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A Theory of Third-Party Intervention in Disputes in International Politics

by

Scott B. Wohlander

A THESIS SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE

Doctor of Philosophy

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ABSTRACT

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Scott B. Wohlander

The occurrence of third-party intervention is a hallmark of many of the most devastating conflicts in world history, because the entrance of third parties into a conflict expands the scope of the violence, amplifies the severity and duration of the fighting, and increases the overall amount of death and destruction. Even in international conflicts in which intervention does not occur, the possibility that third parties may intervene can affect the behavior of disputants and therefore shape the way disputes evolve and are eventually resolved. This dissertation develops a theory of intervention by laying out a story about how strategic third parties and disputants make interdependent decisions in the context of an ongoing militarized dispute, and then formalizing this story into a simple-game theoretic model. The theory produces a general, causal explanation for third-party intervention that specifies the precise conditions under which it does and does not occur. Overall, the theory predicts approximately two-thirds of cases correctly when subjected to rigorous empirical tests. In addition, the theory produces theoretically-
interesting, empirically-supported insights about the relationships between the resources of the actors involved in a militarized dispute and the likelihood that intervention occurs. The dissertation concludes with an application of the theory to the debate in the international relations literature over whether balancing or bandwagoning is the more common form of intervention. The application shows that the theory produces a more powerful explanation for the occurrence of balancing and bandwagoning than the existing literature offers, and suggests that the debate is misspecified.
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Chapter I
Introduction

Third-party Intervention as a Topic of Study

On 25 June 1950, 135,000 North Korean Army troops crossed the 38th parallel and stormed into South Korea, quickly overpowering the weaker army of the Republic of Korea, and capturing the Southern capital of Seoul in only three days. Two days later, after North Korea rebuffed an United Nations Security Council resolution calling for their immediate withdrawal, the United States intervened into the conflict, mobilizing its military forces and joining the ROK Army to stem the communist advance. Over the next few days, the conflict spread further as additional third parties joined the US-led coalition, tipping the balance of military resources in favor of the initially weaker South and altering the direction of the war. A daring amphibious assault at Incheon in September (orchestrated by General Douglas MacArthur) left the North Korean Army cut off from their supply lines, and the coalition forces were able to drive them back over the 38th parallel in a matter of weeks.

The US-led coalition forces continued to push north, capturing significant amounts of North Korean territory and occupying the capital of P’yongyang on 19 October. But, as they approached the Yalu River, the northern border separating North Korea from the Manchurian Province of China, coalition forces began to encounter Chinese troops in the fighting. By November of 1950, the People’s Republic of China had fully intervened into the war, committing over 300,000 troops to the fight, and tipping the military balance back in favor of the communists. The expanded war
escalated to new levels of severity, with each side alternating between retreat and counterattack around the 38th parallel for over two years. Finally, after the election of Dwight Eisenhower to the US Presidency in November 1952, reinvigorated efforts to end the stagnated conflict were made, leading to armistice talks that eventually came to fruition in on 27 July 1953. In the end, what began as an isolated war between two relatively weak states was transformed by third-party intervention into a massive conflict involving states from all over the world, and leading to a loss of life of over 1.6 million (U.S. Army 1973).

At the exact same time as the Korean War was beginning its deadly evolution in late 1950, a second, separate dispute erupted two thousand miles to the southeast. On 7 October, 40,000 troops of the Chinese Army moved south into the disputed territory of Tibet, quickly overwhelming the small Tibetan military of 8,000 troops, and causing the Dalai Lama to flee to neighboring India. In less than two days, military forces of the PRC occupied all of Eastern and Northern Tibet. Though the Tibetan government pleaded for international assistance, and India responded with harshly-stated threats of possible intervention, no third parties proved willing to fight on their behalf. Threatened with full military occupation and further destruction, the delegation sent to negotiate with the Chinese acquiesced to their demands of “ownership” of the territory on 23 May 1951, signing the controversial “17-point Agreement for the Peaceful Liberation of Tibet” that is a matter of protest even to this day. Within six months of Tibet’s acquiescence, the Chinese military occupied all of the territory’s major cities, beginning a systematic campaign of militarization, population transfer, and cultural assimilation, along with reported gross violations of human rights. 50 years later, the situation remains much the
same, with over 500,000 Chinese Army troops occupying Tibet, the Dalai Lama in exile protesting independence, but no third party willing to intervene and fight on their behalf for the cause (Shakya 1999).

