which can spread throughout the system making prediction impossible, even in highly deterministic cases.[256] For instance, although a reform or mediation initiative may not appear to shift the state of conflict to one of peace, these efforts, if done cohesively, slowly chip away at the conflict state, thus creating a shallower basin of attraction that cradles the conditions that are attractive for peace. As the war in Afghanistan (2001-14) demonstrated, a light footprint approach can have a large effect on a post-conflict state, while a large intervention can appear to barely shift any variables promoting the conflict, or to deepen the attractor basin toward conflict reversion.[257] Similarly, the Democratic Republic of the Congo (DRC) experienced a complexity of factors that interacted toward a trajectory of resurgent violence and conflict, which could not be explained linearly.[258] These factors included cultural divisions, land claim, fighting over resources, and a decrease in economic opportunity. Additionally, actors from outside of the DRC became increasingly involved, catalyzing the conflict from an unstable state of peace back to an alternative state of conflict. The failure of the peace agreement (i.e., 2002, 2009) was a combination of internal instability and external interference that further destabilized a weak central government and dampened any efforts toward economic growth.[259] What each of these three cases (i.e., Mozambique, Afghanistan and the DRC) demonstrate is how micro-level non-linear variables were able to self-organize through feedback mechanisms that created patterns of behavior at the meso-level, which emerged as macro-level shifts in the system's trajectory to peace or conflict.

Characteristics that emerged and adapted are difficult to transform to their original characteristics because they are so dependent on past interdependencies. Interdependence

[256] Cederman, L-E. (1997) *Emergent Actors in World Politics: How States and Nations Develop and Dissolve*. Princeton, Princeton University Press.
[257] Dorronsoro, G. (2005) *Revolution Unending: Afghanistan, 1979 to the Present*. New York, Columbia University Press. Felbab-Brown, V. (2013); Thier, J. (2006) "Afghanistan". In: Durch, W. (ed.) *Twenty-First-Century Peace Operations.* Washington, D.C., United States Institute of Peace. pp. 467-572.
[258] Little, A. (2014) *Enduring Conflict: Challenging the Signature of Peace and Democracy*. New York, Bloomsbury. p. 65.
[259] Little, A. (2014).

allows for emergence and adaptation within a system, which consequently, leads to unanticipated outcomes. Moreover, minor events can evolve into large and varying outcomes leading to a reversal of conditions because agents become dependent on a particular trajectory through feedback. For instance, what determines whether or not a peace agreement will be implemented is a consequence of how seemingly similar conditions can produce very different outcomes.[260]

Lastly, it is important to point out how interdependent relations between variables can affect statistical analyses. For instance, frequentist approaches to statistical analyses will test potential sources of bias. Testing for any violations of independence is crucial to good model fit. A model that demonstrates independence and thus good model fit demonstrates an absence of multicollinearity and an independence of errors. However, in a complex system variables are *interdependent* with one another, meaning that changes to the system leads to unintended consequences. Therefore, testing assumptions with variables attributed to a complex system may demonstrate high levels of multicollinearity and bias and thus a violation of assumptions. This finding does not mean that statistical analysis testing is obsolete (i.e., Chapter V tests for interaction effects), but should be tested with caution. Additionally, this thesis applies statistical analysis as a precursor and not an end result when modeling conflict.

2.6. Conclusion

Rational choice holds that actors in a conflict are rational and should be able to resolve the conflict once these actors understand the causes of the conflict through the most efficient means necessary; that is, gathering information to maximize an actor's utility.[261] Although RCT is the dominant theoretical framework and game theory is the dominant formal model applied within IR and conflict studies, both fall short in fully explaining why some states experience conflict reversion and why others do not.[262].

From an epistemological perspective, complexity theory is fundamental for comprehending uncertainty.[263] Uncertainty is high because the conflict environment is sensitive to both exogenous and endogenous variables and interactions which are constantly shifting as new variables and interactions emerge. For example, international organizations and governments

[260] Mutwol, J. (2009).
[261] Kydd, A. (2010).
[262] For a review on why RCT is "unsuited to the study of ethnic conflict" *see* Kaufmann, C. (2005) "Rational Choice and Progress in the Study of Ethnic Conflict: A Review Essay". *Security Studies*. 141(1):178-207.
[263] Little, A. (2014); Urry, J. (2003) *Global Complexity*. Cambridge, Polity Press. Urry, J. (2005) "The Complexity Turn". *Theory, Culture & Society* 22(5): 1-15.

create laws and policies to implement intervention efforts, sanctions or to provide arms to either state or NSA involved in a conflict. The dynamics within a conflict-affected state is complex and therefore individuals, groups and informal and formal institutions are adapting to the constant flow of information in and out of a state's boundaries. Thus, one cannot resolve the conflict purely by implementing a static law or policy reform and expect all those involved to comply in a neat, linear organizational process. Rather, because a conflict-affected state is more likely to have weak institutional structures, poor economic opportunities and corrupt security organizations these highly adaptive structures produce uncertainty at a higher magnitude through non-linear interactions.

Viewing conflict through the lens of complexity allows one to constructively theorize why there is a reversion of conflict in some states and not in others and also to formulate a model based on the understanding of complexity. Currently, IR and conflict studies do not provide a satisfactory approach for why some conflicts revert to conflict, while others transition to peace. Alternatively, complexity theory perceives the international system as a path-dependent, self-organizing, non-linear, open system in which macro-level relations emerge from micro interdependencies that are reinforced through feedback. How agents or actors self-organize is specific to that environmental and social history and how that actor forms relationships with other actors and actor groups. These relationships and interdependencies, in time, form emergent patterns of behavior that eventually evolve into norms and later formal institutions within a complex system.

The following chapter incorporates complexity theory to advance theoretical development by modeling multi-actors and is applied to explain various equilibria and therefore, various conflict outcomes.

CHAPTER III.

Interdisciplinary Approach to Theory

Intrastate Conflict Outcomes as a Consequence of Warring Actor Groups' Competitiveness: Modeling Multi-Warring Actor Groups as a Complex system

3.1. Introduction

An interdisciplinary approach is applied in this thesis to better understand dynamic and oscillatory behaviors of conflict-affected states. This novel approach may provide some insight for comprehending when and why conflicts reach stable equilibrium and how these processes determine the type of conflict outcome. The first half of Chapter III argues why IR and conflict studies should move beyond the 2-player game approach typical in intrastate conflict studies to enhance our understanding of why similar indicators of risk lead to various conflict outcomes and why some states revert to conflict and others do not. Then, I demonstrate how one can model multiple players within a system by introducing a "multi-species" theory and model that is used in the ecological sciences. This ecological approach is applied to examine why certain states experience persistence or a reversion to conflict as an analogy to similar dynamics observed in multi-species interactions. This ecological model is beneficial to understanding species coexistence when coexistence should not be physically feasible; that is, this coexistence model may help to untangle the mechanisms behind why multiple warring actor groups in a conflict-affected state persist in conditions that seem averse to coexistence. The second half of Chapter III introduces the reader to the CEM. The CEM can graphically simulate whether or not a system reached equilibrium and simulates dynamical behaviors of competing actor groups. In combination, these simulations can help illustrate the mechanisms behind conflict reversion. Thus, Chapter III demonstrates, through an interdisciplinary approach, how conflict-affected states can exhibit complex behavior and why states can respond differently given similar reform measures, risk indicators and policies that lead to different equilibria outcomes.

3.2. Moving Beyond the 2-Player Game Approach to Conflict

As mentioned, RCT is used to demonstrate how a state suffering from conflict, such as the Mozambique War (1975-95), appears frozen. The processes of conflict are argued to have settled at equilibrium, and offers an explanation to why it is so difficult to push a conflict-affected from conflict to peace. However, I argue that the IR discipline lacks a proper

understanding of what a system in equilibrium actually describes. In contrast to Collier and others (*see* Chapters I and II) who argue that the reversion of conflict and persistent conflict is a sign of the system trapped in a cycle, I argue that states that experience a reversion to conflict or persistent conflict are never "trapped", but are in a phase of constant flux as demonstrated by variable levels of violence and varying dominance of competing actor groups. This thesis argues conflict-affected states that experience persistence and/or revert back to conflict are not in a phase of equilibrium; rather, persistent and conflict that reverts is so difficult to anticipate and predict because it is *unable to settle at equilibrium*. A system that is unable to settle at equilibrium means that solving for equilibrium lies between or among different equilibria. Such a system is attracted to equilibrium but cannot settle at equilibrium because different counteracting forces are disrupting the system's trajectory toward equilibrium.

As demonstrated in Chapter II, RCT models observe that if there are more than two competing parties within a system, then settlements become plagued by information problems, which leads to uncertainty and instability. However, the UCDP Dyadic Dataset shows (*see* figure 3.1) that since the 1970s the number of dyads involved in intrastate conflict have increased and are often more than one (i.e., involved more than two warring actor groups). Moreover, most conflicts occur with multiple warring actors with many objectives.[264] Recent findings demonstrate how coalitions among multiple waring actor groups can increase the likelihood of conflict reversion.[265] The following examples and observations demonstrate that modern warfare involves more than two competing actor groups, which severely limits the applicability of two player games.

3.2.1. Examples of Multiple Warring Dyad Groups involved in Intrastate Conflict

Rational choice and game theory observe that if there are more than two competing parties within a system, then settlements become plagued by information problems leading to uncertainty and instability.[266] For instance, dominant theoretical IR concepts such as the 'security dilemma' transpires when two parties go to war by pre-emptive means because of the uncertainty and insecurity of decision-makers when determining particular situations as threatening.[267] Consequently, in multiplayer games (>2 players) game theory is only able to

[264] Gallo, G. (2013) "Conflict Theory, Complexity and Systems Approach". *Systems Research and Behavioral Science*. 30(2): 156-175.
[265] Zeigler, S. (2015)
[266] Walter B. (2009) "Bargaining Failures and Civil War." *Annual Review of Political Science.* 12:243–61.
[267] Herz, J. (1950) "Idealist Internationalism and the Security Dilemma", *World Politics*. 2(2): 171–201; Jervis, R. (1978) "Cooperation Under the Security Dilemma". *World Politics*. 30(2): 167-214; Powell, R. (1999) *In the Shadow of Power: States and Strategies in International Politics.* Princeton, Princeton University Press; Roe, P.

solve for equilibrium after players form coalitions or alliances. Some argue that "uncertainty" creates a miscalculation of costs during the conflict and during negotiations.[268] This miscalculation is intensified if multiple groups or dyads are involved in a conflict as the increased complexity of number of dyads can increase the likelihood of spoilers,[269] the shifting of allegiances,[270] commitment and bargaining problems,[271] and the effects of external backers.[272] Thus, the applicability of 2-player games is increasingly inappropriate. Moreover, when one examines empirical literature, one can clearly observe that conflicts that involve more than two groups is more of the norm, rather than the exception.

Previous studies found that intrastate conflicts with multiple NSA are more violent, which led to conflicts that were more difficult to resolve.[273] Figure 3.1 demonstrates the frequency of active warring parties (i.e., more widely known within the conflict literature as dyad groups), but exclusive of EA support, and the number of conflicts within which these actor groups are fighting. A dyad consists of two opposing actors in an armed conflict where at least one party is the government of a state; that is, one dyad is equivalent to two competing parties, or one NSA group and one government actor (GA) group (i.e., a dyad is simply pairs of competing parties). The frequency of dyads has increased significantly since the mid-1970s, while the overall pattern shows a gradual increase in conflict until the end of the Cold War, when conflicts begin to decrease.

(1999) "The Intrastate Security Dilemma: Ethnic Conflict as a 'Tragedy'?" *Journal of Peace Research*. 36(2): 183–202; Posen, B. (1993) "The Security Dilemma and Ethnic Conflict". *Survival*. 35(1): 27-47.

[268] Findley, M. (2013) "Bargaining and the Interdependent Stages of Civil War Resolution". *Journal of Conflict Resolution.* 57(5): 905-932.

[269] Stedman, S. (1997) "Spoiler Problems in Peace Processes". *International Security*. 22(2): 5-53.

[270] Cunningham, D. (2006) "Veto Players and Civil War Duration". *American Journal of Political Science*. 50(4): 875–892

[271] Wood, R., & Kathman, D. (2015); Mason, T., & Fett, P. (1996) "How Civil Wars End: A Rational Choice Approach". *The Journal of Conflict Resolution.* 40(4): 546-568.

[272] Cunningham, D. (2010) "Blocking Resolution: How External States Can Prolong Civil Wars" *Journal of Peace Research.* 47(2): 124–125.

[273] Bakke, K., Cunningham, K., & Seymour, L. (2012) "A Plague of Initials: Fragmentation, Cohesion, and Infighting in Civil Wars". *Perspectives on Politics*. 10(2): 265-283.

Figure 3.1 Active Dyad Groups for Intrastate Conflicts, 1946-2007

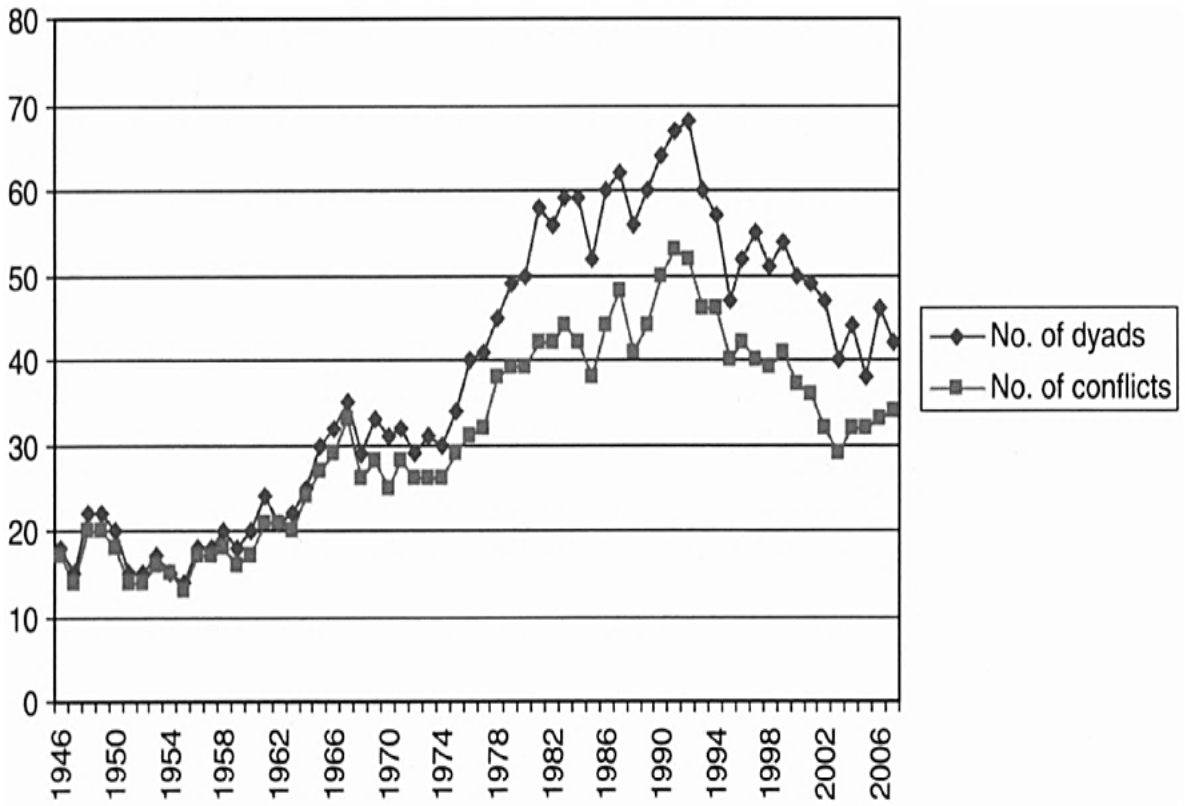


Figure 3.1 Active Dyad Groups for Intrastate Conflicts, 1946-2007 is from the UCDP Dyadic Dataset and Cunningham, Gleditsch, and Salehyan, (2009) article published in the *Journal of Conflict Resolution.*[274] The figure illustrates the number of dyads and conflicts and their corresponding trends over the past 60 years. The figure supports the argument that intrastate conflict has evolved from a 2-player conflict environment to a multiple player conflict environment.

Figure 3.2 demonstrates the variation in the number of dyad groups in highly diverse conflict-affected states: Afghanistan, DRC, Guatemala, Mozambique, Sudan and Uganda. Both Guatemala and Mozambique share similarities including similar dynamics and dyad numbers, the termination of respective conflicts through a peace agreement and a transition from a state plagued with political to criminal violence. The examples of Afghanistan and the DRC show interesting dynamics between increased number of dyads and conflict reversion. Both Afghanistan and the DRC may represent ripe conditions for increased likelihood of conflict reversion given multiple warring dyad groups.[275] These observations may also reveal why there was a shift during the 1990s toward an increase in conflict reversion in contrast to the Cold

[274] Cunningham, D., Gleditsch, K., & Salehyan, I. (2009).
[275] For an interesting study of the effects of third-party support *see* Balch-Lindsay, D., Enterline, A., & Joyce, K. (2008).

War period;[276] meaning an increase in dyad groups, in combination with an increase in reversion frequency, has led to a longer duration of conflict, and thus, a more complex analysis of intrastate conflict.

Moreover, examining dyad numbers and dynamics across a longer temporal period is important for understanding the full complexity of conflict processes in contrast to comparing dyad groups across a shorter temporal period (e.g., 1 year). For instance, during the conflict in Uganda a total of 19 different dyad groups were recorded as active, but if examining the conflict in just a snapshot of a shorter temporal period (e.g., 1 year), there were between 1 and 3 dyad groups who were active in any given year. After further examining the UCDP Dyadic Dataset, the dataset reveals that a variety of dyad groups arise or 'emerge' across a long (e.g., several years) temporal period. For instance, Uganda and Sudan both demonstrate variable numbers of dyad groups since the early 1970s until present day. The emergence, termination and reemergence of multiple dyad groups demonstrates the highly dynamic and unpredictable character of these conflict-affected states, which I argue, can increase likelihood of conflict reversion.

Figure 3.2 illustrates that many conflict-affected states after 1975 had more than one active dyad group. Afghanistan's multiple active dyad groups are clearly represented, which may demonstrate part of the puzzle of why Afghanistan experiences conflict reversion and persistence. Moreover, this empirical example demonstrates how applying a 2-player game to Afghanistan is ineffective in advancing our understanding of these conflict dynamics. Of importance, figure 3.1 only shows competing dyad groups and not EA assistance, so cases like Mozambique (1977-1992), and Guatemala show only 1 dyad group (e.g., RENAMO versus the central government, Guatemalan National Revolutionary Unity (UNRG), versus the central government). However, external support from neighboring countries was prevalent on both sides of the Mozambique and Guatemalan conflicts. For instance, although Guatemala's competing NSA merged into URNG by 1982, both the NSA and the central government were supported by EA that increased the complexity and longevity of the conflict. Hence, figure 3.1 underestimates the complexity of these conflicts.

[276] Many academics argue that this shift toward an increase in intrastate recurrence and duration and increased dyadic complexity is a consequence of proxy wars during the Cold War and decolonization. *See* Harbom, Lotta, Erik Melander & Peter Wallensteen, (2008).

Figure 3.2. Examples of Active Dyad Groups in Known Persistent and Recurrent/Relapse Intrastate Conflicts, 1946-2014

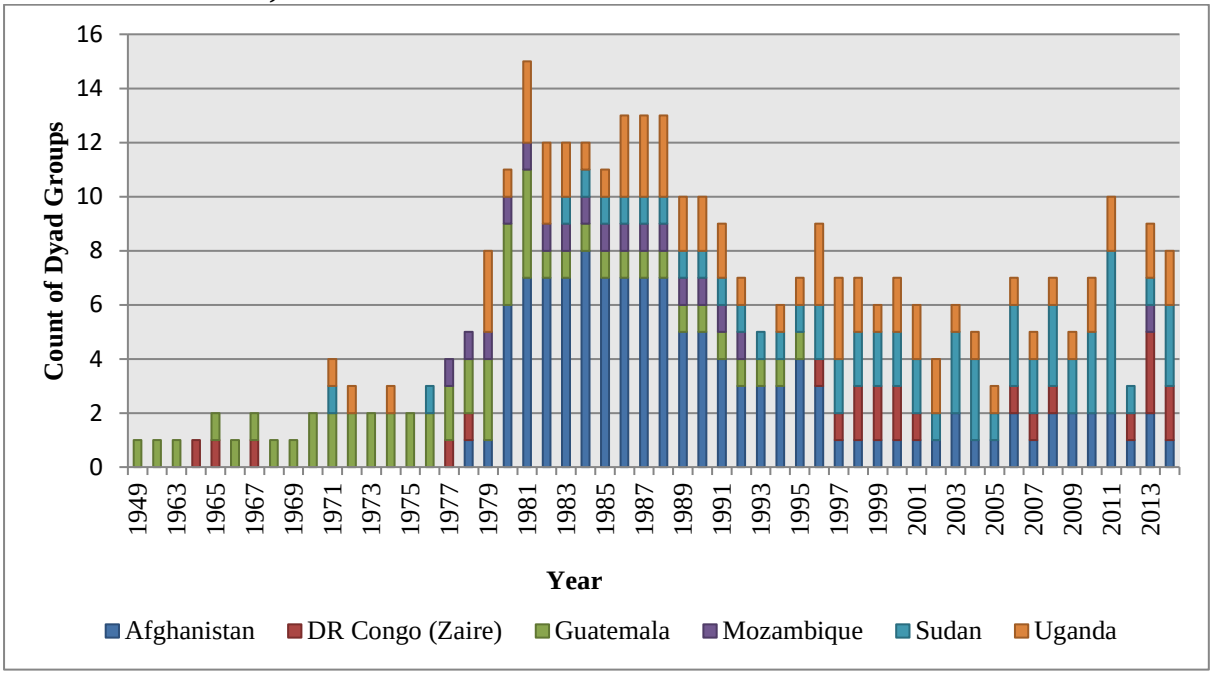


Figure 3.2. Examples of Active Dyad Groups in Known Persistent and Recurrent/Relapse Intrastate Conflicts, 1946 is from the UCDP Dyadic Dataset. This figure demonstrates conflict over the past 68 years and how the numbers of dyad groups overall have increased significantly in examples discussed within this thesis.

On average, the last 40 years illustrates that the number of dyads is higher than the number of conflicts, which indicates there are more warring actor groups than conflicts. There is one caveat related to these observations of greater dyad numbers in comparison to number of conflicts. It is quite likely that both the availability and quality of information regarding intrastate conflicts has improved dramatically. Thus, one cause for this divergence between dyads and conflict counts may be because of an improvement in data collection techniques. Nevertheless, as my argument is addressing the gaps of RCT and the difficulty RCT has in devising multi-player games, these data suggest that 2-player games are increasingly unhelpful given the rise in the number of groups fighting in a modern intrastate conflict (e.g., Afghanistan, Syria, Mali).

3.3. From the 'Competitive Exclusion Principle' to 'Paradox of the Plankton': Resolving the Challenge of Modeling Multi-Actor Groups

In order to resolve the challenge of solving for systems that contain more than one dyad group, I expanded the IR, conflict studies, and complexity literature search into the ecological sciences. Within the ecology discipline, competitive interactions between species are well

known to settle at stable equilibrium if each group settles neatly within a separate niche.[277] This empirical and theoretical ecological research is supported solely by 2-species competition models, in which only equilibrium solutions are possible. Similarly, as established in chapters I and II of this thesis, most formal modeling within the IR discipline that involves human competition is overwhelmingly applied as 2-player games. However, we have seen that many intrastate conflicts involve more than one dyad group.[278] Recently, ecological studies have advanced beyond the two species groups model to demonstrate how more than two species within the same niche can lead to non-equilibrium dynamics as observed in complex and oscillatory behaviors among competing species.[279] The following section explores this complementary link between ecology and IR by introducing how theoretical modeling from ecological studies can be beneficial for understanding complex dynamics within a state suffering from conflict reversion.

3.3.1. The 'Competitive Exclusion Principle' and its Relevance to Human Conflict

Biologists and ecologists have grappled with similar difficulties as IR scholars when analyzing uncertainty and instability in explaining competition within the natural world. Theoretical and empirical research within the natural sciences found that competition[280] for resources[281] can generate oscillations and chaotic behavior when modeling species dynamics.[282] Previous ecological research theorized that a species group's niche, or the role and requirements a species fulfills to survive and reproduce within an ecosystem, could only hold as many species as there were different types of resources available. This theory is known as the 'competitive exclusion principle' and argues that the number of species coexisting is not expected to exceed

[277] Tilman, D. (1982) *Resource Competition and Community Structure*. Princeton, Princeton University Press. Levin, S., *et al.* (Eds.) (2009).
[278] Wood, R., & Kathman, J. (2015).
[279] It is important to note that natural scientists found if "each species consumes most of the resource for which it has the highest requirement, the three species stably coexist"; meaning that equilibrium can exist in conditions that support three species. More specifically, a 'saturated equilibrium' is expected, where the number of species that coexist corresponds to the number of resources. In a human population scenario, this can occur if populations are competing at very low levels as each group has enough popular support that it does not seek to gain further political dominance. *See* Huisman, J., & Weissing, F (2001a). p. 2684.
[280] Competition is defined as "opposition among social entities independently striving for something of which the supply is inadequate to satisfy all". *See* Wright, Q. (1954). p. 146; Wright, Q. (1965).
[281] Resources are defined as "a factor which, through some range of availabilities, leads to higher population growth rates as its availability is increased and which is consumed, in the broad sense, by the population". *See* Tilman D (1980) "Resources :A Graphical-Mechanistic Approach to Competition and Predation". *Am Nat* 116: 362−393.
[282] May, R. (1977) "Thresholds and Breakpoints in Ecosystems with a Multiplicity of Stable States." *Nature* 269:471-477; May, R., & Leonard, W., (1975) "Nonlinear Aspects of Competition Between Three Species". *SIAM J. APPt.. MATH.* 29(2): 243-253; Huisman, J., & Weissing, F (2001a);. Huisman, J., & Weissing, F (2001b) "Fundamental Unpredictability in Multispecies Competition". *The American Naturalist.* 157(5):488-494;. Huisman, J., & Weissing., F.(1999) Biodiversity of Plankton by Species Oscillations and Chaos. *Nature* 402:407–410.

the number of resources available; that is, only the best competitor survives within a given niche.[283] The theoretical argument behind the competitive exclusion principle is the assumption that competing species reach (stable) equilibrium.[284] Competitive exclusion involves transitive competition, where strategy A outcompetes strategy B, and B outcompetes C, then A outcompetes C. Transitive competition a classical definition of competition and is applied widely in RCT and game theory.

This ecological theory of competitive exclusion may help to understand how IR and conflict studies scholars are unable to unravel why certain conflicts are recurrent or relapse, while others are not; that is, IR and conflict studies perceive conflict as following something like the competitive exclusion principle, in that once conflict onset occurs, the seemingly dominant actor group (i.e., usually the central government) will naturally outcompete all other actor groups.[285] However, the major puzzle in intrastate conflict is the question of conflict reversion, and this seemingly natural competitive trajectory towards exclusion is paradoxically difficult to observe. Consequently, there may be more complex dynamics involved in intrastate conflict than the competitive exclusion principle allows for.

3.3.2. How the Ecological 'Paradox' of Multiple Species Surviving on Limited Resources Complements Conflict Reversion Studies

Interestingly, ecological theory and empirical evidence of ≥ 3 species surviving on as many or fewer resources within a niche can generate oscillating or chaotic dynamics of species abundance.[286] If at least three species compete for three or fewer resources, then oscillations are observed in numerical simulations. Furthermore, if there are more species and more or fewer resources, then chaotic oscillations are also observed. Contrary to the competitive exclusion principle, these numerical simulations observed that up to nine species can be supported by only three resources,[287] which were later proved in a mathematical model.[288]

[283]Ecologists argue that if two or more populations are limited by the same resource, then initial conditions of the population in combination with the population that is most efficient at maintaining reproduction rates at the lowest resource level will out-compete other species. *See* Hardin G (1960) "Competitive Exclusion Principle." *Scienc*e 131: 1292−1297.

[284] Tilman, D. (1982); Armstrong, R.., & McGehee, R. (1980) "Competitive Exclusion" . *The American Naturalist.* 115, 151–170; Hsu, S.B (1978) "Limiting behavior for competing species". *Society for Industrial and Applied Mathematics*. 34: 760–763; Li, B., & Smith, H. (2001) "How many species can two essential resources support?" *Society for Industrial and Applied Mathematics*. 62: 336–66.

[285] *See* Luttwak, E. (1999) "Give War a Chance." *Foreign Affairs*.

[286] May, R., & Leonard, W., (1975); Huisman, J., & Weissing., F.(1999); Huisman, J., & Weissing, F (2001a).

[287] Huisman, J., & Weissing, F (2001a).

[288] Li, B. (2001) "Periodic coexistence in the chemostat with three species competing for three essential resources". *Mathematical Biosciences.* 174: , 27–40.

Therefore, a minimum of three species and ≤3 resources are required to demonstrate oscillating and unpredictable behavior.

These 'paradoxical' theoretical and empirical observations found that an excess number of species were surviving in circumstances where there were equal or fewer resource types available compared to the number of existing species. For example, one can apply the analogy of the childhood rock-paper-scissors games.[289] The strategy of actor A is dominated by B, which is dominated by C, which is dominated by A. An equilibrium is never reached; rather there is a cyclical succession of species which are almost entirely composed of A, B, or C (i.e., A>B>C>A). This rock-paper-scissors game is the opposite scenario of competitive exclusion and transitive competition and is called 'intransitive competition'. I argue that intransitive competition is experienced by actor groups in persistent or conflict reversion.[290] The three actor groups survive because their competitiveness does not dominate one another's; instead their competitiveness are inefficient as each actor group allows competing actors to fight for power. As a result, oscillatory behavior and unpredictably increases along with increased complexity within the system.[291]

Ecologists concluded that these observations occurred because multiple species *did not reach stable equilibrium*.[292] The inability to reach stable equilibrium was a consequence of temporal variability in species abundance in response to varying dynamics within the niche under analysis; that is, when there were more species than resources or when there are ≥ 3 species and ≤ 3 resources, the species do not remain constant. In other words, a species' 'carrying capacity', or the maximum number of individuals a species can reach, while still surviving and reproducing within a niche, was not reached. These species were able to coexist because species abundance oscillated through time and none of the species were able to reach carrying capacity because of a competitive effect among different species. Simultaneously, a coexistence of

[289] Sinervo, B., & Lively, C. (1996) "The Rock-Paper-Scissors Game and the Evolution of Alternative Male Strategies". *Nature*. 380(21): 240-243

[290] Intransitive competition is different from intraspecific competition which defines competition as occurring within a group. To clarify, actor groups within a conflict are in competition among one other (interspecific competition) but are producing cyclic behavior because one group is not able to dominate over other actor groups (intransitive competition).

[291] Within the mathematical and ecological sciences this type of game produce oscillatory behaviors called "heteroclinic cycling". This theory is called the 'paradox of the plankton' from Hutchinson's 1961 article. Hutchinson was the first to question why so many phytoplankton species could coexist when the number of phytoplankton species exceeded the number of limiting resources, which was in direct opposition to the widely accepted competitive exclusion principle. Hutchinson theorized that these phytoplankton could coexist because they were not at equilibrium. *See* Hutchinson, G. (1961) "The Paradox of the Plankton". *The American Naturalist*. 95 (882):137-145.

[292] Tilman, D. (1982). Tilman D., Kilham S., & Kilham P. (1982) "Phytoplankton Community Ecology—The Role of Limiting Nutrients". *Annu Rev Ecol Syst* 13: 349−372.

species inhibits any additional species to settle at equilibrium; rather, the species were *competing* and *coexisting*. Therefore, I argue that a conflict-affected state's oscillatory behavior of warring actor groups is an outcome of the competing actor groups inability to settle at equilibrium. Similarly, I argue that competing actor groups within a conflict-affected state oscillate in power and abundance as a consequence of that actor group's competitiveness.

What do I mean by an actor group's competitiveness? The maximum an actor can project its power, which leads to increased group activity, is dependent on that actor group's competitive efficiency; that is, the more efficient an actor group's competitiveness, the more efficient that actor group is in gaining power, and the more likely that actor group will outcompete other actor groups. Consequently, an actor group's competitiveness can oscillate in response to other actor groups' competitiveness. The more dynamic and variable an actor or actor groups' competitiveness, the more likely the system will result in unanticipated outcomes. This uncertainty is a result of actor groups' inability to reach (stable) equilibrium because of an actor group's competitive efficiency and the actor group's abundance (in respect to that actor group's carrying capacity). Therefore, when a state experiences conflict reversion or persistent conflict it is because of the inability of any competing actor group to claim dominance by outcompeting other actor groups. Instead, actor group activity levels (measured by abundance and competitiveness) oscillate as actor groups are both competing and coexisting within a conflict-affected state. Therefore, unanticipated behaviors emerge and are observed as oscillations between peaceful periods and outbreaks of violence.

Figure 3.3 demonstrates how violence varies within a state experiencing intrastate conflict recurrence from 1989-2013. Data is from UCDP, which only covers years from 1989-2013. Also, the figure demonstrates that states plagued by conflict recurrence do not follow any strict pattern, but rather show peaks and troughs and mild oscillatory behaviors across all three violence variables: (1) violence between a NSA and GA (UCDPBattleConYear); (2) violence among different NSA (UCDPNSA); and (3) and violence applied by either a GA group or NSA group against civilians (UCDPOS). Therefore, figure 3.3 illustrates how violence and conflict varies in cases of conflict recurrence and how competitive multiple warring actor groups may produce these dynamic violent behaviors.

A caveat to figure 3.3 is that in many intrastate conflicts the government is violently challenged by NSA who are able to organize into small groups and quickly disperse. Consequently, many estimates of who is an actively competing NSA and who is not can be extremely difficult to measure. Counts of NSA recruitment and mortality in combination with EA support can

increase and decrease over time, which can erroneously conclude that a NSA is either stronger or weaker than in reality.[293] For instance, the Brookings Iraq Index during 2003-2013, there was an estimated insurgent recruitment of between 6,000 to 20,000 active members and a death rate of insurgents between 1,000 and 3,000 a month, and over 14,000 captured and incarcerated.[294] Regarding this data, one would assume an easy victory by the US-led coalition in Iraq as insurgent numbers dwindled; however, the Brookings Iraq Index reported an increase in the number of attacks, and an increase in the sophistication of attacks, rather than a sharp decline in attacks. Therefore, the Iraq example demonstrates how state governments can erroneously assess the magnitude of power and activity of NSA groups within an intrastate conflict. Similarly, GA can appear dominant by applying harsh tactics against NSA and receiving external support from third parties when in reality, the central government is losing or has lost control and resorts to indiscriminate violence against its citizens.[295] Overall, figure 3.2 shows how variable violence is over time. Also, the figure demonstrates that states plagued by conflict reversion do not follow any strict pattern, but show peaks and troughs and mild oscillatory behaviors across all three violence measurements.

[293] Buhaug, H. (2010) "Dude, Where's My Conflict? LSG, Relative Strength, and the Location of Civil War". *Conflict Management and Peace Science.* 27(2): 107–128.
[294] The Iraq Index. The Brookings Institute. Available from: http://www.brookings.edu/about/centers/middle-east-policy/iraq-index. [Accessed 18th December 2015].
[295] Kalyvas, S. (2006).

Figure 3.3. Variation in Violence of All Recurrent Intrastate Conflicts, 1989-2013

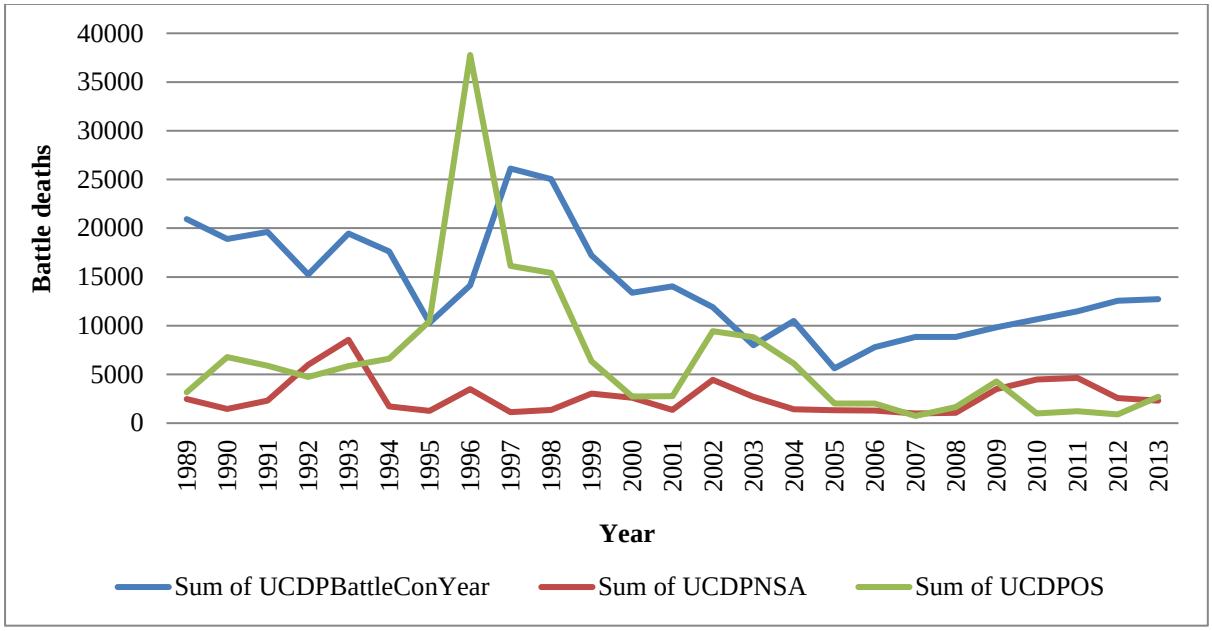


Figure 3.3. Variation in Violence of All Recurrent Intrastate Conflicts illustrates number deaths in the thousands recorded from the UCDP best estimate for deaths in a given year. Data is from the UCDP, which shows battle death counts (UCDPBattle Con Year) between a NSA and government actor (e.g. military), the UCDPNSA which represents NSA specifically, and the UCDPOS represents one-sided violence, which is the use of armed force by the government or by a NSA. The figure shows peaks in violence during the mid-1990s which then decrease and then slowly increase. Specifically, NSA counts of death (UCDPNSA) remains relatively low in comparison to battle deaths of civilian deaths. This observation is likely reflective of relatively low proportion of actively fighting NSA to the general population and the inability to accurately identify and count all NSA deaths. UCDPBattleConYear represents the number of competing party deaths from the UCDP best estimate for battle-related deaths in the conflict/dyad in the given year; UCDPNSA is the number of NSA deaths recorded from the UCDP best estimate for battle-related deaths in the conflict/dyad in the given year; and the UCDPOS is the number of one-sided violence deaths recorded from the UCDP best estimate for battle-related deaths in the conflict/dyad in the given year.

To summarize this section, ecologists originally predicted that species survival was dependent on the competitive exclusion principle, in which the number of coexisting species cannot exceed the number of different types of resources made available. However, it was later demonstrated empirically and proved theoretically that a paradoxical relationship occurs when there are among ≥ 3 species and ≤ 3 resources available, such that species can both coexist and compete within a niche. Previous IR research overwhelmingly demonstrates that the more actors (e.g., multiple NSA groups, intervention efforts by third parties) and more violent competitiveness involved, the more unlikely a conflict will terminate, but will lead to conflict persistence[296] or reversion as warring actor groups cannot defeat one another. Of importance,

[296] Buhaug, H., Gates, S., & Lujala, P. (2009) "Geography, Rebel Capacity and the Duration of Civil War". *Journal of Conflict Resolution*. 53(4): 544-569; Metelitis, C. (2010) *Inside Insurgency: On the Front Lines with the FACR, SPLA, and PKK.* New York, New York University Press.

conflicts that do not end in a military victory are more likely to conflict reversion.[297] Understanding human warring actor groups' competitiveness from an ecological perspective can explain why conflict reverts or persists, and why some conflicts terminate by stalemates, ceasefires, while others end in a military victory. Lastly, these models may help to better understand competition between and among warring groups as the competition itself can influence social change within a state (i.e., institutional evolution, political re-organization, re-structuring of social communities and cultural change through lagged variables).

3.4. A Simple Population Model of Intraspecific Competition

This section presents a simple population model to accustom the reader with the terminology. This simple model demonstrates how a population of a single actor group grows in dominance without interference or competition from other actor groups. Later the model becomes more complex as I demonstrate how growth of one actor group becomes limited by competitive effects within the actor group (i.e., *competition between individuals within the same actor group*, or "intraspecific competition") and competitive effects between actor groups *(*i.e., *competition between different actor groups* or "interspecific competition").

Human populations share characteristics that are widely applied within ecological models to study species dynamics.[298] Previous studies that have applied ecological modeling to IR and conflict include Francisco's work on public protest and coercion,[299] Turchins' cycles of growth and collapse of empires,[300] and Johnson and Madin's research on insurgent warfare.[301] Before introducing the effects of competition within the model, we can simulate an actor group's growth if competition did not exist. An actor group's population growth is limited by births or recruitment,[302] deaths, and migration, which are determined by the properties of the environment and system. These outcomes feedback into the system to determine population size and parameter values in subsequent time steps, which can result in changes in the population structure over time. This is expressed as,

[297] Toft, M. (2009).
[298] Interdisciplinary approaches between the biological/ecological sciences and IR and conflict studies have been applied in the best. *See for example*, Johnson and Madin demonstrate how ecology models are applicable to understanding counterinsurgency dynamics in both Malaya and Iraq. *See* Johnson, D., & Madin, J. (2008).
[299] Francisco, R. (1996) "Coercion and Protest: An Empirical Test in Two Democratic States. *American Political Science Review*. 40:1179-1204.
[300] Turchin, P. (2006). Turchin, P. (2003).
[301] Johnson, D., & Madin, J. (2008).
[302] Births and recruitment are used interchangeably. The model works irrespective of the mode of replication. In long conflicts, both recruitment and individuals past a certain age that are capable to fight can factor into the result. For example, *see* Johnson, D., & Madin, J. (2008).

Actor Group Population change = Births or Recruitment+ Immigration – Deaths - Emigration or

$$\Delta X = B + I - D - E \quad (3.1)$$

where ΔX represents a change in population size over one time unit (e.g., one day).[303]

To compare changes in population from those in previous time periods, one would express population change as, X_{t-1}. The model also adds a rate of change over time, expressed as,

$$r = \frac{\Delta X}{X_{t-1}} = \frac{B+I-D-E}{X_{t-1}} \quad (3.2a)$$

where r is the per capita, rate of increase over the time period $t - 1$ to t. When r is 0, then the population is at (stable) equilibrium at that time period, t. When r is > 0 then the population grows and when r is < 0 the population is in decline.

Equation 3.2a can be re-written as the size of the population at the end of the given temporal unit and the individual rate of increase, which yields,

$$X_t = X_{t-1} + rX_{t-1} \quad (3.2b)$$

To give an example, consider 10 rebel actors at an initial starting time at t=0 and that the per capita rate of increase of rebel recruitment is constant at 0.5 individuals per given time unit (e.g., per day). Thus,

$$X_1 = X_0 + rX_0$$

$$= 10+(0.5 \times 10) = 15$$

After one time unit, say a day later from the initial time, rebel recruitment has grown from a population of 10 individuals to 15 individuals. To examine rebel recruitment for a two-day period or the next cycle of population growth, one would input the answer from the first cycle, where $X_1 = 15$. Thus, there is feedback within such a system space because previous dynamics within the model affect current and future dynamics. This observation is demonstrated in the following equation,

[303] This equation is accepted as a baseline population equation within the natural sciences. *See* Berryman, A., & Kindlmann, P. (2008), p. 35.

$X_2 = 15 + (0.5x\ 15) = 22.5 \sim 23$

Therefore, after two time periods, or two days, there are approximately 23 rebels within the system. Equation 3.2b is an example of a system experiencing positive feedback as the previous population size influences the subsequent size. That is, population densities are increasing, with positive feedback, and the population grows continuously without the effects of competition.

Figure 3.4 demonstrates equation 3.2b with the example baseline conditions of $X_1 = X_0 + RX_0$, where $X_0 = 10$; and $R = 0.5$, and *K* or carrying capacity is set at 1,000 individuals. K is the maximum number of individuals the system can support and hence why the number levels off at 1,000. This graph demonstrates how positive feedback, in the absence of competition, can result in a population to grow exponentially until that population reaches its carrying capacity and therefore, the system has reached stable equilibrium. In fact, figure 3.4 illustrates how the growth slows down as the population of rebels approaches its carrying capacity. Of importance, without applying the parameter of carrying capacity a population would grow exponentially. In the absence of competition and other environmental factors, but with K, the population increases exponentially for several days until the population reaches *K* at 1,000 individuals. At *K* the amount of deaths, births, emigrations, and immigrations remain constant and therefore the system maintains a constant population size of 1,000 over time. These stable conditions within the system are reflective of that system reaching stable equilibrium.

Figure 3.4. Plot of Logistic Growth

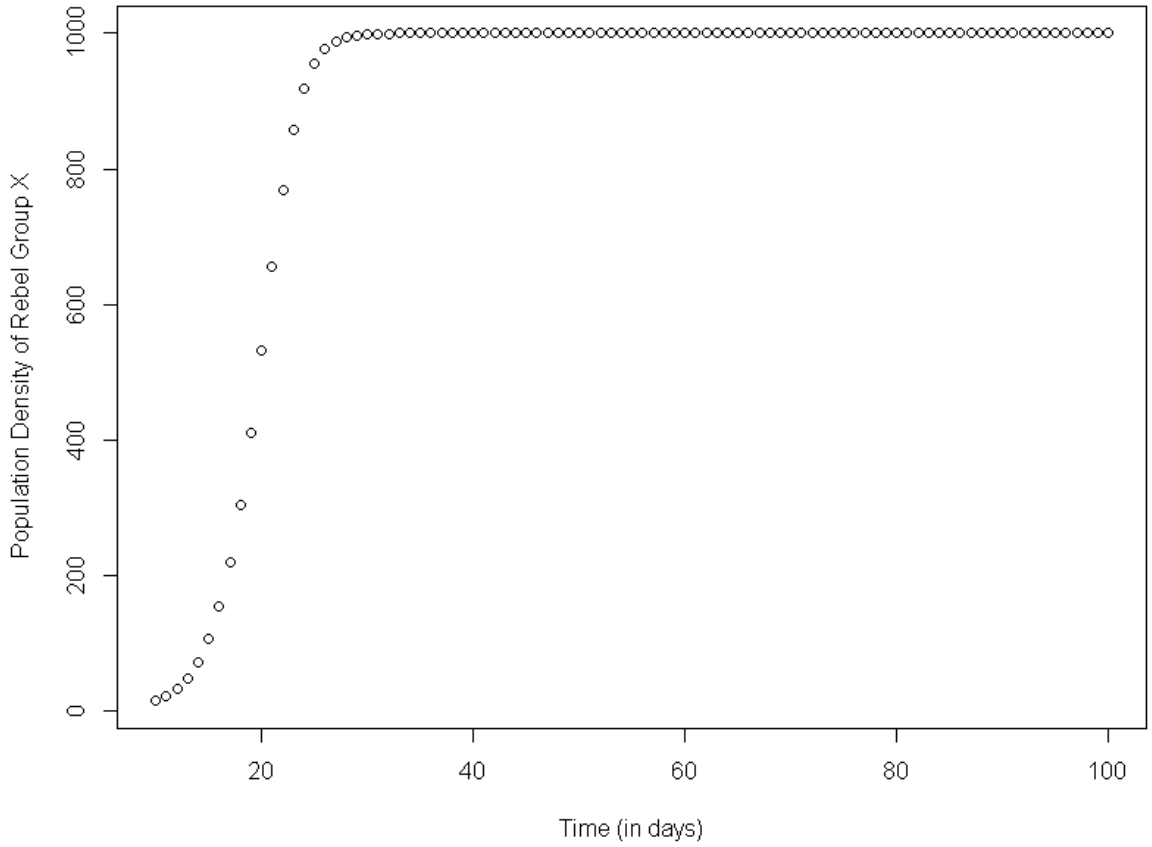


Figure 3.4. Plot of Logistic Growth demonstrates hypothetical data as an illustration to the reader of how a population can grow over time if that population is not limited by competitive effects, but only limited by the parameter, carrying capacity. The figure plots the number of individual actors against time (in days). The population grows over time until it reaches its carrying capacity (K), which was set at 1,000 individuals.

Population parameters such as size, recruitment rate, carrying capacity and mortality are important when measuring how a population changes over time. To include the parameter, carrying capacity, see as follows,

$$X_i + t - X_i = rX_i(1 - \frac{X_i}{K}) \quad (3.3)$$

where K is the carrying capacity, r is the growth rate of the population X_i..

This leads to the following question, how does one measure and account for how individuals interact within their population; that is how do we model competition within a population? The rate per capita of increase, r, is a function of resource availability (e.g., within my model, popular support). If resource availability depends on population density then the individual rate approaches a maximum called r_m. This parameter, in addition to measuring the strength of the interaction between individuals in the population, s, are both additional elements applied to understanding population dynamics. The parameter, s, can be negative when individuals are

competing within the group (i.e., intraspecific competition), positive when they are cooperating or escaping from competing actors, or 0 when individuals within a population have no effect on each other and thus ($r = r_m$). Therefore, the following equation expresses the above argument as,

[Per capita rate of increase] = [Maximum per capita rate of increase] + [Intensity of interaction between individuals or groups] * [Population density][304]

or

$$r = r_M + 0\ sX \tag{3.4}$$

The parameter *s*, brings more realistic behavioral dynamics into a model, especially for this thesis' conflict application, as actor groups are rarely a cohesive, collaborative group. If *s* is negative, then intraspecific competition is influencing the dynamics of the population by decreasing population size. The intensity of this competition can be measured by individuals who are suppressed in their growth given the amount of popular support. As the resource popular support cannot continue indefinitely it is a "limited resource". A resource that is limiting is one that is consumed by other individuals and decreases the success of that population's ability to survive. For instance, the resource that is most limiting and the resource that is of greatest interest for intrastate conflicts are popular support. Thus, a NSA's ability to recruit is dependent on its competitive efficiency relative to other NSA, GA and level of interference or support from EA. Thus, the next step in model advancement is to account for this competition, by substituting equation (3.4) for *r* in equation (3.2b) as follows,

$$X_t = X_{t-1} + (r_m - sX_{t-1})X_{t-1} \tag{3.5}$$

The above equation (3.5) allows both positive and negative feedback via parameters r_m and *s*.[305] What if we change the values of parameters *rm* and *s?* What will the effect be on the population as individuals compete with one another? In this case, NSA groups will often disagree within their organization in regards to financing, strategy, tactics and ideology, especially the longer the NSA group survives. The level of disagreement is attributed to how

[304] *See* Berryman, A., & Kindlmann, P. (2008), p. 39.
[305] Equation (3.5) can result in a negative X_t, which is not realistic. Thus, finding the logarithmic of X_t corrects this.

well organized and disciplined that NSA group is. The less disciplined and organized, the more likely that NSA group will become increasingly internally competitive, while the likelihood of splintering and violent behaviors increases.[306]

Figure 3.5 below illustrates the addition of the two parameters, r_m and s.[307] The difference between the model in figure 3.4 from equation (3.2b) and figure 3.5 below, which is derived from equation (3.5), is that we now reach K in less than half the time (~15 days instead of ~35 days). The addition of intraspecific competition (s) and limiting the maximum rate of increase (r_m) on an actor group severely affects the dynamics of the population (most notably its growth rate).

Figure 3.5. Plot of Competition with Hypothetical Rebel Actor (NSA) Group, X, s = -.001, r_m =.01

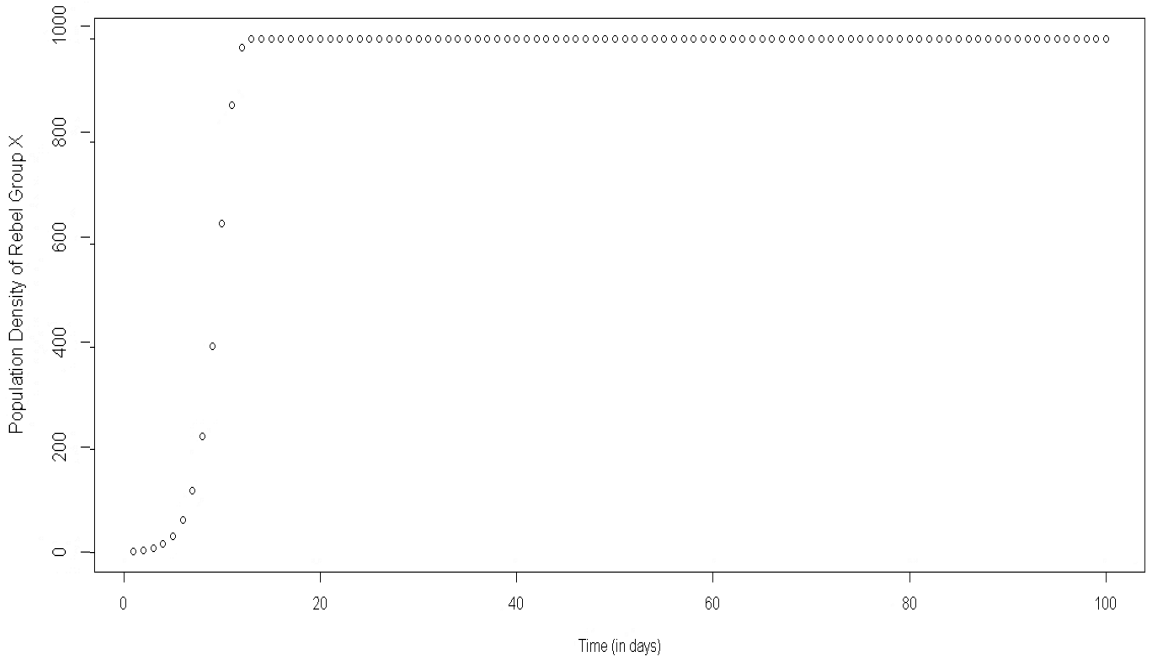


Figure 3.5. Plot of Competition with Hypothetical Rebel Actor (NSA) Group X as an illustration to the reader. The figure plots the number of individual actors within an actor group against time (in days). The actor group grows in size over time until it reaches its carrying capacity, which was set at 1,000 individuals within actor group X, While s = -.001, and R_m =.01

The fact that the addition of competition within the model increased the growth (i.e., reaching K in less than half the time) seems counterintuitive. Ecologists argue that negative feedback mechanism allow the growth rate to increase dramatically under these conditions when

[306] Weinstein, J. (2006).
[307] The parameter values for are commonly used to illustrate population dynamics in ecology. *See* Berryman, A., & Kindlmann, P. (2008), p. 41

competition is added to the population dynamic equation.[308] If negative feedback pushes population growth to reach equilibrium too rapidly, then a population can become unstable and 'overshoot' its carrying capacity. To overshoot means to go above what the carrying capacity can sustain. For instance, *K* in this example is 1,000. If a population overshoots 1,000 that means the population contains more than 1,000 individuals (*see* figure 3.5).