Thinking about these different stories, an interesting puzzle arises: two militarized disputes occur at roughly the same point in space and time. In one, the occurrence of third-party intervention fundamentally alters the evolution of the conflict, tipping the balance of resources among the disputants (twice, in the example of the Korean War), escalating the degree of violence by several orders of magnitude, and resulting in an outcome that is likely very different from that which would have occurred had third parties not become involved. In the other, third-party intervention does not occur, one side acquiesces to the other, and the conflict ends with the other side having achieved a victory and the realization of its preferred outcome without having to fight in full-scale war.

Why?

More generally, looking at the thousands of militarized disputes that have occurred in the international system across space and time, why does intervention occur in some but not in others? This question is the topic of the following dissertation project. It is interesting and important to the field of international relations for a number of reasons: first and foremost, intervention is a relatively rare event in international politics, but is at the same time a hallmark of the deadliest conflicts in world history, such as the Crimean War, World Wars I and II, the Korean War, the Vietnam War, and, most recently, the Persian Gulf War. In each of these, what began as a militarized dispute between two actors expanded into a major world conflict as third parties joined into the
fighting, amplified the severity and duration of the violence, and increased the overall
death and destruction caused by the war (see Jones, Bremer and Singer 1996). As a
general phenomenon, intervention seems to be a catalyst for the largest and most
devastating conflicts in world politics, which suggests that the development of a theory
that specifies the conditions under which it does and does not occur may make a
substantial contribution to our understanding of a behavior with important implications in
international politics.

Moreover, and second, the importance of intervention as an object of study in
international relations may not be limited to those conflicts in which the behavior is
actually observed. Rather, the development of a theory that explains the occurrence of
intervention as the product of the joint decisions of the strategic actors involved in a
conflict (disputants and third parties) may also provide insights about how the possibility
of intervention conditions the behavior of the actors originally involved in disputes, and
thus shapes the evolution and resolution of conflicts. Just as the research of scholars
studying “deterrence” has produced insights about how the expectation of third-party
intervention can dissuade a challenger from attacking a target in a dispute in international
politics (see Morgan 1977; Huth and Russett 1984, 1988; Huth 1988), theoretical
development focusing on the strategic interaction between a third party and the side in a
dispute on whose behalf they consider fighting may yield further insights about how the
possibility of intervention conditions whether these disputants acquiesce to their enemies
or escalate and fight in full-scale war. In this, the possibility of third-party intervention
may either discourage or encourage the occurrence of full-scale war, depending on the
situation, and thus play an important role in conflict process regardless of whether or not the behavior actually occurs.

Third, by developing a theory of intervention that answers questions about the conditions under which the behavior does and does not occur in militarized disputes in international politics, in addition to adding to our general understanding of international conflict, the explanatory insights produced by the project may serve as a useful guide for policymakers in the conduct of foreign policy, particularly in policymaking regarding strategic behavior in conflicts. As recent conflicts such as the Persian Gulf war, and ongoing disputes such as those in the Balkans, Middle East, and Africa suggest, contemporary international politics frequently confront policymakers with situations in which intervention by third parties is a likely occurrence. It may be helpful to policymakers to understand the conditions under which states are most likely to intervene into ongoing militarized disputes, both in terms of informing their own intervention decisions and in terms of anticipating and planning around the intervention decisions of others. In addition, an explanation for intervention may help policymakers better understand the effects of intervention, so that they may make decisions regarding intervention into militarized disputes in ways that are most likely to prevent the occurrence of war and lead to favorable outcomes.

**Ends and Means of the Dissertation**

My goal in this dissertation project is the development of a general, causal explanation for third-party intervention in militarized disputes in international politics. In the view of this researcher, an explanation for intervention specifies the precise conditions under which the behavior occurs. Toward this end, I subscribe to the belief
that the most powerful way of attempting to discover this knowledge is by applying the principles of the scientific method to the research problem. There are two essential components to this endeavor: the first regards the construction of systematic theory. By systematic theory construction, I mean the development of a deductive, logically rigorous, series of statements that lead to clear, falsifiable, observable implications. The second component regards the evaluation of the theory with rigorous empirical tests of its implications. By rigorous, empirical testing, I mean the examination of the predictions of the theory against many cases in the empirical world. In this, the importance of both theory and testing cannot be understated – they go hand in hand.

The theory is developed using formal theory, specifically game theory. While formal modeling is only one of many methods that may be employed in the construction of systematic theory, the approach has a number of strengths that are particularly valuable for this research project: formal models make their theoretical structure explicit, requiring that assumptions be stated, premises be clearly laid out, and implications be derived using the rules of logic. This makes it easier to spot errors in reasoning and makes it possible to derive counter-intuitive implications difficult to discern in more traditional methods of theory construction. Game theory, in particular, is an appropriate method for the construction of a theory of intervention in this dissertation project because it allows the researcher to focus with great precision on the strategic interaction between disputants and third parties that lies at the essence of the research problem (as will be discussed in detail later).

My approach to employing these methods is to develop the model in two stages: in the first, I formalize a very simple story of intervention focusing on the interdependent
decisions of a third party and the side on whose behalf they consider fighting. The point of this exercise is to capture some intuitive, commonly-held notions about intervention, see what their logical implications are, and then see how well these expectations hold up to empirical testing. Having performed these tests, I then develop a second model by building on what is learned from the evaluation of the first game. The second model loosens several restrictive assumptions included in the first (in particular, assumptions regarding the relationship between the share of resources held by the actors and their respective chances of victory in conflict), and yields a number of testable implications about how alterations in the components of the theory (specifically, the resources of the disputants and third party) affect the likelihood that intervention occurs. After testing these hypotheses, the theory is applied to inform an ongoing debate in the international relations literature. The specific organization of the thesis is as follows.

**Organization of the Dissertation**

In the next chapter of the thesis, I survey and critically evaluate the existing international relations literature addressing the topic of intervention. The purpose of the literature review is to assess the contribution existing research has made to our understanding of the behavior so that the development of a theory of intervention may begin with a clear understanding of what is known and what is not known about it. I begin the chapter with a broad overview of the voluminous literature devoted to the study of the different behaviors that fall under the general rubric of intervention, and then break these behaviors down into two main classes, 1) intervention as “conflict management” and 2) intervention as joining into a militarized dispute and fighting on behalf of one side. Focusing on this latter conception as the object of study in this dissertation project, I then
conduct a very focused review of the existing social scientific research addressing the effects and causes of the military intervention. Evaluating this body of work, I am able to glean from it a number of useful ideas for the development of a theory that specifies the conditions under which intervention does and does not occur, such as the idea that the theory should focus on the strategic interaction between disputants and third parties in the context of an ongoing militarized dispute.

In Chapter III, I begin development of the theory with the construction of a simple game-theoretic model of intervention. To do this, I first lay out a story of intervention decision-making in the context of an ongoing militarized dispute in international politics, focusing on the choices faced by third parties over intervening versus staying neutral and disputants over acquiescing to their enemy versus escalating the dispute to full-scale war. The essence of this story is the notion that the actors make decisions by weighing the costs and benefits of the outcomes that result from their strategy choices, and that these costs and benefits are comprised of three main factors: 1) the issues at stake in the dispute, 2) the balance of resources among the disputants and third party, and 3) the costs of fighting in conflict.

I then formalize this story into a very simple game-theoretic model, specifying the sequence of decisions faced by the actors in the game, the manner in which the components of the theory interact to produce the payoffs associated with the outcomes, and the model's assumptions about how the players make their decisions. In Model 1, I assume that the side in the dispute with greater resources wins in conflict with certainty, an assumption that is consistent with the conventional wisdom about how the share of resources held by an actor relates to their probability of victory in international conflict.
Having specified the model, I then solve it using backward induction, and derive its logical implications about the occurrence of intervention in disputes in international politics.

In Chapter IV, I evaluate the explanatory power of Model 1 by subjecting several of its observable implications to empirical tests. To ensure that these tests are performed as rigorously as possible, I lay out a detailed research design that focuses on testing the hypotheses against many cases of militarized disputes in which intervention both does and does not occur. I then discuss in detail the MID Intervention data set constructed for the empirical analyses in this dissertation project, which captures third-party decisions over intervention by obtaining information about the participants in militarized disputes from the Militarized Interstate Dispute (MID) data set (Jones, Bremer and Singer 1996) and calculating the set of potential interveners into each dispute as the set of third parties who are in the “politically relevant international environment” of at least one of the original disputants (see Maoz 1996). Using this research design and sample of cases, I then perform the tests using basic social statistical methods (cross-tabulation tables and difference of means tests).

In Chapter V, I build upon the simple game of intervention by loosening the restrictive assumption that the militarily stronger side always wins in war with certainty, replacing it with a more general assumption that each actor’s probability of victory in war is a function of the share of total resources their side holds in the dispute. To capture this idea, Model 2 incorporates a general function mapping the share of resources held by an actor to a particular probability that they will win if the dispute escalates to war. Adding the additional assumptions of utility theory, the model may then be solved to yield a
range of implications about the necessary and sufficient conditions for intervention to occur that is much broader than that derived from Model 1.