Figure 3.5 demonstrates that the population grows rapidly within the first several days, until it approaches equilibrium at a carrying capacity of 1,000 individuals. Reaching equilibrium in this simple model also reflects that the per capita rate of increase has reached 0. As the population density increases and reaches *K*, competition from within the population slows down the rate of growth, *rm*, until an equilibrium density, or *K*, is achieved. Therefore, the carrying capacity is actually determined by both the per capita maximum rate of increase and the strength of interactions among individuals within the population[309], or

$$K = r_m/s \qquad (3.6)$$

In addition, one can determine the carrying capacity of a population using equation (3.5) by the following,

K = 1 / 0.001 = 1000,

The addition of a small value for the per capita rate of increase parameter led to a quite large effect in the system overall. These dynamics clearly indicate the existence of characteristics related to a complex system, specifically non-linearity and feedback. The presence of non-linearity and feedback demonstrates that even in scenarios where a population's per capita rate of increase was reduced, competition within the group propelled the growth rate of the population much more quickly than in the absence of competition because of feedback through competition. These seemingly minute differences in parameters may bring to light why similar indicators of risk within conflict-affected states can lead to very different outcomes. Thus, *why some states experience conflict reversion and why others do not may have to do with slight parameter differences that lead to different behaviors and different solutions for reaching or not reaching (stable or unstable) equilibrium*. Additionally, these small changes in the parameter values demonstrate more complex behavior, which illustrates how behaviors that appear unanticipated from the individual micro-level are more predictable when measured and observed at the collective macro-level.

[308] Berryman, A., & Kindlmann, P. (2008).
[309] *See* Berryman, A., & Kindlmann, P. (2008).

To elaborate on this finding figure 3.6 shows the different effects of changing the values of the parameters. I varied the parameters *Rm* and *s* to demonstrate how intraspecific competition (i.e., competition within a group) can affect population size. The values for R_m and *s* are provided above each figure and its corresponding dynamics related to the change in these parameters (note the different y-axis scales). When $R_m = 0.01$, the population does not grow fast enough to maintain survival. For example, say a NSA group has a $R_m = 0.01$; meaning recruitment is quite low. If recruitment is too low to expand or replace the insurgency, then the insurgency either dies off or discontinues fighting. Alternatively, when $R_m > 2$ the population is 'overshooting' its carrying capacity, which forces the system to oscillate as it tries to settle back to equilibrium. Of importance, when $R_m > 2$, the system is no longer at stable equilibrium and becomes unstable. Thus, if we are examining say a population of NSA, with $R_m>2$, then a recruitment strategy might be too efficient; meaning, many individuals were recruited which led to exceeding the carrying capacity threshold and recruitment threshold.

Figure 3.6. Plots of Competition Effects within Hypothetical Rebel (NSA) Group X with Various Parameter Values of *s* and R_m

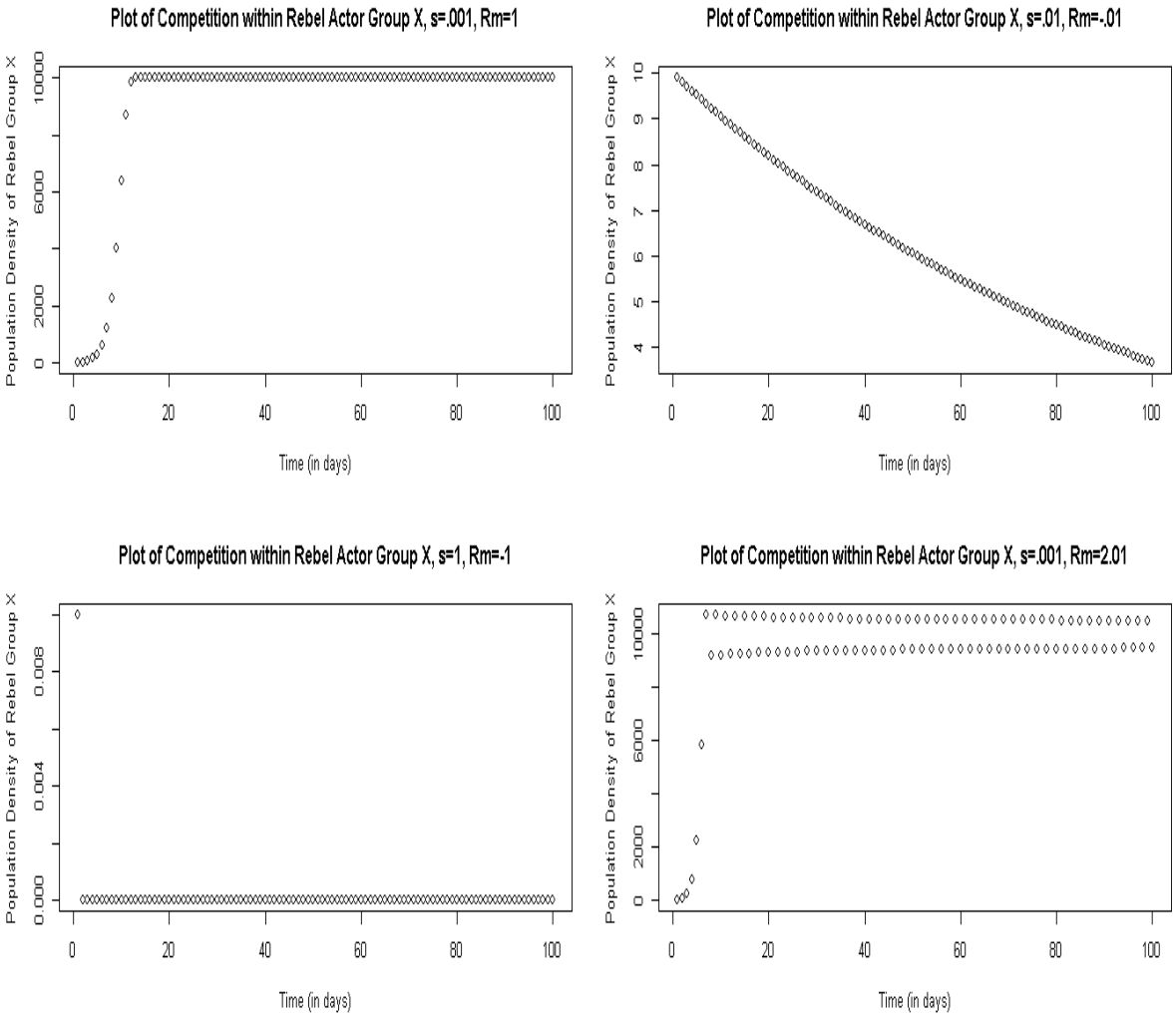


Figure 3.6. Plots of Competition Effects within Rebel (NSA) Group X with Various Parameter Values of *s* and R_m. These four graphs represent populations' growth trajectory computed from equation (3.5), when $N_0 = 10$, $K = 1000$, and parameters r_m and *s* vary. This model generates exponential growth trajectories when $r_m > 0$ and if the initial population of the actor group is small relative to *K* (*i.e.* stable equilibrium). Alternatively, when $r_m < 0$, then a decline to extinction is observed. If r_m is = 0, then the model exhibits steady-state behavior and does not grow or decline. Lastly, when r_m passes a threshold of $r_m = 2$, then oscillations are observable, which is also dependent on the magnitude of the time delay and changes within the environment. The figure plots the number of individual actors within an actor group against time (in days).

3.5. A Population Model of Interspecific Competition: Modeling More than One Actor Group

The final model to demonstrate simple population dynamics is called the Lotka-Volterra model. This model demonstrates how two different population groups compete for a resource (e.g., popular support). The Lotka-Volterra model is the most widely used model within the ecological sciences to study dynamics between predators and their prey (e.g., wolves and

sheep).[310] Additionally, this model has been applied to social systems for the analysis of civil war processes.[311] The death rate of the prey is affected by the population size of the predator, or the death rate of the individuals within the NSA group is affected by the activity of the central government. However, for purposes of this thesis, I model two actor groups as competing for prey (e.g., popular support[312]), rather than one actor group as prey and the other as predator. Equation (3.) describes two actor groups that are competing for power. The key parameters within equation (3.7) are the actor groups' capabilities at a given time. Over time, one actor group can outcompete the other through competitive exclusion or cycling (e.g., periodic cycles), which may be represented in this model as a consequence of time delays and different parameter values.

[Change in actor group 1's population over time] = [growth rate of the actor group 1] * [actor group 1 density] * { [the carrying capacity of the actor group 1] – [actor group 1 density] – [competitive effect of actor group 2 on actor group 1] * [actor group 2 density } / [carrying capacity of actor group 1] . (This equation for actor group 2 is reversed).

The mathematical equation is as follows,

$$\frac{dX_1}{dt} = \frac{r_1 X_1\{K_1 - X_1 - \propto_{12} X_2\}}{K_1} \qquad (3.7)$$

$$\frac{dX_2}{dt} = \frac{r_2 X_2\{r_2 - X_2 - \propto_{21} X_1\}}{K_2}$$

The parameters X_1 and X_2 represent the population size of actor groups 1 and 2, respectively. In the absence of a competitor (X_1 or X_2 would be absent from model), in which case the population would follow a logistic growth model, similar to Figures 3.5 and 3.6 from equations (3.2b) and (3.5). In equation (3.2b) and (3.5) the population density increased until it reached *K*. Intraspecific competition was the largest suppressor of growth, which slowed down the rate

[310] Yorke, J., & Anderson, W., Jr. (1973) "Predator-Prey Patterns (Volterra-Lotka equations)" *Proc. Nat. Acad. Sci*. 70(7): 2069-2071.
[311] Intriligator, M., & Dagobert, B. (1988) "A Predator-Prey Model of Guerrilla Warfare." *Synthese* 76(2): 235-244; Sagarin, R., & Taylor, T. (eds.) (2008) *Natural Security: A Darwinian Approach to a Dangerous World*. Berkeley, University of California Press.
[312] Gates, S. (2002) "Recruitment and Allegiance: The Microfoundations of Rebellion." *Journal of Conflict Resolution* 46(1): 111-130.

of growth, until a stable equilibrium density was achieved at K = 1,000. Conversely, in the presence of other populations the growth rate slows as competition between or among populations can reduce the final population size *below* its carrying capacity.

For the purposes of this thesis, the intensity of the competition is proportional to the actor group's population size and competitiveness. Competitiveness is operationalized as a proportionality constant, α, and is called the *competition coefficient*. The competition coefficient represents the competitive efficiency of an actor groups. The coefficients $\propto_{12}$ and $\propto_{21}$ measure the effect of competition an actor group has on a different actor group's population. The subscript numbers on $\propto_{12}$ and $\propto_{21}$ represent which actor group is competing. For instance, $\propto_{12}$ means that the competitive effect on actor group "2" has on an actor group "1", and vice versa. These subscript numbers are demonstrating that the model is simulating *interspecific* competition. Of note, in a 2-actor group competition model, only one equilibrium is possible. If the outcome is coexistence, then the intraspecific, $\propto_{11} \propto_{22} > \propto_{12} \propto_{21}$, is greater than *interspecific* competition (i.e., *competition between individuals within the same group*).[313] Similarly as described above, the subscript numbers on $\propto_{11}$ and $\propto_{22}$ represent which actor group is competing. For instance, $\propto_{11}$ means that the competitive effect on actor group "1" has on a actor group "1", and vice versa. These subscript models are demonstrating that the model is simulating *intraspecific* competition.

There are four different outcomes that pertain to the Lotka-Volterra model: (A) actor group 1 always outcompetes actor group (B); actor group 2 always outcompetes actor group 1; (C) initial conditions drive one of the actor groups to extinction; or (D) both actor groups coexist. All four of these outcomes result in the system reaching equilibrium. Figure 3.7 illustrates outcome A or B, which is reflective of competitive exclusion (i.e., victory by actor group X). How quickly an actor group is able to mobilize and use different strategies are represented by the previously discussed parameter values. For instance, prior to the peace settlement, the Colombian rebel group, The Revolutionary Armed Forces of Colombia People's Army (FARC) had a high *r* and inefficient competitiveness, or competition coefficient is low $(\propto)$, as they were able to gain popular support and secure resources. This allowed FARC to compete with the central government's inefficient $\propto$ for the resource of popular support, which consequently increased the longevity and survival rate of FARC.

[313] Case T., & Taper M. (2000) "Interspecific Competition, Environmental Gradients, Gene Flow, and the Coevolution of Species' Borders*." American Naturalist.* 155:583–605.

Figure 3.7. Plot of Competitive Effects between Hypothetical Rebel (NSA) Group X and Government Actor X

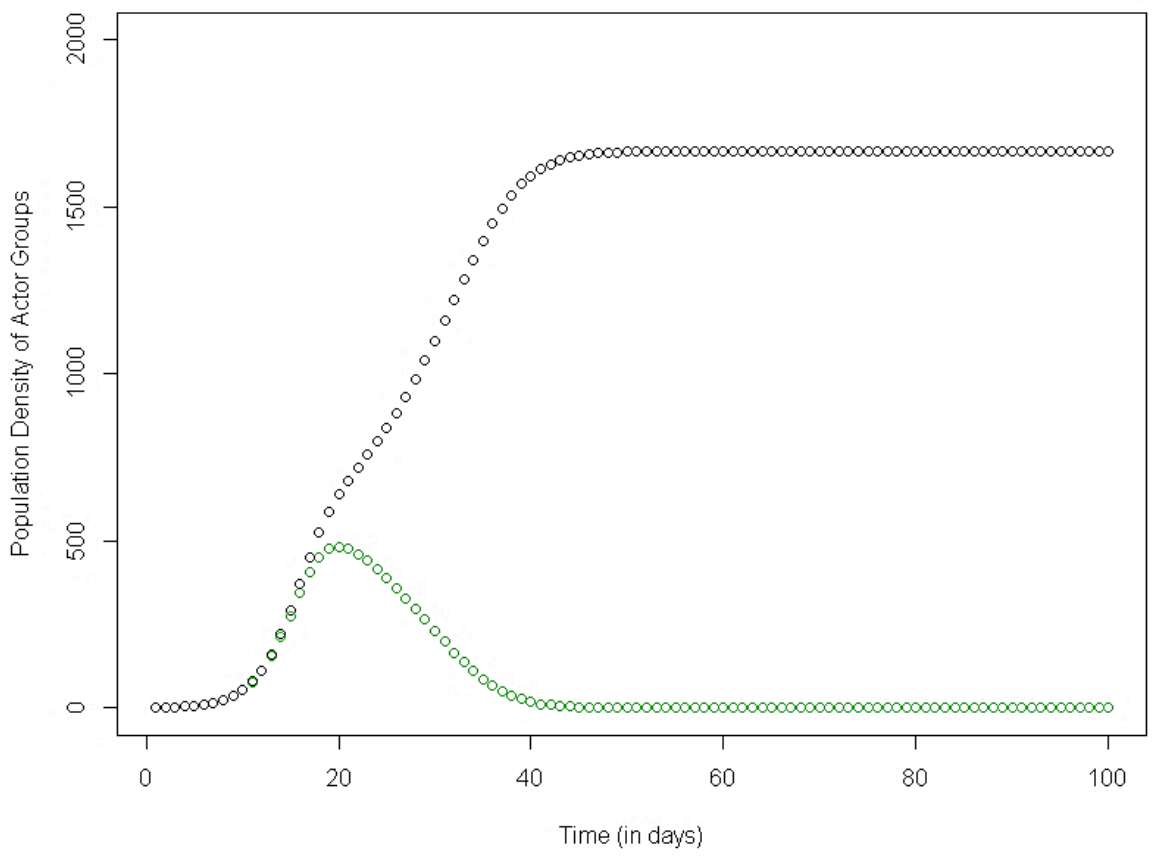


Figure 3.7. Plot of Competitive Effects between Hypothetical Rebel (NSA) Group X and Government Actor Y demonstrates two different actor groups competing, which drives one actor group to low population levels, while the other actor group survives below carrying capacity at *K*=2,000 and instead stabilizes around 1,600. The figure plots the number of individual actors within an actor group against time (in days).

The next sub-section introduces the Competitive Efficiency Model (CEM), which is a more complex model than the population and Lotka-Volterra models as the CEM models three or more actor groups. The CEM uses a combination of parameters similar to the Lotka-Volterra model and previous research from ecologists Huisman's and Weissing's[314] and biologist Robert May's[315] work on multi-species competition models. For the CEM, I consider three actor groups competitively applying different competitive efficiencies toward the ultimate aim of political dominance.

[314] Huisman, J., & Weissing, F (2001a).
[315] May, R., & Leonard, W., (1975).

3.6. The Competitive Efficiency Model

The CEM simulates dynamic, multi-actor behaviors rather than individualized and static accounts of behavior, which, have until now, are more widely associated with decision making in the social sciences. The CEM is a simulation model, which models the main processes that drive a system. A simulation model allows one to examine what would happen in a system under different conditions and scenarios. Of importance, models cannot provide a complete understanding of why some conflict dynamics result in conflict reversion and why others do not, as a model is only an imperfect representation of reality.

As mentioned in the introduction of this chapter, most modern conflicts involve more than two competing actor groups (i.e., more than one dyad). If there are more than two actor groups competing, then complex, non-equilibrium dynamics can result.[316] This thesis hypothesizes that conflict reversion occurs due to how competitive an actor group is. There are three actor groups and each actor group may adopt inefficient or efficient levels of competitiveness for their ultimate goal in claiming political power. In order to claim political power, an actor group that is the most competitive has claimed the majority of the resource. As previously mentioned, the resource within this thesis *is the general population which is not violently participating in the conflict.* The following section introduces the reader to the CEM and how this model is applied to understanding conflict that contains more than two competing actors.

This formula of $3\leq 3$ (meaning less than or equal to three actors and three competitive efficiencies), is the base of my model, in which ≥ 3 actor groups apply ≤ 3 competitive efficacies at different levels of efficiency (*inefficient* or *efficient*) within a conflict-affected state to obtain a resource. *The resource within this thesis is the general population which is not violently participating in the conflict.* Competitive efficiencies are viewed as statistically significant parameter estimates that are hypothesized to be demonstrate a significant relationship with conflict reversion. These estimates are then inputted into the CEM.

I define 'inefficient competitiveness' by an actor group(s) *as a failure to prevent competing actors from defeating their opponents, while maintaining the level of performance necessary for survival with the aim of achieving political power.* Survival here means the ability for actor groups to compete with other actor groups by applying competitiveness at some capacity. Thus, actor groups that apply inefficient competitiveness prevents the termination of a conflict. Actor groups that apply inefficient competitiveness results in conflict environments that are

[316] May, R., & Leonard, W., (1975); May, R. (1973) *Stability and Complexity in Model Ecosystems*. Princeton, Princeton University Press. Gilpin, M. (1975); Huisman, J., & Weissing., F. (1999).

persistent, or after a period of peace results in the relapse or the recurrence of conflict (i.e., conflict reversion). I define actor groups with efficient competitiveness as *those which prevent all competing actors with the exception of one from defeating their opponents with the aim of achieving political power.* Thus, an actor group that applies highly efficient competitiveness against other competing actor groups with less efficient competitiveness will win. In this scenario, conflict is unlikely to persist, recur or relapse.

The outcome of the CEM is different equilibrium solutions that represent various conflict outcomes. I argue that three actor groups have interdependent relationships with one another, which are dependent on different competitive efficiencies, and that these interdependencies produce oscillating and unanticipated patterns of behavior. Additionally, this formula of 3(≤)3 differs from the majority of both the empirical and theoretical conflict and IR literature, which generally assumes only two actor groups (i.e., one GA group versus one NSA group) fighting for various resources.[317] Moreover, I argue that formulas of 2:2, 2:1, 1:2, and 1:1 may demonstrate periodic cycling that are much more predictable.[318] An example of a periodic cycle is the fighting season in Afghanistan and Pakistan, in which certain times of the year observe an increase in fighting due to seasonal patterns.[319] In sum, the type of efficiency level attained determines how competitive an actor group is against other competing actor groups.

3.6.1. Defining Actor Groups for Competitive Efficiency Model Simulation

I categorize actor groups into three different groups: GA (government actor), NSA (non-state actor), or EA (external actor). A GA is an actor that is internationally recognized as sovereign and controls a specific territory and/or the capital of that state.[320] An NSA is a non-state actor group that is in opposition to the government, which has organized and has an announced name while using armed force to influence the outcome of the stated incompatibility.[321]

Since the CEM is new to the IR, I decided to aggregate actors as one GA, one NSA and one EA or one GA and two NSA.[322] This means that the CEM will initially simulate one government actor group, one NSA and one EA, or two NSA/EA actor groups and one government actor

[317]Cunningham, D., Gleditsch, K., & Salehyan, I. (2009); Fearon, J. (1995).
[318] Gilpin, M. (1975) "Limit Cycles in Competition Communities". *American Naturalist.* 109: 51-60.
[319] Farrell, T., & Giustozzi, A. (2013) "The Taliban at War: inside the Helmand Insurgency, 2004–2012". *International Affairs.* 89(4): 845–871.
[320] Pettersson, T. (2014).
[321] Pettersson, T. (2014).
[322]For a quantitative study on the inferential consequences (Type I and II errors) of aggregating NSA interests and behaviors *see* Shellman, S., Hatfield, C., & Mills, M. (2010) "Disaggregating Actors in International Conflict". *Journal of Peace Research* 47(1): 83-90.

group. This observation does not negate my aggregate of NSA as prior research concluded that partial peace agreements can decrease the level of violence and duration of conflict.[323]

Lastly, an EA is an external actor group that does not have a direct stake in the conflict but extends support to help the competing parties resolve the government incompatibility or to intervene in the conflict to change or regulate conflict issues.[324] EA are inclusive of state governments, organizations, individuals, etc., and can be neutral or biased in their support with a competing party.[325] An EA becomes more or less competitive dependent on the level of involvement and biases within the conflict. For example, if an EA directly sends troops during the conflict, then the EA becomes an additional competing party.[326] Although an EA may not be defined as a competing actor group an EA can still affect the dynamics of the conflict process either positively or negatively, especially if that EA is biased.[327] These affects are dependent on the conflict and time period.

There are caveats when applying broad definitions to an actor group. Such limitations include an actor group's battle-related death numbers, which are obtained through the UCDP conflict database through battle-related deaths. As these are estimates, one can never precisely calculate how many NSA individuals are fighting against a government force. Additionally, many EA participate in clandestine operations, so the exact magnitude and number of EA supporters is not always known. Also, there is high variation in the numbers of government versus NSA and EA actors, which was apparent in the earlier example from the Brookings Iraq Index. Additionally, NSA are especially infamous for surviving and growing despite having significantly fewer numbers and resources, while causing high levels of damage in comparison to GA groups.[328] Although population numbers are an important when simulating behaviors, I argue that *it is not population numbers that is of highest significance; rather, how that competitive that population is to achieve its aim and how population numbers are altered in response to competitive efficiencies used is of greatest importance to understanding conflict*.

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[323] Nilsson, D. (2008) "Partial Peace: Rebel Groups Inside and Outside of Civil War Settlements". *Journal of Peace Research.* 45(4): 479–495.

[324] Definition of third parties was extracted from the UCDP databases of UCDP External Support – Primary Competing Party Dataset v. 1.0-2011 and Managing Intrastate Low-intensity Conflict (MILC) dataset, v. 1.0, 1993-2004. *See* Melander, E., Möller, F., & Öberg, M. (2009) "Managing Intrastate Low-Intensity Armed Conflict 1993-2004: A New Dataset". *International Interactions*, 35(1): 58 - 85.

[325] The addition of an active EA can lengthen a conflict and/or lead to a stalemate. *See* Balch-Lindsay, D., & Enterline, A. (2000).

[326] Pettersson, T. (2014).

[327] Balch-Lindsay, D., Enterline, A., & Joyce, K. (2008).

[328] *See* discussion on Viet Cong's resilience against the United States' military during the Vietnam War. Johnson, D., & Madin, J. (2008) "Population Models and Counterinsurgency Strategies". In: Sagarin, R., & Taylor, T. (eds.) *Natural Security: A Darwinian Approach to a Dangerous World*. Berkeley, University of California Press. pp.159-185.

3.6.2. The Method for Finding Values of the Competitive Efficiency Coefficient (α)

Table 3.1 summarizes different approaches to modeling actor group dynamics. Previous discussion within this chapter focused on one or two actor groups competing for a resource. The table shows that when there is one actor group, logistic growth models are appropriate. For two actor groups under analysis the Lotka-Volterra model is preferred. However, for most conflict situations in which there are three or more competing actor groups, the CEM is the most appropriate. The table also lists the main characteristics of the models.

Table 3. 1 Model Applicability for Different Actor Group Counts

	One actor group: Logistic Growth	**Two actor groups**: Lotka-Volterra Model	**Three or more actor groups**: Competitive Efficiency Model
Independent variable	Carrying capacity, K	Competition coefficient, α	Competitive efficiency, α
Dependent variable	Population abundance / activity	Population abundance /activity	Population abundance/ activity
Competition type	Intraspecific	Interspecific, Intraspecific	Interspecific, Intraspecific

Within the CEM and Lotka-Volterra model, values of the competition coefficient are reflective of an actor groups' population fluctuation or activity over time. Within my adapted Loktka-Volterra model and CEM, a competition coefficient is the competitive efficiencies used by the warring actor group under interest.

3.6.3. Mathematical Formula behind the CEM

The CEM simulates how an actor group's population changes over time in respect to its and another actor group's competitive effects. The intensity of this competition can be measured by the competing actor groups who are suppressed in their growth given the amount of limiting resources available. Therefore, the intensity of this competition can be measured by individuals who are suppressed in their growth. How active an actor group is dependent how competitive the actor group is against other actor groups (Cj), which is a function of the competitive efficiencies (C_1, C_2, C_3). This analysis is based on the widely used competitive model called the 'Monod model'.[329] Thus, the competitiveness of an actor group is as follows,

$$\alpha'_X = r_X(C_1, C_2, C_3) \ = \min r_i Cj\,, j = 1,2,3 \qquad (3.8)$$

[329] Tilman, D. (1982); Huisman, J., & Weissing, F. (2001a)

The minimum function ('min'), $r_i C_j$, is the specific growth rate of actor *i* given (C_{j1}, C_{j2}, C_{j3}). Thus, the minimum function represents the most inefficient competitiveness parameter value that limits an actor's growth because growth is controlled by the least efficient use of a competitiveness by an actor group. The CEM examines three competitive efficiencies, j= *(1,2,3)* for the actor group, *i*. The numerator, $r_i Cj$, is the growth rate multiplied by the calculated competitiveness parameter. The competitiveness parameter are values found from statistical analyses from estimated parameters of independent variables under analyses for this thesis (*see* Chapters IV and V for estimated parameter values). Thus, the dynamics of each actor group depends on the competitive efficiencies used by the actor group in relation to other actor groups. The ability for an actor group to gain power is reflective of that actor group's overall competitiveness.

The following equation is the overall equation for the CEM. Equation (3.9) demonstrate three actor groups competing, $\alpha_{XiYiKi} Yi - \alpha_{XiZiKi} Zi$, by using various competitive efficiencies, α. as reflected in one actor group's change in population abundance over time, $\frac{dX_i}{dt}$.

Therefore,

[Change in an actor group's population, *X*, over time] = [the competitiveness of the actor group, *X*, divided by the carrying capacity of the actor group, *X* ,] multiplied by [the actor group population, *X*] subtracted from [the competitiveness of actor group *Y* on actor group *X*] multiplied by [the carrying capacity of actor group *Y*] subtracted from [the competitiveness of actor group *Z* on actor group *X*] multiplied by [carrying capacity of actor group *Z*]

$$\frac{dX_i}{dt} = \frac{\alpha' X X_i}{K_{X_i}} (X_i - \alpha_{XiYiKi} Yi - \alpha_{XiZiKi} Zi) \qquad (3.9)$$

The component, $\alpha_{XiYi} Yi - \alpha_{XiZi} Zi$ are the competitive effects applied by the other two actor groups and their relative effects on the actor group under analysis; that is, α represents the competitive effect one actor group has on other competing actor groups. To illustrate, α_{XiYi} represents the effect of actor group X_i on actor group Y_i . When is $\alpha_{XiYi} < 1$ the effect of Y_i on X_i is less than the effect of on its own members within its actor group. This concept works in reverse. The product of the competition coefficient, α_{XiYi} and the population size of Y_i represents the effect of an equivalent number of individuals of X_1. If the carrying capacity (K) for X_i is higher than the K for X_2 divided by the competition coefficient K_{X1}/α_{X1X2} , then

actor group X_2 is outcompeted and actor group X_1 is the victorious actor group, and vice versa. The parameters for equations (3.8) and (3.9) are shown in Table 3.2.

Table 3.2 CEM Variable and Parameter Values and Definitions

Variable	Definition
X_i Y_i, Z_i	Population size of 1 of the 3 different actor groups (e.g., the government, denoted as X_i; NSA, denoted as $Y_{i,}$; and EA actors, denoted as $Z_{i.}$)
C_j	Competitive efficiency applied at time *t*
α_i	competition coefficient, which quantifies how strongly the per capita growth rate of one actor group is depressed by another actor group; that is the intensity of the competition is assumed to be proportional to the actor groups' population size and takes values as a function of the efficiency levels
Parameter	
r_i	specific growth rate of actor$_{xi}$ as a function of competitiveness efficiency applied, C_1, C_2, C_3
K_i	carrying capacity of actor group under analysis (e.g., X_i); *see* equation (3.7)

3.6.4. Main Conditions for Oscillating Behavior that Increase the Likelihood of Conflict Reversion

Lastly, table 3.3 outlines conditions that lead to oscillatory behavior, which is hypothesized to increase the likelihood of conflict reversion. These conditions were deduced from the literature review (Chapter II) to show a relationship with conflict reversion. Conditions for oscillations are represented by inefficient competitiveness. Conversely, if a system's populations are not experiencing these oscillating behaviors, but instead have 'flat-lined' without much variation, then the system has stabilized (i.e., equilibrium). Other important variables that are attributed to increasing the likelihood of oscillating behaviors are more than one dyad groups (i.e., 3 or more warring actors), varying and strong competitive effect among the majority of actor groups, and inefficient use of competitiveness by warring actor groups in claiming popular support (i.e., the resource) for the ultimate goal of political domination and power. The reverse condition for oscillatory behaviors are no dyad groups warring, and instead one actor group dominates the political environment by using efficient competitiveness in comparison to other competing actor groups. The predictions in table 3.3 are a combination of ecological theory and empirical findings (i.e., increase in number of actor group populations involved in the conflict (EA, number of dyads, competition coefficient)/competing in a niche) and IR theory and empirical findings (politically excluded groups, politically active groups, rule of law, relative rebel capacity, and bureaucratic quality and tax capacity).

Table 3.3. Main Conditions for Oscillating Behavior			
Variable or Parameter	**Conditions for Oscillations**	**Conditions for Stability**	**Operationalization**
Politically excluded groups	Inefficient	Efficient	$C_j \in \{C_1, C_2, C_3\}$
Politically active groups	Inefficient	Efficient	$C_j \in \{C_1, C_2, C_3\}$
Relative rebel capacity	Inefficient	Efficient	$C_j \in \{C_1, C_2, C_3\}$
Rule of law	Inefficient	Efficient	$C_j \in \{C_1, C_2, C_3\}$
Bureaucratic quality	Inefficient	Efficient	$C_j \in \{C_1, C_2, C_3\}$
Tax capacity	Inefficient	Efficient	$C_j \in \{C_1, C_2, C_3\}$
External Actors	Variable involvement	No involvement; unbiased involvement; or cohesive commitment to one actor group	Extending support to help, regulate, or interfere
Number of Dyads	> 1	0	Number of active dyads
Competition Coefficient, α	Variable, strong	Constant, weak	The competitive efficiency of an actor groups

3.7. Conclusion

Complexity theory brings a novel approach to the study of conflict. The CEM illustrates how various important parameters interact to produce emergent behavior within a system of study. Examining the competitive efficiency, rather than only regressing specific variables in linear models is an innovative method. Overall, the CEM explains conflict reversion or persistence with reference to how efficient an actor group's competitiveness is against other warring actor groups across time. The CEM mathematically illustrates that behavior which appears uncertain from the individual, micro-level is more foreseeable when observed at the collective, macro-level.

The following chapter acquires parameter estimates for CEM simulation. This chapter is the most technical chapter of the thesis for a few reasons. First, as this thesis' main objective is to determine why some states revert to conflict and others do not I found it imperative to use standard statistical analyses to first regress independent variables against different conflict

dynamic dependent variables to pinpoint which variables show a stronger relationship with conflict reversion. Teasing out which independent variables contribute mostly to conflict reversion, specifically, adds to the scholarly debate of which variables are more likely to contribute to onset or reversion, rather than lumping all variables to try and explain all conflict dynamics. Moreover, specific variables that demonstrate significant relationships with reversion, in particular, can lead to more reliable parameter estimates for the CEM. Thus, I built statistical regression models to allow for analyses of variables contribute to onset, reversion or persistence. Second, while I was consolidating UCDP and other datasets for dependent variable analysis I noticed that many of the dependent variables did not consistently follow definitions within dataset codebooks. This led to an inconsistency of dependent variables that would likely affect statistical results and thus parameter estimates and the reliability of the CEM. Therefore, I operationalized new dependent variables of onset (i.e., "Usher onset") and reversion (i.e., "Usher recurrence" and "Usher relapse") that followed UCDP codebook definitions, and then compared my new variables with the codification outcomes of these variables from the datasets. Third, I used the best fit models from these numerous regressions to find estimated parameters, and this in itself represents a core contribution of my thesis to the literature. Collectively, these processes led to a very technical, but reliable parameter estimation before conducting model simulation (Chapter V).

CHAPTER IV.
Preliminary Data Analysis

Operationalization of Dependent and Independent Variables with Analyses of Common Risk Factors to Conflict Reversion

4.1. Introduction

This thesis examines why some intrastate conflicts are more prone to conflict reversion, while others are not. I argued in the previous three chapters that the reversion of conflict is in a phase of constant flux. I hypothesize that the reversion of conflict is difficult to anticipate and predict because states that experience conflict reversion are unable to settle at equilibrium. Empirical evidence of this phenomenon was demonstrated in the previous chapters and included variable levels of violence and varying dominance of competing actor groups.

Complexity and ecological theory is applied to understand these empirical observations. Complexity theory interprets how systems like conflict-affected states are able to reach or not reach equilibrium given various interdependent and non-linear relationships that can lead to unanticipated outcomes. For instance, knowing whether or not a state is experiencing conditions that allow the state to settle at stable or unstable equilibrium is imperative as the effects of intervention and mediation efforts, external support, negotiated settlements, and so on, are successful dependent on the type of equilibrium a conflict-affected state is approaching. To further understand the processes behind why similar indicators of risk produce different conflict outcomes, one must start examining conflict with more dynamic methods.

I proceed my analysis of how a conflict-affected state is a complex system by first running several statistical models to test independent variables that are hypothesized to be important contributors to increasing complexity within a conflict-affected state. These independent variables are then regressed against various dependent variables that represent different intrastate conflict processes (i.e., onset, reversion, and persistence). Findings from these statistical analyses will help determine which parameter estimates to input into the CEM (*see* Chapter V). Thus, this chapter is *critical* in demonstrating and supporting the first instance of complexity in model development.

To acquire these parameter estimates for subsequent CEM simulation I follow six steps. *First*, I operationalize intrastate conflict and find that although the UCDP is clear regarding how

conflict onset, recurrence, persistence and termination are coded, these dependent variables can be subjectively interpreted dependent on the individual coder. Consequently, I show how different conflict outcomes as coded by the UCDP (i.e., peace agreement, ceasefire, victory, low activity, other and UCDP recurrence) in comparison to my operationalization of conflict outcomes (i.e., Usher onset and Usher reversion (inclusive of recurrence and relapse)). *Second*, I describe my case and dataset selection process. *Third*, I describe in greater detail the operationalization of my dependent and independent variables. *Fourth,* I provide descriptive statistics for independent variables and descriptive statistics for all dependent variables.

Fifth, I examine how similar indicators of risk have both shared and different statistical results relative to which dependent variable is used and operationalized. I initiate this process by demonstrating how similar indicators of risk can have both shared and different results relative to how a dependent variable is operationalized. Next, I apply independent variables that are widely used within conflict empirical research as control. In addition to logistic and multinomial regressions, I run rare logit regressions as a robustness check. *Sixth*, after the independent variables are regressed against each dependent variable, I use only statistically significant independent variables as controls to build a new model that is inclusive of the independent variables that are hypothesized to increase the risk of conflict reversion (*see* Chapter V). I then report and analyze the statistical results and use parameter estimates from these final best fit models to input into the CEM (*see* Chapter V).

4.2 Operationalization of Conflict

The UCDP defines conflict derived from government or territorial incompatibility as the use of armed force between two parties. Incompatibilities concerning the government are the type of political system, the replacement of the central government, or the change in its composition, while incompatibility concerning territory is over the status of a territory (e.g., secession or autonomy).[330] Armed force is the use of a violent act to promote a party's position, resulting in death. This thesis specifically examines intrastate conflict derived from both government and territorial incompatibility.

Intrastate conflict is defined as conflict between a government and a non-government party with no direct military interference from other sovereign countries.[331] This definition excludes different forms of social unrest or riots that are looking to influence the centralized state for

[330] For a full description of all variables and definitions provided by the UCDP Dataset *see* Themnér, L. (2013) *UCDP/PRIO Armed Conflict Dataset Codebook*. Version 4-2013.
[331] The definition of intrastate conflict was applied and modified from the Uppsala Conflict Data Program's (UCDP) definition *See* http://www.pcr.uu.se/research/ucdp/definitions/.

change, but are not a direct threat to seize state power. Intrastate conflict is inclusive of those conflicts that are formally defined as civil wars (battle related deaths exceed 1,000 per year), such as the Sierra Leone Civil War (1991–2002) and those that are of lower intensity conflict (battle deaths are less than 1,000 per year, but more than 25 deaths per year) such as the conflict in Haiti (1993).

This thesis examines intrastate conflict that reaches a battle-related death threshold of at least 25 battle-related deaths per year. This differs from previous datasets, most noticeably (and until recently) from the Correlates of War (COW) project, in which a threshold of 1,000 battle-related deaths is applied.[332] There are some caveats when applying the 25 battle-related death threshold; these include a lack of data, especially before 1989, and the lack of a clear definitions that separate specific acts of violence (*e.g.* discriminate/indiscriminate). However, as this thesis examines conflict as a complex system, a threshold of 25 is more appropriate and can add to a greater understanding of how simmering violence boils over into larger-scaled conflicts. Also, a threshold of 25 allows a closer examination of intrastate conflict patterns and dynamics which are inclusive of intrastate conflicts that was or is severe (>1,000 battle-related deaths/year), or were simmering (<1,000 battle-related deaths/year) before escalating into civil war. Many intrastate conflicts generally do not rise to the level of a violence experienced by more intense conflicts (>1,000 battle-deaths/ year).[333] Furthermore, a 1,000 battle-related threshold can be quite a large threshold in less populated and less so for more populated countries, which can lead to selection bias. Thus, the 25-battle related deaths per year threshold are appropriate for understanding the dynamics and processes behind intrastate conflict.

Of importance, there are many conflicts in a variety of countries within the UCDP database. In order to separate these conflicts clearly, either by different conflicts within the same country or across countries, the UCDP defines (as does the author) a specific conflict under analysis as,

> The stated incompatibility that is being fought over, [and] a dyad also need to incorporate the same warring sides. This includes, for example, repeated conflicts between states or repeated interactions between a government and the same specific rebel organizations.[334]

The UCDP applies four measurements to count and differentiate conflict episodes. One is via "ConflictID", or conflict identification (ID) number, which is a unique ID taken from the

[332] Conflict that is coded as having >1,000 battle-related deaths/year are considered civil wars within the literature and as a threshold for many database inclusions of conflict.
[333] Call, C. (2012).
[334] Kreutz, J. (2010).

UCDP Armed Conflict Dataset. For instance, Burundi's conflict ID is 1-90. Secondly, the UCDP attributes a unique identifier called "ConflictEp", or conflict episode, which counts the number of times a conflict flares up again under the same conflict ID. For instance, Burundi's conflict episodes are 9001, 9002, 9003, and 9004 which all correspond to the conflict ID number, 1-90. Lastly, the UCDP aggregates dyad groups under a "DyadID" number, which is a unique dyad ID, and "DyadEp", which is a unique dyad episode number. Both DyadID and DyadEp are taken from the UCDP Dyadic Dataset. For example, Burundi's dyad IDs are 11, 12, 13, 14, 15, and dyad episode numbers are 1101, 1201, 1301, 1401, and 1501, which all correspond to the Conflict ID number, 1-90.

4.3 Dataset Revision via New Operationalization of Dependent Variables

Although the UCDP is clear on how it codes various intrastate conflicts and their episodes, the issue of whether or not a conflict is recurrent or onset occurs becomes opaque. Consequently, I include a verbatim coding criteria (from the UCDP codebook) to different conflict processes, onset and reversion, which I label "Usher onset"[335], "Usher recurrence", and "Usher relapse". For instance, table 4.1 operationalizes different dependent variables for the Burundi conflict episode. The symbol, $\neq$ can be interpreted as UCDP's conflict outcome definition is not always followed within the UCDP dataset. The "✓" indicates the author's strict adherence to the operationalization of the dependent variable, which follows the italicized UCDP definition.

[335] As the UCDP is aware of some of these coding errors, the UCDP corrects for this by providing dyadic information for each conflict episode. A dyad episode consists of a continuous year of armed activity between the same parties, includes "one or more opposition organization(s)" and is defined by the UCDP as a conflict-affected state consisting "of two conflicting primary parties" where "[a]t least one of the primary parties are state governments".[335] I compared the number of times a conflict recurred to the competing parties involved and separated any cases that did not include the same competing parties, even though the conflict recurred under the UCDP criteria. These separate cases were coded as new conflict, as "Usher onset".

Table 4.1. Burundi (1991) Example of Dependent Variable Coding Comparisons

Conflict Outcome	**As coded in author's dataset**
UCDP onset *(≠ different dyad groups and/or fighting over different incompatibility from pervious conflict episode*)	
UCDP recurrence *(≠ same dyad groups, same incompatibility, and conflict ID, resumes after one year of peace)*	
Usher onset *(different dyad groups and/or fighting over different incompatibility from pervious conflict episode)*	✓
Usher recurrence *(same dyad groups, same incompatibility, and conflict ID, resumes conflict after one year of peace)*	✓
Usher relapse (*different dyad groups, but same incompatibility and conflict ID, resumes conflict after one year of peace*)	✓

The UCDP codes Burundi in 1991 as "recurrent" since the conflict ID has not changed, even though the years between the previous conflict and subsequent conflict are 20+ years apart and different dyad groups are fighting (which does not follow UCDP onset operationalization in the definition in table 4.1). The previous Burundi conflict episode was coded to have terminated in 1965. The UCDP codes the next conflict episode (same conflict ID) which takes place in 1991 *and* experiences a conflict with *different* dyad groups as recurrent, even though the dyad groups differ! Moreover, from the first conflict episode (coded onset) in 1965 to second conflict episode (coded recurrence) in 1991 demonstrates a difference of 26 years between conflict episodes![336] Thus, the Burundi case is coded as "recurrent" conflict even through this conflict in 1991 observes conflict from a different dyad group. These inconsistencies are not acknowledged in the codebook. Unfortunately, the problem of Burundi is prevalent throughout the UCDP Conflict Termination dataset (e.g., Cuba, the DRC, etc*)* and does not discriminate among regions or time periods.

After examining the UCDP data more closely, it appears that definitions of conflict onset, recurrence, persistence and termination are not straight forward. Upon corresponding with database managers at Uppsala University, I was informed that each time a rebel group fights a

[336] These codification issues are not unique to the UCDP. For instance, other scholars code large gaps between one conflict episode to the next as recurrent. For instance, Barbara Walter's 2014 study coded a conflict (≥1,000 battle deaths/year) as recurrent when there was *16+ years* between conflict episodes among the same warring parties. *See* Walter, B. (2014).

government over an incompatibility the conflict is given a particular conflict identification number in regards to a conflict episode. Conflict episode 'breaks' are interpreted as the termination of conflict activity for a year in which the number of battle deaths that year is less than 25. I was informed that *it is under the discretion of the individual coder to decide for herself whether to treat the different episodes as a recurrent conflict or as separate conflicts*. These decisions are dependent on how the coder defines conflict. Additionally, the UCDP does not distinguish major time lapses between conflict termination and conflict recurrence. This example of how Burundi coded is prevalent throughout the UCDP dataset (e.g., Cuba, the DRC, Mali, Georgia*)* and does not discriminate among regions or time periods.

As the case of Burundi demonstrates, the UCDP coding criteria is not always followed. The addition of the Usher conflict reversion and onset variables helps to amend this. Moreover, the addition of Usher dependent variables helps to clarify and maintain consistency within my statistical analyses. Although time consuming, these variable clarifications and multiple statistical models regressed against different dependent variables leads to more accurate and consistent parameter estimates which improves the reliability of the CEM. Furthermore, distinguishing between cases that are perceived as recurrent conflicts and those that are two sequential conflicts are extremely difficult and often highly subjective.[337]

Usher conflict reversion is inclusive of both conflict recurrence (n=108 for conflicts between 1946-2013; n=80 for conflicts between 1989-2013) and conflict relapse (n=98 for conflicts between 1946-2013; n=59 for conflicts between 1989-2013). Conflict reversion is under a wider umbrella of conflict that is inclusive of both conflict recurrence and conflict relapse. Table 4.2 demonstrates how reversion, recurrence and relapse both compare and contrast to the UCDP definition of recurrence with examples.

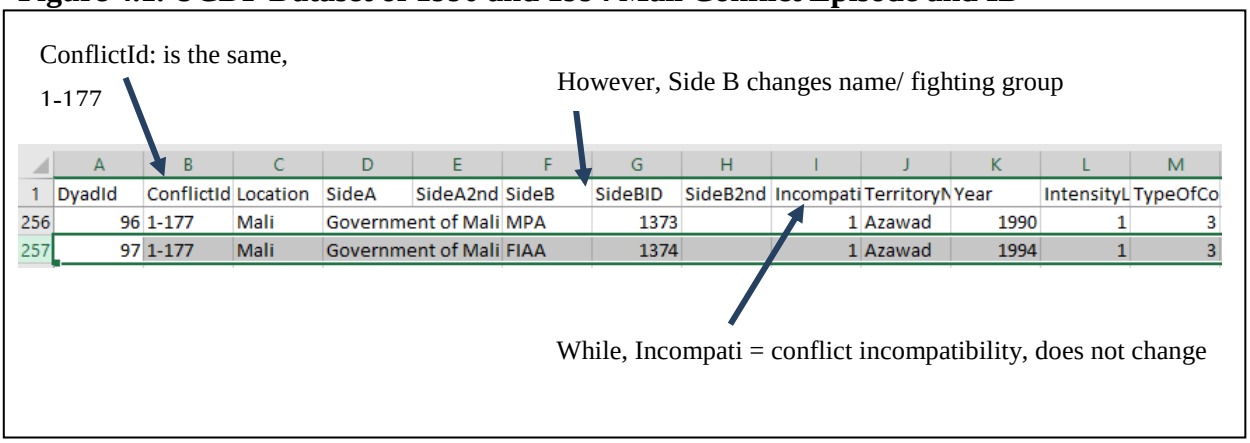
Lastly, because of the UCDP inconsistencies with conflict reversion, I operationalized the dependent variable "Usher reversion" as a conflict episode that experienced a period of peace within one year, but resumed conflict under the same incompatibilities, but with different competing parties (*see* table 4.2).

[337] Call, C. (2012).

Table 4.2. Usher's Conflict Reversion versus UCDP's Conflict Recurrence				
		Examples		
Dependent Variable	**Definition**	Cuba, 1956	Georgia, 2004	Mali, 1994
Usher conflict reversion	Oscillations of peace and violence across time. Both conflict relapse and recurrent conflict are categorized under the umbrella of conflict reversion	✓	✓	✓
Usher conflict recurrence	Conflict experienced a period of peace within one year (i.e., <25 deaths/year), but resumed conflict under the same incompatibilities and the same competing parties	✓	✓	
Usher conflict relapse	Conflict experienced a period of peace within one year (i.e., <25 deaths/year), but resumed conflict under the same incompatibilities and conflict ID, but with different competing parties			✓
UCDP conflict recurrence	Conflict experienced a period of peace within one year (i.e., <25 deaths/year), but resumed conflict under the same incompatibilities and the same competing parties	✓		✓

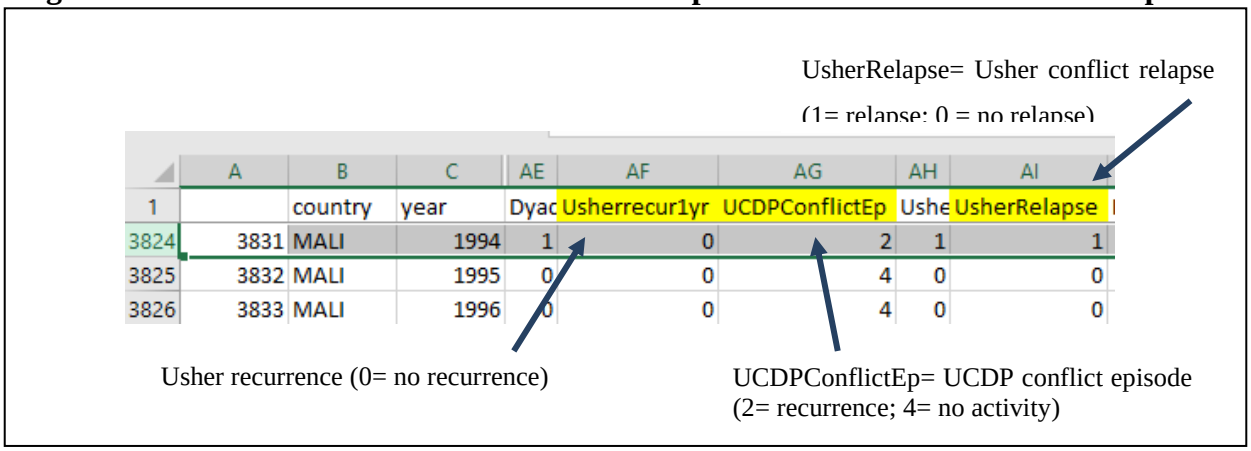
To illustrate these inconsistencies figures 4.1 and 4.2 presents the case of the Mali in year 1994 as it appears in the author's datasets. Figures 4.1 and 4.2 gives further support for my dependent variable operationalization with the example of Mali in table 4.2. The UCDP codes Mali as recurrent in 1994 (UCDPConflictEp =2, see figure 4.2). However, after reviewing how the UCDP operationalizes recurrence from table 4.2 and what is coded as recurrent from the UCDP codebook, one can clearly see these inconsistencies; that is, although the UCDP codes Mali with the same conflict identification number, 1-177, side B changes from DyadId number 96 or SideB called MPA or SideBID called 1373 in 1990, to DyadId 97 or SideB FIAA or SideBID of 1374 in 1994. Meanwhile, the government actor is the samet and the conflict incompatibility is the same. Therefore, while the conflict identification number, government actor and incompatibility are consistent from the previous episode of conflict in the year 1990, the following conflict episode in 1994 observes a different side B or rebel actor group. Thus, I code this conflict episode in 1994 Mali as conflict relapse as the incompatibility and Conflict-ID are the same, but warring groups differ, in contrast to what the UCDP codes the conflict episode of Mali in 1994 as recurrence.

Figure 4.1. UCDP Dataset of 1990 and 1994 Mali Conflict Episode and ID



	A	B	C	D	E	F	G	H	I	J	K	L	M
1	DyadId	ConflictId	Location	SideA	SideA2nd	SideB	SideBID	SideB2nd	Incompati	TerritoryN	Year	IntensityL	TypeOfCo
256	96	1-177	Mali	Government of Mali		MPA	1373		1	Azawad	1990	1	3
257	97	1-177	Mali	Government of Mali		FIAA	1374		1	Azawad	1994	1	3

Figure 4.2. Usher Dataset of 1994 Mali Conflict Episode of Recurrence versus Relapse



	A	B	C	AE	AF	AG	AH	AI
1		country	year	Dyac	Usherrecur1yr	UCDPConflictEp	Ushe	UsherRelapse
3824	3831	MALI	1994	1	0	2	1	1
3825	3832	MALI	1995	0	0	4	0	0
3826	3833	MALI	1996	0	0	4	0	0

Although competing parties might be fighting over the same incompatibility after a period of peace, this does not mean that the same competing parties are involved in the conflict. Conflict relapse includes the reversion of conflict within a period of one year over the same incompatibilities, but with different actor groups. Plausible reasons for why SideB may change, even if the conflict identification number is the same from conflict episode to conflict episode include that competing actors may have splintered, formed alliances or new NSA emerged. Thus, the new variables, Usher reversion and Usher relapse, are to help clarify and make consistent such codification inconsistencies.

4.3.1 Separating Conflict Outcomes under UCDP's Coding Criteria

After discovering the inconsistencies in the operationalization of the dependent variables, I analyzed how conflicts terminated via their 'conflict outcome'. Following UCDP's coding criteria and the author's criteria, I code a conflict outcome into separate categories; these categories are (1) peace agreement; (2) ceasefire agreement; (3) victory; (4) low activity; (5)

other;[338] (6) UCDP recurrence and (7) Usher conflict reversion. A peace agreement is defined as,

> an agreement concerned with the resolution of the incompatibility signed and/or publicly accepted by all, or the main, actors in a conflict. The agreement should address...the issues of contention... [which are] concluded between parties regardless of any reduction in their armed activity.[339]

The specifics behind this definition of an active conflict versus episodes of peace are of importance as many datasets code episodes of peace and conflict differently (e.g., 1,000, 100 or 25 battle death thresholds; two year increments or peace episodes versus one or five year increments, etc.), which can impact quantitative results. The UCDP datasets avoid a misunderstanding by operationalizing conflict episodes versus peace episodes as distinct episodes of conflict. Specifically, a state is experiencing a "peaceful" period if that state has not recently or is presently experiencing more than 25 battle-related deaths per year between formally combative groups.[340] The threshold of 25 battle-related deaths does not include civilian deaths because methods of recording civilian deaths are either unreliable or are not considered within many databases. [341] For instance, casualty data suffers greatly from measurement error, which is a consequence of either over or under reporting. One major caveat is that UCDP does not code whether or not an agreement was implemented, but only that the agreement was signed.[342]

Next, a ceasefire is defined as an "agreement between all of the main actors in a conflict that terminates military operations".[343] A ceasefire differs from a peace agreement, in that a peace agreement addresses the incompatibilities between and among competing parties, while a ceasefire does not. The fourth possible outcome is a "victory" when one side in an armed conflict is either defeated or eliminated, or otherwise succumbs through capitulation, surrender,

[338] Kreutz, J. (2010).
[339] Kreutz, J. (2010).
[340] This understanding of a peaceful period versus a period of conflict is following Galtung's definition of "negative peace" *See*. Galtung, J. (1996) *Peace by Peaceful Means: Peace and Conflict, Development and Civilization*. London, age. Galtung, J. (1969) "Violence, Peace, and Peace Research". *Journal of Peace Research*. 6(3):167-191.
[341] A threshold or 25 is more appropriate and can add to a greater understanding of how simmering violence boils to larger-scaled conflicts and the effects lower-scaled violence has on peace processes. Furthermore, recurrent conflicts and armed conflicts more generally do not often rise to the level of a violence experienced by a civil war (>1,000 battle-deaths/ year). *See* Call, C. (2012).
[342] After a peace agreement is reached or when a conflict terminates, some states will experience a resurgence of violence equal or sometimes greater in intensity compared to levels experienced during the conflict. For example, within Angola more deaths were recorded after a peace agreement compared to those who were killed during the war.
[343] Kreutz, J.. 2010.

or similar public announcement.[344] An outcome of "low activity" is coded when conflict activity continues but does not reach the UCDP fatality threshold.[345] An outcome that is coded as "other" occurs when the conflict terminates without a victory or agreement. For instance, a conflict could continue, but battle-deaths are below the 25 battle-related threshold or a competing party withdraws from the conflict.