After discussing the substantive implications of these conditions, I then employ a second method to examine these conditions in a different way, looking at how alterations in the individual components of the theory – specifically, elements of the distribution of resources among the disputants and third party – affect the decisions of the actors in the game and thus impact the likelihood that third party intervention occurs. To do this, I calculate the partial derivatives of player T's expected utility for intervention and player T's expected utility for escalation with respect to the resources of each actor, analyze their direction, and interpret them to produce substantive implications about how changes in the components of the theory affect the likelihood that third-party intervention occurs in militarized disputes in international politics.

Chapter VI subjects the hypotheses derived from Model 2 to rigorous empirical tests. To do this, I first lay out a careful research design that allows the effects of alterations in the resources of the disputants and third party on the likelihood that intervention occurs to be estimated while holding all of the other factors in the theory constant (a multivariate logit regression model). Then, employing the data set discussed in detail in Chapter IV, I discuss the estimation strategy chosen to minimize problems associated with the rare occurrence of cases of intervention. Specifically, I employ a case-control sampling design supplemented with the method of prior correction of the intercept, which results in unbiased estimates that can be directly interpreted to determine if the hypotheses are borne out.
Finally, in Chapter VII, I employ the theory to inform an ongoing controversy in the IR literature that is directly relevant to the principal object of study in this dissertation project, the ongoing debate over whether third parties tend to "balance," by intervening on behalf of the weaker side in militarized disputes in international politics, or "bandwagon," by joining the stronger side. First, I examine the balancing versus balancing literature, summarize the arguments of a number of scholars who have contributed to this body of work, and attempt to derive operational hypotheses from these arguments that may be subjected to empirical analysis. Second, I perform empirical tests of these hypotheses in order to determine the extent to which the theoretical ideas of the scholars involved in this debate are borne out in cases of intervention in militarized disputes in international politics. Third, having evaluated the explanatory power of these alternative hypotheses, I then employ the model developed in Chapters III and V to inform the debate by deriving its implications about the conditions under which intervention as balancing and intervention as bandwagoning occur in militarized disputes in international politics, and subject them to rigorous empirical tests. Finally, comparing the results of these tests to the those of the analysis of the alternative hypotheses derived from the balancing versus bandwagoning literature may illuminate which of these competing theoretical ideas have greater explanatory power.
Chapter II
Literature Review

An Introduction to the Existing Literature

In the previous chapter, third-party intervention is introduced as an interesting and important object of study in international relations. In this chapter, the existing IR literature addressing the topic is summarized and critically evaluated. The purpose of this exercise is to assess the contribution this body of work has made to our understanding of the behavior so that the development of a theory of intervention may begin with a clear understanding of what is known and what is not known about it. Having evaluated what the existing literature is able to teach us, it becomes possible to focus on the development of a theory that accounts for both novel facts and facts that have already been discovered.

Beginning a survey of this literature, an introductory insight that is likely not surprising is that the amount of international relations literature relating to the concept of intervention is voluminous, going back to the beginnings of the field and encompassing a wide range of different areas of research. One can find examples of scholarly attention to intervention in such varied literatures as policy debates over the appropriate course of action in situations like the former Yugoslavia and the Middle East (Wright 1956, 1959, 1960; Morgenthau 1967; Bull 1984; Betts 1994, among many others), the effectiveness of different conflict management strategies like mediation and arbitration (Young 1967, 1972; Touval and Zartman 1985; Butterworth 1978; Dixon 1996; Brecher and Wilkenfeld 1997; Carment and James 1998; Diehl, Reifschneider and Hensel 1996; Regan 1996, among many others), factors influencing the success of third-party attempts at extended-
immediate deterrence (Morgan 1977; Huth and Russett; 1984, 1988; Fearon 1994), and
interstate war expansion (Davis, Duncan and Siverson 1978; Most and Starr 1980; Most,

While in each of these areas of research the object of study is a behavior that is
called intervention, looking closely at this literature reveals that in many cases the
operational definitions of the behaviors under study are quite different. That is, in the
existing IR literature, there exist a multitude of behaviors undertaken by third-parties to
conflicts that are all studied under the general rubric of intervention. This suggests that
particular care must be taken in evaluating and comparing the theoretical and empirical
evidence produced by this body of work because these insights may regard different
dependent variables. Given this, my approach to reviewing this literature has two main
components: first, I will provide a very broad survey of the wide range of literature
relating to the study of intervention and break it down according to its conception of the
behavior, leading to the specific behavior that will be examined in this dissertation
project – military intervention. Second, I will conduct a very focused review of the
literature addressing military intervention, summarizing the theoretical and empirical
evidence produced by this body of work, and critically evaluating the contribution it
makes to our understanding of its causes and effects in international conflict. I begin
with a broad discussion of the concept of intervention in international relations research,
as follows.