Table 4.3 demonstrates conflict outcomes based on UCDP codification and includes the Usher reversion outcome for comparison. Table 4.2 UCDP Conflict Outcomes are for all intrastate conflicts between 1945 and 2013. For comparison, I also show conflict outcomes after the Cold War.

Table 4.3. Conflict Outcomes[346]

1946-2013		
	Count	Percentage
Peace agreement	52	3.4%
Ceasefire	41	2.7%
Government victory	84	5.6%
Rebel victory	31	2.0%
Low activity	88	5.8%
Other	4	0.2%
UCDP conflict recurrence	140	9.3%
Usher conflict reversion	206	13.7 %
N	1495	
1989-2013		
	Count	Percentage
Peace agreement	28	3.9%
Ceasefire	27	3.7%
Government victory	26	3.6%
Rebel victory	7	0.9%
Low activity	54	7.5%
Other	2	0.2%
UCDP Conflict recurrence	84	11.8%
Usher Conflict reversion	139	19.5%
N	711	

Although this thesis examines intrastate conflict, it is interesting to examine some of the different types of conflict to gain a general overview. For instance, table 4.4 shows that half of all post-World War II conflicts were terminated either by a ceasefire or peace agreement and

[344] Kreutz, J.. 2010.
[345] Kreutz, J.. 2010.
[346] UCDP Conflict Termination Dyadic Dataset v.2010-1, 1946 – 2009.

only one-fifth of interstate conflicts ended in victory. This is in sharp contrast to intrastate conflicts that ended in victory one-third of time. However, the average intrastate conflict demonstrates longer periods of fighting compared to interstate conflicts. The median for these conflicts is dramatically lower, demonstrating a positive skew to the right by a few cases (e.g., the Vietnam War (1955-1975) and the Mozambican civil war (1977-1992)).

Table 4.4 All Conflicts and their Outcomes, 1946-2010[347]

Outcome	**Interstate**	**Intrastate**	**Total**
Peace Agreement	10	39	57
Duration (days), mean	349	2,068	1,749
Duration (days), median	222	1,200	1,036
Ceasefire	19	31	50
Duration (days), mean	563	2,490	1,763
Duration (days), median	213	630	365
Victory	13	102	119
Duration (days), mean	460 (184)*	625	595
Duration (days), median	19 (15)*	24	23
Other	21	116	146
Duration (days), mean	472	1,735	1,581
Duration (days), median	365	647	590

* Estimates excluding the Vietnam War are in parentheses.

In agreement with previous research findings,[348] table 4.4 shows that conflicts that end with a military victory are shorter in comparison to other categorizations of outcomes. Conversely, the length of peace agreements for intrastate war is much longer. This increase in duration of peace agreements is argued as a consequence to increased peacekeeping missions and interventions.[349] For instance, during the 1990s and early 2000s the international system witnessed a shift as UN peacekeepers were increasingly deployed with the expectation that

[347]Kreutz, J. (2010).
[348] Toft, M. (2009).
[349] Fortna, V. (2004).

they would "create" post-conflict environments in high tension areas.[350] As a consequence, mediation efforts by EA were selectively applied to conflicts that were the most intense and difficult to resolve.[351] Ironically, conflicts that resulted in peace agreements were more unstable, increased the likelihood of renewed violence and were highly uncertain in comparison to intrastate conflicts that ended in a victory.

4.4 Dataset and Case Selection

The set of cases was compiled from the UCDP Armed Conflict Dataset v.4-2015, 1946 – 2014 which is a conflict-year dataset with information on armed conflict where at least one party is the government of a state from 1946 to 2014.[352] I also used the UCDP Dyadic Dataset v. 1-2015[353] (i.e., a disaggregated version of the UCDP Armed Conflict Dataset) to go beyond the conflict level represented in the UCDP Armed Conflict Dataset and focus on the dyads within each conflict. Additionally, to determine how a conflict terminated I used the UCDP Conflict Termination Dyadic Dataset v.2010-1, 1946 – 2009, which provides information on specific start and end dates for conflict activity and means of termination for each conflict episode at the dyad-level, which corresponds with the UCDP Dyadic Dataset v1–2015.

In addition to the UCDP datasets, I also utilized the EPR [354] dataset for two of my new independent variables that are hypothesized to increase the likelihood of conflict reversion. The UCDP Conflict Termination Dyadic Dataset includes recurrent conflict with variables that code how, when and if the conflict terminated, while the UCDP Armed Conflict Dataset is inclusive of all episodes of conflict. I am able to overlap these datasets because each episode of conflict is consistently coded, which excludes the possibility of coding mismatch error and redundancy. Consequently, all the previously discussed databases are required in order to examine all instances of reversion.

Table 4.5 demonstrates the country cases for recurrence and relapse by conflict episode year. I developed these lists using the UCDP datasets that approximate my definitions of recurrence and relapse, which are given in table 4.2. I use FL's initial pool of cases and add any cases of recurrence and relapse from the UCDP dataset that fulfills the 25 battle-related death threshold.

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[350] The United Nations General Assembly Security Council (2000) *Report of the Panel on United Nations Peace Operations.* Fifty-fifth session. Item 87 of the provisional agenda. Comprehensive review of the whole question of peacekeeping operations in all their aspects. A/55/305– S /2000/809. p. viii.

[351] Gent, S. (2008) "Going When it Counts: Military Intervention and the Outcome of Civil Conflicts." *International Studies Quarterly.* 52(4): 713-735. Fortna V. (2008); Fortna V., & Howard L., (2008) "Pitfalls and Prospects in the Peacekeeping Literature." *Annual Review of Political Science* 11: 283–301.

[352] Pettersson, T., and Wallensteen, P. (2015); Gleditsch, N., *et al*. (2002) "Armed Conflict 1946-2001: A New Dataset". *Journal of Peace Research* 39(5).

[353] Harbom, L., Melander, E., & Wallensteen, P. (2008).

[354] Vogt, M., *et al*. (2015)

Table 4.5 compares two highly cited scholars in conflict reversion case study selection. These two scholars are Charles Call and his 2012 book *Why Peace Fails*[355], and Barbara Walter and her 2014 article, "Why Bad Governance Leads to Repeat Civil War".[356] Call codes recurrence by using the same UCDP 25-battle-related death threshold and also uses FL's 2003 study as a baseline for his case selection. Call codes conflict recurrence after one calendar year of peace. Peace is subjectively coded as that country's perception of peace in interwar years, and is therefore highly contested. Recurrence also requires at least one NSA common to both armed conflicts, which allows Call to exclude episodes of conflict where none of the prior NSA are involved. In contrast, Walter's higher threshold of 1,000 battle-related deaths, and a period of peace between conflict of two years without 1,000 battle deaths *and* at least one year with fewer than 25 battle-related deaths restricts Walter's cases substantially.

Table 4.5. All Cases of Usher Recurrence and Relapse in Comparison to the UCDP Definition and Prominent Intrastate Conflict Recurrence Scholars

UCDP Recurrence	Usher Recurrence	Call Recurrence	Walter Recurrence	Usher Relapse
Angola, 1998, 2004, 2007, 2009	Afghanistan, 2002	Azerbaijan, 1992-1994, 2005	Afghanistan, 2005	Argentina, 1963, 1974
Argentina, 1965, 1974	Angola, 1994, 1996, 1998, 2002, 2004, 2007, 2009	Burundi, 1921, 1988, 1993-2006	Burma, 1994	Azerbaijan, 1995
Azerbaijan, 1997, 2005, 2008, 2012	Azerbaijan, 1997, 2005, 2008, 2012	Cambodia, 1970-75, 1987-92	Cambodia, 1978	Bolivia, 1952, 1967
Bolivia, 1952, 1967	Burma, 1972, 1976, 1987, 1990, 1992, 1993, 1994, 1995, 1996, 1997, 2000, 2005, 2011, 2013	CAR, 1996-97, 2001-2	Chad, 1976, 1990, 2006	Burma, 1961, 1964, 1985, 1991
Burma, 2000	Burundi, 2008	China, 1950-51, 1956-59	DRC, 1996, 2007	Burundi, 1991, 1994
Burundi, 1991, 1994, 2008	China, 1956, 1959	Indonesia, 1975-99, 2006	Iran, 1974, 1988, 1997, 2004	Cambodia, 1978
Cambodia, 1979, 2011	Colombia, 1973	Georgia, 1992-94, 2004	Laos, 1989	Cameroon, 1984
Cameroon, 1984, 2009, 2011	Congo, 2002	Haiti, 1991-95, 2004	Lebanon, 1982, 1989	CAR, 2006, 2009
CAR, 2006, 2009	Croatia, 1995	Lebanon, 1958, 1975-90	Liberia, 2003	Chad, 1976, 1986, 1989, 1997, 2005
Chad, 1976. 1986, 1989, 1997, 2005	Cuba, 1956	Liberia, 1989-96, 1999-2003	Nicaragua, 1982	Congo, 1997
China, 1956, 1959	Ethiopia, 1980, 1983, 1993, 1994, 1996, 1998	Mali, 1989-94, 2007	Pakistan, 2007	Cuba, 1961
Congo, 1997, 2002	Eritrea, 1999, 2003	Nicaragua, 1978-79, 1981-88	Philippines, 2000	DRC, 1967, 1977, 1996, 2006, 2011, 2013

[355] Call, C. (2012) *Why Peace Fails: The Causes and Prevention of Civil War Recurrence.* Georgetown University Press, Washington, D.C..
[356] Walter, B. (2014).

Croatia, 1995
Cuba, 1956, 1961
DRC, 1967, 1977, 1996, 2006, 2012
Djibouti, 1999
El Salvador, 1979
Eritrea, 1999, 2003
Ethiopia, 1976, 1993, 1996, 1998
Georgia, 2008
Ghana, 1981, 1983
Guatemala, 1954, 1963
Haiti, 2004
India, 1961, 1964, 1967, 1971
Indonesia, 1958,1975, 1981, 1984, 1992, 1997, 1999
Iran, 1966, 1979, 1990, 1997, 1999, 2005
Iraq, 1963, 1973, 1982, 2004
Ivory Coast, 2011
Laos, 1963, 1989
Lebanon, 1975, 1982, 1989
Liberia, 1989
Malaysia, 1975, 1981
Mali, 1994, 2007, 2012
Mexico, 1996
Mozambique, 2013
Nepal, 1996
Nicaragua, 1982

Georgia, 2004, 2008
Guatemala, 1965
India, 1961, 1994, 1996, 1997, 1998, 1999, 2000, 2001, 2003
Indonesia, 1958, 1967, 1976, 1981, 1984, 1992, 1997, 1999
Iran, 1966, 1979, 1986, 1990, 1991, 1993, 1996, 1997, 1999, 2011
Iraq, 1973, 1987, 1991, 1995
Israel, 2006
Laos, 1963
Lebanon, 1982
Malaysia, 1974, 1981
Mozambique, 2013
Nigeria, 2011
Pakistan, 1994, 2006, 2011
Papua New Guinea, 1992
Peru, 2007
Philippines, 1993, 1997, 1999, 2009
Russia, 1999
Rwanda, 2009
Senegal, 1992, 1995, 1997, 2000, 2003, 2011
Somalia, 1986
Spain, 1985, 1991
Sri Lanka, 1989, 2003, 2005
Tajikistan, 2010
Uganda, 1994, 2008, 2013
Zimbabwe, 1973

Peru, 1981-95, 2007
Russia, 1994-1996, 1999-present
Rwanda, 1962-65, 1990-2002
Senegal, 1989-2001, 2003
Sri Lanka, 1971, 1983-2002, 2003-present
Somalia, 1981-2002, 2006-present
Sudan, 1963-72, 1983-present
Zimbabwe, 1972-79, 1983-87

Russia, 1999
Somalia, 2007
Sri Lanka, 1989, 2006
Uganda, 2002

Djibouti, 1999
El Salvador, 1979
Ethiopia, 1976, 1991, 1996
Ghana, 1981, 1983
Guatemala, 1954, 1963
Haiti, 1991, 2004
India, 1969, 1991, 1992, 1993, 1995, 2004, 2008, 2013
Iran, 2005
Iraq, 1963, 1976, 1982, 2004
Israel, 1990, 2000
Ivory Coast, 2011
Laos, 1989
Lebanon, 1975, 1989
Liberia, 1989, 2000
Mali, 1994, 2007, 2011, 2012
Mexico, 1996
Nepal, 1996
Nicaragua, 1982
Niger, 1997, 2007
Nigeria, 2009
Pakistan, 2004, 2007
Paraguay, 1954, 1989
Peru, 1982
Philippines, 1969
Rwanda, 1996

Niger, 1997, 2007

Pakistan, 2004, 2006

Papua New Guinea, 1992

Paraguay, 1954, 1989

Peru, 1982, 2007

Philippines, 1969

Russia, 1999

Rwanda, 1996, 2009

Senegal, 1992, 1995, 1997, 2000, 2003, 2011

Spain, 1985, 1991

Sri Lanka, 1989, 2003, 2005

Somalia, 1986, 2001, 2006

South Africa, 1985

Sudan, 1970, 1976, 1983

Syria, 1979, 2011

Tajikistan, 2000, 2010

Thailand, 1974

Uganda, 1974, 1979, 1994, 2013

UK, 1998

Uzbekistan, 2004

Venezuela, 1982, 1992

Yemen, 1962, 1979, 2009

Zimbabwe, 1973

Somalia, 2001, 2006

Sudan, 1976, 1983, 2006

Syria, 1979, 2011

Tajikistan, 1997, 2000

Thailand, 1974

Turkey, 2005

Uganda, 1974, 1979

UK, 1998

Uzbekistan, 2004

Venezuela, 1982, 1992

Yemen, 1962, 1979, 2009

Of importance, when analyzing data from conflict-affected states datasets, much of the data is missing, which can lead to inefficiency and bias. Most of the datasets contain 'unbalanced' data, meaning there are unequal numbers of observations relative to cells in a dataset. These unequal observations can cause heterogeneity of variance across cells and invalidates standard error estimates. Missing data are usually managed by applying list-wise deletion methods, which results in a loss of valuable information and increases selection bias.[357] List-wise

[357] For a good introduction on missing data *see* Schafer, J. (1999) "Multiple Imputation: A Primer". *Statistical Methods in Medical Research*. 8: 3-15.

deletion methods can be detrimental to the analysis. Shockingly, the percentage of missing data within political science studies is estimated to be well over 50%, and in many cases over 90% of observations are missing.[358] Furthermore, many post-conflict states do not have the resources to collect statistical data from its population and institutions; consequently, NGOs and international organizations (IO) began collecting data in the 1990s. Thus, some variables for this thesis were not available until the mid-1990s. Also, many of the conflicts under analysis were/are recurrent or relapse, so the ability for a state to collect data was impracticable or impossible leading to many missing values within my analysis.

Nevertheless, I correct for unbalanced and missing data by applying and testing an alternative method for unbalanced data called multiple imputation[359] by chained equations (MICE).[360] Then I compare the cleaned version of the dataset that best corrects for missing data. In contrast to other methods for dealing with missing values, MICE accounts for uncertainty in estimating values for missingness by imputing plausible values for missing data which are repeatedly imputed to create numerous 'completed' datasets to reflect uncertainty (*see* Appendix A.1 for MICE diagnostic checks).[361] MICE is an algorithm that uses the Markov chain Monte Carlo (MCMC) method. MCMC samples from conditional distributions to obtain samples from the joint distribution; that is, I analyze both the original values and the imputed values to form a chained equation. Additionally, I test for convergence and nonlinear functions within the data.

4.5 Control Variables Selection

I begin my statistical analyses by first regressing the widely-used FL 2003 independent variables (e.g., "gross domestic product (GDP) per capita income", "instability") against different onset, reversion and persistent dependent variables. To assist with reducing bias regarding variable selection, I drew from and updated the dataset of FL 2003 from their study, "Ethnicity, Insurgency, and Civil War".[362] Later, I applied FL's 2003 determinants of civil war onset variables, which have been used in countless conflict studies as controls.

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[358] King, G., et. al. (2001) "Analyzing Incomplete Political Science Data: An Alternative Algorithm for Multiple Imputation". *American Political Science Review*. 95(1): 49-69.

[359] For a good introduction to multiple imputation *see* Little R., & Rubin D. (2002) *Statistical Analysis with Missing Data*. John Wiley & Sons, New York. Although multiple imputation is primarily used within the natural sciences Little and Rubin (2002) applied multiple imputation methods in sociology and Tanasoiu and Colonescu applied multiple imputation methods in political science. *See* Tanasoiu C., & Colonescu C. (2008) "Determinants of Support for European Integration: The Case of Bulgaria." *European Union Politics*. 9(3), 363–377.

[360] For an excellent introduction of MICE from an applied perspective *see* van Buuren, S. (2012) *Flexible Imputation of Missing Data*. CRC Press, Boca Raton.

[361] Horton, N. & Kleinman, K. (2007). "Much Ado about Nothing: A Comparison of Missing Data Methods and Software to Fit incomplete Data Regression Models." *The American Statistician*. 61(1), 79–90.

[362] Fearon, J., & Laitin, D. (2003).

The decision to apply these eleven variables (i.e., "Prior war", "GDP per capita income", "Population (log)", "Percentage of mountainous territory", "Noncontiguous state", "Oil exporter", "New state", "Instability", "Democracy", "ELF", and "Religious fractionalization (RLF))", as the main controls is to demonstrate how the operationalization of the dependent variable can drastically shift the model of best fit and because most IR scholars are familiar with FL's 2003 determinants of civil war onset variables.[363] The models will demonstrate how these independent variables can shift in significance and relationship relative to the type and operationalized dependent variable, which has a great effect on parameter estimates. Moreover, these preliminary models are used as both explanatory and robustness checks before incorporating these findings into more advanced statistical analyses and eventual CEM simulation. This type of analysis of comparing different dependent variables is not novel;[364] however, the inclusion of onset, recurrence, relapse and persistence conflict dynamics are novel, and contributes to the IR discipline of understanding and interpreting intrastate conflict dynamics. Thus, I regress the eleven independent variables from FL 2003's study (updated to year 2013) against each of the dependent variables. These independent variables are listed as controls in table 4.6. Table 4.6 demonstrates the main independent variables separated as controls and "complexity variables" and dependent variables analyzed within this thesis. Complexity variables are those variable hypothesized to increase complexity within in a conflict-affected state pushing that state to increase in likelihood of experiencing conflict reversion. I draw on past quantitative research to examine which variables would be most appropriate to better understand a complex system (i.e., conflict-affected state). The following section gives a more thorough analysis behind the complexity variable selection.

[363] Additionally, the prior war outcome is built from previous research on how prior war and intensity effects civil war outcomes. *See* Pearson, F. *et al*. (2006).

[364] For an intensive criticism of the Correlates of War (COW) coding criteria and errors with coding more generally in the civil war literature *see* Sambanis, N. (2004b) "What is Civil War?: Conceptual and Empirical Complexities of an Operational Definition". *Journal of Conflict Resolution*. 48(6): 814-858.

Table 4.6. Independent Variables under Analysis	
Control Variables	**Database Utilized**
Prior war: FL Prior War or EPR Prior War	FL 2003 / EPR
GDP	FL 2003 / UCDP
Population (log)	FL 2003 / UCDP
Percentage (%) of mountainous territory (log)	FL 2003 / UCDP
Noncontagious state	FL 2003 / UCDP
Oil exporter	FL 2003 / UCDP
New state	FL 2003 / UCDP
Instability	FL 2003 / UCDP
Democracy	FL 2003 / UCDP
Ethnolinguistic fractionalization (ELF)	FL 2003 / UCDP
Religious fractionalization (RLF)	FL 2003 / UCDP
Complexity Variables	**Database Utilized**
Dyad number	UCDP
Access to political representation	EPR
Political exclusion	EPR
Power ratio (i.e., relative rebel capacity)	UCDP/ Wood
Rule of Law	WGI
Bureaucratic quality	Hendrix
Tax capacity	Hendrix
EA Active	UCDP
EA government support	UCDP
EA non-state actor support	UCDP

4.6. Complexity Variable Selection

4.6.1 Dyads and External Support

The first complexity variable discussed is "dyad count" or number. Dyad number is the first independent variable to test my theoretical claim that an increase in number of actor groups, specifically three or more actor groups fighting in a conflict, increases the likelihood of conflict reversion (see Chapter III for full theoretical justification). Additionally, I hypothesize that if a state or NSA receives external support, then the likelihood of a reversion to conflict and/or conflict increases as the conflict system becomes more complex.

4.6.2. Politically Excluded and Politically Active Groups

The second complexity variable stems from previous research which found states that exclude large sections of the population from government representation are more likely to increase

armed rebellions and infighting among different groups.[365] Moreover, political institutions[366] that include and protect minorities have more effect on the level of violence in heterogeneous societies compared to homogeneous societies.[367] Political institutions are argued to be indicators of stability and are central to building a legitimate state.[368] Institutions are a major mechanism to why societies torn by warfare do not devolve into a phase of chaos, because institutions, even if they are maladaptive (e.g., politically exclusive[369]), can provide a structure for stability within a highly dynamic and complex environment. Hence, effective political institutionalization can also reinforce negative attributes such as violence and political exclusion of certain groups.[370] Specifically, political exclusion has been shown to be more prominent in cases of reversion in contrast to onset.[371] Additionally, previous research found that the more active groups there are within a country case, the greater the risk for conflict onset and reversion episodes.[372]

I use both political exclusion and political activity variables from the EPR dataset[373] as proxies for political institutionalization. The EPR dataset provides annual data on politically relevant (i.e., "at least one political organization has claimed to represent its interests at the national level or if its members are subjected to state-led political discrimination") ethnic groups and their access to state power from 1946-2013.[374] The EPR dataset differs from other ethnic-related datasets, specifically the highly applied ELF index,[375] which focuses on linguistic differences (and is controlled later in this thesis), or the Minorities at Risk (MAR) dataset that measures ethnic mobilization. These index and datasets were criticized as focusing too strongly on demography, while ignoring political power relations, while the EPR dataset takes into account all these factors, thus reducing the likelihood of sample bias.[376]

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[365]Cederman, L., & Girardin, L. (2007) "Beyond Fractionalization: Mapping Ethnicity onto Nationalist Insurgencies". *American Political Science Review*. 101(1): 173-85.
[366] The concept of political institutions is taken from North's definition "constraints that shape human interaction", which are inclusive of both informal and formal institutions that form interdependent and emergent "structure incentives" of process. *See* North, D. (1990) *Institutions, Institutional Change and Economic Performance*. Cambridge, Cambridge University Press., p. 3. For a critique on North's interpretation of institutions *see* Hodgson, G. (2006) "What Are Institutions?" *Journal of Economic Issues*. 40:1, 1-25
[367] Easterly, W. (2001) "Can Institutions Resolve Ethnic Conflict?" *Economic Development and Cultural Change*. 49(4): 687-706. p. 690.
[368] Huntington, S. (1968) *Political Order in Changing Societies*. New Haven, Yale University Press. p. 12.
[369] Exclusion is defined as "the perceived or actual deprivation of an opportunity to participate in state administration". *See* Call, C. (2012),.p. 214.
[370] Ben-Dor, G. (1975); Wolff, S. (2010); Kurtenbach, S., & Mehler, A. (2013).
[371] Call, C. (2012).
[372] Cederman, L., & Girardin, L. (2007).
[373] Cederman, L.-E, Wimmer, A., & Min, B. (2010); Wimmer, A., Lars-Erik Cederman, L-A., & Min, B. (2009).
[374] Vogt, M., *et al.* (2015) 'Integrating Data on Ethnicity, Geography, and Conflict: The Ethnic Power Relations Data Set Family". *Journal of Conflict Resolution* 59(7): 1327–42. pg. 1330.
[375] USSR. (1964) *Atlas Narodov Mira* . Moscow: Glavnoe upravlenie geodezii i kartografii.
[376] Vogt, M., *et al.* (2015)

4.6.3. 'Rule of Law' and Strength of Warring Actor Groups

States that provide inefficient political institutionalization structures to its citizens are more likely to have citizens who will risk allegiance to others who will provide the highest security, especially in states where there is a legacy of mistrust and violence.[377] This inability for the state to provide security leads to the reliance on NSA for security. Such examples of alternative security include civilian reliance on warlords and tribal networks for protection.[378] To complement past research on the connection between conflict reversion and security, I examine the World Bank's World Government Indicator 'Rule of Law' (WGIRL). WGIRL is used to capture the perceptions of citizens' confidence in enforcement by the police and courts, property rights, and the likelihood of crime and violence[379] and legal accountability is correlated with stronger institutions and a decreased likelihood of conflict reversion.[380]

Also, the ability to provide security is also operationalized as power ratios provided by the UCDP Dyadic Dataset.[381] The ability to protect civilians has been shown to decrease conflict reversion and is demonstrated as power ratios provided by the UCDP Dyadic Dataset[382] and calculations by Wood.[383] Power ratios demonstrate how a competing actor group's 'fighting capacity', 'mobilization capacity' and 'control' demonstrates an ability to kinetically protect citizens. Power ratios are proxied via troop ratios, which measure the ratio of a rebel organization's active troops to the number of government troops weighted by the total number of active insurgents within the state.[384] Thus, the relative rebel capability is the ratio of insurgent troops to the scaled number of government troops reported by the UCDP.

4.6.4. Bureaucratic Quality and Tax Capacity

Economic variables related to conflict reversion are robust (i.e., GDP per capita). The motivation behind including economic opportunity proxies stems partly from Acemoglu and Robinson's theory on economic/political inclusiveness as a mechanism for economic growth and state prosperity.[385] As I am modeling variables hypothesized to be significantly related to

[377] *WDR 2011* (2011).
[378] For instance, within Afghanistan both warlords and tribal leaders undermine the current Afghan government. *See for example*, Coghlan, T. (2009) "The Taliban in Helmand: An Oral History". In: Giustozzi, A. (ed.) *Decoding the Taliban: Insights from the Afghan Field.* New York, Columbia University Press. pp. 119-153; Rabasa, A., *et al*. (2011) *From Insurgency to Stability: Volume II: Insights from Selected Case Studies*. Santa Monica, RAND Corporation.
[379] *WDR 2011* (2011).
[380] Walter, B. (2014).
[381] Cunningham, D., Gleditsch, K., & Salehyan, I. (2009);. Harbom, L., Melander, E., & Wallensteen, P. (2008).
[382] Cunningham, D., Gleditsch, K., & Salehyan, I. (2009).;Harbom, L., Melander, E., & Wallensteen, P. (2008).
[383] Wood, R. (2010).
[384] Wood, R. (2010); Cunningham, D., Gleditsch, K., & Salehyan, I. (2009).
[385] Acemoglu, D., & Robinson, J. (2012) *Why Nations Fail: The Origins of Power, Prosperity, and Poverty*. New York, Crown Publishers.

conflict reversion from a complexity theory framework, theory on influential and interdependent relations between political and economic institutionalization provides a good baseline for variable selection and demonstrates a widely-debated theory of interdependency between economic and political institutions.

Economic characteristics such as income levels and growth are correlated with conflict reversion, while economic recovery has shown to be "crucial" to avoiding recurrent conflict.[386] For example, state strength is argued to be GDP per capita, which is a proxy for state institutional and security capacity.[387] However, as many cases that experience conflict reversion have low GDP, are there alternative economic indicators that can better explain conflict reversion?

A major weakness behind Acemoglu and Robinson's inclusive/extractive political and economic institutions theory was an inability to measure whether or not a state has inclusive or extractive institutions. To counteract this weakness in Acemoglu and Robinson's theory, I control for GDP and use Hendirx's 'bureaucratic quality' and 'tax capacity' as proxies for economic opportunity. [388] Bureaucratic quality was applied by a few prominent conflict scholars as a proxy for state capacity.[389] In a later study, Hendrix found that countries with higher bureaucratic capacity led to an increase in state capacity and economic growth and a decrease in the likelihood of conflict reversion in comparison to widely used variables such as GDP. Similarly, revenue-based measures such as the capacity of a state to tax, which are the total taxes/GDP, were found to decrease the likelihood of conflict reversion. Consequently, I apply Hendrix's two variables, bureaucratic quality and tax capacity as proxies for economic opportunity.

[386] Hoeffler, A. (2014) "Can International Interventions Secure the Peace?" *International Area Studies Review.* 17(1): 75 –94; Sambanis, N. (2004a) "Using Case Studies to Expand Economic Models of Civil War". *Perspectives on Politics*. 2(2): 259-279; Collier, P.,Hoeffler, A., & Söderbom, M. (2008) "Post-Conflict Risks". *Journal of Peace Research.* 45(4): 461-478; Hegre, H. & Holtermann, H. (2012) "Poverty and Conflict". In: Brown, G., & Langer, A., (eds.) *Elgar Handbook of Civil War and Fragile States.* Cheltenham, Edward Elgar Publishing Limited. pp. 39-58.

[387] Cevik, S., & Rahmati, M. (2013) "Breaking the Curse of Sisyphus: An Empirical Analysis of Post-Conflict Economic Transitions". *IMF Working Paper;* Elbadawi, I. (2001) "Civil Wars and Poverty: The Role of External Interventions, Political Rights and Economic Growth". *The World Bank*. March.

[388] Hendrix, C. (2010).

[389] *See* for example Fearon, J. (2004); DeRouen, K., & Sobek, D. (2004) 'The Dynamics of Civil War Outcome and Duration'. *Journal of Peace Research.* 41(3): 303–320; Balch-Lindsay, D., Enterline, A., & Joyce, K. (2008) "Third Party Intervention and The Civil War Process". *Journal of Peace Research.* 45(3): 345–363. Balch-Lindsay, D., & Enterline, A. (2000) "Killing Time: The World Politics of Civil War Duration". *International Studies Quarterly*. 44(4): 615–642.

4.6.5. Prior War Intensities and Their Impact on Conflict Reversion

Prior conflict has shown that it can affect relationships between and among additional independent variables.[390] Thus, I regress different intensities of prior conflict to observe how prior war intensity affects these relationships. FL prior war is a dummy variable to whether or not a country had a distinct civil war (battle deaths ≥1,000/year) in the previous year for all civil war incompatibilities, while EPR prior war is a count variable of all incompatibility conflicts of prior conflict (battle deaths ≥ 25/year). All dependent and independent variables are regressed against different prior war intensities and are differentiated, by stating in brackets, which prior conflict (e.g., the dependent variable, Usher onset (FL prior), shows a significant relationship with the independent variable, dyad number).

4.6.6. Summary of Complexity Variable Selection

Variables selected was influenced by Milliken and Krause's previous research on basic functions of statehood (i.e., provision of security, economic opportunity, and welfare),[391] in combination with analyzing institutions as proxies for power based on informal and formal relationships that help to shape a state.[392] Warring actors are competing for political power through various capabilities of institutional components (i.e., political, securitization, and economic), which have been shown in past conflict research to have an significant effect on conflict onset and duration. Thus, *it is what a warring actor group offers civilians (i.e., the resource) as an alternative to a competing actor group that pushes a conflict along a particular trajectory as each actor group flexes their competitiveness*. The application of complexity theory to this argument is ever-more necessary as components such as feedback, emergence and interdependence become ever present in determining conflict outcomes, and especially why some conflict-affected states experience reversion and why others do not.

4.7 Operationalization of Dependent Variables

Table 4.6 shows ten different dependent variables and their corresponding database. Why do I regress against so many dependent variables? As previously discussed, I found inconsistencies in how the UCDP code their variables. I decided to amend this problem by providing clarification of how I code my dependent variables as strictly adhered from the UCDP

[390] Pearson, F. *et al*. (2006).

[391] Milliken, J. & Krause, K. (2003) "State Failure, State Collapse and State Reconstruction: Concepts, Lessons and Strategies" In: Milliken, J. (ed.) *State Failure, Collapse and Reconstruction*. Malden, Blackwell. pp. 1–24; Milner, H. (2009) "Power, Interdependence, and Nonstate Actors in World Politics: Research Frontiers". In: Milner, H., & Moravcsik, A. (eds.) *Power, Interdependence, and Nonstate Actors in World Politics*. Princeton, Princeton University Press. pp. 3-27.

[392] Hameiri, S. (2007) "Failed States or a Failed Paradigm? State Capacity and the Limits of Institutionalism". *Journal of International Relations and Development*. 10, 122–149.

codebook. As the EPR dataset also utilizes the same coding criteria datasets as UCDP, I regress EPR's onset and persistence variables for comparison to observe if the EPR does indeed follow UCDP's coding criteria exactly.

Table 4.7. Dependent Variables under Analysis	
Dependent Variable	**Database Utilized**
*bl*FL onset	FL 2003
FL onset	FL 2003 (updated to 2014)
UCDP onset	UCDP
EPR onset	EPR
Usher onset	UCDP
UCDP recurrence	UCDP
Usher recurrence	UCDP
Usher relapse	UCDP
UCDP persistence	UCDP
EPR persistence	EPR

Table 4.8 shows dependent variable frequencies. The unit of analysis is country-year. For all dependent variables, all years of no conflict episode are coded as '0', while years of conflict episode are coded as '1'. *Bl* FL is the baseline analysis without any updating from FL's original 2003 dataset. The FL onset dependent variable is the updated baseline, binary dependent variable and is inclusive of all incompatibilities (i.e., government, territory and government and territory) and of all major (≥1,000 battle deaths/year) intrastate conflicts from 1946-2013 (author's update). The binary EPR onset dependent variable is inclusive of all incompatibilities (i.e., government, territory and government and territory) and of all major (≥1,000 battle deaths/year) and minor (≥ 25 battle deaths/ year) intrastate conflicts from 1946-2013.[393] The UCDP variable is a multinomial variable with four possible discrete outcomes (i.e., [1:4]). Under the UCDP coding criteria, a "1" represents conflict onset. The UCDP conflict onset dependent variable is inclusive of all incompatibilities of both major (≥1,000 battle deaths/year) and minor (≥25 battle deaths/ year) conflicts from 1946-2013. Lastly, the binary Usher onset variable codes conflict onset as inclusive of all incompatibilities of both major (≥1,000 battle deaths/year) and minor (≥ 25 battle deaths/ year) conflicts from 1946-2013.

[393]The EPR dataset is inclusive of all political "relevant" ethnic groups and their "degree of access to executive-level state power", which differs from the MAR dataset, which focuses exclusively on disadvantaged minorities.

Table 4.8. Dependent Variable Frequency Results, N=8773

	Bl FL onset		FL onset		EPR onset		Usher onset	
Dummy counts								
0=no episode *1= episode*	0	1	1	1	0	1	0	1
	6499	111	8622	151	8472	301	8264	509

	EPR persistence			UCDP Episode			
Dummy counts	0	1	***Dummy counts***	1	2	3	4
0=no episode *1= episode*	7350	1423	*1=onset* *1= recurrence* *3= persistence* *4= no episode*	148	140	1108	7377

	(Usher recurrence +		Usher relapse) =		*Usher Reversion*
Dummy counts	0	1	0	1	Total
0=no episode *1= episode*	8665	108	8675	98	206

For Usher onset, I coded a new conflict as one that experienced a period of peace longer than one year, experienced new dyads, splintered dyads, dyads changed names, or if that country-case study did not experience prior conflict. For recurrence, UCDP (i.e.,'2', n=140) demonstrates a larger recurrence variable count in comparison to Usher recurrence (n=108) and Usher relapse (n=98). For Usher recurrence, I coded recurrence if that conflict recurred within one year of the onset or previous recurrence and if that country case dyad groups did not change (i.e., dyad groups did not splinter, change names). This stricter coding criterion that is less open to interpretation immediately demonstrates the drop in recurrent cases from UCDP recurrence to Usher recurrence.

The binary persistent variables[394], EPR persistence, and UCDP (i.e., '3') indicate conflict duration/ongoing conflict during a specific year within a country. The dependent variable persistence relates to conflict that did not end at a given episode year, but continued with a battle death threshold of at least 25 battle deaths per year. EPR persistence (n=1,423) and UCDP conflict episode persistent variable ('3', n=1,108) is indicative of all conflict incompatibilities. The EPR persistence variable can be interpreted as 16.2% of all cases (by conflict year) experienced episodes of persistent conflict in any given year and UCDP persistence variable can be interpreted as 12.6% of all cases experienced episodes of persistent conflict in any given year.

Lastly, both the Usher recurrence and UCDP conflict episode recurrence (i.e., '2') dependent variables are indicative of all conflict incompatibilities, from 1946-2013. The difference in coding between the Usher recurrence variable and the UCDP conflict episode variable is that I code recurrence as "1" only if the conflict episode is experiencing the same incapability with the same dyad group after a period of peace. Although the UCDP clearly states within the UCDP Conflict Termination Codebook that recurrence is coded as "1" if the same incompatibility with same dyads resume violent conflict that reaches the threshold of ≥25 battle death/year after a period of peace, however, when one examines the dataset more closely these guidelines are not followed. This inconsistency was mentioned in the introduction and reiterated here in that it is under the discretion of the individual coder to decide for herself whether to treat the different episodes as one recurrent conflict or as separate conflicts. Therefore, adding a stricter coding criteria of the additional dependent variables. Usher recurrence, is necessary for obtaining more accurate and transparent statistical results.

Figure 4.3 illustates the UCDP coding criteira for conflict onset ('1', pink), conflict recurrence ('2', green), conflict duration ('3', blue) and no conflict recorded ('4', purple). The data from UCDP demonstrates that conflict onset is bimodal. Conflict onset first peaked during the Cold War era of the 1980s and peaked again in the aftermath of the end of the Cold War during the 1990s. Since its peak at around 1991, conflict onset episodes have decreased substantially. Conflict is ongoing or persists in 19.3% of cases that experienced or are experiencing conflict. This percentage and the results from the figure 4.3 illustrates that once conflict onset occurs, the likelihood of a case experiencing a subsequent year of conflict is relatively high.

[394]Conflict scholars have comparably regressed onset and duration/persistence variables. This thesis's dependent variable operationalization was also from *Elbadawi*, I. & Sambanis, N. (2002) "How Much War Will We See?: Explaining the Prevalence of Civil War". *Journal of Conflict Resolution*. 46: 307.

Furthermore, figure 4.3 shows that conflict persistence increases almost exponentially until the until plateauing from the late 1970 until late 1990s. By the early 2000s the duration of conflicts is on the decrease. This demonstrates that both measures of conflict onset and conflict persistence have been decreasing since the later 1990s and early 2000s. This result is similar to previous studies on conflict onset and persistence.[395] In contrast, conflict recurrence frequency increased dramatically since the 1990s, peaking around 2005 and is currently decreasing.

Figure 4.3. Distribution of UCDP Intrastate Conflict Episodes (≥25 battle deaths/year), 1946-2013

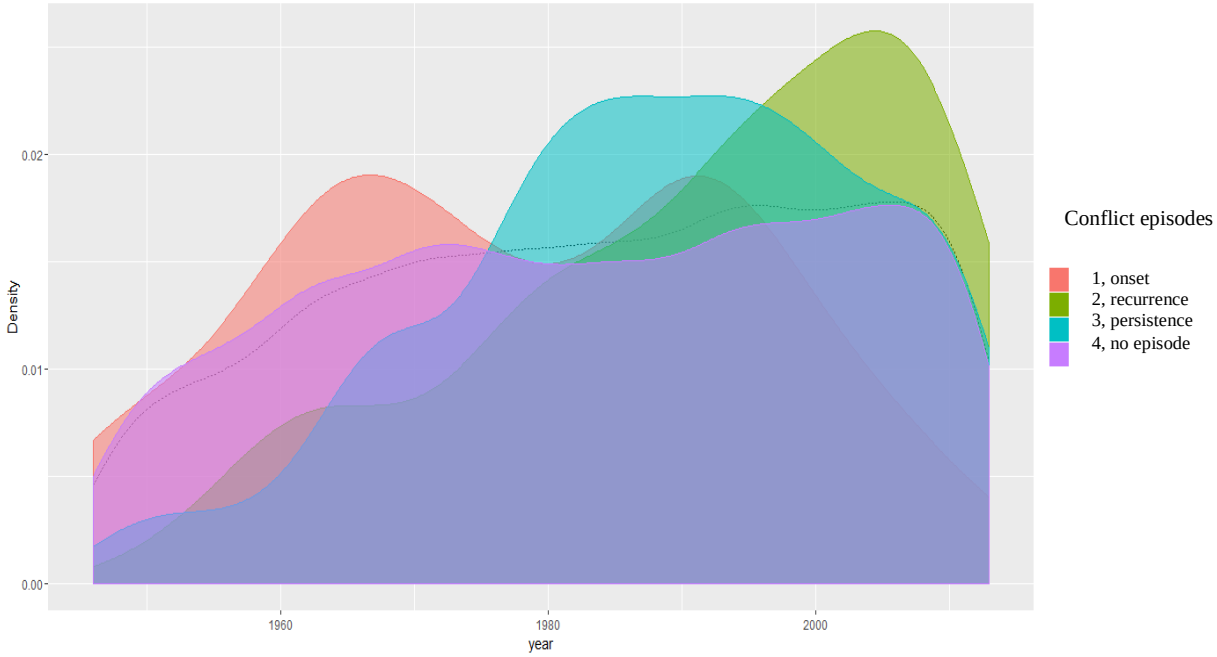


Figure 4.3. Distribution of UCDP Intrastate Conflict Episodes (≥25 battle deaths/year), 1946-2013 shows the distribution of UCDP conflict dynamic variables (≥25 battle deaths/year) from 1946 to 2013. This figure illustrates that frequency conflict recurrence has increased, while conflict persistence and onset has decreased in recent years.

4.8. Descriptive Statistics of Control Variables

Table 4.9 demonstrates expected results by states affected by conflict. Numeric variables robustly related to conflict, such as GDP per capita and democracy illustrate low average and median values. GDP is positively skewed, which is reflective of a non-normal distribution of scores and that many of the cases selected have low GDP per capita values. The democracy variable demonstrates slight non-normal, positive distribution with a negative kurtosis score. These scores indicate that democracy variable is flat with a right-tailed distribution in which cases are skewed slightly more democratic. However, the standard deviation scores illustrate

[395] Walter, B. (2014).

high variability among the cases, meaning there is a high number of undemocratic and democratic governments that are represented within the cases. The log of the population variable shows that many of the cases include territories with dense populations. This result for the population variable is represented by moderately high mean and median values, with relatively small variance, a negative skew and positive kurtosis scores, which again demonstrates non-normal distributions. Overall, the percentage of mountainous territory is less common among the cases in total as demonstrated by the mean, median and skew and kurtosis values; thus, this is an indication that many conflicts are fought in various territories (e.g., jungle, etc). Variables ELF and RLF demonstrate more homogenous results, rather than heterogeneous results. However, there is high variability in both variables indicating high variation among cases. As these cases demonstrate high variability, the skew values are slightly non-normal.

Categorical variables related to conflict such as oil exporter (14% of cases), instability (14.8% of cases) and noncontiguous (20.3% of cases) are more representative, while the variable new state (2.3%) is less represented. FL prior conflict intensity occurred in 11.3% of cases, while EPR prior war increases the number of cases to 75.8%. These high counts of prior war are a consequence of EPR's coding criteria of counting previous conflict with a lower threshold of ≥25 battle-related deaths. Consequently, the models regressed with EPR prior conflict will result in poorer model fit compared to models regressed with FL prior conflict variable; meaning the proportion of variance explained by EPR prior war models will likely decrease these models' predictive power as variability within the EPR models is lower.

Table 4.9 Descriptive Statistics

N=8773	Numerical variables							
Independent variables	**Mean**	**SD**	**Median**	**Min**	**Max**	**Skew**	**Kurtosis**	**SE**
GDP (log)	3.92	4.73	2.27	0	66.74	3.76	26.4	0.05
Population (log)	9.04	1.69	9.02	0	14.03	-0.94	6.08	0.02
% mts (log)	2.19	1.51	2.37	0	17.34	0.75	6.49	0.02
Democracy	0.55	7.45	0	-10	10	0.02	-1.67	0.08
ELF	0.40	0.29	0.35	0	0.93	0.19	-1.37	0
RLF	0.37	0.22	0.36	0	0.78	0.08	-1.19	0

N=8773	Categorical variables	
	0	**1**
FL Prior war	7882	891
EPR prior war	4990	3783
Noncontiguous	7289	1484
Oil exporter	7695	1078
New state	8575	198
Instability	7650	1123

4.9. Statistical Results

This chapter demonstrates a difference in model fit due to the operationalization of the dependent variable and how operationalizing the dependent variable can impact the results of the CEM. I ran several logistic and multinomial models with different dependent variables to demonstrate how slight changes in the operationalization of the dependent variable can dramatically affect significance, parameter estimate values and standard errors. Also, these regressions were conducted with their corresponding assumption tests to indicate how the various operationalization of widely accepted dependent variables can affect statistical analyses and interpretation for scholars, policy makers and practitioners.

The logistic and multinomial regressions demonstrate a side-by-side comparison of ten different dependent variables. I report the significance of the independent variable's coefficient and the direction of the relationship (see Appendices A.3 and A.4 for complete tables). Figures 4.4-4.8 illustrate all regression coefficient plots. The coefficient demonstrates how significantly different the value is from zero. If there is a significant difference, then one may assume that the predictor is making a contribution to the prediction of the outcome.

Figure 4.4. Baseline FL 2003 Coefficient Plot

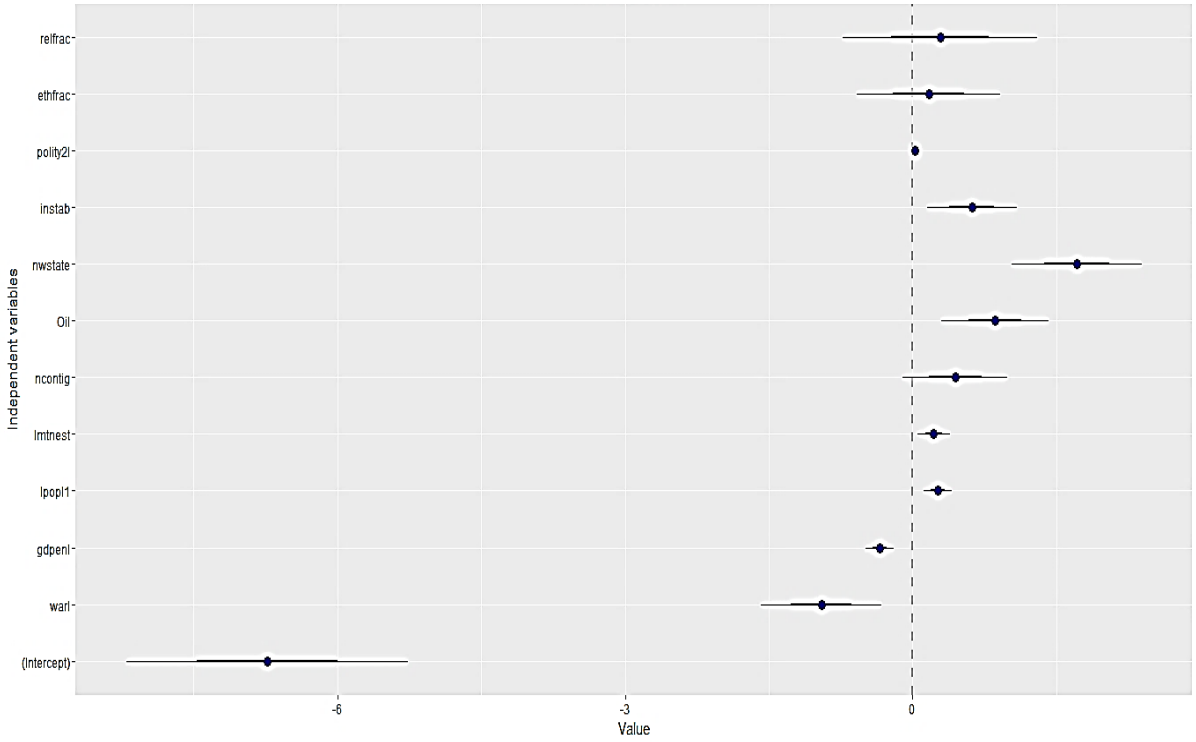


Figure 4.4 shows the baseline model from FL 2003 study to compare against preceding coefficient plots. All regression tables that correspond to these figures and additional figures and tables are reported in the Appendix A.3. The dots in these figures represent the coefficients and the dashed lines are their corresponding 95% confidence intervals. If the dot is on the right side of the '0' threshold (i.e., zero impact), then the variable increases the likelihood of onset, reversion or persistence and if the dot is on the left side of the 0 threshold then the variable decreases the likelihood of onset, reversion or persistence. If the 95% confidence interval line crosses the '0' threshold, then this variable is not statistically significant. For figure 4.4, the baseline FL prior war model demonstrates FL prior war, GDP per capita, log of population, percentage of mountainous territory, oil exporter, new state, and instability are all significant at 95 %.

Figure 4.5. Onset Dependent Variables (FL 2003 Prior War Models)

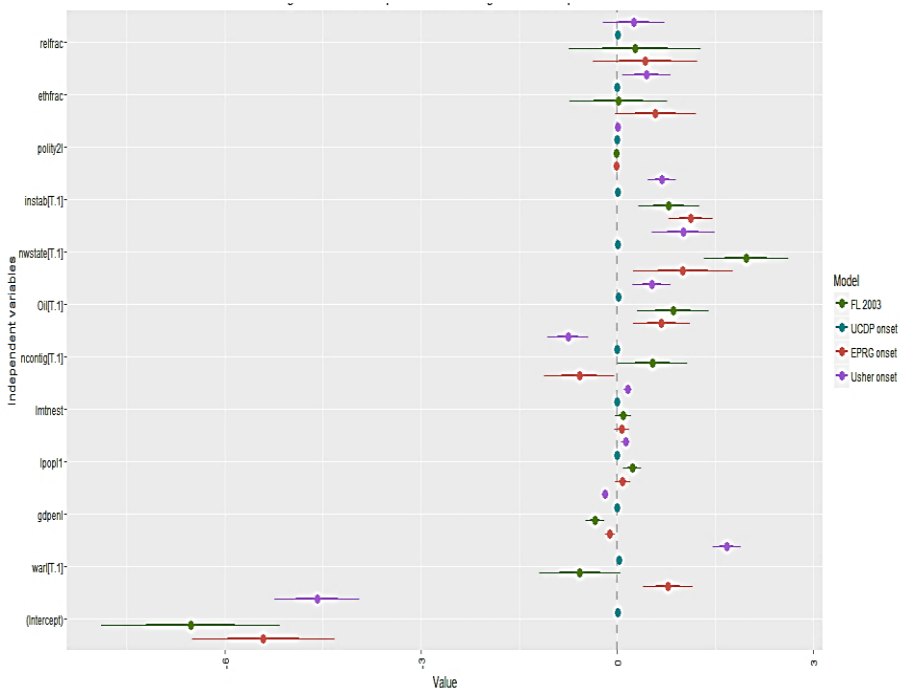


Figure 4.5. Onset Dependent Variables (FL 2003 Prior War Models) shows all onset depend variable regressed with FL prior war intensity. The coefficient demonstrates how significantly different the value is from 0. If there is a significant difference, then one may assume that the predictor is making a contribution to the prediction of the outcome. Detailed results of these graphs are discussed.

Figure 4.6. Onset Dependent Variables (EPR Prior War Models)

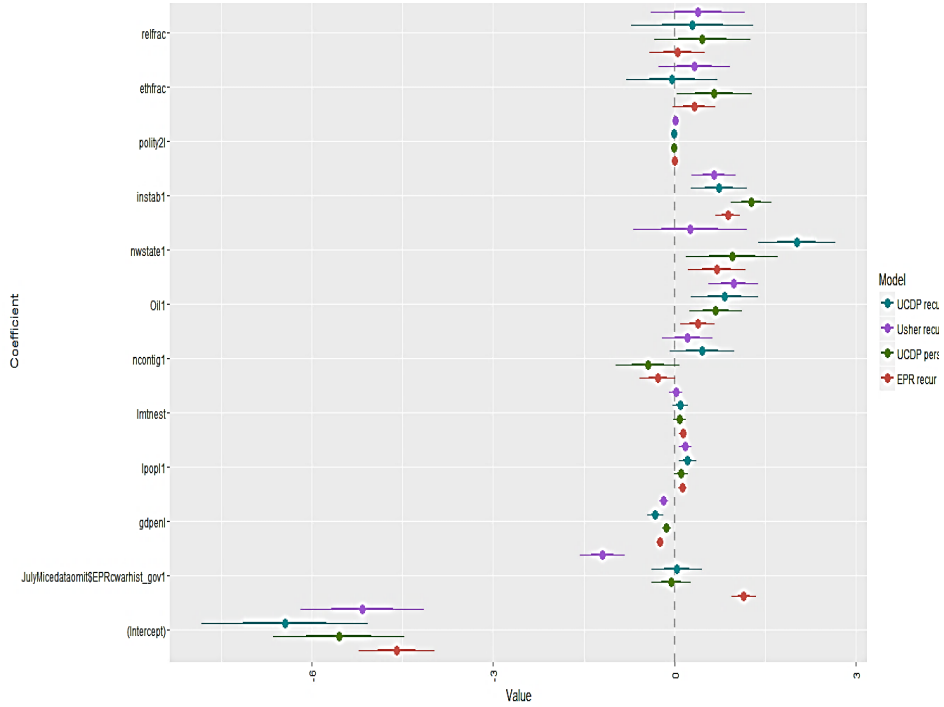


Figure 4.6 Onset Dependent Variables (EPR Prior War Models) shows all onset dependent variables regressed with EPR prior war intensity. The coefficient demonstrates how significantly different the value is from 0. If there is a significant difference, then one may assume that the predictor is making a contribution to the prediction of the outcome. Detailed results of these graphs are discussed.

Figure 4.7. Reversion Dependent Variables (FL Prior War and EPR Prior War Models)

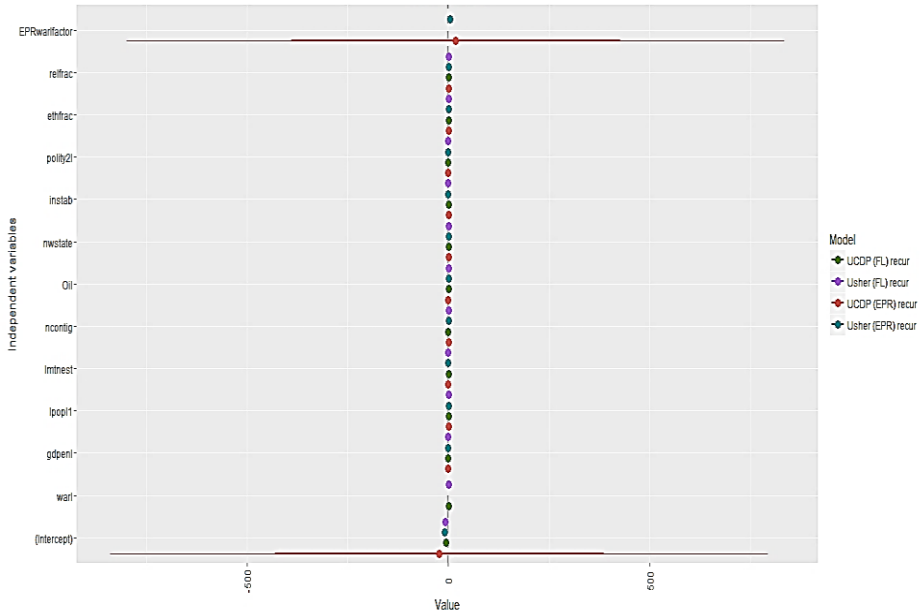


Figure 4.7 Reversion Dependent Variables (FL Prior and EPR Prior War Models) shows all reversion dependent variables regressed with both prior war intensities. The coefficient demonstrates how significantly different the value is from 0. If there is a significant difference, then one may assume that the predictor is making a contribution to the prediction of the outcome. Detailed results of these graphs are discussed.

Figure 4.8. Persistence Dependent Variables (FL Prior War and EPR Prior War Models)

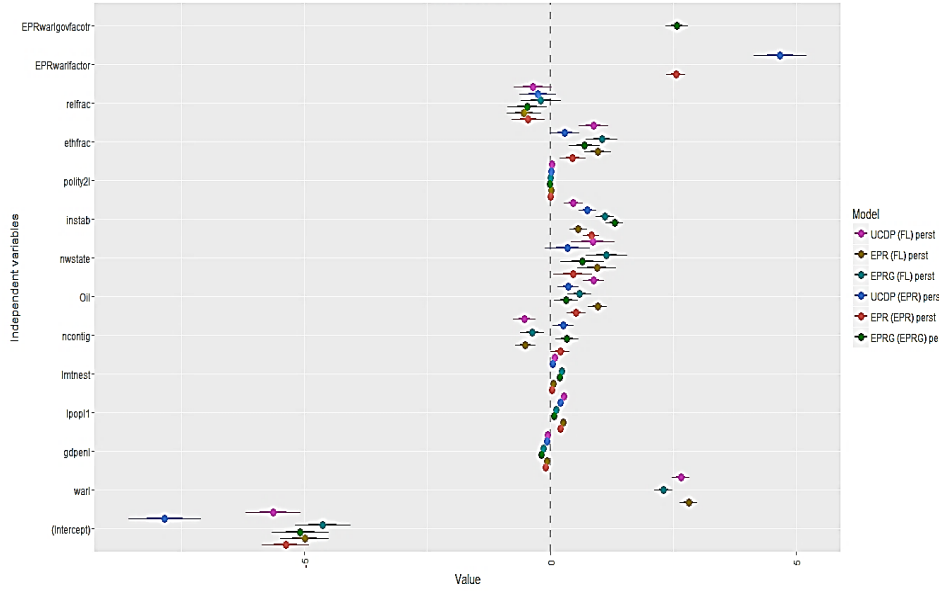


Figure 4.8 Persistence Dependent Variables (FL Prior and EPR Prior War Models) shows all persistence dependent variables regressed with both prior war intensities. The coefficient demonstrates how significantly different the value is from 0. If there is a significant difference, then one may assume that the predictor is making a contribution to the prediction of the outcome. Detailed results of these graphs are discussed.

Figure 4.4 shows all onset variables for FL prior war models and Figure 4.5 shows EPR prior war models. For EPR prior war models (figure 4.5) all GDP per capita income, oil exporter, and instability were significant at 95%. Thus, GDP, whether or not a country is an oil exporter, and instability are all significant variables that robustly contribute to intrastate conflict onset for both conflict intensity models. Figure 4.6 demonstrates FL and EPR prior war for UCDP and Usher recurrence models. For UCDP recurrence, instability was significant at 95% and prior war and noncontagious state were significant at 95% for Usher recurrence. Lastly, figure 4.8 demonstrates persistence variables for EPR prior war models. Prior war, GDP per capita income, log of population, noncontagious state, oil exporter, instability and ELF were all significant at 95%.

Prior War

Prior war is a variable from FL's 2003 study and is applied to demonstrate how coding different battle death threshold of previous wars can affect relationships between and among variables. For the FL prior war model, all onset models demonstrate a positive significant relationship with civil war onset in contrast to the baseline (*bl)* FL 2003 study results (-0.954 (.314), $p<0.01$). Thus, with the exception of *bl*FL 2003, the likelihood of conflict onset increases if that state was engaged in a prior war. However, the coefficients vary widely from 0.040 to 3.021. For EPR prior war, the results are much more mixed with coefficients ranging from -0.059 to 1.355.

When regressed against FL prior war all reversion and persistence variables demonstrate a positive significant relationship. The strongest reversion variable is Usher recurrence (1.278 (0.299), $p<0.001$), which demonstrates an increased likelihood of recurrence by 3.5 times if a case experienced prior civil war. The strongest persistence variable is UCDP persistence (2.652 (0.089), $p<0.001$), which demonstrates an increased likelihood of conflict duration by over 14 times if that case experienced previous civil war.

In contrast, the only reversion model to demonstrate a statistically significant relationship in the EPR prior war model was Usher relapse (4.436 (1.009), $p<0.001$). However, all persistence EPR prior war models are statistically significant with UCDP persistence as the strongest relationship (4.679 (0.271), $p<0.001$). Of note, the coefficient variation for the EPR prior war models was much larger in comparison to the FL prior war model coefficients.

Most onset, reversion and persistence variables demonstrate positive significant relationships with FL prior war and EPR prior war models. However, the type of intensity matters. For instance, FL onset demonstrates a positive non-significant relationship (i.e., FL onset regressed against EPR prior war). Thus, this first regressed independent variable already demonstrates how both conflict type and conflict incompatibility can have different results on even robust independent variables such as prior war/conflict.

GDP per capita income

FL 2003 argued that weak governments render insurgency as more likely and applied GDP per capita as a proxy for a states' overall financial, administrative, police, military, infrastructure and institutional capacity. GDP per capita income is measured as thousands of 1985 US dollars and lagged one year. The results of all onset variables, within both FL prior war and EPR prior war models, supports FL's 2003 study (-0.344 (.072), $p<0.001$). FL's 2003 original study produced that strongest results, despite updates to the FL onset model.

Similarly, all relapse and all persistence dependent variables demonstrate significant negative relationships with GDP per capita. Regardless of prior conflict intensity both types of dependent variables demonstrate similar statistical significance, strength and direction of the relationship. Thus, these results demonstrate the devastating economic effects on states affected by years of conflict.

In contrast, neither recurrence variables showed a significant result with GDP per capita. This result is the first major divergence among the dependent variables in that onset, reversion and duration conflict episodes differentiate and that is essential to code conflict relapse and recurrence separately. These results demonstrate that low GDP per capita increase the likelihood of conflict onset, relapse and duration, but have no effect on conflict recurrence. Variation among coefficients for both FL and EPR prior war is not highly variable, indicating the GDP is highly robust.

Population (logged)

FL 2003 argued that a large country population (log of country population) allows for either the political center to hire individuals to keep control over its citizens, thus reducing the risk of war, or a large country population can increase the likelihood of war as the number of insurgent recruits is larger. Unlike the *bl* FL model (0.263 (0.07), $p<0.001$), the updated FL 2003 model did not show significant results. The remaining FL and EPR onset models were mixed with the

exception of EPR onset demonstrating positive and significant results for both prior conflict models. Conversely, Usher onset demonstrates a negative significant result (-0.130 (0.033), $p<0.001$) for FL prior war model and a positive significant result (0.112 (0.034), $p<0.001$) for EPR prior war model. These results demonstrate that both the previous type of conflict and conflict incompatibility can have different results when the log of the population is regressed against conflict onset. These contradictory results have also been demonstrated in previous studies as the size of a country's population has demonstrated to decrease, increase and to show no effect on conflict onset.[396]

For reversion and persistence FL and EPR prior war models, population (log) demonstrates a positive significant relationship with all reversion dependent variables with the exception of UCDP recurrence (EPR prior war). Most of the significant results demonstrate that a positive relationship with population size dependent on previous conflict intensity model. However, as a significant result was not found with government incompatibility onset, the type of incompatibility is perhaps another interesting area to explore.

Percentage of mountainous and noncontiguous territory

FL 2003 found that the percentage of mountainous territory can be proxied as presence of rough terrain, and poorly serviced roads at a distance from the centers of state power, which favor insurgency and civil war (0.219 (.085), $p<0.01$). In contrast with FL's 2003 original findings, FL onset did not find a significant relationship. The only onset model to demonstrate a positive significant finding with percentage of mountainous territory is UCDP onset (EPR prior, 0.117 (0.064, $p < .05$), and Usher onset for both FL prior war (0.189 (0.030), $p<0.001$) and EPR prior war (0.134 (0.029), $p<0.001$) models. For conflict reversion, only Usher recurrence for FL prior war model observed a significant relationship. All persistence models, with the exception of EPR persistence from the EPR prior war model, demonstrate positive significant results. Thus, the overall percentage of mountainous territory results is favorable for conflict persistence and is highly mixed for onset and reversion.

Noncontiguous land mass is used as a variable to include territorial bases separated from the state's center by war or distance. FL concluded that noncontiguous territory, which was defined as countries with territory holding at least 10,000 people separated from the land area

[396] Gleditsch, N., & Urdal, H.(2002). "Ecoviolence? Links Between Population Growth, Environmental Scarcity and Violent Conflict in Thomas Homer-Dixon's Work." *Journal of International Affairs* 56 (1): 283–302; Fearon, J., & Laitin, D. (2003); Alesina, A., & Spolaore, E. (2005) "War, Peace and the Size of Countries." *Journal of Public Economics* 89:1333-1354. Collier, P., & Hoeffler, A. (2004).

containing the capital city either by land or by 100km of water, did not find a significant relationship (0.443 (.274), $p>0.05$). However, for the FL prior war model, Usher onset demonstrates a negative significant relationship. Additionally, Usher onset for EPR prior war also demonstrates a significant negative relationship. Thus, these onset variables demonstrate that the likelihood of conflict decreases if the case under analysis is noncontiguous, which seems contradictory. Regarding conflict reversion variables, FL prior war model observes a negative significant relationship with Usher relapse, while EPR prior war model observes a positive significant relationship with Usher recurrence.

Interestingly, all FL prior persistence model demonstrates negative significant relationships while all EPR prior persistence demonstrates positive significant relationships. This result demonstrates how prior conflict type changed the direction of the relationship between duration and noncontagious state. Therefore, if a country experienced prior civil war then the conflict was less likely to include territory where citizens are separated from a major center of government power, but if a country experienced prior conflict that was less intense, then the country was more likely to include territory where citizens are separated from a major center of government power.

Oil exporter

FL 2003 found a positive and significant relationship between a country who relies on oil exportation for state revenues and conflict onset (0.858 (.279), $p<0.01$). Thus, FL 2003 concluded that a country whose revenues derive primarily from oil exports tend to correlate with a weaker stat apparatus (e.g., World Bank data on fuel exports as a percentage of merchandise exports). Subsequently, all onset variables are positively statistically significant with a state whose revenues derive primarily from oil exports. These results support FL's original findings. *Bl* FL 2003 demonstrated the strongest results in the FL prior war model, while UCDP onset (1.137 (0.219) $p<0.001$) demonstrates the strongest results in the EPR prior war model. Similarly, all persistence dependent variables in both FL prior war and EPR prior war models demonstrate significant positive relationships with the variable oil exporter. Conversely, most of the reversion variables, with the exception of Usher recurrence in the FL prior war model (0.699 (0.260) $p>0.001$) demonstrates no significant results.

Overall, if a case is an oil exporter the likelihood of conflict onset and increases and if that case is an oil exporter the duration of the conflict is extended, while reversion of conflict is likely to have no effect.

New state and Instability

FL's 2003 study found that a newly independent state significantly increased the likelihood of conflict onset (1.709 (.339), $p<0.001$). New states were found to lead to instability, which increased the chances of political violence. Similarly, many onset and persistence variables within both FL and EPR prior war models demonstrate positive significant relationships with new state and conflict onset. Conflict reversion variables observe positive and significant results for all FL prior war models, while EPR prior war models observe a positive significant result for Usher recurrence only.

The baseline FL 2003 found positive and significant result with civil war onset and instability (0.618 (.235), $p<0.01$). Instability found positive significant and robust results for all onset and persistent dependent variables. With the exception of Usher recurrence, all reversion variables demonstrate were positive and statistically significant relationships with instability. Overall, instability is a strong and robust variable for understanding conflict dynamics. Specifically, instability has the strongest effect on conflict duration, then conflict onset, and lastly conflict reversion. These results support FL 2003 emphasis on state weakness as a major contributing risk factor to conflict onset.

Democracy

FL 2003 applied Polity IV[397], Freedom House's indicator of civil liberties, and Przeworski, *et al* (2000) as measures for democracy. The democracy variable was a proxy in FL 2003 study for social and political grievances and civil liberties to demonstrate that the higher democracy score within a case, the less likely that case would experience conflict onset. FL's 2003 study did not find a significant relationship with the democracy variable and civil war onset (0.021 (0.017), $p>0.05$). Similarly, with the exception of Usher onset from FL prior war model (0.017 (0.008) $p<0.05$) none of the onset dependent variables found a significant relationship with conflict onset and the democracy variable. Similarly, none of the reversion dependent variables were significantly related with democracy.

In contrast, some of the persistence variables demonstrate significant relationships with democracy. Within the FL prior war model UCDP (0.032 (0.006) $p<0.001$) and EPR (0.023

[397] Marshall, M., & Cole, B. (2010) *Polity IV Project: Political Regime Characteristics and Transitions: 1800-2012: State Fragility Index and Matrix 2010*. Vienna, VA, USA; Marshall, M., & Cole, B. (2014) *Global Report 2014: Conflict, Governance, and State Fragility*. Center for Systemic Peace. Vienna, VA, USA.

(0.005), $p<0.001$) persistence demonstrate positive significant results. Within the EPR prior war model UCDP persistence (0.014 (0.006) $p<0.05$) demonstrates positive significant results. These persistence results may be attributed to states that are transitioning to a more democratic state, which are have been correlated with increased conflict persistence.

ELF and RLF

FL 2003 hypothesized that a country's ethnic and religious diversity should be associated with higher risk of civil war. Additionally, countries with an ethnic majority and significant ethnic minority are at greater risk for civil war and are measured by the ethnolinguistic fractionalization (ELF) index.[398] Measures of religious diversity were measured by FL 2003 by the proxy RLF, that was constructed by primarily using the CIA Factbook.[399] FL's 2003 study found that a neither ELF (0.166 (0.373), $p>0.05$) nor RLF (0.285 (0.509), $p>0.05$) were statistically significant in relation to conflict onset. FL 2003 admits that one reason for the original results might be listwise deletion of missing economic data. As this study corrected for listwise deletion problems, the results for the various dependent variables and their models are more robust and reliable.

UCDP onset, EPR onset and Usher onset (from FL prior war models) were all positively significant, which is a major shift from FL's original findings. Similarly, most of the EPR prior war onset dependent variables, with the exception of FL 2003 and UCDP onset, demonstrate positive significant relationships. Thus, when including lower threshold for prior conflict, ELF becomes a statistically significant and robust variable for conflict onset dependent variables. Of interest, the UCDP (EPR prior conflict) dependent did not show a significant relationship with ELF. Reversion variables were all positively significant with the exception of UCDP recurrence (ELF prior war) and Usher relapse (EPR prior war). Thus, previous conflict intensity is a major determining factor in the significance between conflict reversion and ELF. These results demonstrate how even though databases may prescribe the same coding practices, results can very dependent on the coder's interpretation of the data. Lastly, all persistent variables from model FL and EPR prior war models demonstrate positive significant results for ELF.

[398] ELF is baes on data from the Atlas Narodov Mira 1964, which was updated by FL 2003. The atlas gives the probability that two randomly drawn individuals in a country are from different ethnolinguistic groups. Additionally, ELF measures ethnic diversity within a country based on estimates of ethnic group populations. Call (2012) found a relationship with onset, but not recurrence and found that an increase in ELF is a decrease in recurrence.

[399] Measures religious diversity within a country based on religious group populations. Call (2012) found a significant relationship for recurrence.

In regards to RLF, FL's 2003 study did not find a significant relationship with RLF and conflict onset (0.285 (0.509), $p>0.05$). Similarly, none of the onset variables are significantly related to RLF. Also, none of the reversion dependent variables demonstrate a significant relationship with RLF. Conversely, EPR persistence demonstrates a negative significant relationship (-0.550 (0.178), $p<0.01$) within the FL prior war model, while EPR persistence (-0.447 (0.169) $p<0.01$) demonstrate negative significant relationships within the EPR prior war model. Thus, an increase in religious diversity and/or polarization results in an increase likelihood of conflict persistence.

Possible explanations for these diverse findings may be that measures of ELF and RLF do not measure power relations between groups without political power and those with political power.[400] Rather, the cause of conflict between and among polarization of groups is institutional.[401] Thus, additional variables, such as excluded and active groups might be a more appropriate measure in understanding conflict dynamics. Additionally, these results may support Kalyvas' argument that ethnic identities are not fixed, but are dynamic and are especially subject to change during conflict and civil war.[402]

4.10. Summary of Statistical Findings

There are a number of similarities across each of the dependent variables, and these are summarized in tables 4.10 and 4.11. Independent variables such as prior war, population size, new state, instability, and ELF demonstrates shared significant relationship with various conflict processes. The most robust of these variables is instability, which demonstrated strong positive significant relationships and large log odds. In cases that experienced previous civil war, the likelihood of conflict onset, reversion and persistence increases for almost all dependent variables.

[400] Cederman, L-E., Gleditsch, K., & Buhaug, H. (2013) *Inequality, Grievances and Civil War*. Cambridge, Cambridge University Press.
[401] Horowitz, D (1985).
[402] Kalyvas, S. (2006).

Table 4.10. Summary of Statistical Findings and their Relationship Direction (FL Prior War)

	Dependent Variables		
	Onset	**Reversion**	**Persistence**
Independent variables			
Prior war (FL)	*bl*FL (-) FL (+) UCDP (+) EPR (+) Usher (+)	UCDP (+) Usher recurrence (+) Usher relapse (+)	UCDP (+) EPR (+)
GDP per capita	*bl*FL (-) FL (-) UCDP (-) EPR (-) Usher (-)	Usher relapse (-)	UCDP (-) EPR (-)
Population (log)	*bl*FL (+) EPR (+) Usher (-)	UCDP (+) Usher recurrence (+) Usher relapse (+)	UCDP (+) EPR (+)
% mountainous territory	*bl*FL (+) Usher (+)	Usher recurrence (+)	UCDP (+) EPR (+)
Noncontagious territory	Usher (-)	Usher relapse (-)	UCDP (-) EPR (-)
Oil	*bl*FL (+) FL (+) UCDP (+) EPR (+) Usher (+)	Usher recurrence (+)	UCDP (+) EPR (+)
New state	*bl*FL (+) FL (+) EPR (+) Usher (+)	UCDP (+) Usher recurrence (+) Usher relapse (+)	UCDP (+) EPR (+)
Instability	*bl*FL (+) FL (+) UCDP (+) EPR (+) Usher (+)	UCDP (+) Usher relapse (+)	UCDP (+) EPR (+)
Democracy	Usher (+)		UCDP (+) EPR (+)
ELF	UCDP (+), EPR (+), Usher (+)	UCDP (+) Usher recurrence (+) Usher relapse (+)	UCDP (+) EPR (+)
RLF			EPR (-)

Table 4. 11. Summary of Statistical Findings and their Relationship Direction (EPR Prior War)

	Dependent Variables		
	Onset	**Reversion**	**Persistence**
Independent variables			
Prior war (EPR)	UCDP (-) EPR (+) Usher (+)	Usher relapse (+)	UCDP (+), EPR (+),
GDP per capita	FL (-) UCDP (-) EPR (-) Usher (-)	Usher relapse (-)	UCDP (-), EPR (-),
Population (log)	UCDP (+) EPR (+) Usher (+)	Usher recurrence (+) Usher relapse (+)	UCDP (+) EPR (+)
% mountainous territory	UCDP (+) Usher (+)		UCDP (+),
Noncontagious territory	Usher (-)	Usher recurrence (+)	UCDP (+) EPR (+)
Oil	FL (+) UCDP (+) Usher (+)		UCDP (+) EPR (+)
New state	FL (+) UCDP (+) Usher (+)	Usher recurrence (+)	EPR (+)
Instability	FL (+) UCDP (+) EPR (+) Usher (+)	Usher recurrence (+) Usher relapse (+)	UCDP (+) EPR (+)
Democracy			UCDP (+)
ELF	EPR (+) Usher (+)	Usher recurrence (+)	UCDP (+) EPR (+)
RLF			EPR (-)

Robust common factors that increase the likelihood of conflict onset are prior conflict, whether or not a country is an oil exporter, instability within a country, size of population, whether or not a case is a new state, level of instability and how diverse a country's ethnicity is. Robust common factors that decrease the likelihood of conflict onset include high GDP per capita. Of interest, the reversion variables showed significant relationships with some independent variables and not others. For instance, Usher relapse was negatively significant with GDP, while Usher recurrence did not observe a relationship, and Usher recurrence (FL prior war) is positively significant with percentage of noncontagious territory while Usher relapse (FL prior

war) showed no relationship. Of importance, the direction of the relationship between the dependent and independent variable is not always in the same direction. For instance, Usher onset (FL prior war) demonstrates a negative significant relationship with size of population, while EPR onset (FL prior war) demonstrates a positive significant relationship with size of population.

There are a few differences between models that include FL prior war threshold and EPR prior war threshold. These include a change in positive to negative relationships relative to the type of regressed conflict intensity (e.g., UCDP onset regressed against prior conflict) and a variable that is significant in one prior war model and not the other (e.g., Usher relapse regressed against percentages of mountainous territory). Thus, the significance and relationship of variables may be more relevant dependent on the intensity of a prior conflict. A dramatic example is the variable noncontagious territory, which demonstrates very different results between FL prior war models and EPR prior war models. For instance, Usher onset, and Usher relapse and all persistence variables are negatively related with noncontagious territory within FL prior war models. Conversely, within EPR prior war models only Usher onset is negatively related with noncontagious territory, while Usher recurrence is now significant and positively related and all persistence variables are positively related with noncontagious territory.

4.11. Implications of Control Only Statistical Results

Trends have waxed and waned between "greed" versus "grievances" mechanisms and commitment problems in the attempt to demonstrate broad, generalizable patterns of conflict dynamics across a variety of cases and regions. Over the past 15 years, there has not been a clear methodological breakthrough that challenges contradictory regression results in understanding intrastate conflict. Contradictory findings within the intrastate conflict literature can stem from arbitrary coding, which can have major implications on IR theory and policy. Some studies demonstrated how the different researchers code and apply these coding rules can affect statistical analyses.[403] Likewise, this chapter shows how a difference in fit is the result of both methodological and theoretical operationalization of the dependent variable.[404] Therefore, predictions of when and where intrastate conflict occurs, recurs, persists and terminates highly depends on how that dependent variable is coded and can have major impacts on numerical modeling simulations (e.g., the CEM). The next chapter applies statistically

[403] *See for example* Sambanis, N. (2004b).
[404] Sambanis argued that coding rules are a reflection of what civil war means to different scholars and coding rules should reflect these differences. *See* Sambanis, N. (2004b).

significant results from Chapter IV, and uses these statistically significant independent variables as controls in Chapter V. Chapter V begins by describing the descriptive statistics of the eight hypothesized complexity variables. Then, I run several regressions to find parameter estimates for CEM simulation. Lastly, I input these parameter estimates into the CEM.

CHAPTER V.

Data Analysis and Model Simulation

Finding Parameter Estimates for the Competitive Efficiency Model

5.1. Introduction

The main purpose of this chapter is to obtain parameter estimates from statistical models of empirical intrastate conflict data and then input these parameter estimates into the CEM for simulation. The purpose of CEM simulation is to test whether variables found to be associated with conflict reversion, from the prior literature review, interact to produce complex processes that can lead to a system's inability to settle at equilibrium. I apply a logistic regression to analyze main effects and a rare logit model for robustness checks (*see* Appendices A.4 and A.5 for full tables). After conducting regression analyses, I then use the significant parameter estimates (i.e., the coefficients) from the complexity variables to input into the CEM. Rather than just listing statistically significant variables in a table, the CEM gives new insights on how these variables interact to produce emergent behaviors. If we estimate these statistical parameters and input them in the CEM, which demonstrates how variables interact, we may begin to understand why states with similar indicators of risk produce different conflict outcomes. The outcome of these dynamically modeled variables are graphical and mathematical outputs that illustrate whether or not a system is experience oscillatory behaviors and cannot settle at equilibrium.

5.2. Descriptive Statistics for Complexity Variables

This chapter applies the statistically significant variables from the empirical analysis of intrastate conflict data as controls (*see* previous analysis in Chapter IV). The models of best fit from these previous analyses in Chapter IV will be used to build a new model that is inclusive of the eight variables (see fuller rationale and explanation of variable selection in Chapters I and IV) hypothesized to increase complexity within conflict-affected states. From these eight previously hypothesized variables, I select six variables used as proxies for the competition coefficient (i.e., the competitiveness of an actor group), while the other two variables are tested

to examine if an increase in warring actor groups increased the complexity of the system (and therefore, conflict reversion). The variables that represent the competition coefficient (α) are: (1) politically active groups; (2) political exclusion; (3) relative rebel capacity; (4) rule of law; (5) bureaucratic quality; and (6) tax capacity. I also selected two variables that are hypothesized to increase complexity within a system: (1) dyad number; and (2) presence of EA actor group. Table 5.1 lists these complexity variables, if these variables are included in the competition coefficient, α, the definition of each of these variables and the database where these independent variables were derived.

Table 5.1 Complexity Variables Under Analysis

Independent Variable	*Increases system complexity*	*Included in α*	*Definition*	*Database*
Political activity	✓	✓	Access to political representation	EPR
Political exclusion	✓	✓	Politically excluded groups	EPR
Relative rebel capacity	✓	✓	Power ration between NSA and GA	UCDP
Rule of law	✓	✓	Access to state protection and legal accountability	WGI
Bureaucratic quality	✓	✓	State capacity to carry out government functions	Hendrix (2010)
Tax capacity	✓	✓	State capacity to tax	Hendrix (2010)
Dyad number	✓		Number of warring groups	UCDP
EA involvement	✓		If EA are involved in the conflict	UCDP

The following sections discuss the descriptive statistics of these eight independent variables before running several statistical tests to find models of best fit for parameter estimation and later CEM simulation. Descriptive statistics for each of the eight variables are given in table 5.2.

Table 5.2. Summary Statistics of Complexity Variables (N = 8,773)

Numerical Variables

Complexity variables	Mean	SD	Median	Min	Max	Skew	Kurtosis	SE
Excluded Groups	2.51	5.35	1	0	55	6.97	57.79	0.06
Active Groups	4.91	6.10	4	0	58	5.41	37.35	0.07
WGIRL	43.89	30.00	39.71	0	100	0.37	-1.03	0.32
Power ratio	2.31	1.64	2.54	0	7.5	0.05	-0.98	0.02
Bur. capacity	2.50	1.29	3	0	4	-0.59	-0.84	0.01
Tax capacity	0.12	0.09	0.11	0	0.51	0.83	0.34	0.00

Categorical Variables

	0	1
Dyad Number	7270	2307
Ex Support	7929	844
Ex Support G	8151	622
Ex Support NSA	7777	996

Overall, the data represents that all numerical variables that are not normally distributed, which are evidenced by non-zero skew and kurtosis scores (*see* Appendix A.2 for additional tests). The numerical variables are those variables that will be simulated in the CEM, so the observation that these variables are not normally distributed is important. Also, the data shows that even when including developed cases within the case selection, variables such as WGIRL shows a mean (43.89) and the median (39.71), which reflect the fact that many cases fall low on the scale of rule of law, which ranges from 0-100. As my analysis is inclusive of strong democratic countries, strong autocratic countries and anocratic countries, this skew is not unanticipated. The high standard deviation of WGIRL indicates that there is high variability within the WGIRL variable, which is attributable to including both wealthy and developed states and less wealthy and less developed states within the sample. Other hypothesized indicators of conflict reversion include power ratio and bureaucratic capacity show high

variability among scores. Of interest, power ratio has a negative kurtosis, which indicates that the values are widely spread out along the distribution of values. This means that there is high variability of conflict intensities within the sample. In regards to excluded and active groups, the mean and median values represent that many cases involve both politically excluded and politically active groups. Lastly, low scores in the distribution indicate many of the cases inability to collect taxes.

In regards to categorical variables, there were 2,307 cases experiencing conflict with more than one dyad group. Of interest, external support for NSA was higher than external support for state actors and external support overall. External support is inclusive or military, economic, intelligence and other forms of support.[405]

5.3. Statistical Results: Parameter Estimates for Complexity Variables

Table 5.3 shows logit and multinomial regressions are presented as a side-by-side comparison against 18 different dependent variables.[406] I indicate the independent variables' direction of the relationship, if significant (for full regression results see the Appendix A.4).

The table clearly demonstrates both differences and similarities among the statistical models. Each column represents the dependent variable, and the rows represent both the controls and the complexity variable results. If a cell contains a "-", this indicates that a negative significant relationship was observed between the two variables. Note that the type of EA involvement may potentially increase complexity with a conflict-affected state; meaning, that dependent on which side the EA supported a change from non-significant to significant occurred. Thus, which side an EA supports (i.e., EA supports NSA, 'EAN' or EA supports GA, 'EAG') the relationship with that variable became significant. To illustrate, the FL prior war model is regressed with size of population (i.e., "Pop") and the dependent variable "UCDP persistence". I recorded "Pop" as having a positive relationship dependent on the type of EA support. In this instance, the variable Pop regressed against UCDP persistence demonstrates a non-significant relationship (0.006 (0.004), $p>0.05$) with EA involvement overall (i.e., the independent variable EA), but a positive significant relationship (0.010 (0.004), $p<0.05$) with external

[405] Högbladh, S., Pettersson, T., & Themnér, L. (2011) "External Support in Armed Conflict 1975-2009". Unpublished manuscript presented at the International Studies Association Convention in Montreal 2011. UCDP External Support Project. Primary Warring Party Dataset Codebook, v. 1.0 -2011.

[406] Multiple comparison problems are not an issue here as (1) almost all of the dependent variables (exception is FL 2003) come from the same dataset; and (2) these analyses are not simultaneously evaluating many hypotheses, but are examining how slight adjustments in coding impacts model fit.

actors who were biased in their support (i.e., +EA). Lastly, table 5.3 differentiates between conflict intensities (FL prior conflict on the left, EPR prior conflict to the right).

Following table 5.3, a detailed discussion of table 5.3 is presented. These sub-sections briefly describe the effects of the additional complexity variables when controlling for variables that were found to be significant in the previous chapter (i.e., FL 2003 independent variables regressed against all dependent variables). Moreover, this sub-section demonstrates how the addition of the complexity variables led to a number of previously robust variables becoming non-significant, while only a few controls remain significant. For full regression tables *see* Appendix A.4.

Table 5.3. Complexity Variable Significance Results

	FL prior (≥1,000 battle-related deaths)									EPR prior (≥25 battle-related deaths)								
	FL onset	UCDP onset	EPR onset	Usher onset	UCDP recur	Usher recur	Usher relapse	UCDP perst	EPR perst	FL onset	UCDP onset	EPR onset	Usher onset	UCDP recur	Usher recur	Usher relapse	UCDP perst	EPR perst
Controls																		
Prior conflict	+							+	+	-	-	-	-		+	+	+	+
GDP										-								
Pop				-				+EA	+EA				-				+ EA	+ EA
%mts								- EA	-								- EA	-
Noncon				-				- EA	- EA				-					
Oil		+	+			+		+	+		+	+					+	+
Nwstate	+								+ EA									
Instab	+	+	+	+	+		+	+EA	+	+	+	+	+	+		+	+	+
Democ				+				+	+								+ EA	+ EA
ELF						+									+EA			
RLF									- EA									
CEM																		
Dyad		+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Excl			-		-	-	-		-			-		-		-		-
Active			+		+	+			+ EA	+	+	+		+				+ EA
WGIRL				-		+ EA	-	-	-	-			-					-
Power	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Burac	+		-					+ EA				- EA					+ EA	
Tax								+	+								+	+
TP			+		+	+	+	+	+	+	+	+		+	+	+	+	+
TPG								+	+	+	+	+					+	+
TPN							+	+	+	+	+						+	+

"EA": depends on type of EA actor involvement. See Appendix A.4 for full results

Table 5.3. CEM Regression Results. If a cell contains a "+" then a positive significant relationship was observed between the two variables. If the cell contains "+EA", then a positive significant relationship was observed and "-EA", then a negative significant relationship was observed relative to the type of EA involvement. This means that relative to whether or not the EA involvement was pro-government or pro-NSA impacted model fit and whether or not the dependent and independent variable demonstrated a significant relationship.

5.3.1. Control and Complexity Variable Results

Logistic and multinomial regressions were performed in order to obtain parameter estimates from models of best fit. Rare logit regressions were performed as robustness tests, which indicated very similar results as the logistic regressions.[407]

Controls

The following variables lost significance when the eight complexity variables were added to the model: (1) GDP, (2) size of population, (3) percentage of mountainous territory, (4) noncontagious state, and (5) ELF. A possible explanation for GDP is the addition of economic opportunity variables (i.e., bureaucratic capacity and tax capacity) proxies. The percentage of mountainous territory had mixed results, and became negative when regressed against persistence variables. Noncontiguous state was robust for only Usher onset, and showed varied results for the persistence variables. However, some variables maintained their robustness and significant relationship when regressed against the complexity variables: (1) instability and (2) oil exporter were the most robust control variables and showed positive significant results.

Complexity Variables

The following discusses the statistical regression results from the eight complexity variables under analysis. First, I discuss the results of dyad number and external support independent variable results when regressed against different conflict dynamic dependent variables, then I discuss politically excluded and politically active group results, next I discuss rule of law and relative rebel capacity results, before ending this section with bureaucratic capacity and tax capacity results.

Dyad Number and External Support

Dyad number is the first independent variable under analysis that tests my theoretical claims that an increase in the number of actor groups, specifically three or more actor groups fighting in a conflict, increases the likelihood of conflict reversion from a complexity theory framework. First, I regress this variable against all dependent variables and found a strong, positive and significant relationship for all dependent variables, with the exception of FL onset. In sum, an increase in dyad number is a significant and robust variable for understanding conflict dynamics.

[407] Two dependent variables did not share similar results. These were (1) Usher recurrence (FL and EPR prior) and UCDP recurrence (EPR prior).

FL's 2003 study examined foreign support by applying the number of civil wars ongoing in neighboring countries in the previous year as a proxy and found that this was not significantly related to conflict onset.[408] Alternatively, I found that many onset variables regressed with external support were positively significant. These results suggest that there is increase in the likelihood of onset given external support. However, when separately regressed against EA NSA or EA government support these results did not hold. The only onset dependent variable that did not demonstrate a significant relationship with EA support was Usher onset. I also regressed external support against reversion and persistence. Like onset, reversion showed a positive significant relationship with EA support but not so when regressed with EA support specific for government actors or NSA. One exception was Usher relapse (FL prior war model) that showed both a positive significant affect for EA support overall and EA support for NSA. Lastly, EA support in the FL prior war model shows significant and positive results for all three EA.

In sum, an increase in dyad number and the presence of external support increases the likelihood of conflict onset, reversion and persistence. Thus, this result gives support to my theory that an increase in dyads and presence of external actors increases complexity and the likelihood of conflict. However, there are caveats when applying the UCDP Dyadic Dataset and External Support Dataset. First, the UCDP Dyadic Dataset is reliant on information availability. As information becomes easier and better managed, the more likely the complexities of conflict will be reported. Conversely, information prior to the 1990s was much more scattered and less rich. Thus, the increase in dyad groups may be directly correlated with an increase in information availability. However, this observation does not necessarily mean that the variable dyad number is not important. On the contrary, this observation gives further credence to the increasing importance of examining conflict as a multi-player complex system rather than examining conflict as a 2-player static game. Second, both conflict episodes and whether or not an actor groups receives external support is highly correlated and may be a result of endogeneity and bias. Third, I do not hypothesize which actor group receives external support; rather I hypothesize that if a state receives external support, then the likelihood of a reversion to conflict and/or a persistence of conflict increases as the conflict system becomes more complex. Therefore, the significant statistical relationships between external support and conflict dynamic variables is enough evidence to support my hypothesis and theory.

[408] This thesis expands FL's 2003 study by also examining the UCDP External Support-Primary Warring Party Dataset v. 1.0-2011.

Excluded Groups and Active Groups

Previous research showed that both excluded and politically active groups increased the likelihood of conflict onset. Cederman, Gleditsch, and Buhaug argued that political horizontal inequalities demonstrate a power asymmetry as political exclusion is felt not only politically, but also economically, socially and culturally by excluded groups.[409] This exclusion was found to be statistically correlated with conflict onset. Therefore, I included these variables to not only replicate these findings, but to also test their robustness against other onset, reversion and persistence dependent variables. For onset, EPR onset models show a statistically significant and negative relationship with excluded groups. Thus, as the number of excluded groups increases, the likelihood of onset decreases. Although this result may seem counter-intuitive, it is important to understand that many authoritative states have been shown to be negatively correlated with exclusion and conflict onset. Active groups and models for onset found a positive significant relationship with EPR onset dependent variables, and positive significant relationships for FL (EPR prior) and UCDP (EPR prior) onset dependent variables. Thus, the more politically active groups within a country, then the more likely conflict will occur in that country.

UCDP and Usher recurrence dependent variables demonstrated a statistically significant negative relationship with excluded groups and a significant positive relationship with active groups. These relationship directions reflect what was found in the onset models. Of note, however, the EPR prior war model observed no significant results with either excluded nor active groups for Usher recurrence. For Usher relapse, a negative significant relationship was found for excluded groups variable, while no relationship for active groups was observed. In contrast to recurrence which demonstrates a relationship for both excluded and active groups, relapse only shows a relationship with excluded groups. The results for persistence models were less robust. EPR persistence models demonstrates a statistically significant negative relationship with excluded groups and significantly positive relationship with active groups.

These results support my theory that politically excluded and active groups increase the likelihood of conflict reversion. These results also support recent findings that access to state power influences the risk of conflict,[410] however these findings bring interesting new insights of how state power and political institutionalization impacts the likelihood of conflict reversion

[409] Cederman, L-E., Gleditsch, K., & Buhaug, H. (2013).
[410] Cederman, L-E., Gleditsch, K., & Buhaug, H. (2013).

and persistence. Importantly, these results do not support previous findings that states with politically excluded groups are more at risk of conflict onset.[411]

Rule of Law and Power Ratio

Rule of law or WGIRL is the World Bank measure of the rule of law of a state; that is, WGIRL captures citizens' perceptions of whether or not they have confidence in and abide by rules of society. This variable also includes the quality of law enforcement, contract enforcement, property rights, and the likelihood of crime and violence. Thus, the WGIRL contributes to the CEM as a proxy for security.

For onset dependent variables, Usher onset and FL (EPR prior) onset were negative and significant. Usher recurrence (FL prior) shows a positive relationship only when also regressed against either EA support for a government actor or EA support for a NSA, but not EA support more generally, while Usher relapse shows a negative relationship with WGIRL (FL prior model only). This result may demonstrate an increase in recurrence as the conflict-affected state transitions to more democratic, transparent and accountable political institutions. Almost all persistence models, with the exception of UCDP persistence (EPR prior) are negatively significant with WGIRL. These results are expected as the likelihood of conflict onset, relapse and the persistence would likely increase as the values or indices for WGIRL decreases.

The variable relative rebel capacity or power ratio is the ratio of insurgent troops to the number of government troops. Previous studies have found that the weaker the insurgent troops the longer the duration of the conflict. However, this variable does not fully capture the balance of power within a state experiencing intrastate conflict. Power ratio was found to be statistically significant and negative for all onset, reversion and persistence dependent variables. Thus, power ratio is the most robust independent variable within these analyses. For EPR and Usher onset the results were almost identical: an increase in the variable power ratio is less likely to result in conflict onset. Similarly, Usher recurrence and EPR persistence both demonstrate that an increase in power ratio results in a decrease likelihood of conflict recurrence and persistence, respectively. These results support previous findings that strong rebel groups lead to shorter conflicts.[412] For example, stronger rebels are less likely to resort to civilian violence, less likely to result in recurrence as the likelihood settlements and rebel victory increases relative to the

[411] The variable of exclusion is an interesting result as the increase of excluded groups decreases the likelihood of various conflict dynamics. *See* Cederman, L-E., Gleditsch, K., & Buhaug, H. (2013).
[412] Cunningham, D., Gleditsch, K., & Salehyan, I. (2009).

power ratio. Thus, the variable power ratio is a robust and significant variable in better understanding conflict dynamics.

Bureaucratic capacity and Tax capacity

The bureaucratic capacity variable demonstrates a significant and positive relationship for FL onset (FL prior) and a negatively significant relationship with EPR onset models. Reversion models did not show any significant relationships. Overall, persistence variables demonstrate a positive relationship with bureaucratic capacity. An increase in bureaucratic capacity (i.e., the ability of the state to manage and collect information) demonstrates inconsistent results with onset variables. The only variable to demonstrate a significant relationship with tax capacity was EPR persistence. Overall, state weakness measured by economic opportunity proxy variables demonstrate robust results for persistence but not for understanding conflict reversion.

5.3.2. Summary of Conditions and Hallmarks of a System Experiencing Conflict Reversion

Overall, the conditions and hallmarks one would expect in a conflict experiencing reversion are prior conflict, instability, multiple dyad groups, politically excluded groups, relative rebel capacity and EA involvement. Variables such as multiple dyad groups and EA involvement are directly related to this thesis' theory that an increase in warring actor groups increases the complexity of a conflict-affected state and therefore, increases the likelihood that the conflict-affected state will experience conflict reversion. Variables that were significant and robust in regards to competition coefficient were (1) politically excluded groups; and (2) relative rebel capacity.

Table 5.4 demonstrates the best model fit for each conflict dynamic (i.e., onset, reversion, persistence) from the previous multiple logistic and multinomial regressions (*see* Appendix A.4 for full tables). These models were selected based on the lowest Akaike information criterion (AIC) score. These parameters from table 5.4 will be used in simulations in the following sections (s*ee* Appendix A.7 for conflict onset)

Table 5.4. Selection for Competitive Efficiency Model (lowest AIC score)

Model	*Independent Variable*	*Parameter Estimate*
UCDP onset (EPR prior)		
	Excluded groups	-0.026
	Active groups	0.086**
	Rule of law	-0.007
	Rebel capacity	-0.692***
	Bureaucracy capacity	-0.129
	Tax capacity	-0.326
Usher recurrence (FL prior)		
	Excluded groups	-0.094*
	Active groups	0.101**
	Rule of law	0.012
	Rebel capacity	-1.104***
	Bureaucracy capacity	0.012
	Tax capacity	-2.503
Usher relapse (EPR prior)		
	Excluded groups	-0.087*
	Active groups	0.026
	Rule of law	-0.011
	Rebel capacity	-0.466***
	Bureaucracy capacity	-0.144
	Tax capacity	-0.806
EPR persistence (EPR prior)		
	Excluded groups	-0.003**
	Active groups	0.002*
	Rule of law	-0.001**
	Rebel capacity	-0.029***
	Bureaucracy capacity	0.002
	Tax capacity	0.118***

5.3.3. Summary of Interaction Effects

As complexity highlights how variables interact to produce emergent behavior, I also tested for interaction effects for the models of best fit from table 5.4. I created interaction terms for each of the six complexity variables that represent the competitive coefficient. The full results of the regression models with interaction effects are presented in Appendix A.5. The significant

interaction effects and their respective dependent variables are summarized in table 5.5. Table 5.5 summarizes the dependent variables that showed interaction effects with their corresponding effect, coefficient, significance (*) and standard error.

Table 5.5. Summary of Interaction Effects for Competition Coefficient Variables

Dependent Variable	Interaction	Coefficient (standard error)
UCDP onset (EPR prior)	WGIRL*Power ratio	-0.006* (0.002)
Usher recurrence (FL prior)	Null	Null
Usher relapse (EPR prior)	Null	Null
EPR persistence (EPR prior)	Excluded*Active	0.001* (0.000)
	WGIRL*Power ratio	-0.005** (0.001)

The single interaction term of importance is from the UCDP onset dependent variables that shows that there is a significant interaction between rule of law variables and relative rebel capacity. In contrast, the main effects (table 5.4) does not show a significant effect with rule of law. Thus, for conflict onset, if a state has low rule of law scores, then the ratio between relative rebel capacity compared to the government military capacity is high.

EPR persistence shows an interaction between excluded and politically active groups and between rule of law and relative rebel capacity. Although the main effects showed significant effects for these four variables, the interaction between these variables are the estimated parameters that will be applied in the CEM. Likewise, the estimated parameters from UCDP onset's interaction term will be used instead of the rule of law and relative rebel capacity main effects. In contrast, neither reversion variables show any interaction effects.

5.3.4. Summary

These statistical findings from tables 5.3, 5.4, and 5.5 demonstrate interesting novel results, while also supporting and contradicting previous research. Most conflict studies quantitative researchers would end their analysis here. However, these statistical results are only part of my methods for better understanding conflict reversion. As these statistical results indicate, there is no one variable that explains conflict onset, reversion or persistence; rather, it is the interaction and various combinations of these variables that produce varying conflict dynamics. Thus, these statistical results show the need for numerical simulations to better understand the mechanisms behind conflict reversion. To further understand the processes behind why similar indicators of risk produce different conflict outcomes, one must start looking at conflict and modeling conflict with more dynamic tools, theories and models. This thesis proposes a novel approach to understanding unpredictability in conflict by examining a conflict-affected state as a complex system. I now tease out the mechanism behind recurrent conflict by applying these statistical findings to the CEM.

The following section revisits this thesis' main hypotheses and gives further detail of what I hypothesize will be observed with CEM simulation. Then, I apply hypothetical parameter estimates to test model accuracy. Last, I apply real data from tables 5.4 and 5.5 into the CEM for model simulation.

5.4. Hypotheses Revisited

This thesis examines why some states experience conflict reversion and why others do not. Complexity theory is applied through the CEM**.** As argued, conflict-affected states that experience conflict reversion are not 'frozen', nor in a state of equilibrium; rather conflict-affected states that experience conflict reversion are *unable* to settle at equilibrium. Table 5.6 was presented in Chapter I to hypothesize intrastate conflict dynamics and is reiterated below.

Table 5.6. Intrastate Conflict Hypotheses			
		Unanticipated behaviors by competing actor groups?	
		Yes	No
Reversion of violent conflict?	Yes	*Unable to settle at equilibrium* (*e.g.* recurrent or persistent conflict)	*Approaching stable equilibrium* (*e.g.* criminally violent, post-conflict states)
	No	*Approaching unstable equilibrium* (*e.g.* stalemate, ceasefire)	*Reached stable equilibrium* (*e.g.* military or rebel victory)

The following sub-sections revisit and elaborate table 5.5 as I discuss two specific hypotheses under analysis for this thesis. Then, I test these hypotheses with hypothetical data, then with real data for CEM simulation and analysis.

5.4.1. CEM Hypotheses 1: Actor Groups that use an Inefficient Competitiveness Experience Oscillatory Behaviors, Resulting in Conflict Reversion

Oscillations and unanticipated behavior are an observable outcome of actor groups applying inefficient competitiveness. These dynamics are more likely to occur if a conflict-affected state hosts more than one dyad and when inefficient competitiveness is used for the overall aim of political representation and power. The oscillating patterns are the result of warring actor groups responding to other warring actor groups' competitiveness. Inefficient competitiveness leaves the actor groups vulnerable to competition. Thus, in conflict-affected states where the GA and NSA are not strong and EA support is variable, each group can exploit the other group by finding vulnerabilities. Meaning, *oscillating behaviors and "nonequilibrium" processes observed in conflict-affected states are generated by intransitive competitive interactions.*[413] This exploitation of actor group vulnerabilities is the result of delayed intransitive competitive interactions by other actor groups. Behaviors are quantitatively observed through competing actor group activity over time. I therefore hypothesize the following,

H_1: Warring actor groups ($\geq$ 3) who compete for political power by using inefficient competitiveness within a conflict-affected state will experience conflict reversion that is mathematically observed as an inability to settle at equilibrium.

[413] Huisman, J., & Weissing, F (2001a).

I hypothesize that conflict reversion is a consequence of actor groups oscillating as they are unable to settle at equilibrium, in contrast to a conflict that does not recur or relapse and instead approaches stable equilibrium.[414] The conditions most likely to produce a system that does not permit a system to settle at equilibrium are when multiple (*i.e.* ≥ 3) actor groups compete for political power by each applying inefficient competitiveness. The more competing actor groups within an intrastate conflict, the longer that conflict will extend through time or the more likely that conflict with recur or relapse. Moreover, recent ecological research has found that intermediate to weakly competing species are more likely to experience oscillatory behaviors in contrast to stronger competing species, which is more likely to result in competitive exclusion.[415] This recent theoretical ecological research gives support to conflict studies empirical research, which have found weak states and weak insurgencies give rise to longer conflicts and are more likely to observe conflict reversion, while a strong state or strong insurgency are more likely to reach conflict termination by military victory.[416]

Within ecology, oscillations are a consequence of various competitive effects in response to other species competitive effects and temporal variation (e.g., environmental change, weather patterns).[417] Figure 5.5 is a figure is from an ecological analysis of three different species (lines 1, 2, and 3) competing within a niche. This figure illustrates a hypothetical scenario of actor groups competing with inefficient competitiveness, which produces oscillating behaviors. As Figure 5.5 illustrates, there is not one actor that dominates and excludes the other two actor groups. Actors are unable to defeat one another because their competitiveness is not sufficient for one actor group to claim victory.[418]

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[414] This type of oscillatory behavior is a consequence of intransitive competition among actors, which is mathematically visualized as a heteroclinic cycle. Heteroclinic cycles connect unstable equilibria, so a system experiencing a heteroclinic cycle cannot settle at equilibrium. A heteroclinic cycle spirals away from equilibrium at irregular intervals. A heteroclinic cycle involves intransitive competitive interactions, and is well known to exhibit non-equilibrium and non-linear dynamics within a system. *See* Solé, R., & Bascompte, J. (2006), p. 22-3. Nowak, M., & Sigmund, K. (1993) "Chaos and the Evolution of Cooperation". *Proceedings of the National Academy of Sciences, USA*. 90: 5091-5094. Shubik, M. (1982) *Game Theory in the Social Sciences*. MIT Press, Boston.

[415] Kenitz, K., *et al*. (2013) *"*The Paradox of the Plankton: Species Competition and Nutrient Feedback Sustain Phytoplankton Diversity". *Marine Ecology Progress Series*. 490:107-119.

[416] Cunningham, D., Gleditsch, K., & Salehyan, I. (2009); Toft (2010); Toft (2009).

[417] Kenitz, K., *et al*. (2013)

[418] However, over an extended time period one actor may be able to dominate if competitive effects weaken. For example, as the conflict lengthens some groups join stronger NSA groups (e.g., Guatemala in 1982), which results in less competing dyads and a decrease in the likelihood of conflict reversion and an increase in a likelihood of a negotiated settlement. Or one actor group may out-compete other actor groups by becoming increasingly competitive as a result of applying highly efficient competitiveness, which results in the termination of a conflict.

Figure 5.1.[419] CEM Hypothesis 1: Actor Groups that use an Inefficient Competitiveness Experience Oscillatory Behaviors, Resulting in Conflict Reversion

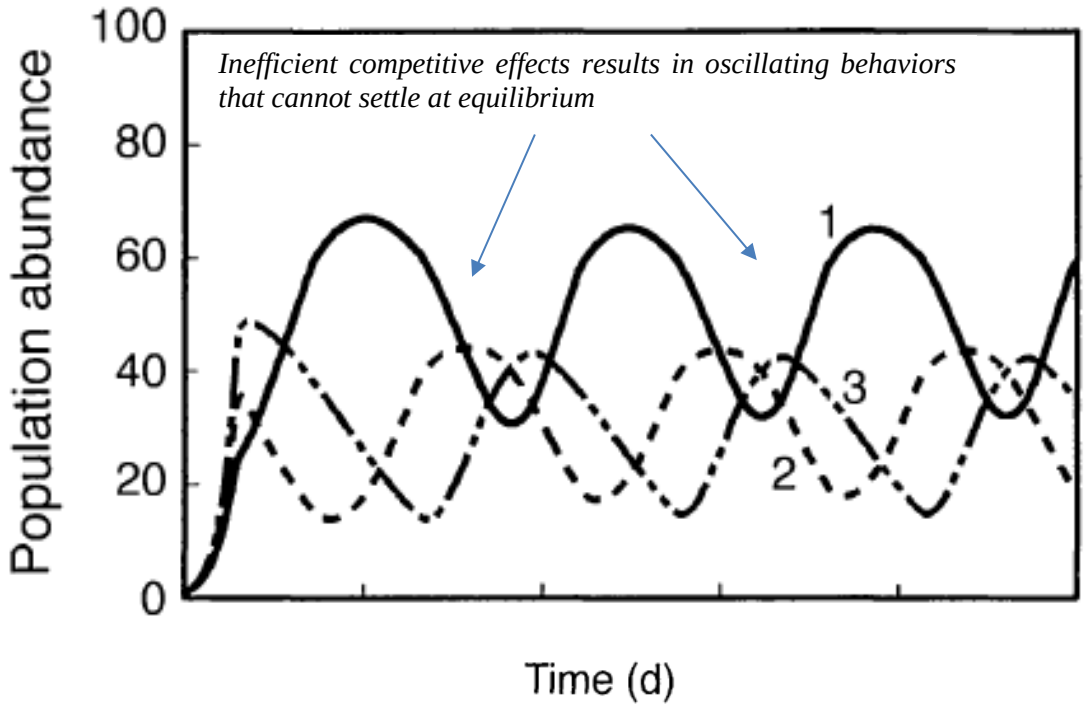


Figure 5.1 illustrates three different hypothetical populations experiencing oscillatory behavior. The vertical axis is population abundance and is the number of actors (i.e., activity) in each actor group (1, 2 or 3). The horizontal axis is time.

Attributes that are applicable to inefficient competitiveness include a decentralized, but organized NSA, EA that have limited funds and/or intervention efforts that are not supported by their home country and GA that are moving toward reform, but are still highly corrupt in various areas of governance. External actors can be viewed as increasing complexity within a conflict-affected state because most EA intervene when the conflict is at its most severe and unpredictable. Thus, EA can be detrimental to ending a conflict dependent on the timing of the intervention. Thus, competitiveness at inefficient levels inhibit competing actors from performing at their highest and most efficient capacity, while maintaining the level of performance necessary for survival. A state that experiences conflict reversion or persistence is a consequence of actor groups who are not strong or powerful enough to outcompete other groups. This inability leads to continued or repeat violence because of a sense of powerlessness or control among actors who are inefficiently competing.

[419] Figures 5.1 is from Huisman, J., & Weissing., F. (2001a). With author's additions.

5.4.2. CEM Hypothesis 2: A Dominant Actor Group who uses the Most Efficient Competitiveness Experiences Equilibrium, Resulting in Victory

Victory occurs when one actor group dominates and subsequently out-competes all other actor groups for the contested resource (i.e., popular support). If the central government is unable to defeat a NSA group early in the conflict, or vice versa, then the prognosis for a successful conflict resolution grows increasingly unlikely, while the risk for conflict reversion or persistence increases.[420] Thus, dependent on initial conditions[421] and competitive efficiency, an actor group can defeat other actor groups to terminate the conflict.

H_2: A warring actor group who competes for political power by using the most efficient competitiveness within a conflict-affected state will experience victory that is mathematically observed as stable equilibrium.

However, if each actor group is highly competitive, then the victor depends on initial conditions. The more organized, powerful, influential and legitimate an actor group, the more likely that actor group will be able to employ efficient use competitiveness to out-compete other actors for dominance within a conflict-affected state. However, most intrastate conflict and especially intrastate conflict reversion environments are correlated with weak institutions, poverty and delayed EA interventions. Thus, the likelihood of a clear victory is low.

Figure 5.2 is a figure is from an ecological analysis of three different species (lines 1, 2, and 3) competing within a niche. This figure illustrates a hypothetical scenario of an actor group competing with efficient competitiveness, which produces competitive exclusion. Figure 5.2 illustrates how one actor group was able to use the most efficient to outcompete other actor groups over time. As the actor group competes most efficiently, then (stable) equilibrium is reached. Therefore, the competitive effects are constant and weak among all actor groups with exception one, which affords competitive exclusion (i.e., victory) and thus termination of the conflict. If competitive effects are constant, then this demonstrates higher predictably within the system.

[420] Akcinaroglu, S. (2012) "Rebel Interdependencies and Civil War Outcomes" *Journal of Conflict Resolution*. 56(5) 879-903; Regan, P. (2002).

[421] Initial conditions are related to the concept of path dependence, which is a characteristic of a complex system Path dependence is also applied widely within IR. *See* Chapter II for discussion.

Figure 5.2. CEM Hypothesis 2: A Dominant Actor Group who uses the Most Efficient Competitiveness Experiences Equilibrium, Resulting in Victory [422]

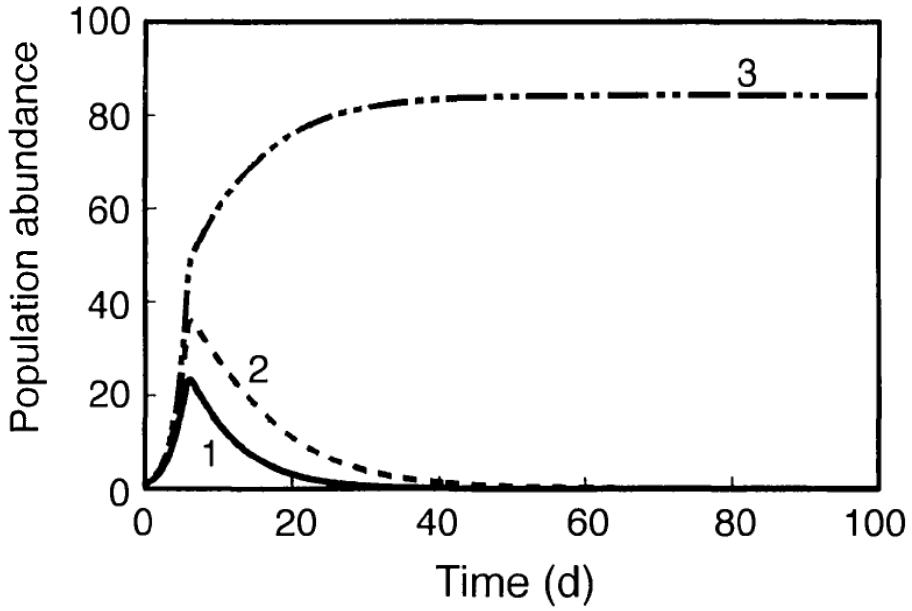


Figure 5.2 illustrates three different hypothetical populations. actor groups experiencing competitive exclusion. The vertical axis is population abundance, which is the count of actors (i.e., activity) in each actor group (1, 2 or 3). The horizontal axis is time. Most cases that result in a competitive exclusion outcome can be traced to the winner's initial conditions. By time step 15, one actor group's competitiveness proved to be the most efficient as actor group 3 outcompeted actor group 1 and 2.

Attributes that are applicable to high competitiveness include highly disciplined and organized NSA, committed and well-funded EA actors, or legitimate government actors. Although competitive exclusion is one of the outcomes hypothesized for this thesis, competitive exclusion will not be discussed and analyzed in detail.

Below, table 5.7 lists both hypotheses for comparison. These hypotheses are taken from table 5.5 and elaborated upon in greater detail below.

[422] *Figures 5.2. is from* Huisman, J., & Weissing., F. (2001a).

Table 5.7. Hypotheses for Conflict-Affected State Outcomes			
Conflict Type	**Prediction**	**Characteristics**	**Equilibrium Outcome**
***Conflict reversion* (Hypothesis 1)**	Intrastate conflicts that experience inefficient competitiveness among warring actors do not allow for one actor to concede defeat or another to dominate over others to achieve absolute victory	If (≥3) actors use inefficient competitiveness; the system generates species oscillations Oscillating behavior and unanticipated outcomes	Unable to reach equilibrium
***Victory* (Hypothesis 2)**	Intrastate conflict resulted in competitive exclusion of at least one of the warring actors is a consequence of efficient competitiveness compared to other competing actors whose competitiveness was less efficient	If one actor uses highest competitiveness efficiency, the system generates competitive exclusion	Stable; If all use highly efficient competitiveness, then winner depends on the initial conditions

In sum, intrastate conflict is far from static and is constantly reacting to non-linear relationships and stochastic processes. Part of the reason why intrastate conflict is unpredictable is that these conflicts are not in a state of equilibrium, but are shifting and producing seemingly random behavior. However, applying differential equations to describe the interacting dynamics in combination with statistical analyses can help to clarify the mechanism to why conflict recurs, relapses or terminates. Differential equations are appropriate as fighting is not continuous over time, but intensity increases and decreases in response to external and internal stimuli. Thus, population numbers (i.e., activity of populations), which are discrete values, can be captured through differential equations in a smooth way as differential equations (*see* Chapter III for equations) act on a continuous time scale to more efficiently capture dynamical processes.

5.5. Using Hypothetical Data to Calibrate and Test the CEM with an Intraspecific Competition Example

In this section, I demonstrate how one can use estimated parameters from statistical analyses to model complex and unanticipated behaviors in a conflict system through the application of the dynamic CEM. As statistical analyses are static these analyses can only tell us at a specific moment in time what risk indicators are relevant in understanding conflict dynamics. If we estimate these static parameters, but then input them in the CEM to explore how variables interact and change over time, we may begin to understand why states with very different indicators of risk produce similar conflict outcomes, and why states with very similar indicators of risk produce different conflict outcomes. Next, these parameter sets will be aggregated and

applied within the CEM as the competition coefficient (i.e., α), which was derived in Chapter III.

The CEM mathematically and visually models the dynamics of actor group populations given different competitive effects applied by each actor group. An inefficient use of competitiveness is mathematically observed as oscillatory behavior and tends to be perceived as unpredictable behavior by the competing parties involved. A conflict-affected state that experiences a reversion of conflict is not in a phase of equilibrium, nor in a stable state of equilibrium; rather these conflicts are so difficult to anticipate because it is in a phase of settling *near unstable equilibria*.

To illustrate how competitive effects within an actor group can impact how competitive an actor group is relative to other actor groups, I first model intraspecific competition within three different actor groups. As discussed in depth in Chapter III, intraspecific competition is the intensity of competition *within* an actor group. The intensity of this competition can be measured by individuals who are suppressed in their growth given the amount of limiting resources available. A resource that is limiting is one that is consumed by another group that decreases the success of that group's ability to obtain political power. For instance, the resource that is most limiting and the resource that is of greatest interest for the CEM are popular support/non-violent civilians.

Figure 5.3 illustrates the effect of intraspecific competition.[423] This figure depicts how infighting within a group, while keep all other parameters constant (e.g., growth rate, interspecific competition), can severely affect the ability for an actor group to outcompete and thus dominate a conflict environment. As depicted in figure 5.3, the color orange represents the group with the largest intraspecific competition levels and the color blue with lowest intraspecific levels. If an actor group experiences higher intraspecific competition rates compared to other competing actor groups who have lower intraspecific competitive rates, then the actor groups with lower intraspecific competition rates will increase in activity level and outcompete those actor groups who have higher rates of intraspecific competition. Thus, figure 5.3 illustrates these simple dynamics of how intraspecific competition can suppress activity levels of an actor group.

[423] This figure is simulated from the CEM equation (equation 3.10) presented in Chapter III.

Figure 5.3. Hypothetical Intraspecific Competitive Effects on Three Actor Groups

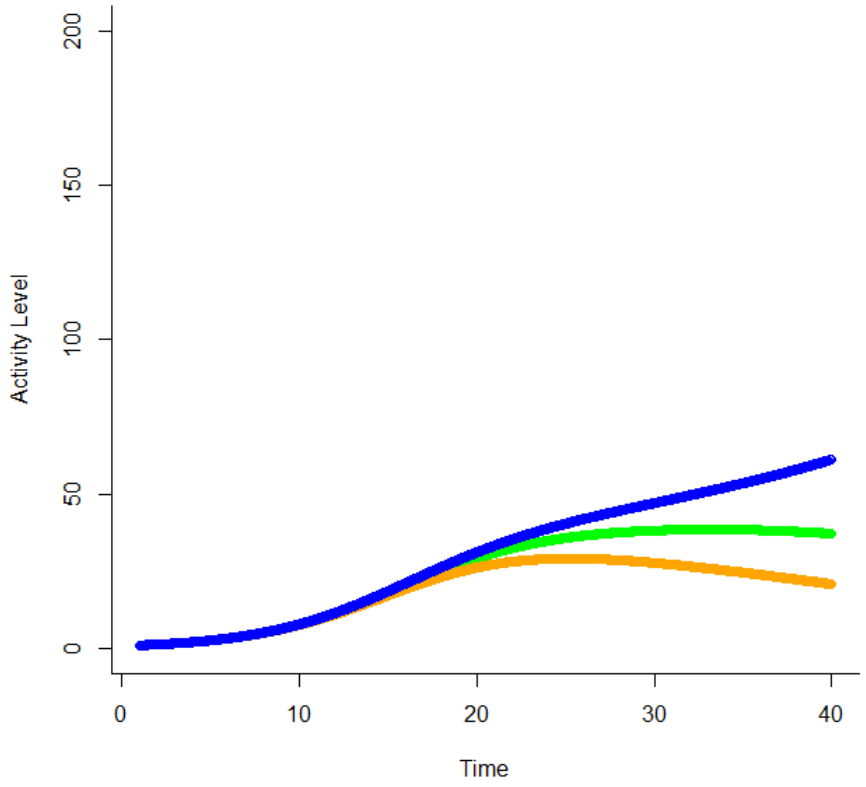


Figure 5.3 Hypothetical Intraspecific Competitive Effects on Three Actor Groups illustrates how changing the intraspecific competition parameter effects group activity levels over time. Blue, or actor group 1, shows the lowest intraspecific competitive value, while orange or actor group 2 demonstrates the highest. Intraspecific competition rates are Orange (0.8), Green (0.6), Blue (0.5).

To illustrate how intraspecific competitive effects can have detrimental effects on competing actor group activity levels, consider the lack of cohesion and organization of the seven Mujahedeen leaders during the Afghan-Soviet War (1979-89). During the early half of the Afghan-Soviet War, the Mujahedeen were highly fractionalized and internal squabbling was prevalent. Consequently, the Mujahedeen were unable to organize to become an efficient competing NSA group against the Soviet occupation and the Soviet-backed central government because of high levels of intransitive competition.[424] If one examines the Mujahedeen activity levels through their intraspecific competition levels, while keeping all other parameters and variables constant (e.g., growth rate, interspecific competition), then similar dynamics from figure 5.3 is to be expected by the uncoordinated and internally competitive Mujahedeen. Thus, in addition to other variables and parameters, such as growth rate, intraspecific competition

[424] Infighting would plague the Mujahedeen until 1982. By 1984 the Mujahedeen began to apply more competitive tactics (i.e., higher competitive efficiency) against the Soviets and received more comprehensive support from EA groups (e.g., Pakistan).

alone can severely affect the ability for an actor group to outcompete and dominate a conflict environment.

5.6. Using Hypothetical Data to Calibrate and Test the CEM with Intraspecific and Interspecific Competition Examples

This section demonstrates to the reader the functionality and simulation ability of the CEM with hypothetical data. This section is important for model development, as the calibration and testing of the CEM is critical before applying real data from estimated parameters (which are simulated in the subsequent section). The CEM demonstrates different actor group dynamics and equilibrium outcomes in response to different initial starting sizes of the actor group, varying the actor groups' growth rates and varying the magnitude of the competition coefficient (i.e., aggregated competitiveness or α; inclusive of both intraspecific and interspecific competition). The following several figures demonstrate how adding slight variations of the competition coefficient parameter into the CEM can result in different conflict dynamics.

First, I simulate CEMs with deterministic competition coefficient parameters. However, as deterministic models fail to measure randomness (e.g., uncertainty, noise), modeling real data in a deterministic model is not possible. Therefore, a deterministic CEM is an initial step when observing and recording which mechanisms and values may be of most importance in understanding conflict outcomes. Deterministic models draw a random value, once, from a uniform distribution of the competitive efficiency parameter set.[425] For these initial simulations, these parameters are fixed, which means that these values *do not change over time* (i.e., the parameters are not time dependent). Deterministic models draw random numbers from a uniform distribution that I derive from my competitive efficiency parameter set (tables 5.4 and 5.5). For instance, I predict that if a deterministic CEM simulates an actor group that is highly competitive, that highly competitive actor group will suppress other actor groups' competition coefficients, thus decreasing other actor groups' activity levels, which may lead to competitive exclusion.

Although deterministic models are unable to measure randomness, stochastic models can include the measure of randomness that allows competition among actor groups to vary. These parameters are not fixed, which means that these values *change over time* (i.e., the parameters are time dependent). Stochastic CEMs allow for more realistic simulations. Additionally,

[425] Bolker. B. (2008) *Ecological Models and Data in R*. Princeton, Princeton University Press.

stochastic CEM simulations are able to include real data from parameters that were estimated during the numerous statistical analyses. Stochastic models simulate the CEM's competition coefficients at different time steps in response to competition coefficient values from other actor groups; that is, stochastic models draw random numbers from a probability distribution that I devise from my competitive efficiency set (tables 5.4 and 5.5).

I apply two different stochastic models: (1) normal and (2) gamma. The first stochastic model draws parameters from a normal distribution, while the second stochastic model draws parameters from a gamma distribution. The difference between the two is that parameters from a gamma distribution is a "distribution of waiting times until a certain number of events take place".[426] This means I can set values from the set into the function to allow competitiveness to shift after a certain number of events take place. For example, the waiting time for a certain number of events to take place occurs when a certain proportion of decreased activity by an actor group. Table 5.8 presents hypothesized conflict outcomes based on competition coefficients from a hypothesized competitive efficiency set.

Table 5.8. Hypothesized Conflict Outcomes from Competitive Efficiency Set

	Coexistence (i.e., recurrent or persistent conflict)	Competitive Exclusion (i.e., victory)
Competitive efficiency set	$\alpha_i = \in [2.0:1.0]$	$\alpha = \in [0.01:0.99]$
Mathematical meaning	Unable to reach equilibrium	Stable equilibrium reached

Table 5.8 are hypothetical values of the competition coefficient, which is how competitive an actor group is based on that actor group's efficiency. Previous ecological studies show that alpha values less than one ($\alpha < 1$) result in coexistence, while alpha values greater than one ($\alpha > 1$) result in competitive exclusion, oscillate away from equilibrium.[427] I then formulated a function (see Appendix A.11 for R code) to simulate the CEM. [428] The CEM simulates behaviors that are more realistic of a conflict environment by modeling how actor groups alter their competitive efficiency and how other groups take advantage of other groups'

[426] Bolker. B. (2008). p. 172.
[427] These values are widely accepted within the ecology literature. *See* Levin, S., *et al.* (Eds.).
[428] I am indebted to Professor Michael Bonsall's help with creating this function in R. Conversation with Michael Bonsall, Department of Zoology, University of Oxford, November, 2016.

vulnerabilities through exploitation. A function was created to simulate an actor groups' competitiveness. This function is derived from competitiveness of an actor group applied at time *t*, which is the least efficient competitiveness used by that actor group at that time, or $\min r_i Cj$ (equation 3.9, Chapter III). The minimum function represents the competitive efficiency that limits an actor's growth because growth it is constrained by an inefficient use of a competitiveness. This means that the smallest competitive value is driving the system.

In the proceeding, sub-sections I apply this function to the deterministic CEM (figures 5.4 and 5.5), then I apply this function to the probabilistic CEM (figures 5.6-5.7). These figures represent the competition coefficient's dynamic ability to draw once (uniform) or three times (normal or gamma) from a distribution. If the simulation is probabilistic then the competitive coefficient parameter is the result after taking the minimum of each draw (i.e., the smallest competitive value is driving the system).

5.6.1. Deterministic CEM Results

Oscillatory behaviors can experience group activity levels that overshoot. As many of the following figures show, actor group population levels surpass or 'overshoot' their carrying capacity (K=1,000). In systems that are stable, important variables usually respond slowly over time to dynamics experienced within the system.[429] This is a consequence of the competition coefficient's ability to suppress growth indefinitely through various mechanisms of feedback. If the system is stable, overshooting will settle at equilibrium; however, if the system is unstable or unable to settle at equilibrium then the system can result in 'dampened' oscillations which results in "persistent instability".[430] If the competition coefficient (α) is less than one we should observe coexistence. However, if the competition coefficient is greater that one we should observe deterministic actors that withdrawal from the conflict as competitive processes push actor group dynamics to oscillate away from equilibrium.

[429] Gallo, G. (2013)
[430] Gallo, G. (2013), p. 166.

Figure 5.4. Deterministic Competitive Effects on Three Actor Groups, α<1

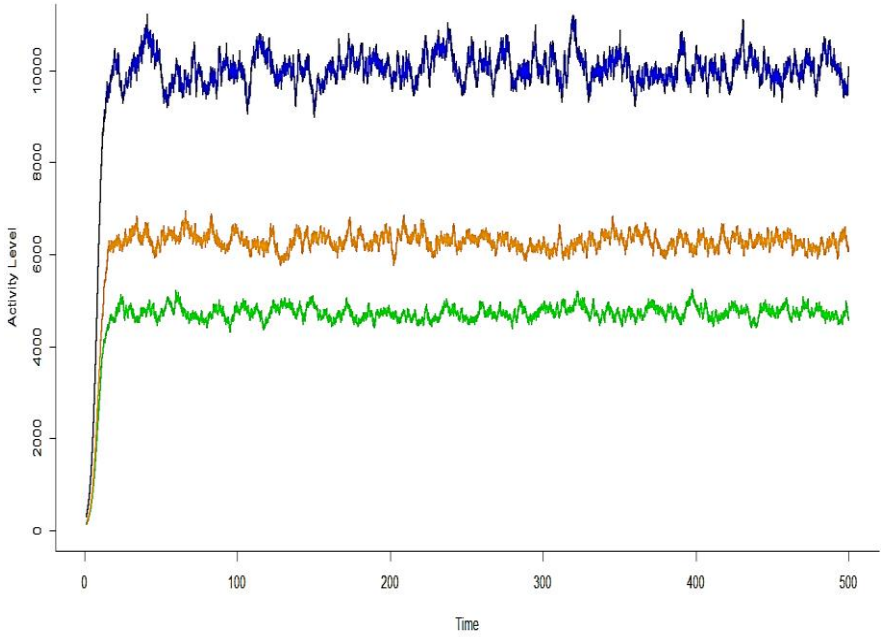


Figure 5.4. Deterministic Competitive Effects on Three Actor Groups, α<1. Alpha values range from [0:0.50]. Alpha values are less than one, drawn once from a uniform distribution (R function runif()).This figure shows aperiodic fluctuations. Actor group initial population activity is 250 (green), 100 (orange), and 50(blue). r = 0.50.

Figure 5.5. Deterministic Competitive Effects on Three Actor Groups, α>1

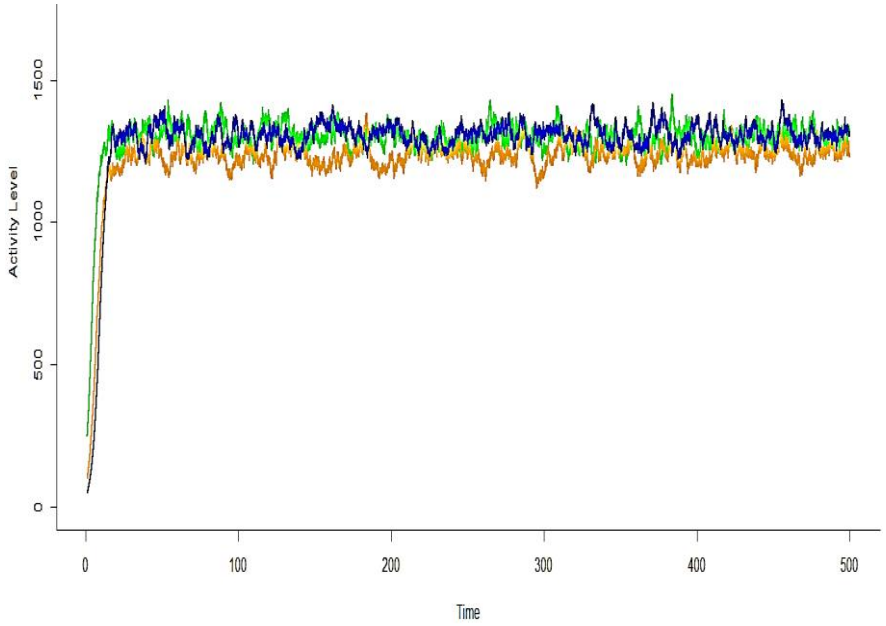


Figure 5.5. Deterministic Competitive Effects on Three Actor Groups, α>1. Alpha values range from [1.001:2.0]. Alpha values are greater than one, drawn once from a uniform distribution (R function runif()). This figure shows aperiodic fluctuations. Actor group initial population activity is 250 (green), 100 (orange), and 50(blue). r = 0.50.

Figures 5.4 and 5.5 are outputs of deterministic models, meaning competitiveness values are fixed. Actor groups' competitiveness are drawn from random numbers of values that correspond with values from three sets of competitiveness. In figure 5.4 the competition coefficient is less than one for all actor groups and in 5.5 the competition coefficient is greater than one for all actor groups. The biggest different between the two graphs are the population activity levels of actor groups. Also, the blue actor group in figure 5.4 shows much stronger oscillatory behavior compared to orange and green actor groups. Figures 5.4 and 5.5 illustrate how simple changes in the competition coefficient dramatically impacts how active the groups are; meaning, when the competition coefficient values are less than one in a deterministic model, competition among actor groups are low, which allows actor groups to grow beyond their carrying capacity. This lower competitive intensity among actor groups allows all actor groups to exceed their carrying capacity activity values and continue to oscillate aperiodically, which results in persistent instability. Conversely, when the competition coefficient is set for values greater than one, then competition among actor groups is more intense. This intensity is show in overlapping population activities in figure 5.5, and is an indicator of persistent instability. As competition is more intense in figure 5.5, the activity levels for each of the actor groups are suppressed at a much lower rate.

5.6.2. Stochastic CEM Results

The ability to model probabilistic values increases the ability of the CEM to simulate more realistic scenarios as probabilistic values allows competitive coefficient values to vary across time, which is in contrast to the previous deterministic models. Figure 5.6 illustrates highly dynamic behaviors between all three competitive actor groups. Most noticeably, the orange actor group is observed to overcompensate in its competitive efficiency by sharp increases in activity before decreases to very low activity values. This overcompensation is likely the result of orange's lagged competitive coefficient interactions, which are oscillating further and further away from equilibrium and eventually withdraws from the system at time step 95. From time step 95 onwards, there is a noticeable shift in equilibrium as the blue and green actors begin to coexist. Time step 95 is an example of a 'bifurcation' or better known in the IR literature as an abrupt change in the system, due to small changes in parameter values.

Figure 5.6 Stochastic Competitive Effects on Three Actor Groups, α<1, t=100

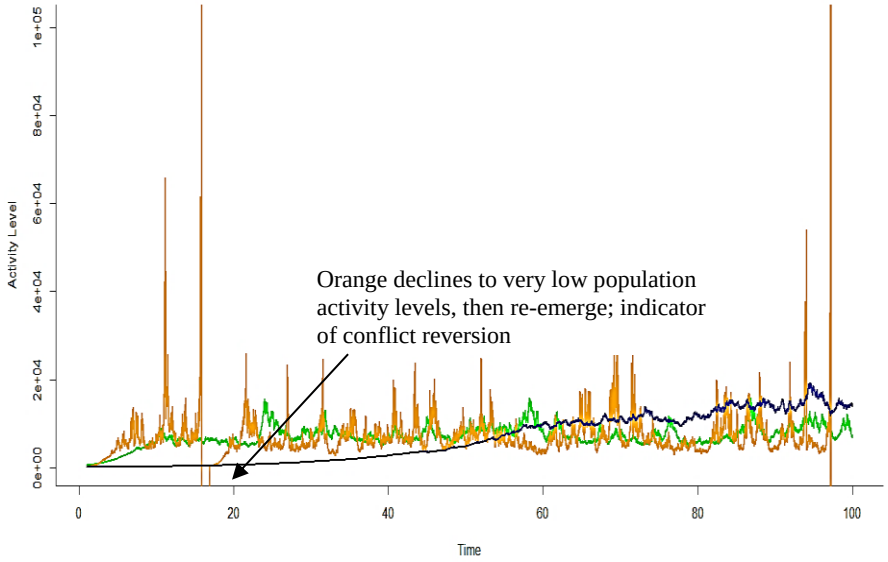


Figure 5.6. Stochastic Competitive Effects on Three Actor Groups, α<1. Alpha values range from [0:0.50]. Alpha values are less than one, drawn three times from a uniform distribution (R function rnorm()). The minimum of these three values are used (*see* Chapter III for theoretical justification). This figure shows aperiodic fluctuations and extinction. Actor group initial population activity is 250 (green), 100 (orange), and 50(blue). r = 0.50

Figure 5.7. Stochastic Competitive Effects on Three Actor Groups, α>1, t=100

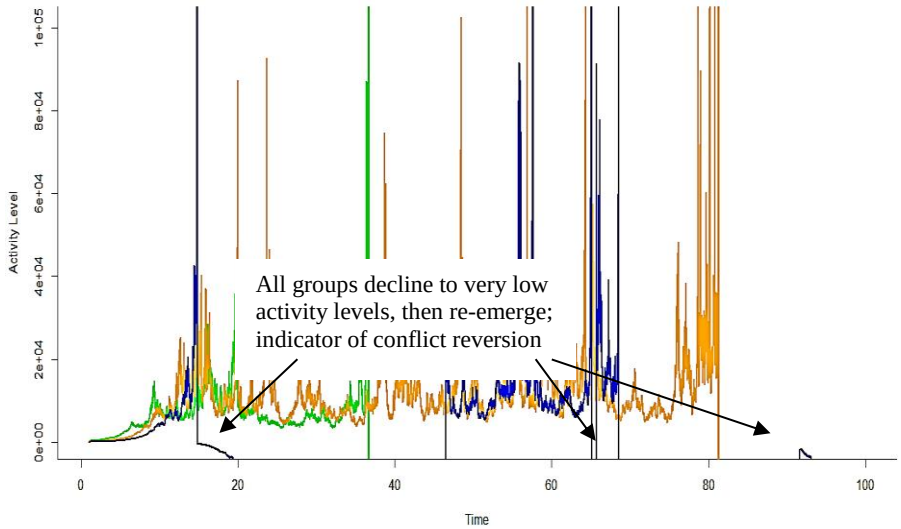


Figure 5.7. Stochastic Competitive Effects on Three Actor Groups, α<1/ Alpha values range from [1.001:2.0]. Alpha values are less than one, drawn three times from a uniform distribution (R function rnorm()). The minimum of these three values are used (*see* Chapter III for theoretical justification). This figure shows aperiodic fluctuations. Actor group initial population activity is 250 (green), 100 (orange), and 50(blue). r = 0.50

A bifurcation at time step 95 has shifted the state of the system to one of high complexity to lower complexity, while increasing predictability. Over time, the blue actor group steadily increases, before in begins to oscillate, while increasing in population activity by time step 55. The blue actor group has exploited the orange's vulnerability by increasing in population activity and competitiveness. Although not simulated past time step 100 in this figure, after simulating up to 500 time steps, figure 5.6 experiences limit cycling, which are more predictable oscillating behaviors between two warring actor groups (e.g., post- conflict shifts from political to criminal violence).

Figure 5.7 shows dynamic behaviors among actor groups whose alpha values are greater than one. The highly oscillatory activity levels are a consequence of unstable persistence, which is more likely to occur when the competition coefficient is greater than one.[431] The green actor group eventually withdraws at time step 35. After dipping to very low activity levels and then increasing at multiple increments, the blue actor group appears to have withdrawn by time step 68. However, after the orange actor group withdraws from the conflict at time step 81, the blue actor group reemerges at time step 90! These oscillating of activities of actor groups is a consequence of the actor groups lagged competitive coefficient interactions, which is oscillating further and further away from equilibrium. The orange actor group's oscillating behavior after other groups withdrew is a clear indication that lagged competitive coefficients interactions impacted the orange actor group. Meaning, the exploitation of actor group vulnerabilities is the result of delayed intransitive competitive interactions by other the actor groups. As the other two actor groups appeared to withdrawal from the conflict, the orange actor group overcompensates, before eventually withdrawing. However, after 9 times steps, the blue actor group takes advantage of the new environment, or niche, and reemerges.

Both figure 5.6 and 5.7 illustrate actor group behaviors that decrease in very low activity before increasing. Dependent on the individual coder, these conflicts could be coded as conflict reversion or persistence. Moreover, results from figure 5.7 illustrate when alpha values are greater than one, a system is more likely to experience dampened oscillations that can lead to competitive exclusion. Alternatively, results from figure 5.6 illustrate that when alpha values are less than one, a system is more likely to experience coexistence of actor groups. In figure 5.6, shifts in the competition coefficient is what gives the wobbles around the equilibrium

[431] Levin, S., *et al.* (Eds.) (2009).

levels.[432] Wobbling is a consequence of instability in the system as the actor group(s) is unable to settle at equilibrium.

The following section applies real data from parameter estimates earlier in this chapter to the CEM in order to model parameter estimates from conflict reversion.

5.7. CEM Parameterization with Application of Real Data

The best model fit for conflict recurrence is Usher recurrence (FL prior war) dependent variable. Also, I will simulate Usher relapse (EPR prior war) for comparison. This will give us the first statistical model's estimated parameters to input into the CEM, which are listed in table 5.9.[433] When examining proxies for political institutionalization, one can observe that both excluded and politically active groups are significantly related with conflict recurrence. Next, proxies for security shows a significant effect with rebel capacity. Lastly, proxies for economic opportunity illustrates that, on average, an increase in bureaucratic capacity decreases the likelihood of recurrence, while tax capacity increases the likelihood of conflict recurrence. However, economic opportunity proxies are not significantly related to conflict reversion.

Table 5.9. Parameter Estimates from Best Fitting Models to Input into the CEM

Model	***Independent Variable***	***Parameter Estimate***
Usher recurrence (FL prior)		
	Excluded groups	-0.094*
	Active groups	0.101**
	Rule of law	0.012
	Rebel capacity	-1.104***
	Bureaucratic capacity	0.012
	Tax capacity	-2.503
Usher relapse (EPR prior)		
	Excluded groups	-0.087*
	Active groups	0.026
	Rule of law	-0.011
	Rebel capacity	-0.466***
	Bureaucracy capacity	-0.144
	Tax capacity	-0.806

[432] Levin, S., *et al.* (Eds.) (2009).

[433] I run tests for sensitivity by increasing or decreasing the parameter values by 10 percent. Sensitivity analyses tests the robustness of the parameter estimates of the CEM in the presence of uncertainty and increases our understanding of the effects of these parameters on the model. Moreover, I also compare models that included statistically significant parameters versus models that were inclusive of non-significant parameters as an additional measurement of model sensitivity. Lastly, I include simulations from a normal distribution from the estimated parameters.

Similarly, conflict relapse has significant relationships with politically excluded groups and rebel capacity. However, active groups are no longer significant. As the CEM simulates complex systems, this difference between recurrence and relapse and their relationship with the politically active groups variable may result in quite different model outcomes.

Stochastic models simulate the CEM's competition coefficients at different time steps in response to the competitiveness of other actor groups; that is, stochastic models draw numbers from a probability distribution from the parameter set. These types of models allow competitive coefficient values to vary over time, which allows for more realistic scenarios. Figure 5.8 is an outcome of statistically significant recurrence parameters that were selected from a gamma distribution, which is a distribution of waiting times until a certain number of events take place for a competitive actor group to change its competitive efficiency within the distribution of the parameter estimate (table 5.8). In this model, the waiting time for a certain number of events to take place occurs when a certain proportion of decreased activity by an actor group occurs. Around time step 32, the orange actor group decreases dramatically in activity level in response to blue and green's increased competitiveness. Blue, green and orange actor groups all demonstrate oscillatory behaviors, which is reflective of this thesis' hypothesis; that is, a system that is experiencing oscillating behaviors are more likely to experience conflict reversion. Although the blue actor group's population activity is quite low, there are fluctuations and wobbles that feedback into the system an impact the green and orange actor group's competitiveness. The blue actor group is competing inefficiently as this actor group is unable to obtain political dominance, but is competitive enough to allow for survival throughout the duration of the simulation. The blue actor group could be representative of a EA that is involved in the conflict or an additional NSA that is only dominant in particular areas of a state. Thus, in this hypothetical system the three competing actor groups are not strong, so each group is exploiting the other group's vulnerabilities. Thus, oscillating behaviors and nonequilibrium processes are observed in this system, which are generate by intransitive competitive interactions.

Figure 5.8. Stochastic Competitive Effects on Three Actor Groups with Competition Coefficient Parameters for Conflict Recurrence

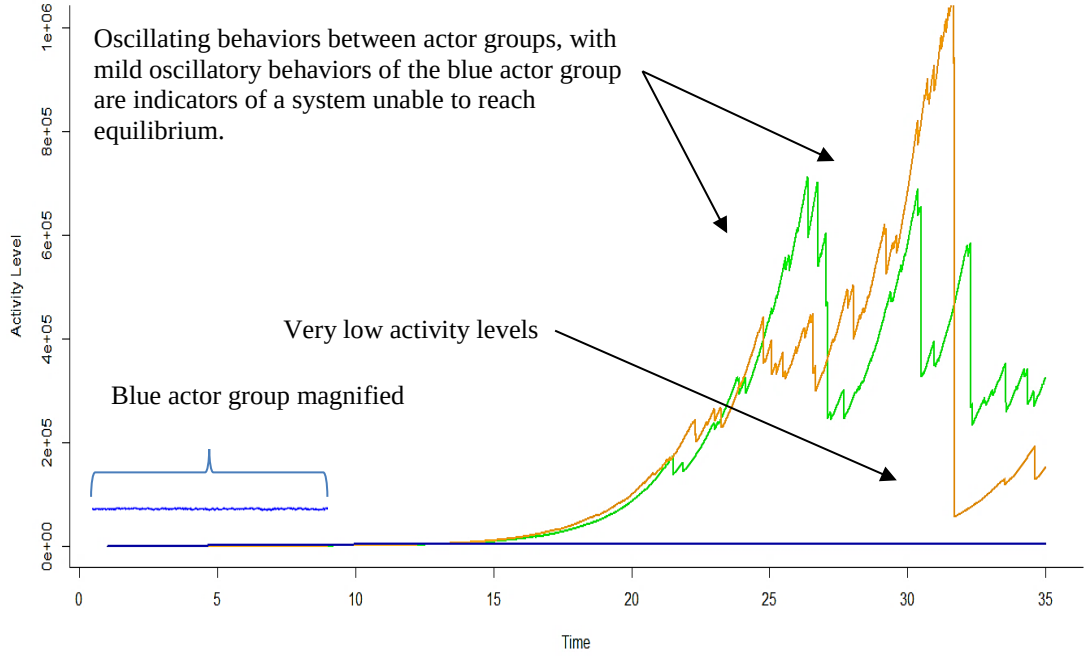


Figure 5.8. Probabilistic Competitive Effects on Three Actor Groups with Competition Coefficient Parameters for Conflict Recurrence. Alpha values are from the significant recurrence parameter set, drawn three times from a gamma distribution (R function rgamma()). The minimum of these three values are used (*see* Chapter III for theoretical justification). This figure shows aperiodic fluctuations and extinction Actor group initial population activity is 250 (green), 100 (orange), and 50(blue). r = 0.50

Figure 5.9 shows model results when using significant variables related to conflict relapse. Figure 5.9 illustrates a system experiencing oscillating behaviors of low and high activity over time (specifically, between time step, 20:35). At time step 95 the blue actor group's activity level is so low, one could assume victory by the orange actor group if the simulation was stopped here. However, the blue actor group changes competitiveness efficiency reflective in blue's increase in activity by t=96. However, by the next time step, orange responds dynamically to blue and green's competitiveness and begins to increase in activity. This is a clear indication of an actor group seeming to 'reemerge' in a conflict scenario and is a major indicator of conflict reversion! This simulated behavior illustrates uncertainty within IR and conflict studies as many scholars and practitioners have been unable to satisfactorily explain warring actor group reemergence and conflict reversion. Thus, both figures 5. 8 and 5.9 give clear indications of how complexity can be applied to better understand conflict reversion.

Figure 5.9. Stochastic Competitive Effects on Three Actor Groups with Competition Coefficient Parameters for Conflict Relapse

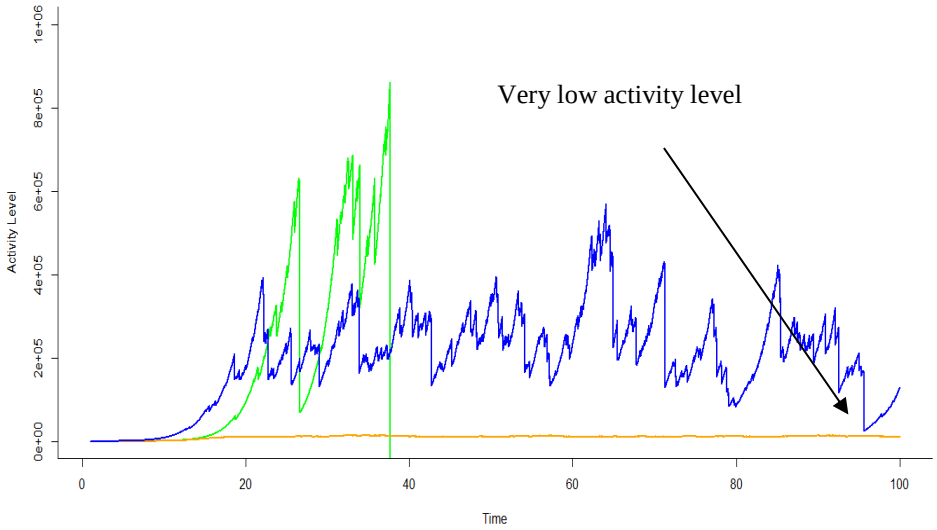


Figure 5.9 Stochastic Competitive Effects on Three Actor Groups with Competition Coefficient Parameters for Conflict Relapse. Drawing from 3 times from the distribution, then drawing the minimum. This figure shows aperiodic fluctuations. Green represents government actors, orange represents NSA, and blue represents EA. Government actor initial value is 10, NSA is 10, and EA is 10. Growth rates are r.1=0.50.

5.7.1 Summary of CEM Parameterization with Real Data Application

Results suggest that conflict-affected states are complex systems and that competing actor groups are unable to reach equilibrium in a number of simulations. Characteristics of complexity such as interdependence, emergence, non-linearity, and feedback were observed. These findings are telling as this simulated behavior illustrates uncertainty conflict studies as many scholars and practitioners have been unable to satisfactorily explain, or intervene in, warring actor group reemergence and conflict reversion. These simulations also demonstrate how statistical models can be used to develop and test real data within a complex system framework to advance our understanding of conflict dynamics, and especially conflict reversion.

The final section of this chapter is applying the CEM to data from Afghanistan. As the number of cases are small (n=68) I estimated parameters through rare logit and Poisson regressions, and contingency table analyses (*see* Appendices A.8-A.10 for full tables).

5.8. Statistical Analyses to Obtain Parameter Estimates from Afghanistan Dataset

The last section in this chapter derives parameter estimates from the Afghanistan data and compares this data to findings between 1946-2014. Afghanistan is a good case study as different periods in Afghanistan represents all hypothesized equilibrium outcomes and conflict dynamics. As the data is far fewer in comparison (n=68 versus n=8773), I ran different statistical models (i.e., rare logit, Poisson, and contingency tables) to estimate parameters for the analysis of Afghanistan. When analyzing Afghanistan, the first task was to determine the size of the population to estimate NSA recruitment numbers and whether or not the population of Afghanistan has reached equilibrium; meaning has the growth of the population stabilized? Also, determining whether or not Afghanistan's population has stabilized, then one can determine Afghanistan's carrying capacity. Figures 5.10 and 5.11 are produced from data from the World Bank.[434] The first figure illustrates population growth in percentages over time and the second figure illustrates total population growth (in millions) over time. Figure 5.10 illustrates that the population growth in Afghanistan is experiencing dampened oscillations, which results in instability. Similarly, figure 5.11 shows exponential population growth from around 1990, or the end of Soviet-Afghan War, which continues to increase until the last data point in 2015. From these two figures one can quickly determine that population numbers in Afghanistan have not reached equilibrium, and therefore the ability to find the carrying capacity and recruitment numbers in Afghanistan is hypothetical. Both figures clearly show that the population growth within Afghanistan has not yet stabilized

.

[434] World Bank Data (2016) "World Bank Indicator: Afghanistan Annual Population Growth." [Online] Accessed 30 September, 2016. http://data.worldbank.org/indicator/SP.POP.GROW?end=2015&locations=AF&start=1960&view=chart

Figure 5.10. Percentage Rate Increase in Afghan Population, 1960-2015.

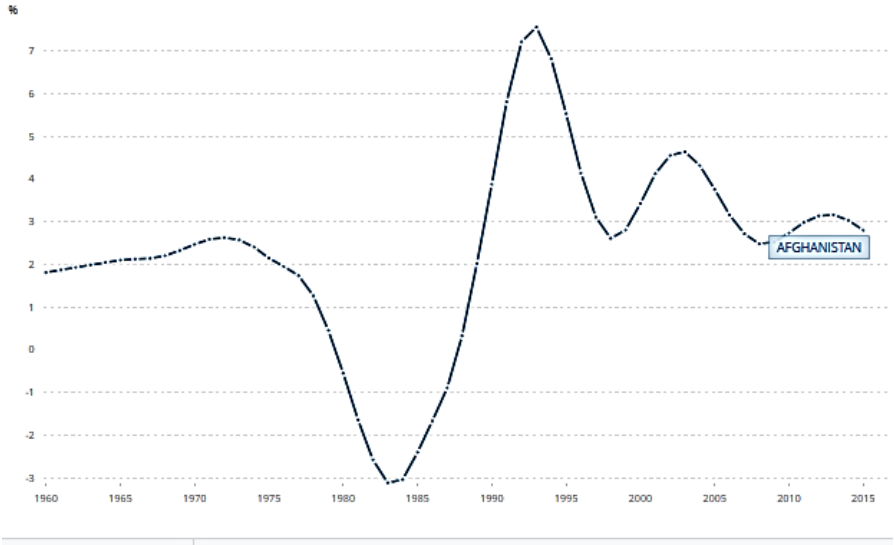


Figure 5.10. Percentage Rate Increase in Afghan Population, 1960-2015. Notice the oscillating behaviors of Afghanistan's population in response to conflict.

Figure 5.11. Afghan Population Growth by Annual Percentage Rise, 1960-2015.

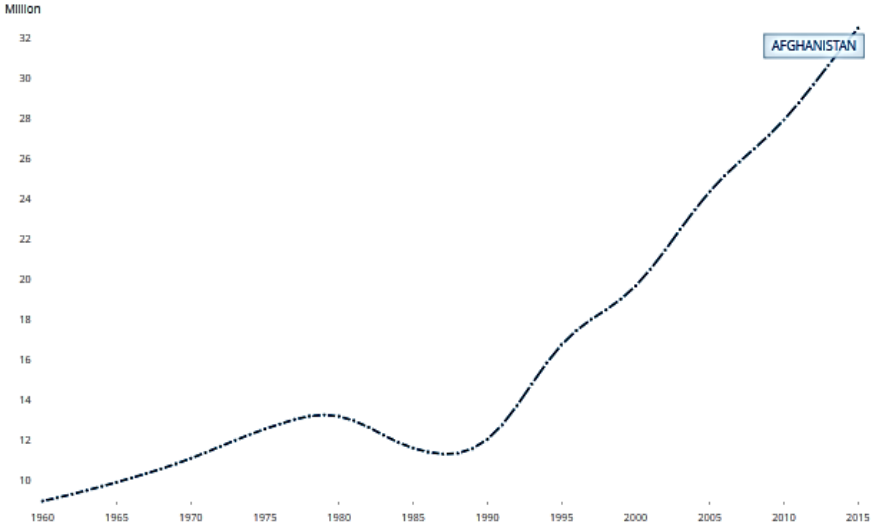


Figure 5.11. Afghan Population Growth by Annual Percentage Rise, 1960-2015. The data demonstrates that population of Afghanistan in 1960 was approximately 9 million versus approximately 32.5million in 2015.

5.8.1 Descriptive Statistics of the Afghanistan Dataset

Table 5.10 shows frequencies for the different dependent variable for Afghanistan from 1946-2014. From this table one can observe that persistent conflict is an unfortunate theme across the majority of conflict episodes. Major conflict onset (≥1,000 battle deaths/ year) occurs in 1978 and 1992, while less intense conflict (≤25 battle deaths/year) occurs in 1978 and 2001. Conflict reversion is counted once for the year of 2001. Thus, the majority of CEM simulations *should* simulate *persistent conflict dynamics given the persistence dependent variable frequencies*.

Table 5.10. Dependent Variable Frequencies of Afghanistan Data, N=68

FL onset		**EPR onset**		**EPR persistence**	
1	1	0	1	0	1
63	5	66	2	32	36

	UCDP Episode			**Usher onset**		**Usher recur**		**Usher relapse**	
1	2	3	4	0	1	0	1	0	1
1	0	35	32	45	23	67	1	68	0

Next, I examined independent continuous variables specific to the case of Afghanistan. Figure 5.12 shows levels of population size of Afghanistan (corresponding to figures 5.10 and 5.11), power ratio (or relative rebel capacity), rule of law (or WGIRL), GDP, bureaucratic capacity and tax capacity. Notice that the variables vary widely across time with large peaks and troughs. Population growth shows both similar and divergent results compared to the World Bank data, which is to be expected given that the population variable was calculated with different measurements. Relative rebel capacity shows major oscillations until the arrival of the US-led NATO coalition in 2001/2002. Although there are still mild oscillating patterns post-US invasion, these oscillations are less severe. This illustrates how the ratio of insurgent troops to government troops decreased dramatically as a consequence of Taliban emergence, high desertion rates of the Afghan Army, and a relatively low US and NATO presence compared to the Afghan population. Rule of law is noticeably quite high during Afghanistan's 'Golden Age' of the 1950s. Relative spikes throughout the past 70 years illustrates the consequences of coups and wars that have devastated Afghanistan's securitization structure and institutions. Until the

end of the Cold War in 1989, Afghanistan's GDP slowly increased until crashing in the subsequent aftermath of Soviet withdrawal. Taliban rule of the late 1999s and early 2000 show a flatter and more stable peak, until the 2001 US-led invasion. During this period, foreign aid by state sponsors was quite low, which reflects the Taliban-led government's ability to increase economic productivity during its short rule. Meanwhile, proxies of economic opportunity show wild oscillations over the past 60 years.

Figure 5.12. Key Continuous Independent Variables

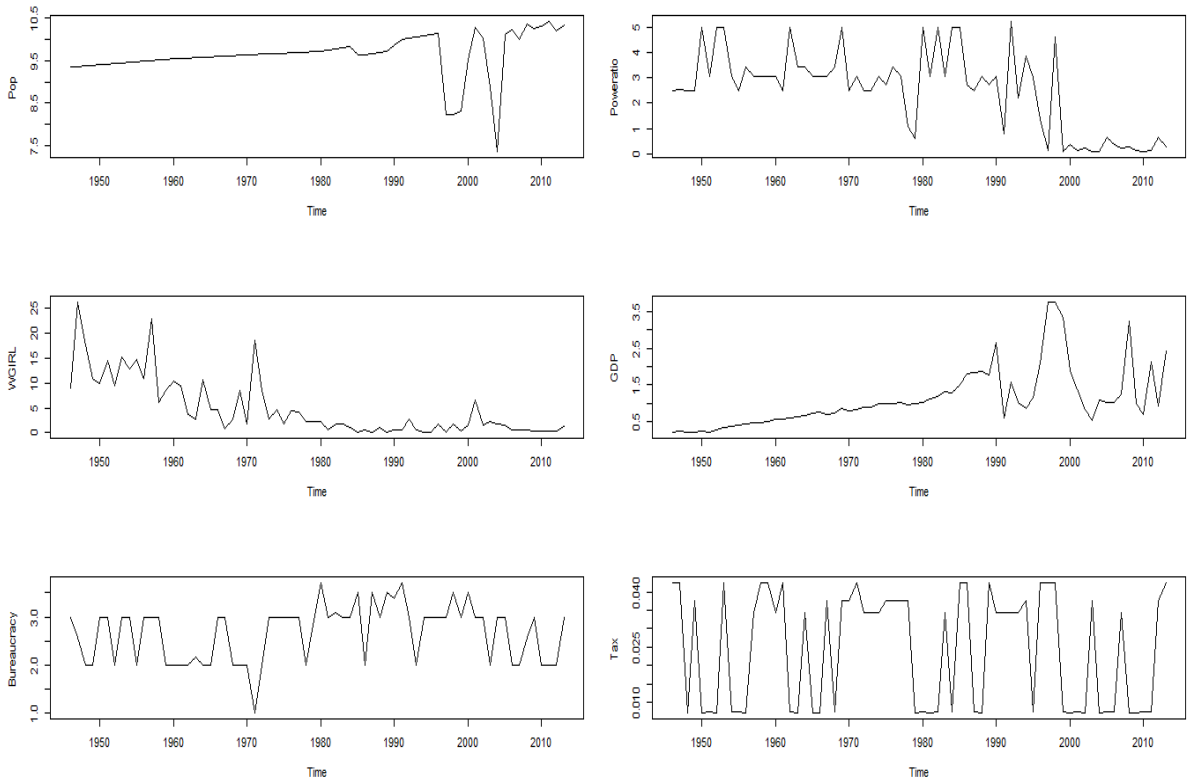


Table 5.11 presents descriptive statistics for these and other variables. These variables clearly illustrate why Afghanistan is considered one of the poorest, least free, and under-developed nations in the word. Overall, Afghanistan's GDP, level of democracy, RLF indicator, rule of law, and tax capacity was much lower compared to summary statistics for all cases under analysis, while ELF indicator, and number of politically active groups was much higher compared to summary statistics for all cases under analysis. Multiple variables demonstrate heavy skew, which is an indicator of non-normal distributions. This skew is likely reflective of periods of peace versus periods of conflict during Afghanistan's long trajectory of oscillating periods of violence. Of interest, the polity, or they type of regime within Afghanistan, demonstrates high variability, representing a highly changeable state government.

Additionally, rule of law or WGIRL varies widely, which is again reflective of Afghanistan's highly violent and chaotic changes of government over the past 50 years. As is known to those familiar with Afghanistan, Afghanistan's percentage of mountainous territory is higher than average. Also, Afghanistan's ELF index is quite heterogenous, which has led many recent scholars to claim that Afghanistan's violent past and present is a consequence of high ethnic heterogeneity.

Complexity variables show an average amount of politically excluded groups when examined against all cases (n=8,773, *see* Chapter V), but a high number of politically active groups when compared with all cases. However, because there is no variation in the politically active variable, the following statistical analyses will be unable to claim any statistical significance for this variable. Variables related to security proxies, demonstrate extremely low rule of law (i.e., WGIRL) values in comparison to all cases, while power ration (i.e., rebel capacity) is relatively the same compared all other cases. Lastly, variables related to economic opportunity proxies demonstrate that Afghanistan's bureaucratic capacity is higher than the average for other cases, while its tax capacity is much lower.

Table 5.11. Afghanistan Descriptive Statistics, N=68

Numerical variables

Independent variables	Mean	SD	Median	Trimmed mean	Min	Max	Range	Skew	Kurtosis	SE
GDP (log)	1.11	0.82	0.95	0.98	0.19	3.76	3.57	1.58	2.29	0.1
Population (log)	9.64	0.51	9.65	9.7	7.31	10.43	3.09	-1.88	5.66	0.06
% mts (log)	4.13	0.34	4.2	4.2	2.56	4.2	1.64	-4.34	17.11	0.04
Democracy	-7.21	2.54	-7	-7.66	-10	10	10	1.58	2.67	0.31
ELF	0.65	0.04	0.66	0.66	0.46	0.66	0.2	-4.34	17.11	0
RLF	0.27	0.01	0.27	0.27	0.2	0.27	0.07	-4.43	17.11	0
Excluded Groups	2.26	1.25	2	2.05	1	6	5	1.74	3.07	0.15
Active Groups	12	0	12	12	12	12	0	NA	NA	0
WGIRL	4.98	5.95	2.35	3.98	0	26.32	26.32	1.56	1.99	0.72
Power ratio	2.51	1.6	2.87	2.5	0.06	5.24	5.19	-0.11	-1	0.19
Bureaucracy	2.67	0.59	3	2.66	1	3.71	2.71	-0.37	-0.79	0.07
Tax capacity	0.02	0.02	0.03	0.02	0.01	0.04	0.04	-0.09	-1.92	0

Categorical variables

	0	1
Prior war	44	24
EPR prior war	33	35
Noncontig	68	0
Oil exporter	64	4
New state	64	0
Instability	40	28
Conflict outcome	32	0
Dyad group	32	36
EA	40	28

5.8.2. Rare Logit and Poisson Regression for Parameter Estimation

I estimated the parameters for Afghanistan by running a number of rare logit regressions and Poisson regressions (see Appendix A.8-A.10 for full tables). [435] As the Afghanistan dataset is a small sample with many zeroes I also applied negative binomial models to test for better model fit, which can deal with zero inflation. However, negative binomial results were similar to Poisson regression and did not improve overall model fit. Moreover, it is not advised to apply negative binomial models with small samples (n<100). Therefore, the following parameter estimates from table 5.12 are results from the Poisson and rare logit analyses. I used

[435] To help find parameter estimates for variables that vary only slightly I ran a series of contingency tables, identified any non-random associations via Pearson's Chi-square or Fisher's Exact test, then computed the correlation to estimate the parameters for CEM simulation. (see Appendix A.8-A.10 for full tables). Some of the variables under analysis do not vary at all within the case of Afghanistan, rendering inclusion of regression analysis unhelpful.

these to derive my Afghanistan parameter set, which will be simulated in Chapters VI and VII. These CEM simulations will also be accompanying with a historical narrative of the various conflict processes in Afghanistan over the past 35 years.

Table 5.12. Afghanistan Data: Summary of Statistical Findings and their Relationship Direction (Poisson Regressions and Rare Logit Regressions)

Dependent Variables

	Onset (UCDP)_	**Recurrence (Usher)**	**Relapse[436] (Usher)**	**Persistence (EPR)**
EPR Prior War	-17.80 (43331.2)	17.75 (4460.6)	NA	3.497*** (1.014)
GDP per capita	0.254 (1.452	-0.680 (1.860)	NA	0.509*** (0.152)
Population (log)	0.273 (2.211)	2.841 (0.375)	NA	0.391 (0.385)
% mountainous territory	9.206 (3311)	9.206 (3311.8)	NA	-0.412 (0.367)
Noncontagious territory	NA	NA	NA	NA
Oil	-15.14 (4713.3)	-15.14 (4713.3)	NA	0.693 (0.530)
New state	-14.11 (4042.9)	14.11 (4042.9)	NA	0.663 (0.727)
Instability	18.97 (6679.8)	18.97 (6679.8)	NA	0.927** (0.347)
Democracy	0.030 (0.373)	0.030 (0.373)	NA	0.118* (0.052)
ELF	77.22 (27779.6)	77.22 (27779.6)	NA	-3.460 (3.078)
RLF	208.9 (75172.1)	208.95 (75172.1)	NA	-9.363 (8.329)
Dyad number	-0.175 (0.570)	-0.175 (0.570)	NA	0.207*** (0.055)
Excluded groups	-0.213 (1.008)	-19.17 (6140)	NA	0.131 (0.116)
Active groups	NA (12)	NA (12)	NA	NA (12)
WGIRL	-0.131 (0.310)	-0.277 (0.523)	NA	-0.369*** (0.111)
Rebel capacity	-0.640 (0.780)	-2.251 (3.560)	NA	-0.262* (0.106)
Bureaucratic capacity	-1.856 (1.682)	1.160 (2.102)	NA	0.592 (0.312)
Tax capacity	82.24 (121.20)	-44552.0 (10877087.5)	NA	-8.835 (10.60)
EA	-17.61 (4842.5)	-17.61 (4842.5)	NA	1.609*** (0.400)

*p< 0.05, ** p< 0.01, ***p< 0.001

[436] Table 5.11 shows no counts of Usher relapse within the Afghan Dataset. Thus all values for the Usher relapse column are "NA".

Table 5.13 presents the parameter estimates used for CEM simulation the proceeding chapters. In the following two chapters (VI and VII) I simulate the CEM in combination with a historical analysis of conflict dynamics within Afghanistan over the past 35 years.

Table 5.13. Afghanistan Model Selection for CEM

Dependent Variable	*Independent Variable*	*Parameter Estimate*
UCDP onset (EPR prior)		
	Excluded groups	-0.213
	Active groups	12
	Rule of law	-0.131
	Rebel capacity	-0.640
	Bureaucratic capacity	-1.856
	Tax capacity	82.24
Usher recurrence (FL prior)		
	Excluded groups	-19.17
	Active groups	12
	Rule of law	-0.277
	Rebel capacity	-2.251
	Bureaucratic capacity	1.160
	Tax capacity	-44552.0
EPR persistence (EPR prior)		
	Excluded groups	0.131
	Active groups	12
	Rule of law	-0.369***
	Rebel capacity	-0.262*
	Bureaucratic capacity	0.592
	Tax capacity	-8.835

CHAPTER VI.

Empirics: Afghanistan 1979-2000

"Experience is a Light Which Shines Only Backwards":[437]
The Rise and Spread of Non-State Actors in Afghanistan

6.1. Introduction

In this chapter and the following case study chapter, I apply complexity theory by using the CEM. I use Afghanistan as a case study and ask how NSA, specifically the Taliban,[438] organized and proliferated to become the dominant NSA group during one of Afghanistan's most chaotic periods. Drawing on literature from Chapter II and specific to the conflicts in Afghanistan, I explain how failures by the Afghan central government allowed for the rise and dominance of the Taliban. I use a historical narrative approach to interpret mechanisms behind the variation in Afghan conflict outcomes (and therefore variation on the dependent variable) and to complement quantitative data simulated in and analyzed from the previous chapters. I examine conflicts within Afghanistan from 1979 to 2014, divided across four temporal periods that I argue, represent different equilibria: (1) 1979-1989; (2) 1989-2001; (3) 2001-2006; and (4) 2006-2014. Understanding how the Taliban movement emerged (1979-89; Chapter VI), spread (1989-2001; Chapter VI), collapsed (2001-2006; Chapter VII), and resurrected themselves (2006-2014; Chapter VII) can not only lead to understanding policy implications, but also in terms of what the international system can expect from the Afghan central government and the influence and effects the Taliban will have in Afghanistan during the post-2014 transitionary period.

Both Chapters VI and VII combine quantitative results from Chapters IV and V with a historical narrative perspective to discuss the conflict dynamics within Afghanistan (1979-2014) Chapter VI examines the conflicts in Afghanistan from a macro (1979-2000), while Chapter VII examines the conflict from a micro perspective. This mixed methods approach will tease out the how various actor groups were illustrating behaviors that were inefficient and then simulate the conflict dynamics under study with both real-world parameters and hypothetical parameters

[437] Afghan proverb, cited in Dorronsoro, G. (2005).
[438] For model simplification, I aggregated NSA to represent the 'Taliban'.

Table 6.1 shows moments in time along Afghanistan's violent trajectory where these different equilibria are hypothesized to have occurred. As this thesis examines Afghanistan across various time periods and conflicts with varying outcomes, the conditions to test my hypotheses with Afghanistan as the case study is ideal. However, before I outline this mixed methods approach, it is important to brief the reader on certain cultural indicators that influence conflict dynamics within Afghanistan.

Table 6.1 Intrastate Conflict Hypotheses, Afghanistan, 1979-2014

		Unanticipated behaviors by competing actor groups?	
		Yes	No
Reversion of violent conflict?	Yes	*Unable to settle at equilibrium*: Afghan-Soviet War, 1979-88; Afghan Civil War, 1992-96; US-Afghan War, 2003-2014	*Approaching stable equilibrium*: End of Afghan Civil War, 1997-2000
	No	*Approaching unstable equilibrium*: End of Afghan-Soviet War, 1989-91	*Reached stable equilibrium*: Taliban victory, 2000-2001

6.2. Cultural Indicators Suggest that Afghanistan is Fertile Ground for Emergent NSA Groups

Mountstuart Elphinstone was a 19th century British civil servant who arrived in Peshawar in 1809 to report on the Afghan kingdom, culture and society. Ceremonial pageantry was thrust upon Elphinstone immediately after his arrival leaving Elphinstone impressed and amazed by the Shah Shuja's extravagance and especially the Shah's Koh-i-Noor diamond.[439]Within the same expedition, however, Elphinstone quickly gathers that the glittering ceremonial display is only a mirage of the Shah's power and authority. Testament to Elphinstone's intuition and awareness, the Shah's kingdom collapsed only a few weeks after Elphinstone departed Peshawar.

[439] The Koh-i-noor, Persian for "Mountain of Light", was once the largest known diamond in the world. The diamond originates from India, and was later seized by the Afghans until 1850 when the British East India Company confiscated the diamond. Since then, the Koh-i-noor has remained part of the British Crown Jewels. For a detailed account of Elphinstone's experience and interpretation of Afghan politics and society in the 19th century *see* Elphinstone, M. (1969) *An Account of the Kingdom of Caubul and its Dependencies in Persia, Tartary, and India*. Graz, Akademische Druck-u.

Elphinstone's interpretation of the Afghan kingdom's glittering exterior supported by fragile foundations has mirrored past and future illusions of the central Afghan government; that is, from a distance the Afghan central government seems to be functioning, but if one lightly scratches the surface a host of economic, social and political fractures are found and reach throughout the central government and Afghanistan's provincial villages and towns. Afghanistan survives on a centuries' old clientele system, which redistributes wealth in order to secure and prolong a client-patron arrangement. Through this competitive political clientele system even the most feared Shahs and modern-day political leaders did not and do not have complete control over the various tribal networks beyond the periphery of the capital. Consequently, various political elites and warlords alike have competed with one another, often obtaining revenue illegally by plundering, illicit trade and/or through foreign aid donors.[440]

Informal interdependencies between Afghan political leaders and NSA leaders are rooted in kinship and drive political and economic institutions during times of both conflict and peace.[441] The significance of these informal networks remain and have further solidified their precedence in the war-torn Afghans. These networks have driven a wedge between formal structures of state authority and informal structures of individual and familial autonomy. Especially in times of conflict, Afghans outside the city walls of Kabul do not perceive the state as providing political representation, basic security or economic opportunity and instead rely on informal institutions and NSA to redistribute these 'resources'. For instance, de facto autonomy for entire ethnic regions (e.g., the Kurdish North, or Pashtun South) still dominates and directs political power rather than centralized rule from Kabul.

This state-society relationship of a weak state underpinned by a strong society is not unique to the state of Afghanistan. Migdal argued that weak states that encompass strong societies often tend to inhibit the central government from having complete control over the state.[442] Accommodations between central state actors (e.g., Afghan provincial governors) and Afghan tribal leaders, for example, reinforce this weak relationship between the state and society, which increases the likelihood of corruption and undermines the building blocks of a strong Westphalian state such as enforced tax policies and bureaucratic capacity.

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[440] Ewans, M. (2002) *Afghanistan: A Short History of Its People and Politics*. New York, HarperCollins Publishers; Rubin, B. (2002) *The Fragmentation of Afghanistan: State Formation and Collapse in the International System*. 2nd Edition. New Haven, Yale University Press.
[441] Harpviken, K. (2009) *Social Networks and Migration in Wartime Afghanistan*. New York, Palgrave Macmillan.
[442] Migdal, J. (1988) *Strong Societies and Weak States: State-Society Relations and State Capabilities in the Third World*. Princeton, Princeton University Press.

As Afghanistan is a text-book case of a strong society within a weak state, understanding Afghanistan's struggle toward peace and prosperity and the rise and resiliency of NSA within Afghanistan stems from its tribal structure. Fundamental to understanding the Afghan tribal structure is work published over a half century ago by anthropologist Fredrick Barth.[443] Barth's account of the Swat Pathuns, the largest ethnic group in Afghanistan, was paramount in understanding how the Pathuns or Pashtuns prefer to choose *temporary* political allegiances based on a capricious chief's power and security capacity. Choice of who one pledges allegiance to is based on the extent to which a leader can redistribute resources to his subordinates. Redistribution of resources (e.g., harvest, water access) and the capacity to protect through a system of exchanges dictates the political system within Afghanistan on multiple levels. Hierarchy is developed and maintained through "reciprocal but differentiating contracts", which form a network of redistribution that is based on voluntary or contractual political allegiances.[444] For example, if a village leader cannot afford to redistribute resources as much as a neighboring leader, then the villagers will switch allegiances to the leader who can provide more. Clan patronage, control of water through land, and autonomy dominate tribal politics as numerous systems of social networks protect, feed, and economically support those within the network.[445] Furthermore, bonds of allegiance can become increasingly complex as an individual may align himself with both a religious leader and a chief. This results in bonds of allegiance that overlap between and among authority leaders,[446] and complicates the magnitude and duration of legitimacy of a central Afghan political leader. Thus, political action is heavily dependent on manipulating these relationships, which is derived from individual choices that self-organize from the micro to the meso (i.e., group/tribe) and eventually upwards to the macro or the institutional level.

This freedom Afghans have that enables individuals and groups to switch allegiances has frustrated, confused, and enraged foreign occupiers for centuries. Allegiance is not about 'keeping your word', or 'performing a duty', as is the case with many Western value systems; in contrast, Afghans value allegiance as something that is bartered.[447] From the British to the Soviets and from the Americans to even the Pakistanis, the Afghans' ability and acceptance of

[443] Pathuns are similar to Afghan and Pakistani Pashtuns. *See* Barth, F. (1959) *Political Leadership Among Swat Pathans*. London ,The Athlone Press.
[444] Barth, F. (1959) p. 2.
[445] Johnson, R. (2012) "Managing Helmand: From Bost to Bastion". *International Area Studies Review*. 15, 3: 279-300.
[446] Barth, F. (1959)
[447] Barth, F. (1959)

switching allegiances based on redistribution has stalemated both conflict processes and policy making.

However, this allegiance strategy is not without consequence among the Afghans. For instance, as a tribal leader gains more power and land, he creates fear among neighboring tribal leaders who form a larger opposition against the leader who is currently amassing wealth and power.[448] In order to prevent one overly dominant tribe or group, other tribal/group leaders will form allegiances to amass their wealth to compete with the growing dominant actor group. Shifting alliances during the Afghan civil wars of the 1990s was documented in Christia's work on alliance formation in response to power shifts among the four main Afghan ethnic groups.[449]

Subsequently, this reliance on and more recent manipulation of the clientele model has been the crux of politically unifying the Afghan state since its modern-founding in 1747 and is a major contributing factor to why NSA are able to emerge, self-organize and compete politically with the central government. The fear among Afghan tribal leaders that one leader will centralize is one of the features of Afghan tribal society that has prevented the formation of a functioning, legitimate and secure centralized Afghan state. Such strong interdependent and constantly shifting relationships among NSA, government and external actors give rise to non-linear effects within Afghanistan that result in state-society instability.

In sum, these complex allegiance systems are very much like 'islands' of influence with each chief establishing his own 'central island of authority,'[450] and challenges any actor, either NSA or government in centralizing their power. This allegiance or *qawm* (i.e., allegiance when individuals or groups are not related), becomes ever more complex the further one zooms in.[451] At the very local level cousins may duel, but at a district level cousins place their allegiance to the clan or tribe ahead of local divisions. A lack of cultural and social understanding of the various complex and shifting allegiances between and among Afghan leaders and networks is attributed to why past Great Power invaders such as the British, Russians and Americans have been unable to defeat insurgencies. One important caveat to the Afghan clientele system is that a tribal leader may temporarily succeed in centralizing his power if he applies the system of clientage more evenly. Thus, one NSA group, the Taliban, were ultimately able to cement and

[448] Dupree, L. (1980) *Afghanistan.* Princeton, Princeton University Press.
[449] Christia's theoretical framework was a realist perspective. Although this framework is helpful in understanding Afghan NSA alliance shifts, it does not explain alliance shifts during times of 'peace', but instead focus on post-war alliance shifting. Also, her work does not explain how one group eventually dominates. *See* Christia, F. (2012).
[450] Barth, F. (1959) p. 91.
[451] Barfield, T. (2010).

centralize their power because of an ability to form networks of allegiance, either by force or willingly, among various Pashtun and non-Pashtun villages while preventing other actor groups from strongly competing with the Taliban. The next section builds on cultural dimensions to lay a foundation for understanding how the Taliban emerged in the wake of the devastating Soviet-Afghan War.

6.3. 'Death by a Thousand Cuts':[452] A Prologue to Taliban Emergence, 1979-1989

The most recent major internal conflicts experienced in Afghanistan (i.e., Afghan-Soviet War (1979-1989), Afghan Civil War (1992-1996), and War in Afghanistan (2001-2014)) can be directly traced from the mid-20th century when Afghanistan was surviving almost entirely on foreign aid (mainly from the Soviet Union or the US), which accounted for 80% of Afghan investment and development expenditure.[453] This large amount of foreign aid and foreign influence persuaded Afghanistan's last monarch, Shah Zahir (reigned 1933-1973), to introduce a modernization policy that subsequently created a new educated class and new hierarchy of political elites.

Until 1965, Afghanistan had been ruled mainly by the Loya Jirgah (council), which was controlled by landholding tribal and religious elites who set rules to govern and conduct assemblies. In 1965, Zahir introduced a fairly liberal constitution and parliamentary system that legalized political parties and allowed a new legislative council (Wolesi Jirgah) that upset the Loya Jirgah. Meanwhile, the central government was shocked by a sharp cut in foreign aid from both the Americans and Soviets as the Cold War drew both the Americans and Soviets interests elsewhere. This cut had a major effect on newly educated individuals and the growing middle class as the newly educated found themselves unemployed and without alternative prospects. Consequently, the new classes began to search for alternative political and economic means to support their livelihoods.

By the late 1960s the number of the unemployed, educated elite, in combination with Zahir's disruptive transformation of the Afghan political system, produced a vocal uprising from both

[452] "Death by a thousand cuts" is a phrase from Brig. Mohammad Yousaf who served in the Pakistani army from 1983-87. He wrote this phrase after reflecting how the Afghans, who were unorganized, ill-trained, undisciplined and ill-equipped, defeated the Soviets: Yousef trained and was responsible for operational training of the Mujahedeen inside Afghanistan. He also controlled the flow of thousands of tons of arms across Pakistan and Afghanistan, and arms that were bought from the US with CIA and Saudi funds. See Yousaf, M., & Adkin, M. (2001) *Afghanistan- The Bear Trap: The Defeat of a Superpower*. Leo Cooper, Barnsley.

[453] Some scholars will argue that to truly understand the conflict dynamics within Afghanistan, one must take a more historical view, and trace Afghanistan's interaction with foreign occupiers from the 19th century Anglo-Afghan Wars. *See* Rubin, B. (2002).

those within and outside of Kabul.[454] Subsequently, the Soviet-backed communist People's Democratic Party of Afghanistan (PDPA) took root in response to political change and economic instability. However, the PDPA was immediately soured by numerous factional disputes.[455] By 1967, just two years after its founding, the PDPA had split into Khalq (the "People") and Parcham (the "Flag"). The splitting of the PDPA resulted in additional smaller splits, coupled with waning popular support. Furthermore, a decrease in support of the central government was compounded by a massive famine from 1971-72, in which King Zahir was both slow to react and failed to resolve the food shortage.[456]

By 1973 King Zahir was overthrown by prime minister Mohammed Daoud in a military coup. Daoud abolished the monarchy and founded the Republic of Afghanistan in which Daoud became acting president. In 1974 Daoud began to ally his country with Iran while pulling further away from Soviet influence. Throughout the latter half of the 1970s, the Soviet Union was unable to unify the PDPA or sway the central Afghan government to implement Soviet-supported policies. Consequently, on April 27, 1978, Daoud was assassinated by Soviet-supported leftist military officers in a coup and replaced by Hafizullah Amin as Afghanistan's new president. In December of 1979 the Soviets invaded Afghanistan with tens of thousands of troops, assassinated Amin, and initiated the decade long Soviet-Afghan War (1979-1989). Thus, infighting among political elites, in addition to a puppet state supported by the Soviets helped to create fertile ground for NSA emergence in Afghanistan.

The following sub-section provides a historical narrative underline the Afghan-Soviet War from 1979-89. This historical narrative is used to test my argument that it was inefficient competitiveness by warring actor groups that led to persistence of the Afghan-Soviet War. I then apply real and hypothetical parameter estimates (*see* Chapter V and Appendix A.4) from the Afghanistan dataset to simulate the CEM. I also highlight when actor groups applied inefficient or efficient competitiveness and how this may have led to an inability to end the decade-long Afghan-Soviet War until Soviet withdrawal in 1989.

6.3.1 The Soviet Invasion

The Soviets reluctantly invaded Afghanistan to maintain Communist influence.[457] After the 1978 coup, the PDPA tried to unify, but the new Soviet regime struggled to reform the Afghan

[454] Dupree, L. (1980).
[455] Gibbs, D. (1987)" Does the USSR Have a 'Grand Strategy'? Reinterpreting the Invasion of Afghanistan". *Journal of Peace* 24: 365-379.
[456] Dupree, L. (1980).
[457] Gibbs, D. (1987).

state overnight.[458] Afghans began to violently oppose the invasion and in response the Soviet military applied indiscriminate violence against civilians, further exacerbating popular support for the insurgency. The rationale behind this violent tactic applied by the Soviets, in the light of recent research, suggests that the less control an insurgency or incumbent has, the more likely that actor group will inflict indiscriminate violence to punish civilians for a lack of commitment and support.[459] Thus, the Soviets pursued an inefficient competitiveness by applying inefficient securitization tactics by increasing human insecurity among civilians.

Simultaneously, the Soviets used an inefficient level of competitiveness by removing previous Afghan heads of state and replacing the Afghan government with a puppet government. Moreover, the Soviets and the PDPA forced the Afghans to redistribute land without providing adequate irrigation, abolished land debts to help eliminate the Afghan feudal system and adhered to rights to legal property.[460] Of importance, these reforms were not universal as exemptions were afforded to those Afghans who supported the government by selling goods to the state.[461] Moreover those Afghans who sided with the PDPA were exempt from most reforms, while the majority who were not exempt were forced into reform. Table 6.2 summarizes that the consequences of the Soviets using inefficient competitiveness against the insurgency and EA involvement, which led to conflict persistence. Table 6.2 also shows which hypothesized complexity variables are empirically observed within the dataset and literature that have an impact on the conflict environment. In sum, Soviet tactics were maladaptive to an Afghan society that is highly segmented and reliant on patronage.

[458] Harpviken, K. (1997) "Transcending Traditionalism: The Emergence of Non-State Military Formations in Afghanistan". *Journal of Peace Research*. 34, 271-287.
[459] Kalyvas, S. (2006).
[460] Newell, R. (1989) "Post-Soviet Afghanistan: The Position of the Minorities". *Asian Survey*. 29, 11:1090-1108.
[461] Rubin, B. (2002)

Table 6.2. Soviet/PDPA (GA) Competitiveness Efficiency, 1979-82

Inefficient competitiveness examples	Regime Change Unfairly redistribution of resources Favoritism to those who support the PDPA
Complexity variables observed	Increase in number of warring dyads EA support Political exclusion Politically active groups Low rule of law low Rebel capacity high Bureaucratic capacity low Tax capacity low
Hypothesized Outcome	Unable to settle at equilibrium
Empirical Outcome	Persistent conflict

The opposition to the PDPA challenged the newly secular government's forced reforms on the Afghan state. The main opposing side to the fractured PDPA and Soviets consisted of seven disjointed Mujahedeen groups who strategized and moved supplies and fighters in and out of the porous Pakistan-Afghanistan borders.[462] Initially, the insurgency applied both discriminate and indiscriminate violence against competing fronts that led to further splintering and an inability to provide a collective NSA group against the Soviet-supported Afghan government. The constant shifting of NSA alliances among separate NSA groups and Mujahedeen groups was a result of an inefficient competitiveness by the NSA (reference to mainly the seven Mujahedeen groups) as the opposition was too fractionalized and involved in internal competition, which preventing any sort of comprehensive efficient competitive mechanisms to secure the population and claim victory against the Soviets.

The unification of the opposing seven Mujahedeen groups to fight collectively was a constant struggle and a major contributing factor to the duration of the conflict. For instance, the first few years of the Soviet-Afghan War supported over 300 separate NSA groups against the PDPA that were unorganized and fragmented, which resulted in tactical ineffectiveness and

[462] These 7 groups were: (1) National Islamic Front of Afghanistan (NIFA) [Mahaz-I Milli-yi Islami-yi Afghanistan], which were the most nationalistic party; (2) Afghanistan National Liberation Front (ANLF) [Jabha-yi Nijat-I Milli-yi Afghanistan]; (3) Movement of the Islamic Revolution (HAR) [Harakat-I Inqilab-I Islami-yi Afghansitan], which combined traditionalist Islamic appeals with territorial, non-ethnic nationalism; (4) Islamic Party of Afghanistan, Hikmatyar (HIH) [Hizb-i Islami-yi Afghanistan]: was the most revolutionary and most disciplined of the Islamic parties; (5) Islamic Party of Afghanistan, Khalis (HIK) [Hizb-I Islami-yi Afghanistan], which arose from a split within Hizb-i Islami in 1979; (6) Islamic Society of Afghanistan (JIA) [Jamiat-I Islami-yi Afghanistan], which was moderate and predominantly Tajik; and (7) Islamic Union for the Freedom of AFghansitan (ITT) [Ittihad-I Islami Bara-yi Azadi-yi Afghansitan], which was mainly used as a vehicle by Saudi Arabia. *See* Yousaf, M., & Adkin, M. (2001)

infighting among Mujahedeen groups as personal rivalries clouded a cohesive stance against the Soviets.[463] Consequently, many of the insurgents were killed at the hands of other insurgents who were under different Mujahedeen leadership. These divisions are unsurprising given the cultural dimensions previously discussed of Afghan alliance formations and the method of retaining power through a clientele system of redistribution. Thus, from the early periods of the Afghan-Soviet War, applied unorganized and fractionalized Mujahedeen groups used inefficient competitiveness.[464]

Table 6.3. Afghan Mujahedeen groups (NSA) Competitive Efficiencies, 1979-82

Inefficient competitiveness examples	High internal fighting (i.e., interspecific competition) Employed indiscriminate violence Inability to redistribute resources
Complexity variables observed	Increase in number of warring dyads EA support Rule of law low Rebel capacity high
Hypothesized Outcome	Unable to settle at equilibrium
Empirical Outcome	Persistent conflict

Throughout the majority of the Afghan-Soviet War, external actors (i.e.., Iran, Saudi Arabia, US) were largely involved as a disruptive force against the Soviets. During the initial fighting of the war, the insurgency was receiving inconsistent external support, which since has been shown to increase indiscriminate violence by insurgents.[465] Although EA involved in the Afghan-Soviet War were all aligned against the Soviet Union, their motivations and level of activity heavily varied. This variation can partially be attributed to the duration and intensity of the Afghan-Soviet War, as all EA provided different levels and types of safe havens, funds, arms and intelligence; that is, each external actor involved in supporting the insurgency were motivated by different reasons. For Pakistan, the support of Pashtun Mujahedeen leaders was about Pakistan's national security since India was aligned with the Soviet Union and coordinated direct military action against Pakistan. As Yoursaf and Adkin recalled, "I knew that our military contingency plans were drawn up on the basis of fighting the Indians, or since

[463] Johnson, R. (2011) *The Afghan Way of War: How and Why They Fight.* Oxford, Oxford University Press.
[464] For an illustration of how competitive effects within an actor group can impact how competitive an actor group is relative to other actor groups please refer to figure 5.1 in chapter V.
[465] Weinstein, J. (2006), p. 6-7.

1979, the Soviets. Our nervousness was heightened by the fact that the USSR was a nuclear giant, and India had developed a nuclear capability".[466] As the Cold War churned, Pakistan summoned support from the US against the Soviet Union, and received $7 billion in military and economic aid.[467] Although the US supplied the insurgency with arms, funds and intelligence, the Pakistani military had great difficulty working with the Central Intelligence Agency (CIA) and vice versa. The central issue was mistrust on both sides, which caused enormous economic loss and prolonged the war.[468]

Meanwhile, Saudi Arabia allied against the Soviet Union to maintain stability in the region and to return Afghanistan from a secular to a Muslim state. Although Iran was heavily involved in the Iran-Iraq War, Iran joined the allied opposition against the Soviets to balance against Saudi influence and as a supporter to Afghan-Shiite groups. Thus, as EA were unable to provide cohesive support to the insurgency, EA ended up applying inefficient competitiveness. EA groups were disruptive of existing political institutions, and were not able to provide a cohesive alternative.

Table 6.4. External Actors Competitive Efficiencies, 1979-82

Inefficient competitiveness examples	Variable biased support for the PDPA or Mujahedeen groups
Complexity variables observed	Increase in number of warring dyads EA support Rebel capacity high Bureaucratic capacity low
Hypothesized Outcome	Unable to settle at equilibrium
Empirical Outcome	Persistent conflict

6.2.2 The Persistence of the Afghan-Soviet War, 1979-89

In 1982, the Soviets adjusted their securitization tactics by deploying a surge of 110,000-120,000 Soviet troops to Afghanistan and further pushing their institutional and economic reforms and influence throughout Afghanistan's rural areas. Meanwhile, the insurgency was much more united by a more heavily involved Pakistani military, which helped clot further

[466] Yousaf, M., & Adkin, M. (2001) p. 24.
[467] Ahady, A. (1994) "The Changing Interests of the Regional Powers and the Resolution of the Afghan Conflict". *Asian Affairs*. 21, 2 80-93.
[468] Yousaf, M., & Adkin, M. (2001)

infighting and splintering among the Afghan Mujahedeen. Unbeknownst to the Soviets, the Mujahedeen were solidifying their support throughout the rural areas of Afghanistan in response to Soviet civilian killings and forced reforms. Thus, while the Soviets claimed land victories and political and economic institutional reform, the Mujahedeen were quietly seeking the allegiance of tribal elders in villages along the countryside. These actions by the insurgency and misinformation by the Soviets resulted in a turning point in the conflict. As early as 1984 the Soviets could only see a future of persistent conflict and initiated discussions for withdrawal.[469]

Although the Soviets appeared militarily, economically and politically dominant, they severely misjudged the appeal and effect of a disorganized but increasingly united Mujahedeen front and a rural population that were disgruntled by the forced Soviet reforms. Moreover, the Soviets destroyed much of the physical and political infrastructure of the country by severely and irreversibly disrupting the traditional clientele system that supported and enabled Afghanistan to survive as a segmented society.[470] This securitization tactic used by the Soviets for political power was counterproductive to Soviet interests as the population became increasingly supportive and more reliant on protection from the insurgency. Consequently, these various reforms inflamed the insurgency by encouraging Afghan army deserters.[471] Moreover, Soviet bombing campaigns on major cities and villages pushed Afghan refugees into Iran and Pakistan, which gave the Mujahedeen an opportunity for further insurgent recruitment. [472]

Unfortunately, those who paid the highest cost during the Afghan-Soviet War were Afghan civilians: during the War 1 out of every 15 individuals were killed, 4 out of 15 were wounded and 5 out of 15 were refugees.[473] Consequently, millions of people lost various familial and tribal networks within the span of a decade and were replaced by the Pakistani madrash system.[474] The Geneva Accords further exacerbated the internal destruction of Afghan political institutions by failing to address the responsibilities of the communist regime in Kabul and the role of Najibullah's (Afghan President, 1987-1992) regime more generally. As the Soviets prepared for withdrawal the Iraq-Iran War ended, which allowed Iran to focus more of its

[469] Johnson, 2011.
[470] Rubin, B. (2002)
[471] Approximately 50,000 deserted by 1980 out of a force of 80,000. *See* Christia, F. (2012)
[472] Ewans, M. (2002).
[473] Fergusson, J. (2010) *Taliban: The True Story of the World's Most Feared Guerrilla Fighters*. Bantam Press, London.
[474] Fergusson, J. (2010)

attention on Afghanistan in support of the Afghan-Shiite group and to unite non-Pashtuns (i.e., Tajiks and Uzbeks) for political representation in opposition to the Pashtun majority. Consequently, Iran would help to form and support the newly aligned non-Pashtun group called the Northern Alliance, while Saudi Arabia and Pakistan both clamored for influence among Pashtuns while Soviet influence faded. [475]

Political pressures within the Soviet Union coupled with an inability to unite the PDPA forced a decision to withdraw Soviet troops from Afghanistan by the end of 1988. The Soviets began to withdraw in accordance with the Geneva [Afghanistan- Pakistan- US- USSR] on April 14, 1988 until February 15, 1989, which included the discontinuation of external interference. Unfortunately, the Geneva Accords paved the way for civil conflict after Soviet withdrawal as the Geneva Accords did not establish institutional and legal guidelines for the transition of the post-Soviet backed government. Furthermore, states that gave external support to various Mujahedeen groups during the Soviet occupation created hostility between local and central leaders.[476] Consequently, weeks after the Soviets withdrew, the Mujahedeen initiated a large offensive against President Najibullah's forces in Jalalabad.

6.3.3 Complexity Theory Applied to the Afghan-Soviet War

This chapter's introduction discussed the importance of understanding Afghanistan's interdependent cultural norms and formal and informal institutions. This interdependence between informal and formal actors has allowed Afghanistan to function as a sovereign state since the 18th century. Upon examining the events prior to the Soviet invasion, one observes that these events and conflict dynamics were a consequence of many components that make a system complex, rather than just merely complicated. A combination of modernization reforms and years of foreign aid paradoxically decreased the Afghan state's resilience as robust interdependent relationships were not accounted for by Zahir and his council. Consequently, reforms in the 1950s and 1960s transformed interdependent relationships between informal and formal actors, which were replaced relatively swiftly without regard to how these changes would feedback into Afghan political, social and economic institutions.

I argue that a stable equilibrium developed in Afghanistan prior to the Soviet invasion as a consequence of formal and informal institutional processes. However, this balanced was destabilized with the introduction of Zahir's new policies and the 1971-72 famine, which in

[475] Ahady, A. (1994)
[476] Ahady, A. (1994).

addition to exogenous events such as increased interference by the Soviet Union, would reduce Afghanistan's political, economic and social resilience. This reduction in resilience led to vulnerability of a destabilized equilibrium; that is, seemingly stochastic events would push Afghanistan from a phase of peace to one of persistent conflict. Moreover, the Soviets exploited Afghanistan's loss of resilience with the assassination of Afghan political elites, destroyed numerous economic and political institutions to create a system of persistent, high human insecurity that was unable to settle at equilibrium. Thus, Zahir's redirection of political, social and economic modernity in the guise of greater education opportunities, social liberalism, and political pluralism had unanticipated effects on political institutions, security and economic opportunities. These unanticipated effects that led to economic instability and subsequent PDPA-backed revolt, are a consequence of asymmetric relations between variables under interest; that is, non-linear relationships were a consequence of social, economic and political reforms, which led to the Soviet invasion. As non-linearity does not display proportionality between the variables under interest, especially when positive feedback is strong, it can decrease predictability within a system. Consequently, Afghanistan transitioned from a phase of relatively (1) stable equilibrium (i.e., pre-reforms, pre-Soviet invasion) to (2) unstable equilibrium (i.e., post-reforms, reduction of foreign aid, famine, increased interference by foreign governments) to an (3) inability for various processes and dynamics to settle at equilibrium (i.e., Afghan-Soviet War and subsequent Afghan Civil War).

From the brief historical analysis above, and from statistical models from the previous chapter, I am able to formulate table 6.5 below. Table 6.5 demonstrates the complexities during the height of the Afghan-Soviet War (~1982). The results of the CEM are from both hypothetical and real data. Actor groups are aggregated for model simplicity into three actor groups: (1) GA group; (2) NSA group; and (3) EA group. Competitiveness is inefficient or efficient based on its ability to outcompete (claim victory in a conflict) other actors, to coexist (actor groups do not withdraw) or withdraw from a conflict. Competitiveness are used to measure the competitive effect or how competitive each actor group is in regards to other competing actor groups. Values are from the estimated parameters set from table 5.11 from the preceding chapter. Based on these values I then formulate a function to represent how actor groups compete.

Figure 6.1 is the outcome after running model for 500 times steps or approximately the first two years to equate with the Afghan-Soviet time scale of when the war was in phase of conflict persistence. Figure 6.1 are the persistence parameter estimates of the CEM as a stochastic

model, which draw numbers from a probability distribution (i.e., gamma) from table 6.5. To reiterate, a gamma probabilistic distribution is a distribution of waiting times until a certain number of events take place for a competitive actor group to change its competitive efficiency within the distribution of the parameter estimate (table 6.5). In this model, the waiting time for a certain number of events to take place is when a certain proportion of decreased activity by an actor group occurs. Blue, green and orange actor groups all demonstrate oscillatory behaviors, which is support for this thesis' hypothesis; that is, a system that is experiencing oscillating behaviors is more likely to experience conflict persistence because that system is unable to settle at equilibrium.

Table 6.5. Key Parameters for the CEM that Describe the Persistence of the Afghan-Soviet War

Variable	Definition	Hypothetical or Real Data
GA, NSA, EA	Population size of PDA/Soviets; seven Mujahedeen groups aggregated; Pakistan, US, Saudi Arabia, Iran, aggregated	Real data and hypothetical
C_j	Competitiveness applied at time *t.* The most inefficient competitiveness from a distribution within the parameter estimated set is used	Real data
α_i	Competition coefficient. Represented by excluded groups, rule of law, and rebel capacity	Real data
Parameter		
$\boldsymbol{r_i}$	specific growth rate of actor$_{xi}$ as a function of competitiveness , C_1, C_2, C_3	Hypothetical
K_i	carrying capacity of actor group under analysis (e.g., X_i); *see* equation (3.7)	Hypothetical

Figure 6.1 clearly illustrates the blue actor group as competing the most inefficiently as this actor group is unable to obtain political dominance, but is competitive enough to allow for survival throughout the duration of the simulation. The blue actor group is representative of a EA (lowest growth rate, at r=0.10) and demonstrates the lowest levels of activity. If one zooms into the conflict dynamics between the green and orange actor groups, one can observe that the orange actor group decreases dramatically in activity level in response to blue and green's increased competitiveness. However, by the next time step, orange responds dynamically to blue and green's competitiveness and begins to increase in activity. This is a clear indication of an actor group seeming to 'reemerge' in a conflict and is a major indicator of conflict

reversion! The orange actor group was able to reemerge because the blue and green were competing more with each other, thus allowing the orange actor group to exploit a blue and green vulnerability. Of note, the smaller figure on the upper right hand corner of the graph is a zoomed in version of figure 6.1 to show the dynamics more closely.

Figure 6.1. Stochastic Competitive Effects on Three Actor Groups, Afghan-Soviet War, 1982

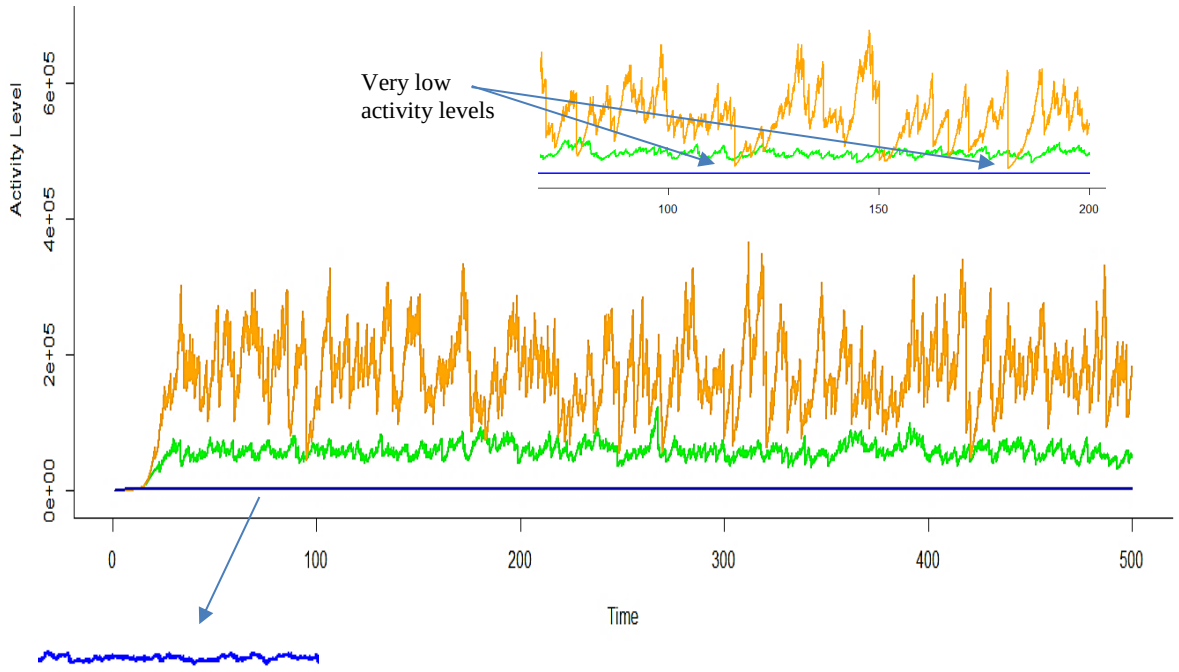


Figure 6.1 Stochastic Competitive Effects on Three Actor Groups, Afghan-Soviet War, 1982. This figure shows aperiodic fluctuations during the height of the Afghan-Soviet War. Green represents government actors, orange represents NSA, and blue represents EA actors. Alpha values are from the significant recurrence parameter set, drawn three times from a gamma distribution (R function rgamma()). The minimum of these three values are used (*see* Chapter III for theoretical justification). This figure shows aperiodic fluctuations and extinction Actor group initial population activity is 250 (green), 100 (orange), and 50(blue). Growth rates are GAr.1=0.15, NSAr.2=0.45, EAr.3= 0.10.

The outcome in figure 6.1 is similar to simulations in Chapter V for parameters associated with conflict reversion. What does this mean? Mathematically, systems that experience oscillating behaviors are a consequence of that system experiencing both persistence and reversion. Systems that experience persistent conflict can show oscillations of peace and violence, which is illustrated in alternating low and high actor activity population levels in figure 6.1. Within IR and conflict studies, coders often operationalize a conflict event as binary: a conflict terminated or did not terminate. However, the underlying system dynamics and processes have not settled at equilibrium, then conflict may simply reappear after a period of peace or low

activity level. To illustrate further, the UCDP codes conflict to have ended if battle-related deaths fall below a threshold of 25. However, in many conflicts these battle death thresholds rarely reach an activity level or battle death level of 0 (equilibrium). As many Afghan conflict-related battle deaths fail to fall to a yearly activity level of 0, these oscillating dynamics indicative of persistent conflict are a feature of all my simulations.

In sum, the Soviet-Afghan War was a war that was fought among hundreds of different actor groups, but were modeled within this chapter as three aggregated actor groups for purposes of simplification and to reflect the literature on the Soviet-Afghan War. Conflict dynamics experienced during the War were reflective of different actor groups applying mostly inefficient levels of competitiveness that not only prolonged the conflict, but also allowed a post-conflict Afghanistan to remain vulnerable to the reversion of conflict; that is, the majority of the Afghan-Soviet War was suspended in a phase that was unable to reach equilibrium.

6.4. Emergence and Spread of the Taliban, 1989-2001

During Soviet withdrawal, the Mujahedeen 's morale was high as they rode the crest of victory against the Soviet occupiers.[477] As the Soviets were withdrawing, the Mujahedeen were able to capture 60 urban centers and 6 provinces out of 25.[478] However, these victories were "illusionary"; immediately after the Soviets began withdrawing in 1989, Afghan government forces remained highly unorganized.[479] As the seven Mujahedeen groups perceived the threat of Soviet occupation less imminent, fractions within the alliance spread, which helped to catalyze the initiation of the Afghan Civil War (1992-1998).[480] The Soviets began withdrawal in 1989 as Afghanistan was in phase of *not* settling at equilibrium, but were *approaching unstable equilibrium* in consequence of actor groups' inefficient competitiveness and a decrease in system complexity due to a decrease in the number of warring actor groups. Moreover, the implementation of the Geneva Accords enforced Soviet withdrawal and prevented EA involvement, but did not provide efficient political, economic or security opportunities for a peaceful withdrawal or a peaceful government transition.

The central government was weak after the Soviet withdrawal: a combination of little or no political institutionalization, no security structures, economic opportunity, and high levels of nepotism and corruption led to a perceived loss of state autonomy from Afghan society. Aid

[477] Dorronsoro (2005)
[478] Dorronsoro (2005)
[479] Moreover, the US had cut all funding to opposition groups by July 1989. Dorronsoro (2005) p. 227.
[480] Christia, F. (2012).

and weapons continued at a value of about $3-4 billion per year until the end of 1991 when both the US and Soviet Union agreed to cease foreign aid to Afghanistan.[481] Thus, arms flooded into Afghanistan from Pakistan, instead allowing the Mujahedeen to take control of various military positions and towns.[482] Consequently, any informal institutions that provided predictability and stability among Afghan tribes and groups that survived the Afghan-Soviet War, was further chipped away by the arms trade left over from the War. While the Mujahedeen a continued battling for influence and power post-Soviet withdrawal, the central Afghan government was severely hampered by internal fighting and corruption. Afghan President Najibullah's (1987-1992) political strategy was dependent on the redistribution of Soviet aid through nepotistic channels, rather than through more evenly dispersed channels of power. Consequently, the central Afghan government absorbed roughly 90% of the aid intended for the entire population, rather than redistributing foreign aid immediately after the Soviets withdrew.[483]

After the last Soviet troops departed Afghanistan on March 6, 1989, the Mujahedeen led a Pakistan-backed offensive on Jalalabad (a politically strategic city) in order to seize centralized political control. The uncoordinated and disorganized Mujahedeen was prompted by Pakistan, which advanced small Mujahedeen victories in a shallow attempt to seize control of the Soviet-backed central government. The Mujahedeen made some headway against the Afghan Army, but the Army was now more organized, fought with heavier artillery and were able to push Mujahedeen forces back.[484] With no centralized leadership, the Mujahedeen's light artillery attacks during the assault on Jalalabad killed civilians, rather than members of the Afghan Army. Additionally, the Mujahedeen underestimated the discipline of the Afghan Army, in that the Mujahedeen were counting on several thousand defectors. However, defection did not materialize, while internal fighting among the Mujahedeen leaders increased.[485] Moreover, the Mujahedeen quickly began to switch allegiances in an attempt at various power grabs.

Furthermore, the recurrent theme of *qawm* was ever more present as non-Pashtun civilians attacked by Pashtuns sought vengeance against Pashtun-Mujahedeen groups.[486] Not only did alliances switch between and among various NSA groups, but also alliances switched most

[481] Rubin, B. (2002).
[482] Dorronsoro, G. (2005).
[483] Barfield, T. (2010).
[484] Stenersen, A. (2015) "Al-Qaeda versus Najibullah: Revisiting the Role of Foreign Fighters in the Battles of Jalalabad and Khost, 1989-92". In: Gates, S., & Roy, K. (eds.) *War and State-Building in Afghanistan: Historical and Modern Perspectives*. London, Bloomsbury.
[485] Dorronsoro, G. (2005).
[486] Dorronsoro, G. (2005).

notably from the Mujahedeen to President Najibullah's regime and vice versa. Thus, the victory against the Soviets was short lived as factional fighting among loose alliances between the different Mujahedeen groups encouraged each group to pursue their own goals, while funding by foreign powers to the mujahedeen were severely reduced or ceased altogether.[487] This increase in uncertainty, plus a hostile post-conflict environment allowed conditions that were ripe for renewed violent conflict within Afghanistan.

Among numerous factions and tribal security forces were the four main NSA-Mujahedeen groups that also represent the largest ethnic groups in Afghanistan. These groups and corresponding ethnic groups are presented in table 6.6. Table 6.6 demonstrates the four most prominent ethnic groups in Afghanistan and their respective language, Muslim sect, whether or not they are historically and currently political excluded, their main political party, their geographic location within Afghanistan, whether or not the ethnic group has a rebellious history and, therefore, more prone to participating in violent conflict to amend perceived injustices, and from which external government actor the ethnic groups receives the most political support.

[487] Zaeef, A. (2010) *My Life With the Taliban*. New York, Columbia University Press.

Table 6 .6. Most Prominent Ethnic Groups in Afghanistan[488]

	NSA Groups			
NSA Group Characteristics	*Hazara*	*Pashtun*	*Tajik*	*Uzbek*
Group size	Fourth largest ethnic group	Largest ethnic group, politically dominant since the mid-18th century	Second largest ethnic group	Third largest
Language	Dari	Pashto, Dari	Dari	Uzbek, many can speak Dari
Sect	Shiite	Sunni	Sunni	Sunni
Political exclusion	Yes, high	No, dominant group	Moderate – either junior power or dominant	Yes, moderate to high
Party	Hizb-i-Wahdat	Taliban, Ittehad-e-Islami, Hizb-i-Islami	Jamiat-i-Islami	Junbish-i-Milli
Geographic location	Central highlands, Hazarajat, Kabul, Mazar-i-Sharif	Concentrated on the Afghan/ Pakistan border and the south, spread throughout	Concentrated in the North and Northeast, West, urban centers, Panjshir valley	North
Rebellious history	Yes	Yes	Yes, Northern Alliance	Yes
External support	Yes, Iran	Yes, Pakistan, Saudi Arabia	Yes, Tajikistan, United States	Yes, Uzbekistan

Hizb-i-Islami, led by Hekmatyar, was the most powerful by 1992 with major backing from Pakistan and Saudi Arabia. The other ethnic groups, Uzbeks, Hazaras and Tajiks perceived the Pashtun NSA group, Hizb-i-Islami as a major threat and agreed to unite as force against Hizb-i-Islami. The three groups, Junbish-i-Milli (Uzbeks), Hizb-i-Wahdat (Hazaras) and Jamiat-i-Islami (Tajiks) signed an agreement on April 18, 1992 to attack Kabul as a cohesive unit against Hizb-i-Islami. On April 18, 1992, President Najibullah was overthrown with Iranian backing by Masud and established the Islamic State of Afghanistan. However, this overthrow was not a cohesive movement as most of the alliances that emerged in the attempt to overthrow Pashtun dominance quickly became unstable. This instability was a direct consequence of motivations behind the unification of non-Pashtuns as driven by a variety of external government actors who prioritized opportunism over idealism.[489]

[488] Although Afghanistan is a country of multiple ethnicities, these four major ethnic groups are widely represented within Afghanistan and have been involved in the majority of the conflicts. This table is updated from Christia (2012). I added information regarding whether or not the group is politically excluded and whether or not the group has a history of violent rebellions against the central government. Christia, F. (2012).
[489] Ahady, A. (1994).

6.4.1. The Afghan Civil War (1992-98)

Dramatically and for the first time in over 150 years, on 1 January 1992, the Afghans no longer had a significant source of outside revenue as new leadership and a new Russian republic terminated all funds to Afghanistan, which "redefine[d] rather than end[ed] the conflict". [490] After the Soviets ceased all foreign aid, Najibulla panicked and printed large sums of money to make up for the lack of incoming aid, which immediately led to hyperinflation. As Soviet withdrawal left Kabul without any institutional or security structures, Najibulla appointed nonparty individuals to the new government. Najibulla's decision to appoint nonparty officials increasingly concentrated his power in the highly uncertain political climate of post-Soviet Afghanistan. Consequently, various newly appointed government individuals sought links to social groups, inclusive of militias and strongmen that would provide both security and insecurity to Najibullas' government officials.[491]

In a final attempt to bring order, the leaders of the Pakistan-based Mujahedeen groups[492] signed the Peshawar Accords on the 24 April 1992, in order to provide an interim government of Mujahedeen leadership. Simultaneously, Saudi Arabia supported various groups to push Saudi agenda and to overthrow Najibulla, which sparked a renewed interest from Iran. Subsequently, Iran began to back Shiite minorities to push political Shiite leaders to demand 25% representation (Shiites only accounted for 15% of the population).[493] Iran was also able to coordinate and unite a non-Pashtuns coalition called under the Northern Alliance, which consisted of Tajik's Jamiat-i-Islami, the Uzbeks and Ismali Shiites.

Meanwhile, the Peshawar Accords quickly failed and fighting among the various factions resumed.[494] The inability for warlords and rival factions to reach an agreement over the redistribution of resources left over from the Afghan-Soviet War allowed local community-based fighting to spread throughout most of the country.[495] Multiple military actors, warlords, and faction leaders emerged, thus forcing the post-war environment of Afghanistan to immediately transition to a seemingly chaotic and bloody battlefield among Afghans. Rival warlords, propped up by their various external backers used their new-found autonomy to expand their patronage networks through brutal territorial and economic control. On 20 April

[490]Rubin, B. (1993) "Post-Cold War State Disintegration: The Failure of International Conflict Resolution in Afghanistan". *Journal Of International Affairs.* Winter; 46: 143. p. 486.
[491] Rubin, B. (2002).
[492] With the exception of Pakistani supported Hizb-i-Islami leader, Hekmatyar
[493] Ahady, A. (1994).
[494] Barfield, T. (2010).
[495] Giustozzi, A., & Ibrahimi, N. (2012) *Thirty Years of Conflict: Drivers of Anti-Government Mobilisation of Afghanistan, 1978-2011*. Human Security Report Project, Afghanistan Research and Evaluation Unit. January.

1992, Najibullah's pro-Soviet regime would collapse in a coup. On the 29 June 1992, Burhanuddin Rabbani (leader of Jamiat-i-Islami) would become the President of Afghanistan. In a breach of the Peshawar Accords, Rabbani would remain in power long-after the agreed power transition deadline until the Taliban capture of Kabul in 1996.

The collapse of Afghanistan in 1992 allowed for some groups to centralize their power that was supported by various government actors (i.e., Uzbekistan, Pakistan, Iran, and Saudi Arabia) and Afghan regional support.[496] Alliance switching among the many Mujahedeen groups continued and intensified with the onset of the Afghan-Civil War in 1992. Table 6.7 shows the ever-changing alliances during the civil war, inclusive of balancing against the newest emergent NSA, the Taliban. The table represents the Mujahedeen civil war alliances throughout the 1990s until US-led invasion in October of 2001. Consequently, over 25,000 civilians were killed for the control of Kabul, which reflected violence that was more intense in comparison to what the Afghans had suffered under the Soviets.[497] Unfortunately, the UN Security Council did not hold a single debate on the civil war that was ravaging the country.[498]

Table 6. 7. Afghan Intra-Mujahedin War Alliances, 1992-2001[499]

Year	Pashtun Dominated Alliance	Non-Pashtun Dominated Alliance
1992	Pashtuns (Hizb-i-Islami)	Tajiks (Jamiat-i-Islami) + Uzbeks (Junbish-i-Milli) + Hazaras (Hizb-i-Wahdat)
1993	Pashtuns (Hizb-i-Islami) + Hazaras (Hizb-i-Wahdat)	Tajiks (Jamiat-i-Islami) + Uzbeks (Junbish-i-Milli)
1994	Pashtuns (Hizb-i-Islami) + Hazaras (Hizb-i-Wahdat) + Uzbeks (Junbish-i-Milli)	Tajiks (Jamiat-i-Islami)
1995	Pashtuns (Taliban) + Hazaras (Hizb-i-Wahdat-Mazari and Hizb-i-Wahdat -Khalili) + Uzbeks (Junbish-i-Milli)	Tajiks (Jamiat-i-Islami) + Hazaras (Hizb-i-Wahdat -Akbari) + Pashtuns (Hizb-i-Islami)
1996	Pashtuns (Taliban)	Tajiks (Jamiat-i-Islami) + Uzbeks (Junbish-i-Milli) + Hazaras (Hizb-i-Wahdat)
1997	Pashtuns (Taliban) + Uzbeks (Junbish-i-Milli -Malik)	Tajiks (Jamiat-i-Islami) + Hazaras (Hizb-i-Wahdat)
1997	Pashtuns (Taliban) with defectors	Remaining Tajiks (Jamiat-i-Islami)+ Uzbeks (Junbish-i-Milli) + Hazaras (Hizb-i-Wahdat)
1998	Pashtruns (Taliban) military victory with defectors from other sides	
1998-2001	Taliban (supported by Pakistan and Saudi Arabia)	Northern Alliance (supported by Iran, Turkey, Uzbekistan, Russia, Kazakhstan, Kyrgyzstan, and Tajikistan)

As the factions would not unite in light of the opportunity for immediate power, each faction in itself was too weak to extend power beyond its region. Although a new power center was

[496] Dorronsoro (2005).
[497] Fergusson, J. (2010).
[498] Fergusson, J. (2010).
[499] Table from Christia (2012) with author's additions. Christia, F. (2012), p. 60.

initiated by Rabbani, many warlords, tribal leaders and politicians believed Rabbani was too powerful and many leaders did not trust Rabbani to redistribute resources to their groups and tribes. Consequently, alliances shifted again in an attempt to remove Rabbani from power. This alliance shifting witnessed Hizb-i-Islami forces, under Hekmatyar, to have killed thousands of civilians and destroyed Kabul's electrical grid, water system and hospitals over leadership of the central government. Conflict erupted over different sections of Kabul as new alliances became increasingly distrustful of the various factional leaders. Additionally, during the summer of 1992, the Northern Alliance began a series of infighting, which resulted in the deterioration of the alliance and an opportunity for other groups to emerge and claim power. By August of 1992 the Northern Alliance collapsed as a consequence of factional fighting and leaders refusing to accept Iran's political objectives. Consequently, each regional backer witnessed a short-lived victory as alliances and rivalries ebbed and flowed the first half of the 1990s.[500]

Alliances shifted and swayed as Afghan warlords, tribal leaders and politicians bartered allegiance. Consequently, tribal and ethnic coalitions became increasingly autonomous[501] as the constant shifting of alliances and opportunism became a daily experience for most actors and groups. As the Taliban grew in number and spread throughout 1994 and 1995, older Mujahedeen alliances further splintered and continued to readjust alliance memberships. These shifting dynamics among Mujahedeen groups, a strong Pakistani backing to the Taliban, and infighting within Kabul, gave the Taliban further clout to emerge as the dominant NSA group in opposition to the central government. After temporally sharing power in Kabul with Hezb-i-Wahdat in March of 1995, the Taliban captured and killed the leader of Hezb-i-Wahdat, which forced Hezb-i-Wadhat to split into two fractions, thus weakening the competing NSA further. However, competition for Kabul was still high, and the Taliban retreated to Kandahar. The Taliban redirected its focus on Herat and claimed victory over the city on 5 September 1995, Ismail Khan's forces were uncoordinated and several military leaders had perished in previous fighting. With victory in Herat and defeat of Khan and his forces, the Taliban now had a clear path to victory in Kabul.

6.4.2. The Taliban Emerges as the Dominant Non-State Actor Group

Throughout the early 1990s, warlords scoured the provinces of Afghanistan as drug-related activities in the aftermath of the Afghan-Soviet War created an economy to support these illicit

[500] Ahady, A. (1994).
[501] Rubin, B. (1993).

leaders.[502] Thus, professional politicians, noble families, and the entire elite political structure crumbled and was replaced by strongmen and warlords with special interests.[503] In combination with Soviet-led destruction of Afghan's political and economic institutions and with little to no outside aid or revenue to fund the central government to maintain the running of a clientele system, the Afghan political and economic structures deteriorated. Subsequently, the clientele system maladapted to non-traditional NSA groups who took advantage of the political, security, and economic vulnerabilities within Afghanistan's post-conflict environment. For instance, while the fragmented Mujahedeen tried to take over various towns and villages, and while Najibullah's government officials increasingly relied on militias and strongmen, civilians and many elders resorted to community and tribal protection from individuals and networks from other competing clans and communities that formed during and in consequence to the Afghan-Soviet War. Tribal groups became militarily and politically empowered, which gave rise to additional NSA competing groups and individuals. While new NSA groups emerged, Mujahedeen leadership continued to battle both internally and against the central government; in turn, the Afghan Civil War became increasingly violent and protracted.

The Taliban were able to gain support through a mixture of historical context (i.e., feedback mechanisms), patronage, and *qawm* that secured its dominance. Amongst all the internal fighting, the Taliban were able to emerge and organize in response to the corruption and criminal organizations that sprang up and spread in response to years of civil war. Although heavily dominated by Pashtun ethnic groups, the Taliban was highly inclusive in comparison to mercenary and Mujahedeen groups that had dominated the fighting over the last 15 years. Rather than uniting under a national, tribal or ethnic cause, the Taliban's official political goal was unification of Afghanistan under one single ideology: an Islamic state. This inclusionary element allowed the Taliban to quickly grow from a few individuals to scores to hundreds within a matter of several days.[504] One of the strategies the Taliban used that allowed them to dominate other NSA groups was an efficient competitiveness for securing the civilian population. The ability of the Taliban to adapt to the shifting alliances of their competitors and the ability to demonstrate to both factional groups and civilians that they were above factional fighting further solidified their dominance and helped to end most of the fighting by 2000. As Ewans argued, the Taliban were able to claim victory through simply bribing local tribal leaders and warlords to align themselves with the Taliban as years of fighting both the Soviets and

[502] Ewans, M. (2002).
[503] Vogelsang, W. (2002) *The Afghans.* Oxford, Blackwell Publishers.
[504] Zaeef, A. (2010)

each had taken its toll.[505] Either through force or through will (e.g., bribery), the Taliban partially disarmed militias and controlled them indirectly by assigning militias to police Taliban territory. Where resistance was active, the Taliban would apply a more conventional style of fighting.

Politically, the Taliban were viewed as harsh but less corrupt than the central government and redistributed resources evenly among the Taliban and its supporters. Moreover, the new government supported the famed Tajik insurgent commander, and subsequent Minister of Defense, Ahmad Shah Massoud, lacked ruling legitimacy because of an inability to provide public services and was unable to form a cohesive national government under Rabbani.[112] In order to gain support Massoud's security came under several different factions, thus allowing a more unified Taliban.[506].

On the 26 of September 1996, a 30,000 strong Taliban force took Kabul, and by April of 1997 the town of Mazar became the only major town not under Taliban control. By the end of 1998, the Taliban had control of over 90% of Afghanistan. To help repair fragmented communities into a cohesive community in support of the Taliban, the Taliban organized administrative systems that forced frequent rotation of officials outside their home regions. This highly efficient competitiveness by the Taliban avoided the establishment of strong leaders within particular regions and prevented future fragmentation that helped to quell the resistance.[507] Thus, the Taliban was able to increase their competitiveness from one of inefficient to efficient within a couple of years.

To conclude, the 1990s led to irreversible devastation as Kabul's infrastructure was in ruins both physically and politically. However, from 1996 to 2001 the Taliban were able to reconstruct various institutions, including political and judicial institutions, while enforcing harsh punishments to those involved in narcotics and violent crimes. Unlike other NSA like Hezb-e Islami, the Taliban were able to transcend Pashtun fragmentation and build a united group. The unification of the Taliban was successful because it was able to mobilize various communities under a common cause.[508] The ability the Taliban to create a relatively stable environment after two decades of violence and disorder was remarkable. The Taliban used political institutionalization and security tactics to mobilize and spread their ideology that unified the state. Nevertheless, Afghanistan was still not able to collect revenue from its

[505] Ewans, M. (2002).
[506] Matinuddin, K. (1999) *The Taliban Phenomenon: Afghanistan 1994-1997*. Oxford, Oxford University Press.
[507] Dorronsoro, G. (2005).
[508] Harpviken, K. (1997).

citizens, while foreign investment was mostly nonexistent.[509] An inability to compete with a domestic and global market was a niche that was easily exploited by surviving tribal leaders, foreign supporters, and illegal markets. In addition, by 1998 moderates (mostly in Kabul), the educated class, non-Pashtun and Shiites became increasingly vocal against the Taliban's strict sharia law practices that prohibited many of the freedoms Afghans once enjoyed.[510] Consequently, many who disagreed with the Taliban's rule of law and could afford to leave Afghanistan began fleeing the country, thus leaving economic opportunity mechanisms more vulnerable to corruption, while support for the Taliban decreased.[511]

6.4.3. Complexity Theory Applied to the Afghan Civil War

During the Afghan-Soviet war conflict transpired partly because of a lack of government legitimacy, state corruption and disorder at the macro-level, which trickled down and exacerbated rather than relieved tensions at the micro-level. Measures applied by the Afghan government to, for example, repress an uprising, had unanticipated results because of the emergence of non-linear processes that shifted within alliances among various parties and groups. Moreover, interdependencies between groups eventually emerged into large-scale civil sectarian divisions because of inefficiencies at the institutional level and corrosive relations at the micro.[512] In a conflict environment, these relationships increasingly grew stronger over time through the mechanisms of positive feedback and path dependence.

Consequently, NSA warring actors during the civil war were a consequence of self-organization and emergent properties. These properties developed from the bottom-up within a seemingly chaotic system that produced highly violent dynamic behaviors which plagued Afghanistan immediately after Soviet withdrawal in 1989. In the absence of any centralized authority, various NSA groups began to aggregate and self-organize giving way to a few surviving major dominant NSA groups, as outlined in table 6.8. However, as none of these NSA groups, nor the central government, were able to provide efficient competitiveness for political institutionalization, security or economic opportunity, the state of Afghanistan and its processes were unable to settle at equilibrium. The constant shifting of alliances, EA group interference, and a weak central government produced dynamics that were unable to settle at equilibrium, and resulted in conflict persistence. However, as the state of Afghanistan is an

[509] Dorronsoro, G. (2005).
[510] Dorronsoro, G. (2005).
[511] Dorronsoro, G. (2005).
[512] Because the centralized Afghan government is intricately linked at the local level, these relationships quickly changed and became more difficult to anticipate. *See* Evans, R. (2012) "The Micro-Level of Civil War: The Case of Central Helmand Province". *CTC Sentinel*. September, 5: 9, 14-17.

example of a complex system, over time one NSA group was able to self-organize and emerge as the dominant NSA. This NSA or the Taliban helped to transition Afghanistan from a state that was unable to settle at equilibrium (1979-96) to one that transitioned to unstable equilibrium (1997-99) to finally a state that was able to settle at a shallow stable equilibrium by the year 2000.

This seemingly spontaneous order of Taliban dominance was a result of various interdependences and interactions that were highly adaptable to Afghanistan's old behaviors of preferring bartered politics through informal and formal structures and newly emergent behaviors as consequence of the destruction of many political, economic, and social institutions. These relations are observed in figure 6.2, outlining the interaction of various agents and behaviors with the complex system of war-torn Afghanistan. Table 6.8 lists the key parameters that describe persistence during the Afghan-Civil War.

Table 6.8. Key Parameters for the CEM that Describe the Persistence of the Afghan Civil War

Variable	Definition	Hypothetical or Real Data
GA, *NSA*, *EA*	Population size of Afghan GA under Rabbani; Taliban; Non-Pashtun dominate alliance	Real data and hypothetical data
C_j	Competitiveness applied at time *t.* The most inefficient competitiveness from a distribution within the parameter estimated set is used	Real data
α_i	Competition coefficient. Represented by excluded groups, rule of law, and rebel capacity	Real data
Parameter		
$\boldsymbol{r_i}$	specific growth rate of $actor_{xi}$ as a function of competitiveness, C_1, C_2, C_3	Hypothetical
K_i	carrying capacity of actor group under analysis (e.g., X_i); *see* equation (3.7)	Hypothetical

Figure 6.2. Stochastic Competitive Effects on Three Actor Groups, Afghan-Soviet War, 1994-99

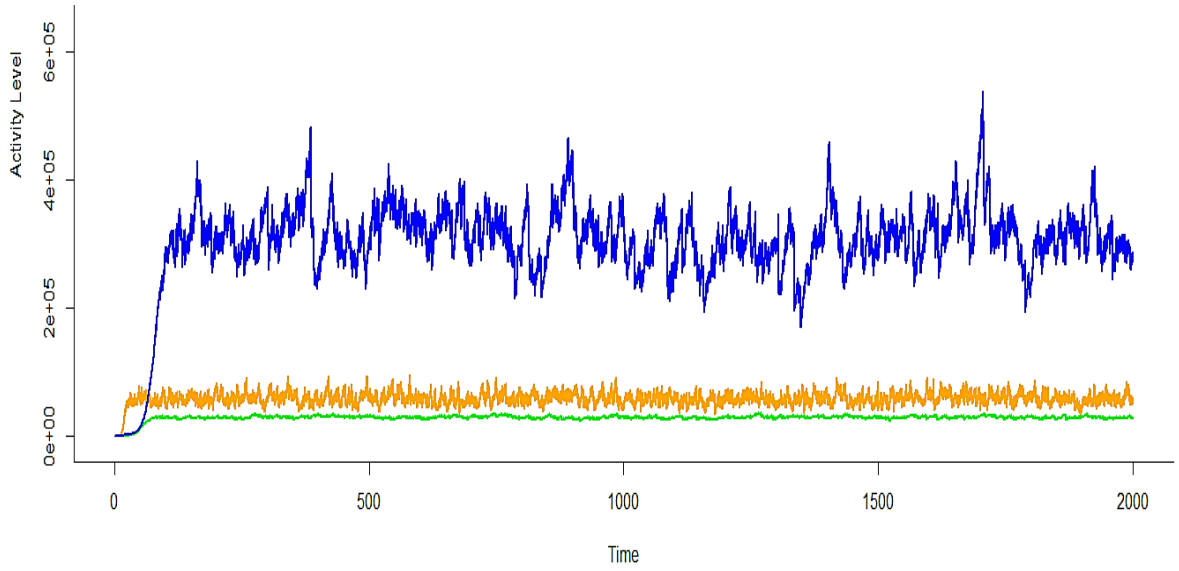


Figure 6.2. Stochastic Competitive Effects on Three Actor Groups, Afghan-Soviet War, 1995-97. This figure shows aperiodic fluctuations during the height of the Afghan-Soviet War. Green represents government actors, orange represents NSA, and blue represents EA actors. Alpha values are from the significant recurrence parameter set, drawn three times from a gamma distribution (R function rgamma()).The minimum of these three values are used (*see* Chapter III for theoretical justification). Actor group initial population activity is 250 (green), 50 (orange), and 100(blue). Growth rates for blue are 0.15, orange, 0.20,and green, 0.05. Growth rates are r.1=0.15, r.2=0.45, r.3= 0.10

Figure 6.2 is the outcome after running the model for 2,000 time steps, or approximately 5.5 years during the Afghan Soviet War. Figure 6.2 is illustrative of Taliban emergence (blue line) around the year 1995. The Taliban emerge after applying moderately more efficient competitiveness, which shown by higher activity levels compared to other competing actor groups. Over time, the Taliban remained dominant, while other NSA groups competing with Taliban, but at much lower levels. Figure 6.2 illustrates the persistence parameter estimates of a stochastic CEM. In this model, the waiting time for a certain number of events to take place is when a certain proportion of decreased activity by an actor group occurs. Blue, green and orange actor groups all demonstrate oscillatory behaviors, which is support for this thesis' hypothesis; that is, a system that is experiencing oscillating behaviors is more likely to experience conflict persistence because that system is unable to settle at equilibrium.

Figure 6.2 clearly illustrates the blue actor group (i.e., Taliban) as competing the most efficiently as this actor group is able to obtain political dominance, but is not competitive enough to exclude the other NSA group or GA group. The outcome in figure 6.2 is similar to simulations in Chapter V for parameters associated with conflict persistence. In sum, the

Soviet-Afghan War was a war that was fought among hundreds of different actor groups, but were modeled within this chapter as three aggregated actor groups for purposes of simplification and to reflect the literature on the Soviet-Afghan War. Conflict dynamics experienced during the War were reflective of different actor groups applying mostly inefficient levels of competitiveness that not only prolonged the conflict, but also allowed a post-conflict Afghanistan to remain vulnerable to the reversion of conflict (i.e., US-led invasion in 2001); that is, the majority of the Afghan-Soviet War was suspended in a phase that was unable to reach equilibrium.

6.5. Conclusion

To conclude, the Taliban took control of Afghanistan through various tactics including conventional battles, bribery and threats. By the end of 1993, many factions and warlords were defeated or aligned with more dominant factions, leaving only five regional political armed forces.[513] These constantly shifting alliances allowed the Taliban to self-organize and eventually capture Kandahar.

The Taliban changed the climate and dynamics of the civil war by concentrating their power within the entire country as a whole, rather than focusing solely on Kabul. From a complexity perspective, the Taliban were able to self-organize through interdependent interactions and higher competitive effects compared to other NSA groups and the central government. This unanticipated outcome of Taliban rule may seem exactly that when analyzed through a linear perspective. However, as complexity theory has shown us throughout this chapter, characteristics such as emergence, self-organization, and non-linear interactions allowed the Taliban to organize and proliferate throughout Afghanistan.

By Feb 15, 1995, the Taliban were able to mobilize those who were neutral and those who were fighting for Hizb-i-Islami. These new recruits catalyzed the Taliban's ability to capture 12 out of 32 Afghan provinces only months after its inception. By the summer of 1995 the Taliban boasted heavy artillery and 15,000 recruits. The Taliban were able to take villages, towns and entire provinces by both force and willingly as backing from Pakistan grew substantially.

The Afghan government used inefficient competitiveness for political institutionalization, economic opportunity and security, while the Taliban, backed by a cohesive EA actor (i.e., Pakistan), was able to use a more efficient competitiveness selection for institutionalization,

[513] Nojumi, N. (2002) The Rise of the Taliban in Afghanistan: Mass Mobilization, Civil War, and the Future of the Region. New York, Palgrave. p. xi.

economic opportunity and security. This allowed them to out-compete the government while EA actors (i.e., Iran, Saudi Arabia, the US and Soviet Union) were either applying low efficient competitiveness or were no longer competing by supporting various actor groups.[514] Thus, the success of the Taliban during the mid-1990s is attributed to the exploitation of internal rivalries among various militia groups and warlords, the inability for the Afghan government to provide cohesive leadership that redistributed wealth to the Afghan population, a decrease in support by rival EA backers, and an increase in support to EA backers for the Taliban. Additionally, morale among the Taliban was high in comparison to the government and other competing NSA as the Taliban was able to provide an inclusive ideology that benefitted the many Afghans.[515]

Under a complexity framework, the above hypotheses fall short on explaining the unanticipated outcome of Taliban emergence and subsequent political dominance. From a complexity perspective through CEM modeling, I was able to show how the factors produced an outcome of a system that is unable to settle at equilibrium (i.e., post-Afghan Soviet War Afghanistan). This relatively unknown NSA was able to establish a semi-standing army, and a semi-functioning government which was officially recognized by Saudi Arabia, Pakistan and the United Arab Emirates.[516] As each Afghan NSA leader was concerned mainly with his tribe and immediate region and territory and not with the general Afghan public, the Taliban was able to emerge in the gap wedged between Afghan citizens and a lack of Mujahedeen leadership.[517] The Taliban created a direct connection between religious order and Pashtuns, rather than providing security for a specific tribe or location.[518] Importantly, the Taliban brought security, which had been lacking for many Afghans for decades. Additionally, the Taliban were heavily supported by Pakistan which brought economic opportunity to many Pashtuns. Lastly, the Taliban provided a new institutional framework umbrellaed by sharia law that gave the population a sense of security they had not experienced for almost a generation. These factors, coalesced together, allowed the Taliban to exploit weaker warring parties to eventually transition from NSA to GA.

[514] Giustozzi, A., & Ibrahimi, N. (2012).
[515] Matinuddin, K. (1999).
[516] Johnson & Mason (2007).
[517] Nojumi, N. (2002) The Rise of the Taliban in Afghanistan: Mass Mobilization, Civil War, and the Future of the Region. New York, Palgrave.
[518] Rashid, A. (2008) *Descent into Chaos: How the War Against Islamic Extremism is Being Lost in Pakistan, Afghanistan and Central Asia*. Allen Lane, London.

CHAPTER VII.

Empirics: Afghanistan 2000-2014

The Collapse and Subsequent Re-Emergence of the Taliban

"The West's mistake was to assume that…Afghanistan was a terrorist-sponsoring state, when in reality it was a state sponsored by terrorists." [519]

7.1. Introduction

This chapter discusses the collapse of the Taliban immediately after the US-led invasion in 2001 and its subsequent re-emergence a few years after the invasion. This chapter is a continuation from the historical narrative and complexity theory approach of Chapter VI. I apply complexity theory to illustrate how the Taliban were defeated and re-emerged during the US-led occupation of Afghanistan from 2001 to 2014.

This chapter takes a micro-level approach to understanding conflict reversion, in contrast to Chapter VI, which takes a macro-level approach to understanding conflict reversion and persistence. First, I describe the immediate aftermath of the US-led invasion. I discuss how the coalition missed an opportunity to compete efficiently against the dispersed Taliban, NSA groups and other EA groups, and instead allowed vulnerabilities to be exploited that resulted in an unanticipated outcome of Taliban reemergence. Then, to better understand decision-making at the micro-level, I explore the British experience in the Helmand between the years 2006 to 2010. This analysis with subsequent CEM simulation further illustrates the importance of applying a complexity theory framework to improve and advance our knowledge of how micro and macro relations interact to produce unanticipated outcomes. Next, I show how the Taliban, and the US-led coalition were able to coexist in a war environment that should have resulted in an easy coalition victory. I end the chapter with how complexity has further increased within Afghanistan since President Obama's 2010 surge.

7.2. The 'Collapse' of the Taliban, 2001-2006

The Taliban collapsed after the US-led invasion in 2001 more quickly than it emerged. Once it became evident that the Taliban lost its political power, most of the provinces within

[519] Fergusson, J. (2010), p. 95.

Afghanistan turned against the Taliban.[520] As Afghans view allegiance as something that is bartered, this change of alliance likely came as no surprise for many Afghans. However, concern over where the defeated US enemy had gone stumped high-ranking US military and political officials. As the former Commander of US forces in Afghanistan stated, "when we arrived in Afghanistan in May 2002, it wasn't clear whether there was any war left…the Taliban seemed to have been decisively defeated… and we weren't sure where they'd gone".[521]

McChrystal's belief that the Taliban had withdrawn from the conflict, is a direct parallel of dynamics observed in the CEM. As demonstrated in Chapters V and VI, stochastic CEM models that simulated reversion parameters illustrate how warring actor groups can dip down to low activity numbers in a system under study. Although, the US-NATO-led coalition appeared to have defeated the Taliban through an intensive "clearing campaign", the Taliban's flight to Pakistan allowed the insurgency to re-organize. [522]

Initially, one can observe that post-2001 Afghanistan was a fertile environment for NSA to emerge. Although the Taliban were perceived to have collapsed and completely withdrawn by Western standards, the US-led coalition was unable to capitalize on many of its initial successes. For instance, the US-led coalition failed to provide ground forces to secure major towns and Taliban strong-posts. Table 7.1 shows the period between 2001-2003, which I argue permitted conditions for the reemergence of the Taliban. Inefficient competitiveness left the US-led coalition vulnerable to competition. Between 2001-2003 Afghanistan was a conflict-affected state consumed by warring actor groups that could exploit other groups as not a single actor group was able to outcompete other actor groups.

[520] Barfield, T. (2010).
[521] McChrystal, S. (2013) *My Share of the Task*. New York, Penguin Group. p. 77.
[522]Rabasa, A., *et al*. (2011).

Table 7.1. Conditions in Afghanistan as Precursors for NSA Emergence, 2001-03

Inefficient competitiveness examples	US-led NATO coalition fails to provide efficient security US-led NATO coalition fails to provide strong political institutional structures Puppet government in place via the 2001 Bonn Agreement EA groups and efforts are multiple and uncoordinated Warlords emerge as a consequence to lack of security and economic opportunity in many of the districts US-led NATO coalition's alignment with the Northern Alliance Attention diverts to Iraq
Complexity variables observed	Increase in number of warring dyads EA support Political exclusion Politically active groups Rule of law low Bureaucratic capacity low Tax capacity low
Hypothesized Outcome	Unable to settle at equilibrium
Empirical Outcome	Conflict reversion

Theoretically, the US would have been more successful if it aligned itself with the Taliban against Bin Laden's Al-Qaida.[523] Although, this approach was more complex and difficult in the short-term, the US may have eliminated radical networks, gained complete control over Afghanistan, and eradicated the opium production that funded the Taliban and criminal networks. However, the US aligned itself with the Northern Alliance, which were both politically and militarily weak and were much less inclusive in comparison to the Taliban. By 2003, the US switched its major focus to Iraq, giving the Northern Alliance more independence, which afforded the Taliban to initiate major efforts to ignite a large-scale insurgency.[524] Moreover, strategic divisions between the US State Department and DOD prevented the US from entering Afghanistan with a cohesive, long-term strategy against terrorist networks in Afghanistan.[525]

[523] Dorronsoro, G. (2005).
[524] Giustozzi, A., (2007).
[525] Dorronsoro, G. (2005).

Table 7.2 shows key parameters that led to conflict reversion in Afghanistan. As stated prior, these parameters are derived from real data and some that are hypothetical.

Table 7.2. Key Parameters for the CEM that Led to Conflict Reversion in Afghanistan

Variable	Definition	Hypothetical or Real Data
GA, NSA, EA	Population size of Karzai government forces; Taliban; US-led NATO coalition, aggregated	Real data and hypothetical data
C_j	Competitiveness applied at time *t.* The most inefficient competitiveness from a distribution within the parameter estimated set is used.	Real data
α_i	Competition coefficient. Represented by politically excluded groups, rule of law and bureaucratic capacity	Real data
Parameter		
$\boldsymbol{r_i}$	specific growth rate of actor$_{xi}$ as a function of competitiveness, C_1, C_2, C_3	Hypothetical
K_i	carrying capacity of actor group under analysis; *see* equation (3.7)	Hypothetical

Figure 7.1 is an outcome of simulating data from Afghanistan's 'Usher recurrence' (EPR prior) of best model fit. This figure illustrates the first two years of the conflict, when the US-NATO (e.g., orange line) coalition's population activity was high and variable, and while the Taliban hid in Pakistan (e.g., green line). The Karzai government is represented by the blue line. The parameter values illustrate an ability for all actor groups to coexist. This means that all actor groups are inefficiently competing. The US-NATO group is relatively high on the y-axis because it's alpha values are higher than the other two actor groups. However, the other two actor groups are competing enough to maintain survival and to coexist with the US-NATO group. Although not clearly observed in figure 7.1, if one zooms in both the green and blue actor groups display oscillating behaviors and not straight lines.

Figure 7.1. Stochastic Competitive Effects on Three Actor Groups, War in Afghanistan, 2001-03

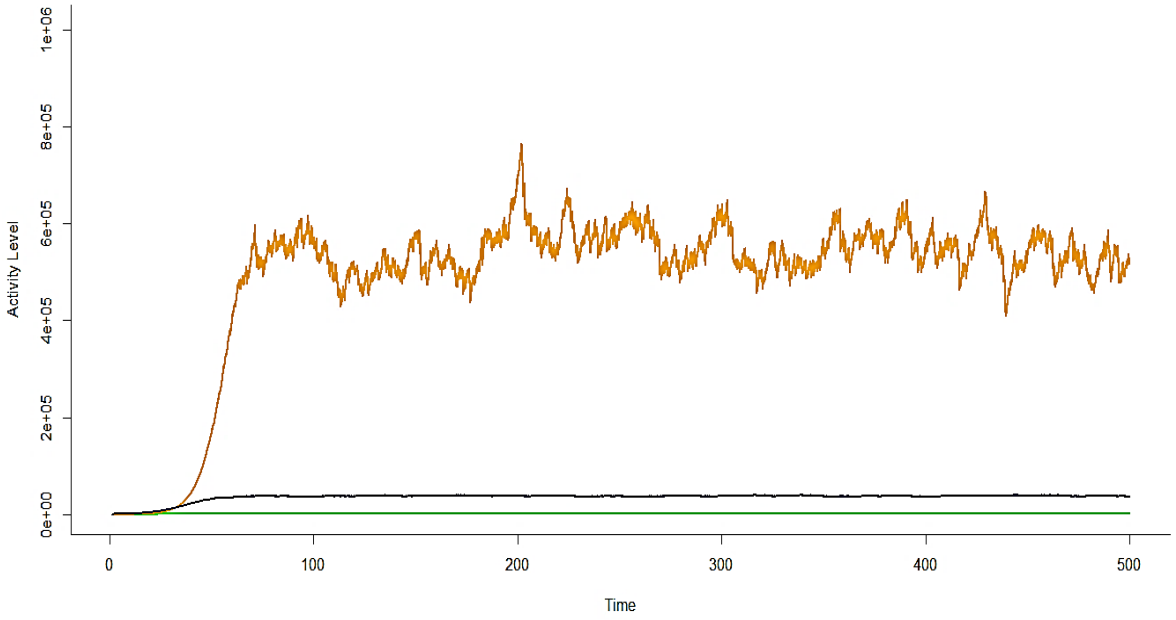


Figure 7.1. Stochastic Competitive Effects on Three Actor Groups, War in Afghanistan, 2001-03. This figure shows aperiodic fluctuations during the height of the Afghan-Soviet War. Green represents the Taliban, orange represents the US-led coalition, and blue represents the Karzai governments. Competitive coefficients are drawn from which draw numbers from a probability distribution random numbers from a uniform distribution. A value for each competition coefficient are selected at the minimum. Growth rates are r.1=0.05, r.2=0.20, r.3= 0.15

The section examines a micro-level approach of the British military's decision-making that led to increased complexity of the battlefield and to unanticipated consequences.

7.3. The Resurrection of the Taliban, 2006-2010: A Micro Approach from a British Military Perspective

This section examines the British perspective and experience of the War in Afghanistan during the Taliban's reemergence from 2006-2010. The aim of this section is to demonstrate various obstacles that disrupted British mission success within the Helmand Province (Pashtun dominated where the majority support the Taliban). Additionally, I demonstrate how competitive effects are far from static, but are both adaptive and maladaptive over time.

7.3.1. Helmand: Turning a Reconstruction Effort into a War Effort

The 2011 RUSI *Afghan Papers* were published as an analysis of the British's military decision for involvement in the Helmand Province. This report aimed to address how the UK became

involved in the War, which began as a reconstruction mission with as little as 1,000 troops.[526] Their findings concluded that it was the deployment of 3,300 troops to the barren and ungoverned Helmand Province in the spring of 2006 that altered the UK's 'military operation' into a 'war'.[527]

Most of the literature surrounding British occupation of Helmand from 2006-2010 is widely negative and critical in that the British military was incompetent and unable to adapt to the quickly evolving landscape of irregular warfare.[528] The section demonstrates how the British military in the Helmand Province of Afghanistan were slow to adapt to an irregular war as the British were inefficient when competing with the Taliban. The Helmand Province became Britain's battlefront based on three main factors.[529] The first was that Prime Minister Blair wanted to eradicate poppy cultivation in order to (a) break the financial support that the Taliban relied on in order to spread their ideology; and (b) as a matter British ethical standards towards anti-narcotics to halt the narco-economy since 2001. Third, the British saw the reconstruction and stabilization mission within Helmand as an opportunity to make up for failures within Iraq over the past three years.

By the summer of 2006, the British began arriving in the Helmand Province as part of the International Security Assistant Force's (ISAF) expansion strategy.[530] The British and ISAF's strategy initiated the first major casualties of British forces as they were small in number and slow to adapt to insurgent fighting techniques. As the following section describes, it took the British years to adapt to finally push the Taliban out of many of the villages and towns that dotted the Helmand.[531]

Nation-building was ISAF's central theme running alongside counterterrorism efforts.[532] However, by 2002 ISAF was unable to deter the threat of terrorism[533] and the responsibility of reconstruction missions were overturned to NATO and the US in 2003.[534] On May 1, 2006,

[526] Clarke, M (ed.) (2011) *The Afghan Papers: Committing Britain to War in Helmand, 2005-06*, RUSI Whitehall Paper, 77. London, Routledge Journals.
[527] Clarke, M (ed.) (2011). Farrell, T. & Gordon, S. (2009) "COIN Machine: The British Military in Afghanistan". *Orbis*. 53(4), 665-683.
[528] Fergusson, J. (2008) *A Million Bullets: The Real Story of the British Army in Afghanistan*. London, Transworld Publishers.
[529] Clarke, M (ed.) (2011).
[530] Farrell, T., & Giustozzi, A. (2013).
[531] Goodson, L., & Johnson, T. (2011) "Parallels with the Past- How the Soviets Lost in Afghanistan, How the Americans are Losing". *Orbis*. Fall, 577-599.
[532] Ledwidge, F. (2011) *Losing Small Wars: British Military Failure in Iraq and Afghanistan*. Cornwall, TJ International Ltd.
[533] Some social sciences may perceive these actions as self-defense and not terrorism. See Kemp, S. (2009).
[534] Clarke, M (ed.) (2011).

American military control of the Helmand Province was passed to the British military and called Operation Herrick 4 (OH 4).[535] Under OH 4, the British were expected to begin reconstruction immediately throughout the Helmand as part of NATO's 'Phase 3' expansion to southern Afghanistan.[536] OH 4 was a development and reconstruction mission to win the 'hearts and minds' of the locals and to enforce Karzai governmental policies and not one that would involve heavy fire from outnumbered and under-resourced British soldiers.[537] British Defense Secretary, John Reid gave the now infamous statement that "we would be perfectly happy to leave in three years' time, without firing one shot, because our mission is to protect the reconstruction".[538] However, the British brigades deployed to Helmand consisted of young men who were trained in heavy kinetic and conventional fighting warfare techniques and *not* peacekeeping and COIN tactics. For instance, the first to be deployed, 16 Air Assault Brigade (16AAB) were trained as shock troops. As Ledwidge argued in *Losing Small Wars*, 16AAB was "surely the last soldiers to be placed in an environment that required subtle and measured activity".[539] How did reconstruction mission turn so deadly practically as soon as 16AAB's boots touched the ground in Helmand?

Prior to the deployment of the 16AAB, around 100 counterterrorism US Special Forces were involved in heavy fighting with little involvement with the locals in reconstruction efforts.[540] In 2006 the Taliban had increased its coordinated kinetic action against the US-led counterinsurgency by 400 percent.[541] After 2006, the Taliban was able to regain much of lost territory because of a failure of US and NATO forces to form a relationship between Western forces, political actors in Kabul and local communities.[542] By the end of 2006, NATO sources estimated that areas affected by the insurgency had quadrupled compared to 2005 (e.g., six-fold increase in suicide attacks, 3-fold increase in direct fire attacks, doubling of IED attacks and doubling of indirect fire attacks.[543] How did this happen?

[535] Fergusson, J. (2008).
[536] Ledwidge, F. (2011).
[537] Fergusson, J. (2008)
[538] *Afghanistan: War without end? Afghanistan: The Battle for Helmand* [Afghanistan BBC2]. (2011) BBC 2 Viewed: Accessed 16th April 2012.
[539] Ledwidge, F. (2011) p. 72.
[540] Clarke, M (ed.) (2011).
[541] Rabasa, A., *et al*. (2011).
[542] Elias, M. (2009) "The Resurgence of the Taliban in Kabul: Logar and Wardak". In: Giustozzi, A. (ed.) *Decoding the Taliban: Insights from the Afghan Field.* New York, Columbia University Press. pp. 43-55.
[543] Giustozzi, A., (2007).

By 2006 the Taliban had adapted to the conflict by adopting a suicide bomb campaign to compete with NATO's air and bombing campaign.[544] In parallel, the central government was viewed as increasingly weak (primarily its political institutions and security structures) as the Taliban grew in number, support and began to recapture territory.[545] As the central government applied inefficient competitiveness across all strategies (political institutionalization, security, and economic opportunity) in combination with EA who demonstrated mixed efforts of support or in opposition for the US-led invasion,[546] the Taliban increasingly used more competitive strategies to claim its ultimate resource, the Afghan people. Much of the blame fell on Tony Blair and the Ministry of Defence's (MOD) focus on Iraq over Afghanistan.[547] Meanwhile, London was overly optimistic, like their American allies, that the Pashtuns would welcome NATO troops openly.[548]

Intelligence provided to 16AAB was scarce and incomplete, as the "intensity of the fighting took [16AAB] by surprise", because "intelligence told us that there wouldn't be Taliban when we arrived" said Col. Stuart Tootal.[549] Partially why the British came under heavy attack after a few weeks in Helmand was based on a history of British occupation over the last 170 years; particularly, the Battle of Maiwand in which 1,700 British troops were destroyed by the less advanced Afghan warriors.[550] This battle became a serious and present reminder for the Afghans of British defeat in Afghanistan during the 19th and 20th centuries.[551] Thus, when the British delayed reconstruction efforts in early 2002, and instead focused on patrolling and occupying centers such as Sangin, the locals became suspicious and increasingly hostile.[552]

In response to this historical threat, President Karzai and Governor Dalmad ordered British commanders to protect civilians while kinetically engaging the Taliban.[553] Consequently,

[544] In 2006, there were 2,000 IED attacks that killed 78 Coalition troops, which amounted to 30% of all battle deaths that year. By 2009, there were 7,000 IED deaths that killed 275 Coalition troops or 61% of all deaths that year. *See* Fergusson, J. (2010) *Taliban: The True Story of the World's Most Feared Guerrilla Fighters*. Bantam Press, London.
[545] Coghlan, T. (2009).
[546] For instance, European partners were accused by Americans and British as not wanting to fight the Afghan War. These accusations were provided by anecdotal evidence of NATO providing 83 restrictions on their troops to the Dutch refusing to work more than 8 hours a day to Italians not participating in combat operations or the Turks refusing to leave Kabul to shortened Danish 6-month tours, for instance. *See* Hastings, M., (2012) *The Operators: The Wild and Terrifying Inside Story of America's War in Afghanistan.* Blue Rider Press, New York.
[547] Grey, S. (2010).
[548] Grey, S. (2010).
[549] Afghanistan BBC2 (2011).
[550] Fergusson, J. (2008).
[551] Grey, S. (2010) *Operation Snake Bite: The Explosive True Story of an Afghan Desert Siege*. Penguin Books, London. Stewart, F. (2012).
[552] Fergusson, J. (2008).
[553] Afghanistan BBC2 (2011).

reconstruction efforts were halted, while kinetic fighting for territory was prioritized.[554] Simultaneously NATO-led Operation Mountain Thrust[555] was initiated immediately after 16AAB was deployed. This operation would profoundly impact and even reverse reconstruction efforts within Helmand, thus further aggravating relations between ground troops and civilians.[556]

Tensions and miscommunication between reconstruction efforts and 16AAB further agitated and obscured the early stages of the UK's Helmand campaign.[557] Cultural differences between Pashtuns and the British soldiers and even among Pashtun tribes was evident, further complicating British reconstruction efforts. As mentioned throughout Chapter VI, Pashtuns find honor in switching sides between Taliban and Western forces, which further increased tensions among the British and Afghans.[558]

7.3.2. How the British went from Reconstruction to Military Mission

Under-manned and slow to deploy (it took approximately three months for a task force of 3,000 to arrive in Helmand), 16AAB received pressure from President Karzai, Governor of Helmand Mohammad Dauod and Whitehall to adopt a platoon house strategy.[559] A platoon house strategy was a kinetic approach to clear Taliban strongholds, but because 16AAB was under-resourced it was unable to hold and build counterinsurgent support within the platoon house perimeter.[560] Combat troops from Sangin were then sent to Now Zad and Musa Qala, further spreading the troops and resources to rationing levels.[561] Consequently, the British were trapped in widely spaced areas, with little resources or numbers, while the Taliban moved freely in and out of 16AAB platoon houses.[562] Tootal summed up the difficulty 16AAB faced in that 30,000 NATO troops held roughly the same area as 1,200 16AAB.[563]

[554] Moreover, during the initial stages of fighting rumor spread that the British were planning to destroy Afghan poppy crops. Poppy crops doubled between 2005-2006, and in response officials in Kandahar pushed British commanders to kinetically engage the Taliban, ending all reconstruction efforts. *See* Clarke, M (ed.) (2011) and Afghanistan BBC2 (2011).
[555] A search and destroy mission that relied on heavy aerial bombing against the Taliban, in order to smoke-out Osama bin Laden and his al-Qaida and Taliban supporters. The mission included 11,000 troops including soldiers from the UK and the Afghan National Army.
[556] Fergusson, J. (2008)
[557] Clarke, M (ed.) (2011)
[558] Grey, S. (2010).
[559] Farrell, T. & Gordon, S. (2009)
[560] Fergusson, J. (2008). Farrell, T. & Gordon, S. (2009)
[561] Afghanistan BBC2 (2011)
[562] Afghanistan BBC2 (2011)
[563] Afghanistan BBC2 (2011)

Troops began to move north and applied an 'ink spot' strategy,[564] further scattering an already thinly spread force, which reduced British chances of having a positive effect on the population.[565]. In Afghanistan, ink spots were to begin as development projects in various controlled locations until the spots multiplied and eventually joined as one covering the entire Helmand.[566] This move north was strongly suggested by Governor Daud and President Karzai, in which the Governor commented that "if [the British] are not prepared to fight, if you are not prepared to protect our flag and protect our people, why are you here?"[567] Criticism toward the British military of particular techniques such as counting Taliban causality numbers, the lack of resources to effectively 'clear, hold and build', the negative repercussions of persistent accidental Afghan civilian deaths by Special Forces, the failure of development and engineering personnel to repair combat damage and the inability to provide aid through such organizations as Provincial Reconstruction Teams (PRTs) plagued the British military during their first few deployments to the Helmand.

PRTs were adopted and applied to provide sustainability towards a functioning Afghani government after a territory was secured. The difficulty with PRTs was that its success depended on the security environment provided by and in collaboration with the British military.[568] Until 2005 tensions between highly kinetic strategic battles between the British and Taliban caused a number of civilian deaths and subsequently, distrust of PRTs.[569] Consequently, PRTs and the British military blamed one another for mission failures. Moreover, the US military was pre-occupied with Iraq from early 2003 onwards leaving the British to develop their own strategy, with a thinly spread battalion, alongside an uncoordinated NATO.[570]

Until 2006 the Taliban maintained a fighting strategy that engaged the UK conventionally through intermittent battles. However, by 2007 the Taliban's conventional fighting strategy dramatically shifted to population-centric tactics against the foreign coalition via decreasing indiscriminate attacks, increasing cooperation with the Afghan population and increasing attacks against the coalition through IED and suicide tactics. From 2007 onwards the Afghan security environment dramatically deteriorated as levels of violence increased steadily. In

[564] This strategy was devised during the successful British-Malaya counterinsurgent campaign of the 1950s and was applied to provide security, via quick impact projects by the military.
[565] Clarke, M (ed.) (2011)
[566] Farrell, T. & Gordon, S. (2009)
[567] Afghanistan BBC2 (2011)
[568] Clarke, M (ed.) (2011).
[569] Clarke, M (ed.) (2011).
[570] Clarke, M (ed.) (2011).

parallel, US military commanders were aware that their highly kinetic tactics could be counter-productive and started adopting Village Stability Operations (VSO).[571] VSOs uses bottom-up techniques that promotes US Special Forces to move away from forward-operating bases and into Afghan villages.[572] These more direct approaches towards instability and Taliban recruitment were aimed to help empower local Afghans and Afghan institutions by forming relationships with tribal elders and training the Afghan police.[573]

Nevertheless, in the attempt to secure and/or recapture some Taliban strongholds, Brig. John Lorimer was able to clear sections along the Helmand River by utilizing large-sized, heavy-armored maneuver forces by 2007.[574] Many of the Taliban holdings were cleared but the MOD was unable to send resources that allowed Lorimer and his brigade to hold the cleared areas as he moved to the next Taliban stronghold.[575] Frustrated, Lorimer exclaimed that operations around the Helmand River were like 'mowing the lawn'.[576]

Lorimer's inabilities and limitations did not solely rest on his incapacity to fully adapt to the irregular war environment. Multiple sources have pointed fingers at NATO and the MOD in the simple lack of providing enough troops and resources required to hold captured Taliban areas. Overall, platoon-house and ink-spot strategies were counterproductive and further alienated the population in that the British would clear the Taliban from strategic strongholds, only for the Taliban to reclaim an area shortly after British disbandment. The Taliban only had to wait and watch, knowing and recognizing from past foreign invasions that the British were temporary invaders. Consequently, the Pashtuns were constantly harassed by both the British forces and Taliban to provide information on each other's whereabouts and tactics. Captain Duncan Campbell told Grey an unforgettable story of the dilemma when trying to provide security for the Pashtuns in order to win the locals hearts and minds: a nomadic shepherd was approached and asked if he had any news of the Taliban's whereabouts. In 'despair' the shepherd exclaimed, "You are always coming here to ask about the Taliban. The Taliban come and ask about the British. Me, I'm still looking for my sheep!". [577]

[571] VSOs are a COIN technique adapted from the Vietnam War's Combined Actor Program (CAP).
[572] Guistozzi, A..(2013) "Military Adaptation by the Taliban, 2001-2011". In: Farrell, T., Osinga, F., & Russell, J. *Military Adaptation in Afghanistan.* Stanford, Stanford Security Studies. pp. 219-241
[573] Miller, P. (2013) The US and Afghanistan After 2014. *Survival: Global Politics and Strategy*. 55:1, 87-102.
[574] Grey, S. (2010).
[575] Grey, S. (2010).
[576] Grey, S. (2010)
[577] Grey, S. (2010) p. 125.

7.3.3. How the British Military Maladapted, then Adapted to the Insurgency

Unfortunately, for a kinetically trained brigade and their commander, each bullet that is fired at a Taliban increases the insecurity felt by the locals, eventually diminishing the population's support.[578] Moreover, much of the persistent accidental Afghan civilian deaths were blamed on covert operations carried out by US Special Forces.[579] It is likely that this additional dimension of tension[580] between regular soldiers and Special Forces may have delayed mission success. Duncanson addressed this paradox and argued that the post-9/11 British military were expected to operate in kinetic and non-kinetic environments almost simultaneously by winning hearts and minds, 'create[ing] peace and security', all while maintaining an acceptable 'masculinity' within British military culture.[581] Consequently, the Pashtuns likely saw no difference between those soldiers who raid their homes and kill their family members and those soldiers that try to befriend them in bazars. Moreover, small patrols of Special Forces would become overwhelmed in the open deserts of the Helmand or the more heavily populated green zones, which resulted in high civilian causalities.[582]

When Brig. Mackay relieved Brig. Lorimer in October of 2007, the build up around the recapture of Musa Qala was an uphill battle from the start. Mackay warned the MOD in a 'ground truth' memo, that just one-fifth of heavy ammunition was available, half of armored vehicles were supplied, amongst other needed supplies such as night-vision goggles.[583] Mackay criticized the Helmand campaign strategy of "constant muddling through, making it up as we go along, being reactive, not proactive" and that formal orders were "riddled with errors" and "turned out to be simply a cut-and-paste version of those to the previous commander".[584] Moreover, unlike some academics.[585] Mackay argued against the British military's 'short' six month tour and that the heavy of rotation of commanders only halted military adaptation; Mackay instead pushed for deployments that were similar to the American 12-18 month tours.[586] It would not be until 2007 that the British would see an increase in troop numbers and

[578] Grey, S. (2010)
[579] Grey, S. (2010)
[580] Tension here is in regards to regular soldiers are commanded to be friendly with the locals and to make an effort to earn their trust, while the more highly regarded Special Forces participated in aggressive and covert missions.
[581] Duncanson, C. (2009)"Forces for Good? Narratives of Military Masculinity in Peacekeeping Operations," *International Feminist Journal of Politics*. 11(1). p. 76.
[582] Grey, S. (2010)
[583] Grey, S. (2010)
[584] Grey, S. (2010) 48-9, 51.
[585] Farrell, T. & Gordon, S. (2009); Farrell, F. (2010) "Improving in War: Military Adaptation and the British in Helmand Province, Afghanistan, 2006-2009". *The Journal of Strategic Studies*. 33(4):567-594.
[586] Grey, S. (2010)

resource allocation and a refocus on military strategy in the formulation of the 'Helmand Road Map'.[587]

Despite heavy odds against the initial UK campaign in Helmand, eventually the Afghans, Americans and British came together in December of 2007 to form a kinetic combat troop of 5,000 to recapture Musa Qala.[588] Journalist Stephen Grey, described the struggle for British forces to recapture the strategic Afghan town of Musa Qala from Taliban dominance. Grey supported the necessity for the British to apply a decentralized hierarchical chain of command, which provided security for the Afghans and an exit strategy or the Operational Mentoring and Liaison Team, which trained and fought amongst the Afghan National Army (ANA). By the time efforts were made to recapture Musa Qala, the British and Americans both understood the importance of capturing the town and demonstrate that a legitimate Afghan government rather than NATO forces were recapturing Musa Qala from the Taliban.[589] However, as stated by British diplomat, Sir Sherard Cowper-Coles,

> the population would not be won over by shiny new bridges or brand new schools or wells. The Soviets had tried that. [The British] counted for Afghans was to know who was going to be in charge in five years' time. Then they would step off the fence and back a winner.[590]

On April 9, 2008, Brig. Mark Carleton-Smith relieved Mackay and the same 16 AAB that was first deployed in Helmand during the summer of 2006.[591] Mackay's 'ground truth' seemed to have caught-on back in London as Carleton-Smith received more than three times the strength of British troops, the support of an American Marine battalion and Carleton-Smith was focused on confronting an evolving Taliban less kinetically and more towards a population-centric approach (e.g., repair of the Kajakik dam).[592]

To conclude, the cards were stacked heavily against British forces prior to deployment to Helmand. After the invasion of Iraq in 2003, the British military diverted "two-thirds of all deployable resources" to Iraq leaving a single British brigade available for the mission in Afghanistan.[593] A top-down approach centered on the 2005 UK Joint Plan severely limited deployment numbers and expenditure, in combination with poor intelligence, prior friction between Western military forces and the Afghani population, a focus on Iraq and priority of

[587] Farrell, T. & Gordon, S. (2009)
[588] Grey, S. (2010)
[589] Grey, S. (2010)
[590] Grey, S. (2010) p. 56.
[591] Grey, S. (2010)
[592] Grey, S. (2010)
[593] Clarke, M (ed.) (2011), p. 19.

resources for the Iraqi operation, the delay of the 16 AAB deployment, an incoherent NATO force, an illegitimate Helmand government that blurred lines between legal and criminal organizations, a Taliban-saturated province with a mildly supportive population, diverse social norms within Pashtun society, a rugged Helmand terrain, and a thinly spread and ill-prepared force all in combination led to British counterinsurgent failure and withdrawal. Moreover, the MOD and British military never provided its soldiers with a defined and cohesive strategy for Afghanistan.[594] However, the Taliban had many shortcomings. Although the NSA group were highly resilient, built on a highly adaptable "network of networks", this decentralized nature of the Taliban's organization strategy is also its greatest weakness as the Taliban were unable to organize cohesively to implement a strategy that would prevent splinter groups from forming.[595] Factionalized fighting led to Taliban, warlord and tribal leader power grabs, which is evidenced by Afghans liquefying their assets and moving abroad and an increase in various criminal acts.[596]

The Battle of Musa Qala became the biggest British-led operation in Afghanistan since 2001. As a consequence, the Taliban would no longer confront the West and their Afghan government directly,[597] while IEDs became the new tactic of choice by the Taliban.[598] By 2010 criminal acts such as kidnapping, robbery and poppy production were on the rise, which has allowed the Taliban to exploit low security strategies used by the Afghan government. Corruption still remains an intractable issue within Afghan politics while the prospects for economic opportunity is low. Moreover, EA, such as the US and the UK, have been inconsistent in their policies against corruption, which have oscillated between confronting corruption and completely ignoring it.[599] Unsurprisingly, institutions and political parties are unable to emerge from individual and tribal loyalty as warlords and tribal leaders provide more consistent and predictable strategies. Thus, networks among NSA and government actors remain tied in a political and social system were bartered alliances are key to power and domination.

7.3.4. Complexity and the War in Afghanistan, 2006-2010

Interpreting the British Army's experience in the Helmand Province from 2006-2010 allows one to obtain a better sense of the benefits and increased clarity of viewing intrastate conflict

[594] Clarke, M (ed.) (2011)
[595] Guistozzi, A.. (2013) "Military Adaptation by the Taliban, 2001-2011". In: Farrell, T., Osinga, F., & Russell, J. *Military Adaptation in Afghanistan.* Stanford, Stanford Security Studies. pp. 219-241.
[596] Hopkins, N. (ed.) (2012) *Afghanistan in 2012: A Survey of the Afghan People*. The Asia Foundation. International Crisis Group [ICG] (2012) *Afghanistan: The Long, Hard Road to the 2014 Transition*. Asia Report. N.236 – 8 October.
[597] Grey, S. (2010).
[598] Grey, S. (2010).
[599] Felbab-Brown, V. (2013).

with a complexity theory framework. First, miscommunication by the US-led coalition, especially between the US and UK militaries and the Afghan central government (i.e., government actor group) demonstrates how interdependent relationships among the various government actor groups led to a complete breakdown of military command within the Helmand Province. These logistic and kinetic breakdowns at the ground-level led to adverse effects at the province level that fed upwards to the central government, which affected policymaking. Feedback played a significant role in British Army's inability to defeat the Taliban through various use of strategies (e.g., Ink Spot), that led a "muddling through" of the British Military within the Helmand Province that increasingly became more deadly and counterproductive as the conflicts persisted and intensified. Meanwhile, with increased help from EA (e.g., Pakistan, Iran) the Taliban were able to adapt their strategy from conventional tactics to IEDs that were devastating to both UK strategy and morale.

The CEM can demonstrate that when the situation in Helmand is viewed holistically, a variety of causes that led to an event are responsible, rather than one or several from the same source, such as poor military strategy. These previous sections demonstrate the various processes that prevented either the Taliban or the British military from claiming complete victory in the Helmand Province as conflict. Consequently, the War in Afghanistan would persist beyond 2010. For instance, in 2009 President Obama announced a 33,000 troop-surge to Afghanistan to protect US coalition held territories and to claim Taliban strong-holds, especially those in the Helmand Province. However, Obama's surge strategy would fail for a variety reasons: (1) the security environment was more complex than what the allied coalition anticipated; (2) Karzai and the central government disagreed about the necessity and the intensity of the surge that would disrupt the bartered system of governance in Helmand; (3) strong EA actors (e.g., Pakistan) support of the Taliban; (4) the ANA was less active, while 'green-on-blue' attacks increased against US military personnel; and (5) decreased US public support for the War in Afghanistan.[600]

[600] Chandrasekaran, R. (2012) "The Afghan Surge is Over: So Did it Work?" *Foreign Policy*. 25 September.

Table 7.3. Conditions that led to Conflict Persistence, War in Afghanistan, 2006-2010

Inefficient competitiveness examples	Kinetically trained troops, rather than peacekeeping troops are deployed to a reconstruction mission US-coalition is unorganized Whitehall and MOD do not shift strategy and policy in response to dynamics in theatre Taliban apply both discriminate and indiscriminate violence against civilians EA involvement is wide and variable Karzai government is corrupt and highly nepotistic
Complexity variables observed	Increase in number of warring dyads EA support Political exclusion Politically active groups Rule of law low Relative rebel capacity high Bureaucratic capacity low Tax capacity low
Hypothesized Outcome	Unable to settle at equilibrium
Empirical Outcome	Conflict persistence

Understanding that a number of influences affected military success and failure such as a lack of resources to effectively 'clear, hold and build', the negative repercussions of persistent accidental Afghan civilian deaths by Special Forces, the failure of development and engineering personnel to repair combat damage, an inability to provide aid, a pre-occupation with Iraq, a thinly spread battalion, alongside an uncoordinated NATO are just some of the elements that led to military failure. Nevertheless, when British commanders adapted a strategy to one of protecting the people rather than prioritizing kinetic clearing techniques, did the British only then begin to see true progress in their overall strategy of pushing the Taliban out of various strong-holds.

Table 7.4. Key Parameters for the CEM that Led to Conflict Reversion in Afghanistan		
Variable	**Definition**	**Hypothetical or Real Data**
GA, NSA, EA	Population size of Karzai government forces; Taliban; UK military, aggregated	Real data, hypothetical
C_j	Competitiveness applied at time *t.* The most inefficient competitiveness from a distribution within the parameter estimated set is used.	Real data
α_i	Competition coefficient. Represented by politically excluded groups, rule of law and relative rebel capacity	Real data
Parameter		
$\boldsymbol{r_i}$	specific growth rate of actor$_{xi}$ as a function of competitiveness, C_1, C_2, C_3	Hypothetical
K_i	carrying capacity of actor group under analysis; *see* equation (3.7)	Hypothetical

Figure 7.2 Probabilistic Competitive Effects on Three Actor Groups, War in Afghanistan, 2006-2008.

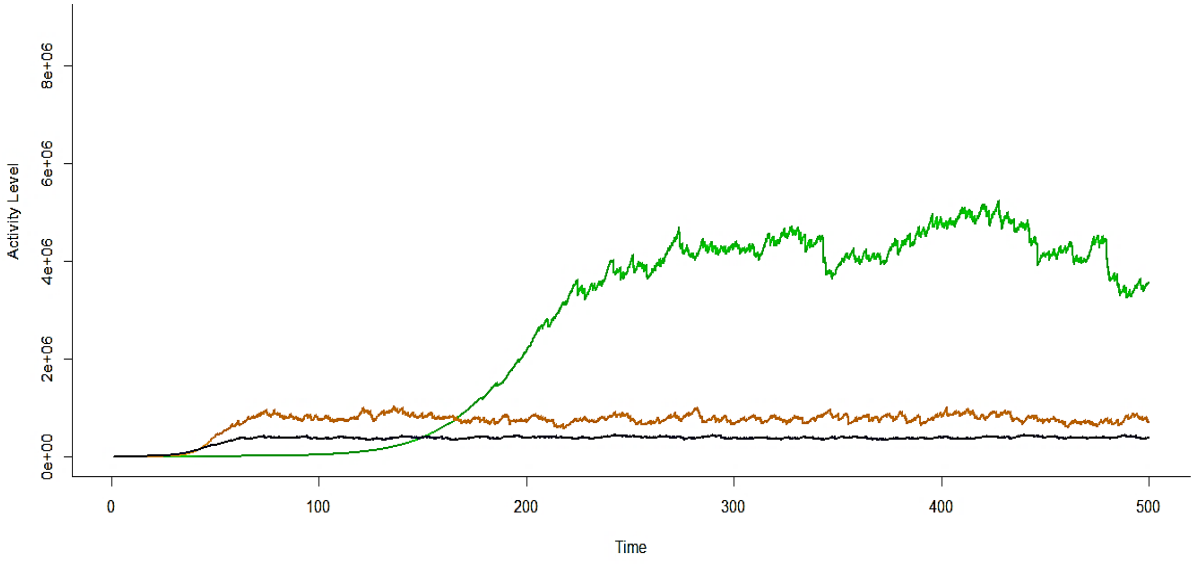


Figure 7.2. Stochastic Competitive Effects on Three Actor Groups, War in Afghanistan, 2006-2008. This figure shows aperiodic fluctuations during War in Afghanistan. Green represents the British military, orange the Taliban, and blue represents EA actors Alpha values are from the significant recurrence parameter set, drawn three times from a gamma distribution (R function rgamma()).The minimum of these three values are used (*see* Chapter III for theoretical justification). Actor group initial population activity is 250 (green), 50 (orange), and 100(blue). Growth rates for blue are 0.15, orange, 0.20,and green, 0.05.

Figure 7.2 illustrates the British military's (green line) creep into the Helmand. Initially, the British mission in the Helmand started as a reconstruction mission, as evident by the green

line's low numbers. However, after a few months the British force grew in numbers. The oscillations in the green line show how this actor group responded to the competitive effects of both the blue and orange actor groups. The orange line represents the US forces and other coalition forces who were in and out of the area in much smaller numbers over the two years, while the blue line represents the Taliban.

However, the ability to adapt is "fundamentally different from merely *reacting*" or predicting the next crisis.[601] What the US and British failed to realize was the insurgents were learning and adapting faster.[602] To illustrate this further, many academics and military commanders argued that UK and US COIN forces were unable to adapt because of the MOD and DOD's reliance on technology, an overly bureaucratic and hierarchical command structure and an inability to adjust its military strategy to irregular conflict situations.[603] Moreover, previous research has shown that both political and military leaders have reported slow adaptation to asymmetrical warfare in comparison to insurgents.[604] Some fault an inferior military strategy, while others blame stronger powers for disengaging when the cost of victory is higher than political objectives and state interests.[605]

Responding to the changing conflict environment, McChrystal shifted the US-led coalition's counterinsurgency strategy toward a 'adaptive movement' that was inclusive of a shift population-centric strategies.[606] This change in counterinsurgency strategy was a product of integrating tactical (i.e., Obama's 2010 'surge') and special forces with intelligence gathering in parallel with an increase in recruitment methods of civilian advisors.[607] Thus, military commanders who decentralized their units, defined a strategic cause, and refocused their efforts towards the population were the most effective against insurgent forces. [608]

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[601] Sagarin, R. (2012) *Learning from the Octopus: How Secrets from Nature Can Help Us Fight Terrorist Attacks, Natural Disasters, and Disease.* New York, Basic Books. p. xxv
[602] Zellen, B. (2012) *The Art of War in an Asymmetric World: Strategy for the Post-Cold War Era*. London, Continuum International Publishing Group.
[603] Sagarin, R. (2012). Kilcullen, D. (2010).
[604] Nagl, J. (2005) *Learning to Eat Soup with a Knife: Counterinsurgency Lessons from Malaya and Vietnam*. Chicago, The University of Chicago Press. Johnson, D. (2009) Darwinian selection in asymmetric warfare: the natural advantage of insurgents and terrorists. *Journal of the Washington Academy of Sciences*. 95,3: 89-112. Kilcullen, D. (2010).
[605] Sullivan, P., & Karreth, J. (2014) "The Conditional Impact of Military Intervention on Internal Armed Conflict Outcomes" *Conflict Management and Peace Science*: 1–20. Arreguín-Toft, I. (2005).
[606] Russell, J., (2013) "Into the Great Wadi: The United States and the War in Afghanistan". In: Farrell, T., Osinga, F., & Russell, J. *Military Adaptation in Afghanistan.* Stanford, Stanford Security Studies. pp. 51-82.
[607] Russell, J., (2013).
[608] Kilcullen, D. (2010). Nagl, J. (2005).

7.4. In Retrospect: How the Taliban and Various Non-State Actors were able to Exploit Government Actor Vulnerabilities

The following three sub-sections describes how allowing warring actor groups to exploit the coalition's vulnerabilities for political institutionalization, economic opportunity and security resulted in a 15 years-long conflict in Afghanistan. The following sub-sections discusses in greater detail how the Taliban were able to emerge between 2001 and 2006 to become a political, economic and security alternative to the Afghan central government and US-NATO alliance.

7.4.1. The Failure to Provide Political Institutionalization

When examining post-2001 attempts in Afghan state building (especially by the US-led coalition) one may clearly see how feedback was monumental. One of complexity theory's major components are feedback mechanisms that rely on a path dependent process. As initial conditions are important, a decision among many during a period of significant change can encourage further processes along a trajectory.[609] The neo-Weberian state model that the US decided to implement to reconstruct the central Afghan state was detrimental to how Kabul historically functioned, which also included harmful ideological policies that fed back unintentionally into future political choices.[610] Thus, building political institutions that are unfavorable to a society's normative structure can lead to political institutions that are maladaptive. Consequently, Kabul and the US-led coalition would continue to battle NSA groups, and especially the reemergent Taliban for political legitimacy post-2014 US withdrawal. As neither the internationally-funded Taliban, nor the US-Kabul government have highly efficient strategies of political institutionalization, the battle for political power and dominance continues post-2016.[611] The inability for the US-led coalition and Kabul to provide an efficient competitiveness of political institutionalization allowed competing NSA groups, backed by various external government actors, to take full advantage and provide competing strategies of political institutionalization.

To illustrate, after the signing of the Bonn Agreement, Western officials devised a poorly planned initiative that allowed each Western-allied force to manage separate political, security

[609] Parsons, C. (2007) *How to Map Arguments in Political Science*. Oxford, University of Oxford Press. p. 74.
[610] For an excellent discussion on neo-Weberian interpretation of 'failing' and 'failed' states and its effects on the international system, *see* Hameiri, S. (2007).
[611] *See for example*: Reuters (2017) "300 Marines Heading to Afghanistan to Assist Anti-Taliban Efforts". *Newsweek.* 8th January. Mashal, M. (2016) "How Peace Between Afghanistan and the Taliban Foundered". *The New York Times*. 26 December.

and judicial institutions within Afghanistan that placed no single government actor in charge.[612] Meanwhile, the US-backed Northern Alliance, who, prior to the US invasion were almost defeated by the Taliban, became recipients of $100 million in US bribes.[613] In response to a US order to wipe out any remaining Taliban, the Northern Alliance applied harsh tactics (approximately 20,000 Afghans are killed within the first two years of the US invasion) against competing NSA groups and the Taliban.[614] Consequently, a heterogenous, uncoordinated attempt to rebuild Afghan's central institutions relied almost entirely on warlords in the countryside and a hodgepodge of foreign actors in Kabul.

While the Taliban hid, the US became quickly aware that the central Afghan state had no power outside of Kabul.[615] Of importance, Kabul has never been highly bureaucratic nor aggressive towards combating informal power structures beyond the periphery of the capital.[616] As Mukhopadhyay argues, "[t]he ubiquity of informal politics throughout the formal apparatus of the state should not be mistaken for the absence of statehood".[617] Rather, as stated throughout Chapter VI, the state of Afghanistan functions within neo-patrimonial institutions and norms that permit political links to form throughout various provinces that are shared and bartered with informal political leaders (e.g., tribal, warlords, etc.). Actions, rather than processes, create Afghan legitimacy[618] and Karzai and his government provided the opposite to the Afghan people. Moreover, Kabul had not invested in its citizens who live in the thousands of villages that dot Afghanistan's rugged terrain.

Further fragmenting an already fragile US-Kabul alliance, political conflict within the Kabul government broke out as early as 2002.[619] Consequently, tensions increased among government officials, which came to a head when the Minister of Civil Aviation, Abdul Rahman was assassinated in February of 2002.[620] These crises within the government would have led to the complete collapse of the Kabul government if the US was not physically present for diplomatic

[612] Bert, W. (2011) *American Military Intervention in Unconventional War: From the Philippines to Iraq*. Palgrave Macmillan, New York.
[613] Fergusson, J. (2010).
[614] Giustozzi, A., (2007).
[615] Giustozzi, A. (2011) *Kant, Hobbes or... Machiavelli? Facing the Grim Choices of State-Building in Afghanistan.* The Anthony Hyman Memorial Lecture, School of Oriental and African Studies University of London.
[616] Mukhopadhyay, D. (2014) *Warlords, Strongman, Governors, and the State in Afghanistan*. Cambridge, Cambridge University Press.
[617] Mukhopadhyay, D. (2014), p. 11.
[618] Barfield, T. (2010).
[619] Dorronsoro, G. (2005) *Revolution Unending*
[620] Once a strong supporter of President Rabbani during the civil war, Rahman switched allegiances to support the Karzai government. *See* Dorronsoro, G. (2005) *Revolution Unending*

exchanges among the various ministers.[621] Subsequently, the ability of the insurgency to exploit the weakness of Kabul allowed the insurgency to grow and spread.[622]

7.4.2. The Failure to Provide Economic Opportunities

The US-led coalitions' operation of a 'light footprint' approach centered in and around Kabul, while ignoring Kabul's periphery. Absence of the central government beyond Kabul empowered warlords who pledged bartered allegiance to the US-led coalition, while ignoring the needs of many provincial towns and villages. Consequently, this governing approach became one of the major contributing factors to the reemergence of the Taliban and their ability to reorganize and recruit.[623] Furthermore from 2002 to 2009 Western and Afghan military operations were not cohesive and lacked operational and strategic objectives that were reactionary to the enemy rather than adaptive.[624] This reactionary tactic is a clear indicator of applying cause and effect or linear approaches in warfare.

Many Afghan refugees and migrants who left Afghanistan during the civil war and subsequent Taliban take-over began to return. These returning Afghans also brought back with them new networks that crossed state borders and regions, which further altered the social fabric of Afghan society.[625] Moreover, the US-led coalition did not prioritize institution building. By 2005, the mood of the Afghans had changed from support of the US-led coalition to fear and mistrust. As Afghan expert Michael Barry documented in one interview with a resident just outside of Kabul, "[t]he Americans are here for their own interests, they have no real care for us".[626] Alternatively, those Afghans who had relations with Karzai and US officials were immediately placed in higher-ranking government positions, while those who did not were replaced. Similar to the Soviet political and socio-economic reforms that showed favoritism to those Afghans who actively supported the PDPA, this US tactic had similar negative repercussions among Afghans.

Consequently, patronage networks would become more essential among the Afghans who refused to join allegiance with another foreign occupier. Partially credited with the Taliban's

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[621] Dorronsoro, G. (2005) *Revolution Unending*
[622]Giustozzi, A., (2007).
[623] Ruttig, T. (2009) *The Other Side: Dimensions of the Afghan Insurgency: Causes, Actors an Approaches to 'Talks*. Afghanistan Analysis Network.
[624] Russell, J., (2013) "Into the Great Wadi: The United States and the War in Afghanistan". In: Farrell, T., Osinga, F., & Russell, J. *Military Adaptation in Afghanistan.* Stanford, Stanford Security Studies. pp. 51-82.
[625] Harpviken, K. (2009).
[626] Barry, M. (2011) *Kabul's Long Shadows Historical Perspectives*. Liechtenstein Institute on Self-Determination ,Woodrow Wilson School of Public and International Affairs, Princeton University, Princeton. Available from: http://dataspace.princeton.edu/jspui/bitstream/88435/dsp01vd66vz93t/1/afgh_barry2011.pdf [Accessed 18th February 2013]. p. 28.

reemergence is an Afghan culture of redistribution. For instance, President Karzai (2001-2014) was selected by Washington to coax the Pashtun tribes to cease their allegiance with the Taliban and to instead rely on Karzai directly for international aid that would far exceed Pakistani aid. However, the parallel war in Iraq saw an immediate drop in aid to the Karzai's regime, which led to different forms of corruption within the US-backed Karzai regime.[627] The corruption became exceedingly worse as institutions ceased to function and basic public services were unfilled.[628]

The consequence of low economic opportunities increased civilians' reliance on warlords for economic opportunities. As one group of elders mentioned to Gen. Stanley McChrystal that "the government robs us, the Taliban beats us, and ISAF bombs us…We do not support any side".[629]Thus, it is not surprising that Afghans bestowed their allegiance to warlords and their tribe over the central government. Hence, the reliance on warlords was a direct consequence of the central government's inability to provide economic opportunities to its citizens. Thus, warlords sprang-up across Afghanistan to fill a niche, so to speak, to provide goods through patronage that would further undermine strategies used by those in Kabul.[630] Thus, the rise of warlords in Afghanistan took precedence over the central government and other NSA groups of providing security and resources.

Over nine years would past that the US would begin thinking seriously about and economic competitiveness for the war-torn Afghans.[631] Prior to 2009, there was not a single mention in the US coalition's state-building strategy of sustained economic growth. In the latter half of 2009, the US proposed a "U.S Economic Growth Strategy for Afghanistan: FY 2009-2001" as a strategy for Afghan economic policy inclusive of job creation, government provision of basic services, infrastructure and fiscal sustainability.[632] Although this policy was a promising first step for Kabul and the US-coalition in providing a more efficient economic opportunity competitiveness in comparison to its competitors, this economic policy never bore fruition.[633]

Meanwhile informal bartered ties for economic opportunities between the Karzai government and the Taliban has taken root in the guise of opium production. Local narco-state administered

[627] Hammes, T. (2004) *The Sling and The Stone: On War in the 21st Century*. St. Paul, Zenith Press. Barfield, T. (2010).
[628] Felbab-Brown, V. (2013).
[629] McChrystal, S. (2013) (p. 317).
[630] Marten, K. (2012) *Warlords: Strong-Arm Brokers in Weak States*. Ithaca, Cornell University Press.
[631] Kuchins, A. (2011) "A Truly Regional Economic Strategy for Afghanistan, The Washington Quarterly". 34:2, 77-91.
[632] This publication is unpublished, and was made available to Kuchins (2011).
[633] Kuchins, A. (2011).

poppy production are directed by government officials who uses opium production to run government facilities.[634] Both the Taliban and the central Afghan government compete and cooperate with one another by permitting the growth of poppy in return for a tax.[635] As neither the Taliban or Kabul can offer a more efficient competitiveness for economic opportunity, competition between the Taliban and government officials for poppy taxes are likely to increase.

7.4.3. The Failure to Provide Securitization

The unawareness of the US-NATO coalition of the population's support the Taliban was able to reclaim by 2006 is staggering. For instance, in 2006 NATO claimed that only 10% of the southern (mainly Pashtun) Afghan population supported the insurgents, when, in reality, 80% of the southern Afghan population were in support of the insurgency.[636] Constant US and NATO air strikes and eradication of poppies pushed elders to side with the Taliban who found that sometimes the Taliban were the "only force which could help express their grudges against the government".[637] As elders and tribal leaders were concerned about the balance of force and power between the Taliban and NATO alliance, support shifted dependent on how well either side could protect a village, which forced NATO to adapt and retrain their own forces and Afghan police in various government controlled villages and towns.[638] Nevertheless, the Taliban shifted tactics and adopted suicide attacks in the spring of 2003, which skyrocketed between 2005 and 2006. These attacks forced the NATO alliance to use more aggressive tactics that caused the population to create an almost nostalgic memory of Taliban rule.[639] From the Afghan's perspectives, the Taliban understood Afghan culture and treated elders and villagers with respect. To illustrate, the Taliban warned rural populations of upcoming attacks, resisted to interfere with daily lives of the population, provided security from criminal gangs who worked under the protection of the Afghan police and forbade house searchers without permission.[640] Moreover, the Taliban increased its ability to sway local opinion by various propaganda techniques that were far more sophisticated and centralized compared to the movement of the mid-1990s.[641]

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[634] Ahmed, A. (2016) "Tasked with Combating Opium, Afghan Officials Profit from it". *The New York Times*. 16t[h] February.
[635] Ahmed, A. (2016)
[636] Giustozzi, A., (2007).
[637] Giustozzi, A., (2007), p. 51
[638] Giustozzi, A., (2007), p. 51
[639] Giustozzi, A., (2007)
[640] Giustozzi, A., (2007) p. 117.
[641] Giustozzi, A., (2007).

Although the US was able to support the various institutions that were cobbled together to form the Kabul government, outside of Kabul the Taliban guerrilla force was re-emerging in the south and east of Afghanistan. Within six months after the US occupation was initiated, districts throughout Afghanistan organized securitization forces with various competing warlords.[642] The militia groups competed for power by allying with the Karzai government and misleading US-led NATO forces that various competing militias were part of the Taliban. [643] Communities that were not part of particular militia patronage networks were exploited, which led many elders and tribal leaders of various villages to realign with the Taliban as soon as the Taliban began reemerging.[644] Thus, this social and political devastation allowed a new opening for upper-class families to turn to tribes and warlords for security.[645]

In sum, the initial post-2001 period of hope was cut short as state institutions were unable or unwilling to redistribute wealth o to uniformly enforce laws and policies to most of the Afghans, and instead, redirected these resources to narrow nepotistic channels. Although, there were attempts to battle corruption within the Karzai Regime (e.g., General Independent Administration for Corruption, the Afghanistan Compact, Afghan Local Police), however many who were selected to lead these initiatives were selected based on Karzai's patronage model.[646]

7.5. Conclusion: The War in Afghanistan After the 2014 Withdrawal

As the US came closer to the 2014 withdrawal date, an interesting tactic reemerged between NSA and government actors: the old and established bartered system of Afghan politics. As Afghanistan is a segmented society, redistribution of wealth by a leader is essential to maintaining political influence.[647] Upon his placement by Western forces, President Karzai adopted a traditional Afghan patrimonial model of nepotistic redistribution, while dividing others with variations of favoritism.[648] For instance, Afghan journalist, Qais Omar's article, "Where's My Ghost Money?" attached a daunting photo of a Kabul hillside slum to

[642] Farrell, T., & Giustozzi, A. (2013)
[643] Farrell, T., & Giustozzi, A. (2013)
[644] Farrell, T., & Giustozzi, A. (2013)
[645] Mukhopadhyay, D. (2014).
[646] Felbab-Brown, V. (2013).
[647] Groh, T. (2010) "A Fortress without Walls: Alternative Governance Structures on the Afghanistan-Pakistan Frontier". In: Clunan, A., & Trinkunas, H. (eds.) *Ungoverned Spaces: Alternatives to State Authority in an Era of Softened Sovereignty* Stanford, Stanford University Press. pp. 95-112.
[648] Barfield, T. (2010).

demonstrate that the capital is still without basic necessities such as electricity and running water after over 15 years of US and NATO intervention.[649] Thus, Afghanistan remains weak, violent and corrupt as a consequence of internal fighting over political power. Furthermore, the misunderstanding of Kabul's cultural preferences of forging links through bartered relationships with informal power holders resulted in a post-2001 Afghan government to be the direct opposite of what the US and UK envisioned in its democratic state-building project. Moreover, internal squabbling between US, the UK and Kabul actors demonstrated a lack of cohesion and trust within the government. Consequently, as the Americans prepared to withdrawal from Afghanistan, Karzai feared that the Afghans were becoming increasingly restless with the political climate, and blamed numerous terrorist attacks on a joint plot by the Americans and Taliban to purposely bring chaos to Afghanistan. Dalrymple attributed Karzai's accusation as a consequence of Karzai's fear of a direct comparison and direct descendant to Shah Shuja (and briefly discussed in the introduction of Chapter VI) who was restored to the throne by the British and later murdered by Afghans in 1842.[650] Like Shuja, Karzai's weakness was further magnified by a dependency on foreign aid and foreign support.

Afghan's central government is still unable to extend its political power beyond the walls of Kabul. This inability has allowed the Taliban to maintain a presence within Afghanistan without signs of leaving.[651] As reported by Johnson and Mason, one Taliban mullah said, "[t]he Americans have the wristwatches, but we have the time"; meaning,

> [the] Americans may stay for five years, they may stay for ten, but eventually they will leave, and when they do, we will come back to this village and kill every family that has collaborated with the Americans or the Karzai government.''[652]

Given the importance of qawm and family and tribal allegiance, this statement is not to be taken lightly and is instead a clear indication of real fears among the Afghan population of remaining neutral, or worse supporting the Afghan government, during the conflict. Naivety and ignorance leading up to the American withdrawal in 2014 was palatable. For instance, Ambassador Ryan Crocker, who headed the US Embassy in Afghanistan between July 2011 and July 2012, stated that the likelihood of another civil war post-2014 was unlikely.[653] Conversely, Afghans voiced their fear of renewed civil war post-2014 as both aid and presence

[649] Omar, Q. (2013) "Where's My Ghost Money?". *The New York Times*. 4th May.
[650] Dalrymple, W. (2013) "The Ghost of Afghanistan's Past". *The New York Times*. 13th April.
[651] Johnson, T. & Mason, M. (2007).
[652] Johnson, T. & Mason, M. (2007), p. 87.
[653] Felbab-Brown, V. (2013).

of the US and NATO would be heavily reduced. [654] Moreover, the Pentagon Report's *Progress Toward Security and Stability in Afghanistan* and recent interview with senior military commander in Afghanistan, Gen. Joseph F. Dunford Jr., confirms that the US-NATO mission in Afghanistan will require foreign military and financial assistance well after 2014.[655] Moreover, factionalized fighting among Taliban, warlord and tribal leader grabs for power is highly likely as evidenced by: (1) popular Afghan opinion; (2) more direct means of wealthy Afghans liquefying their assets and moving abroad; and (3) poorer Afghans applying for asylum.[656]

In consequence to weak and corrupt political institutions, incentives for legitimate and legal economic opportunity are increasingly rare. For instance, corruption and opium sales (e.g., 11% of Afghan GDP in 2010) have soared since the fall of the Taliban.[657] The World Bank estimates Afghan economic growth to fall between 5-6% a year from 2011-2018, forcing an entire generation to wait for the next generation to come of age before this generation can experience an increase in its average per capita income.[658] Lastly, IED attacks and corruption are major hurdles when providing much needed infrastructure such as roads, railroads and irrigation.[659] Thus, Afghanistan's lack of infrastructure is also a major challenge to growing a stagnant economy.

By 2013, the Taliban began reclaiming large sections of Afghanistan and is feared that soon over half of Afghanistan will be controlled by and/or heavily influenced by the Taliban.[660] At present, the Taliban are functioning as a "shadow government" in parallel to the Afghan government.[661] The Pentagon Report's *Progress Toward Security and Stability in Afghanistan* and recent interview with senior military commanders confirms that the US-NATO mission will require foreign military and financial assistance well after 2014.[662] Thus, Afghanistan remains in a phase of persistent, unstable equilibrium, dominated by inefficient competitiveness without a foreseeable end to the conflict in the near future.

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[654] Felbab-Brown, V. (2013).
[655] United States Department of Defense [USDOD] (2013) *Progress Toward Security and Stability in Afghanistan*. July. Shanker, T. (2013) "Pentagon Sees Support for Afghans After 2014" The New York Times. 30th July.
[656] Hopkins, N. (ed.) (2012). [ICG] (2012)
[657] Mikser, S. (2012) *Afghanistan: Towards 2014 and Beyond.* NATO Parliamentary Assembly Report.
[658] World Bank. (2011) *Transition in Afghanistan: Looking Beyond 2014*. November. Washington, World Bank.
[659] Mikser, S. (2012).
[660] Almukhtar, S., & Yourish, K. (2016) "More Than 14 Years After U.S. Invasion, the Taliban Control Large Parts of Afghanistan" *The New York Times.* 19 April.
[661] Barry, M. (2013) *Afghanistan and the Great Powers*. [Lecture] Princeton University, Spring.
[662] USDOD (2013). Shanker, T. (2013)

7.5.1 Final Thoughts

The conflicts in Afghanistan over the last 35 years have illustrated how a state rife with multiple actor groups violently fighting for political power and dominance have led to complex dynamics and years of persistent and repeated conflict. Both empirical chapters show how multiple competing actor groups, who each display inefficient competitiveness at various points in time give rise to a system (i.e., the state of Afghanistan) that is so dynamic that it is unable to settle at equilibrium. What I showed in these two empirical chapters was how both micro and macro relations are responsible for Afghanistan's violent past and trajectory and not one or the other. Moreover, I demonstrated a novel methodological approach of applying a historical narrative with numerical modeling to exemplify how non-linear interactions can produce emergent and highly dynamic behaviors at the micro and macro level.

Lastly, Afghanistan is an ideal case to apply complexity theory and the CEM as Afghanistan transitioned to various equilibria points and experienced a range of conflicts. Patterns of low group activity levels that reemerge and patterns of coexistence observed as oscillating behavior dominates the narrative of Afghanistan. When discussed in detail and modeled, the inability for foreign actors to defeat Afghan NSA, specifically the Taliban, becomes less opaque.

CHAPTER VIII.

Conclusion

8.1 Theoretical and Empirical Contribution of the Thesis and Main Implications

This thesis contributes to existing knowledge in four core areas of conflict dynamics within the IR discipline.

First, it identifies how the misconception of what constitutes and is operationalized as conflict reversion, persistence or termination can be detrimental to the field and to scholars' ability to understand conflict processes that lead to reversion. In particular, this research shows how examining conflict reversion through a rational choice perspective is inadequate for the advancement of the discipline.

Second, this thesis adopts a novel application of interdisciplinary approaches, namely a complexity theory framework to better understand and explain why some states revert to conflict and others do not. Additionally, the research identifies how novel interdisciplinary approaches can advance the discipline by addressing gaps within current theoretical approaches.

Third, I showed how complexity theory is the most appropriate theoretical framework for understanding why certain states revert to conflict while others do not. This research found that conflict reverts in some states and not in others as a consequence of factors that form interdependent and emergent behaviors over time.

Fourth, this thesis pinpoints significant variables related to conflict reversion in order to tease out the mechanisms that contribute to conflict reversion and persistence through CEM simulation. After CEM simulation, many outcomes showed an inability to settle at equilibrium. The importance of this finding is not only relevant to IR theory and methodological advancement, but also impacts policymaking. For instance, knowing whether or not a state is experiencing conditions that would allow it to settle at stable equilibrium is imperative as the success of intervention and mediation efforts, negotiated settlements, and so on, are highly

dependent on the type of equilibrium a conflict-affected state is approaching. Therefore, this thesis has led to several contributions to IR theory development and methodological advancement, which I now turn to in greater detail.

8.1.1. Contribution I: The Interpretation of Equilibrium is Essential to Understanding Conflict Reversion

My interdisciplinary approach suggests that conflict reversion is an outcome of a system that is unable to settle at equilibrium. This finding is perhaps the most compelling contribution of the thesis to the advancement of IR theory. Additionally, this contribution is in complete contrast to RCT who argue that conflict-affected states that experience reversion and persistence settle *do* settle at equilibrium. However, the opposite may be the case.

This thesis found that conflict which revert tend to be in a phase of constant flux, illustrated through oscillating population activities of waring actor groups. Moreover, the persistence of conflict also experiences similar dynamics and equilibrium outcomes. As the CEM illustrated, such systems can dip into low activity, which conflict scholars may code as a conflict terminating. However, CEM simulations showed how this dip in low activity numbers is not a cessation of the conflict itself, and can increase suddenly again without any change in the underlying process of competition, leading to conflict reversion. Therefore, systems that are unable to settle at equilibrium are more likely to experience conflict reversion and persistence.[663]

Game theory and RCT are applied in IR and conflict studies for both theory advancement and as a tool to understand the consequences of player strategies by solving for equilibrium.[664] However, the misnomer of stating that a conflict-affected state that reverts back to conflict is in a phase of equilibrium, and the inability to solve for equilibrium in games involving more than two players, are both major theoretical and conceptual gaps within the IR and conflict studies literature. I would argue that in many cases, game theory and RCT are not suitable for studying intrastate conflict dynamics given the complexity of the conflict "system" and the inability of RCT to offer unique principles that reflect this. Examining a conflict-affected state through the lens of complexity theory can demonstrate the logic behind why different types of equilibria lead to different conflict outcomes, how those equilibria may be reached under different conditions, why conflict-affected states respond non-linearly to external and internal stimuli and why unintended outcomes are a common consequence of conflict resolution efforts.

[663] The difference between the two are how conflict reversion and persistence are operationalized and coded.
[664] Snidal, D. (1985) "The Game Theory of International Politics". *World Politics*. 38(1): pp. 25-57. p. 25-26.

8.1.2. Contribution II: Multiple Actor Groups Increases the Complexity of the System and Increases the Likelihood for Conflict

This thesis addressed a key conceptual challenge of IR theory in its inability to model multiple warring actor groups or dyads, even though mounting evidence demonstrates the need to model more than two actor groups at any given time. A major contributory factor to this inability to model more than one dyad group is the IR discipline's heavy reliance on RCT and game theory to describe a conflict environment, limiting attention and focus to situations of only two warring actor groups. Ironically, multiple publications describe three or more warring actor groups in a game theoretical model, but as quickly as the game starts the actors form alliances, thus forcing all actors into a 2-player game. However, as empirical data has shown and as my empirical cases (Afghan-Soviet War, Afghan Civil War, War in Afghanistan) demonstrate, many intrastate conflicts involve multiple dyads or players. While an oversight in itself, my interdisciplinary approach clearly demonstrated how that the number of warring actor groups is a major indicator of complexity that increases not only the likelihood of conflict reversion, but also the onset and persistence of conflict. Therefore, this thesis' findings challenges the method and conclusions of a central pillar of IR formal theory and modeling approaches.

8.1.3. Contribution III: Applying Complexity Theory

Although complexity theory was introduced to IR theory roughly 20 years ago, scholars have not invested in applying the theory, or measuring its implications, until research completed within this thesis. This research has provided an important first step of actively applying hypothetical and real data to model a system that experiences complex dynamics. Thus, this thesis only scratches the surface of what can be studied and unraveled within conflict studies and IR more broadly at the intra and interstate level, and in conflict and other state behavior. As discussed in Chapters I and II, many IR scholars have discussed at great length complexity theory's importance to the study of IR phenomena, and specifically to conflict studies; nevertheless, most IR scholars do not apply complexity theory, but merely suggest its application for future research.[665] There are of course exceptions[666], but the majority of scholars over the last 20 years who recommend applicable components (e.g., non-linearity, emergence)

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[665] *See for example*, Bousquet , A., & Curtis, S. (2011) "Beyond Models and Metaphors: Complexity Theory, Systems Thinking and International Relations". *Cambridge Review of International Affairs.* 24, 1: 43-62. Cudworth, E., & Hobden, S. (2010) "The Foundations of Complexity, the Complexity of Foundations". *Philosophy of the Social Sciences*. 20(10), 1-25. Gallo, G. (2013). Hoffmann, M., & Riley J., Jr. (2002). Jervis (1979).

[666] Cederman, L-E. (1997) *Emergent Actors in World Politics: How States and Nations Develop and Dissolve.* Princeton, Princeton University Press. Axelrod, R. (1997) *The Complexity of Cooperation: Agent Based Models of Competition and Collaboration*. Princeton, Princeton University Press. Epstein, J., & Robert Axtell, R. (1996) *Growing Artificial Societies: Social Science from the Bottom Up*. Washington, DC: Brookings Institution Press

of complexity theory to conflict studies and IR do not conduct theoretical nor empirical research of its applicability. This thesis demonstrates how commonly used methods like statistical modeling and historical narrative approaches can be used in combination with differential equation modeling to simulate a conflict environment that experiences complex relations.

The application of complexity theory to empirical observations is a first within the discipline and leads to exciting future research within this theoretical framework. Complexity theory recognizes how diverse conflict can be relative to any particular case under analysis. For example, complexity theory: (1) takes into account incompatibilities among more than two competing actor groups; (2) recognizes that not all intrastate conflict ends with the collapse of the central government; (3) nor are all intrastate conflict recurrences and relapses a consequence of ethnic-based grievances; and (4) there are many factors, including the effects of external actors that fuel tensions within intrastate conflicts but do not apply to the inter-state system.[667]

Moreover, the development of the CEM under a complexity theory framework illustrates the potential for interdisciplinary research on an unprecedented scale. For instance, it contributes to IR theory by questioning RCT approaches to conflict in light of complexity theory, which is claimed by some scholars to be the "fifth debate" within IR.[668] Although this thesis does not subscribe to the claim that complexity theory represents a paradigm shift in IR theory, complexity theory's important contribution and theoretical framing should not be ignored and should be applied beyond conflict studies. A complexity theory approach helps to coalesce interdisciplinary methods and theory to better understand phenomena that plagues IR researchers. For example, the limitations of RCT and game theory include that overall choices are applied equally to all persons under the study and are stable over time (i.e., preferences are taken as fixed). However, complexity theory and the CEM was able to simulate actor groups that were able to adapt their competitive efficiencies to other actor groups' competitiveness, which themselves changed over time.

The world is complex and dynamic, and our models and theories, perhaps, should be too. Complexity characteristics such as non-linearity, emergence, self-organization are features that are not either developed yet in other IR modeling approaches or are ignored. Thus, from a

[667]Mandel, R. (1994) *The Changing Face of National Security: A Conceptual Analysis*. Westport, Greenwood Press. Kaufman, S. (1996) "Spiraling to Ethnic War: Elites, Masses, and Moscow in Moldova's Civil War'. *International Security*. 21(2): 108-138. Barak, O. (2007).
[668] Kavalski, E. (2007)

complexity theory perspective I was able to develop an interdisciplinary model to show how all these characteristics, when simulated together, can produce dynamic and unanticipated outcomes from simple interactions from only a few parameters. Thus, the CEM showed just how complex the world can become and that the whole does not equal the sum of its parts.

8.1.4. Contribution IV: Risk Factors that Contribute to Conflict Reversion both Support and Challenge Previous Scholarly Findings

To advance the IR discipline with a complexity approach to conflict, I hypothesized eight independent variables as major contributors to increasing complexity and increasing the likelihood of reversion within a conflict-affected state, while controlling for variables that are have been found to be robust within the conflict literature in contributing to onset, reversion and persistence.

The most surprising result was that after controlling for one of the most robust indicators of conflict, variables attributed to economic opportunity and development were not significant predictors of conflict. This finding is in contrast to much of the widely-accepted literature on conflict reversion and economic proxies (e.g., Paul Collier's work on the 'conflict trap', Acemoglu and Robinson's theory on economic inclusiveness).[669] In contrast, the debate on greed and grievance dominates the conflict literature with multiple studies concluding strong significant relationships between conflict and economic variables (e.g., GDP , various proxies for state development and capacity).[670] This thesis found less impressive results: economic variables became statistically insignificant when political exclusion and activity variables were regressed in addition to variables related to a state's security (i.e., rule of law and relative rebel capacity).[671] This finding suggests that when adding other variables such as proxies for political institutionalization and security, the effects of economic proxies decreases. Thus, the results from this thesis downplay the role of economic variables and their significant impact on conflict dynamics GDP was found to be no longer significant for the majority of conflict reversion dependent variables (any many other conflict dynamic variables when other economic proxies were added to the model). After controlling for GDP, proxies for economic opportunity (tax capacity and bureaucratic capacity) showed no significant effects related to

[669] Many conflict and IR studies have found a relationship with economic variables and conflict onset and persistence, specifically. The most cited articles are Blomberg, S. & Hess, G. (2002) "The Temporal Links between Conflict and Economic Activity". *The Journal of Conflict Resolution*. 46(1): 74-90. Collier, P., & Hoeffler, A. (1998) "On Economic Causes of Civil War". *Oxford Economic Papers*. 50: 563-73. Collier and Hoeffler (2000).

[670] Of note, the greed versus grievance debate is strongly dominated by research commissioned by the World Bank.

[671] Tax capacity was statistically significant and robust with conflict persistence. Dependent on the intensity of the previous conflict, bureaucratic capacity had an effect on some onset variables; however, this finding was not robust across both prior conflict models.

conflict reversion. Thus, this research challenges IR and conflict studies literature on the relationship between economic variables and conflict reversion and persistence. Overall, economic variables did not show robust results and were the weakest variables hypothesized to be associated with conflict reversion.

Alternatively, variables that were previously found to be significantly related to conflict reversion, such as "political excluded groups"[672] and "politically active groups"[673] were significantly related with most conflict reversion statistical models.[674] Also, conflict reversion was highly statically significant with relative rebel capacity.[675] However, rule of law, was much less robust; that is, dependent on the prior conflict intensity, rule of law demonstrated a negative significant relationship with conflict relapse, but not with conflict recurrence.[676]

Lastly, controls that remained robust when regressed with complexity variables were: (1) instability and (2) whether or not a country case was an oil exporter. All other control variables showed no effect or displayed inconsistent results.

8.1.5. Contribution V: How Dependent Variables are Operationalized Impacts Model Fit and Accurate Parameter Estimates for Dynamic Model Simulations

Although past generation of conflict modelers have seen a huge surge in new data collection (e.g., aggregation to subnational to micro analysis) and data collection techniques (e.g., country-year analysis to day-to-day analysis and GIS methods), there has correspondingly been a surge in contradictory results.[677] These contradictory results have been attributed to list-wise deletion and coding methods, or biases from agencies who collect national and sub-national data (e.g., Iraq and Afghanistan index). Inconsistencies among certain statistical results within the conflict literature demonstrate how the operationalization and measurement of variables affect statistical significance. Statistical models are developed to generate predictions but an over-reliance on statistical significance does not guarantee accurate prediction. Some argue

[672] Call (2012); Vogt, M., *et al.* (2015).
[673] Vogt, M., *et al.* (2015).
[674] Specifically, political activity was found to have a stronger significant effect on conflict onset, while excluded groups were found to have a stronger significant effect on conflict reversion and conflict persistence.
[675] All conflict dynamics (i.e., onset, reversion and persistence) were highly statically significant with relative rebel capacity
[676] Only conflict persistence demonstrated a robust and significant relationship with rule of law in which the likelihood of conflict persistence increases if rule of law is low. Although not as robust as conflict persistence, rule of law also demonstrated a negatively significant relationship with conflict onset.
[677] Hegre, H., & Sambanis, N. (2006) "Sensitivity Analysis of Empirical Results on Civil War Onset". *Journal of Conflict Resolution*. 50(4): 508-535. Sambanis, N. (2004). Blattman, C., & Miguel, E. (2010) "Civil War". *Journal of Economic Literature.* 48(1): 3-57. Call, C. (2012).

that other factors such as the type of control variables used are attributed to inconsistent results[678] while others argue that we face the *unreliable nature of databases*.[679]

Consequently, this thesis found that how dependent variables are operationalized can have on models of fit and later model simulation.[680] As accessibility to information grows and as the collection of information becomes easier in light of big data methods and data collection technologies, the necessity of transparency and clarification of coding rules with examples becomes ever more imperative.

Additional limitation within the discipline include coding conflict as purely binary. For instance, RCT views conflict dynamics as a dichotomy: war onset occurs or it does not occur; conflict reversion occurs or does not. However, as the CEM illustrated conflict is *dynamic* and is constantly adapting to both internal and external stimuli. Thus, complexity theory goes beyond dichotomous coding and interprets conflict as non-linear processes along a time gradient. Rather, violent conflict is a periodic outcome within a broader ongoing state of competition, which may rise and fall over time as opposing actors interact and react to each other. This divergent perspective allows scientists to simulate and analyze how discrete time (e.g., battle-deaths, number of politically excluded groups, etc.,) units might be fitted to a smooth curve through a combination of statistical and numerical modeling. Graphical outputs from the CEM demonstrate how system processes and behaviors from simulated warring actor groups interact and change through time.

8.2 Policy Implications

An overarching emphasis within the literature explains the likelihood of conflict reversion as related to the relevant strength of state governance and its political and economic institutions.[681] Weak central governments are attributed as the cause of 25 out of 30 active conflicts, of which most conflicts began over 10 years ago.[682] Past empirical research shows that an increase in EA and NSA groups is a trend that is unlikely to decline. New indicators of conflict reversion, such as the number of warring dyad groups and number of EA involved, and support for

[678]Dixon, J. (2009).
[679] Hegre, H., *et. al* (2011).
[680] Conflict scholars have comparably regressed onset and duration/persistence variables Sambanis argued that coding rules are a reflection of what civil war means to different scholars and coding rules should reflect these differences. However Sambanis did not regress conflict reversion and his motivation for his study differ from motivations in this thesis. *See* Sambanis, N. (2004b).
[681]Fearon, J. (2010) *Governance and Civil War Onset*. World Development Report 2011, Background Paper; Walter, B. (2014).
[682] Merz, S. (2012) "Less Conflict, More Peace? Understanding Trends in Conflict Persistence". *Conflict, Security & Development*. 12(3): 201-226.

previous findings such as the importance of political inclusion[683] and security[684], while challenging prior dominant indicators, such as GDP per capita[685] and bureaucratic capacity[686] can have profound effects on policymaking. These findings should signal policymakers to prioritize some indicators over others, while simulations from the CEM should inform how these indicators can interact to create dynamic behaviors that go beyond interaction effects in statistical analyses.

What role can policymakers have in managing conflict reversion from a complexity theory perspective? Present-day conflicts such as Afghanistan, Syria and Yemen illustrate that a different approach is needed to understand persistent, recurrent and relapsing conflicts. First, this thesis points both conflict management and conflict dynamics literature in a new direction: that conflict reversion and persistence are a consequence of a conflict-affected state unable to settle at equilibrium. This approach should be made apparent to policymakers that conflict management should be an adaptable, fluid strategy for peacebuilding. While outcomes can be unpredictable and interventions may have unintended effects, there are key "risk factors" in complex systems which can be targeted to help reach an equilibrium in which peace does finally take hold.

Perhaps most notably, reducing the number of groups involved should help to decrease complexity within a conflict environment. The ability and capacity IOs and governments have to foster an end to persistent conflict or to help decrease the likelihood of conflict reversion is contentious. International actors prefer authoritative power in conflict management and peacekeeping missions for a variety of reasons.[687] However, as previous research and this thesis has demonstrated, EA involvement should be minimal. Not only do EA increase complexity within a conflict-affected state, but heavy EA involvement decreases state legitimacy, which diminishes any long-term prospect for peace.[688] External actors can be viewed as producing further unpredictability within a conflict-affected state because most EA intervene when the conflict is at its most severe and unpredictable. Thus, EA can be detrimental to ending a conflict dependent on the timing of the intervention; that is, after a conflict established a phase of recurrence, intervention efforts may be costlier and less successful.

[683] Supportive of Call's previous findings (*see, for example* Call, C. (2012)).
[684] Supportive of Toft's previous findings (*see, for example* Toft, M. (2009)).
[685] Fearon, J., & Laitin, D. (2003); Fearon, J. (2005); Collier, P., & Hoeffler, A. (1998); Collier, P.*et al.* (2003) Collier, P., & Hoeffler, A., (2004).
[686] Hendrix, C. (2010)
[687] Call, C. (2012).
[688] Cox, M. (2008) "Bosnia and Herzegovina: The Limits of Liberal Imperialism." In: Call, C. (ed.) *Building States to Build Peac*e. Boulder, Lynne Rienner.

To illustrate, after years of EA political, economic and security support, Afghanistan is consumed with a plethora of problems related to high EA involvement. These include major concerns with security, non-existent or crumbling economic institutions, high unemployment, low trust among central government actors, no rule of law, little accountability, and the overlap of criminal and political networks.[689] NSA are growing in power, with much of their funding from the arms trade and narcotics, while foreign aid (although at a lower rate than previous years) continues to pump money into the central government.[690] This failure of the central government to provide security and build legitimate economic and political institutions has allowed the Taliban an ever-expanding niche to take power in many of Afghanistan's districts.[691]

Moreover, oscillations of violence and peace clearly demonstrates that violence is not static; rather violence is fluid and can overlap into a post-conflict environment creating 'opportunistic violence'.[692] Opportunistic violence can affect the duration of a conflict dependent on whether or not violence is selective or indiscriminate.[693] For example, Afghanistan has experienced decades of high levels of indiscriminate violence inflicted by government actors, warlords and tribal leaders.[694] Instability from neighboring states, such as Pakistan, further fueled the violence as heavy interference counterbalanced with neglect from international non-government organizations (NGOs) and governments propelled Afghanistan into both persistent conflict and conflict reversion.

8.3. Limitations and Future Research

Overall, this thesis contributes to the IR discipline by challenging RCT's interpretation of equilibrium, a deemphasis on economic factors and a shift to basic human security as priority and political inclusion as secondary to decreasing the likelihood of reversion. Moreover, it emphasizes conflict management and peacekeeping as adaptable processes rather than a cause

[689] University of Oxford, Department of Politics and International Relations [DPIR] (2016) "'Hard but not Impossible: State Building and the Peace Process in Afghanistan'." [Seminar]. 26 February.
[690]Foreign aid to Afghanistan was $4 billion in 2014, but by 2016 aid is $614 million and decreasing. *See* DPIR (2016).
[691] Stanekzai, M. (2017) "Afghan Taliban Signal Growing Strength with Key District Capture *Reuters*. 24 March. Cutler, L. (2017) "President Barack Obama's Counterterrorism Strategy and Legacy: The Case of Afghanistan". *Political Science and Politics.* 50(1): 59-64.
[692] Boyle, M. (2014) *Violence After War: Explaining Instability in Post Conflict States*. Baltimore, Johns Hopkins University Press. p. 38.
[693] Kalyvas, S. (2006). p. 144-45.
[694] Crocker, C., Hampson, F., & Aall, P. (2005) "Introduction: Mapping the Nettle Field". In: Crocker, C., Hampson, F., & Aall, P. (eds.) *Grasping the Nettle: Analyzing Causes of Intractable Conflict*. Washington, D.C., United States Institute of Peace Press. pp. 3-30. p.16-17, 25.

and effect process. However, there were some limitations within the thesis that allows room for future research.

8.3.1. Lack of Agency?

First, CEM development and simulation was an intense and novel method of combining interdisciplinary theory. Although the objective of the CEM is to not model individual or group decision-making, but to demonstrate how collective behavior by the actor groups results in dynamic, non-linear, and unanticipated behaviors, a major criticism regarding the CEM might be lack of agency. The CEM assumes agency by modeling how competitive the actor groups are (i.e., competitive coefficient), which was illustrated in Chapter VII through a mixed-methods micro-approach to British military adaptation and competitiveness in the Helmand Province of Afghanistan. However, the model does not specifically simulate individual or group decision-making. Presently, the CEM represents agency by simulating an actor group using more less competitiveness. This competitiveness or competitive effect is found by taking the minimum function that allows actor groups to select how competitive they are against other actor group. There are many good reasons for adopting this approach, for instance, it demonstrates how complexity can emerge even with minimal assumptions about decision-making, but it also suggests ways I which modeling could be advanced in new ways.

The addition of deeper agency within the model might allow the model to better represent a complex system (i.e., how warring actor groups' patterns of behavior emerge by following various rules) and therefore, a more realistic interpretation of a conflict-affected state. The model can be improved by explicitly stating where agency directly contributes to the overall theoretical framework. Specifically, the ability for the CEM to simulate how or why one group picks and efficient tactic, or is highly competitive, while others are not, is where agency can more directly come in.[695]

A way to amend this problem is two possible ways: (1) the addition of *evolutionary* game theory to statistical and numerical methods (and evolutionary game theory can involve multiple actors); or (2) the addition of an agent-based model. On the first point, the addition of evolutionary game theory to the CEM would more clearly show the processes of how actor groups' decisions results in that actor group becoming more or less competitive. Thus, instead of actor groups selecting the least efficient competitive effect as a function of the parameter set, an evolutionary game could model strategies that actors follow as a component to the CEM

[695]I am grateful for Densua Mumford for her insights on this aspect.

equation. Strategies which are successful are copied by and spread among other actors. In regards to agent-based modeling, recent developments within the medical sciences combine numerical, statistical and agent-based models to model complex behaviors.[696] These models can simulate instrumental structures in combination with simple rules to provide agency. For instance, informal and formal institutional (simple) rules could be supplemented in addition to biophysical conditions from geographic information systems and spatial databases.

As this thesis disagreed with RCT and game theory approaches the suggestion of evolutionary game theory may seem odd, or even contradictory. However, what is key here is the term 'evolutionary', meaning that preferences change over time, in response to their success or failure in surviving or spreading. Also, game theory would only be a component of the CEM; the complex processes that arise from interactions over time would remain.

8.3.2 Simulating Additional Warring Actor Groups

Further improvements of the CEM is to model more than actor groups. The UCDP made tremendous effort to code and operationalize multiple competing dyad groups and their dynamics over time (e.g., alliance formation, splintering). As the CEM was a first attempt at a very complex phenomenon, resources were limited to increase the power of the CEM to model more than three actor groups. Thus, future research on more than three actor groups would contribute to CEM development and more widely to the IR discipline by illustrating the growing complexity of a conflict-affected state with the addition of four or more warring actor groups. Also, separating the number of dyads into two, three, four, etc., rather than aggregated the dyad number variable into more than one dyad (which was how dyad count was operationalized in this thesis), could introduce interesting thresholds of when a conflict-affected state experiences increased complexity, which can lead to the greater likelihood of reversion or persistence.

Lastly, I did not hypothesize which actor group receives external support; rather I hypothesized that if a state receives external support, then the likelihood of a reversion to conflict and/or a persistence of conflict increases as the conflict system becomes more complex. Hence, which actor group received external support and the type of external support received might lead to

[696] *See for example:* Cilfone, N., *et al.* (2015) "Strategies for Efficient Numerical Implementation of Hybrid Multi-scale Agent-Based Models to Describe Biological Systems". *Cellular and Molecular Bioengineering*. 8(1): 119–136.

interesting findings. Specifically, the type of EA involvement could potentially increase complexity in a conflict-affected state.

8.3.3. Assumption of a Continuous Supply of Popular Support

Although popular support is a limiting resource, the CEM is based on the assumption that popular support is in continuous supply. A more realistic CEM would model how popular support changes in response to warring actor groups' competitive effects. Thus, future research on developing a function that restricts a continuous supply of popular support would increase model accuracy. Additionally, one can model more than one resource (e.g., water supply) or different types of popular support (e.g., social media platforms or providing physical structures for concealment of NSA forces) could add more complexity and interesting dynamics to the model.

When modeling different or additional resources, it would be interesting to ask if there are there tradeoffs when comparing different resources (e.g., reliable water supply to the population from the central government versus more reliable security from NSA forces to the population)? This tradeoff function could be combined with evolutionary game theory and agent based modeling as some tradeoffs are preferred over others.

8.3.4. Going Forward

This thesis has focused on intrastate conflict, but this research may generate important insights beyond the confines of intrastate conflict subfield. Modeling the dynamics of multiple actor groups through a complexity theory framework is useful in a globalized, highly dynamic international system. Complexity's emphasis on adaptable behavior, rather than a linear, constant effects can help scholars approach an increasingly connected international system.[697] Interconnectedness between NSA and GA, between transnational and national, illustrates how both complex and vulnerable we are in a system that is so widely connected. Such research suggests that further inquiries into interconnections between various actor groups and consequences for the international system, would be highly insightful also beyond the subfield of conflict studies.

IR theory is the most fertile ground for the application of complexity. The international system is by definition a system of interaction agents, with multiple interactions and processes, and it

[697] Kavalski, E. (ed.) (2015) *World Politics at the Edge of Chaos: Reflections on Complexity and Global Life.* SUNY Press, New York.

is kind of odd that the field has not adopted the very approach of complexity theory more thoroughly. Indeed, it could be precisely the reason that IR, in terms of both theory and practice, is so contested, to explain why complexity theory has been unable to break traditional and dominant approaches to explaining conflict dynamics, and especially conflict reversion.

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