*The Concept of Intervention in International Relations Research*

In the most general terms, the concept of intervention regards any act of
interfering in an affair so as to affect its course or issue (according to the Oxford English
Dictionary, 2nd Edition (Pearsall and Trumble 1996)). It occurs in a wide variety of settings, from domestic squabbles to labor-management disputes in professional sports to disputes within and among states in international politics. In the field of international relations, intervention is generally thought of as the interference by one actor, usually a state or group of states, in the domestic or foreign affairs of another state or states. Using this broad definition, it can reasonably be argued that almost any foreign policy behavior studied in international politics can be a form of intervention under some set of conditions. In any dispute in which a third party attempts to influence one or both sides, whether with diplomatic initiatives or the use of military force, the actions of that third party can be said to be intervention. Even foreign policy behaviors such as economic sanctions and foreign aid can be thought of as intervention, insofar as they affect encourage or discourage certain actions by disputants and affect how disputes evolve and are resolved.

In the IR literature, researchers have dealt with the generality of the concept of intervention by dividing the range of different behaviors that may be undertaken by third parties into two main classes: the first of these regards the study of intervention in the "conflict management" literature, in which intervention is conceived of as attempts by third parties to end hostilities and bring about negotiated settlements in disputes in international politics. The typical role that third parties play in this form of intervention is as mediators or arbitrators and as guarantors of settlements reached between disputants. A defining characteristic of intervention in this literature is that the behavior of the third party in the dispute is not coercive, but rather is limited to attempts to persuade the
disputants to accept a settlement (Young 1967) or serve as a physical buffer between sides to prevent violence (Diehl 1996; Boutros-Ghali 1992).

To briefly summarize this body of work, the study of intervention in the conflict management literature has generated a number of useful insights about the roles and functions third parties may take on in helping disputants reach negotiated settlements, such as facilitating communication, increasing the willingness of disputants to make concessions, and suggesting creative compromise solutions like "logrolls" across issues (Young 1967, 1972; Day and Doyle 1986; Rubin 1981; Touvall and Zartman 1985; Morgan 1994). A second contribution of this literature regards the empirical assessment of the "effectiveness" of third-party intervention attempts at conflict management. For the most part, scholarly attempts to evaluate the effectiveness or "success" of third-party attempts at conflict management have focused on the ability of third parties to bring about a cessation of violence for an extended period of time (Regan 1996; Carment and Rowlands 1998; Walter 1997). The main conclusion of this body of work is (not surprisingly) that third party conflict management attempts tend to increase the likelihood of negotiated settlements in disputes in international politics (Butterworth 1978; Haas 1986; Wilkenfeld and Brecher 1989; Boyer and Wilkenfeld 1989; Ayres 1998; Dixon 1996). However, this general tendency is conditioned by evidence that third-party attempts at conflict management are by no means always successful; rather, their rate of

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1 One particularly interesting insight that has come out of this literature regards the characteristics of third parties that are thought to improve their likelihood of achieving a settlement. While it is generally agreed upon that a strong resource base increases a third party's chances of reaching and guaranteeing a settlement, it is a matter of some debate whether disputants need believe a third party to be impartial in order to be effective. Contrary to the conventional wisdom, some recent scholarship has shown that it is possible for a third party to favor one side in the dispute and still attain a settlement (Touvall & Zartman 1985; Morgan 1994).
success varies across different types of disputes, types of third parties and intervention strategies.

The second broad class of behaviors studied as intervention regards a body of research that has developed distinct from the conflict management literature and conceives of intervention as the joining of third parties as additional participants in conflicts in international politics. A defining characteristic of the conception of intervention in this literature is that the behavior of third parties goes beyond attempts to persuade disputants to accept a settlement to the active use of coercion to force a particular outcome. While the range of potential coercive tactics a third party may employ is quite broad, ranging from economic sanctions and foreign aid to threats and displays of military force to the actual use of force, at the ultimate level this form of intervention regards fighting in conflict on the side of one of the disputants. It is this conception of intervention – in which third parties actively employ military force on behalf of one of the sides in a dispute in international politics – that is the object of study in this dissertation project, and thus will be the major focus of this literature review. As such, the remainder of this chapter is devoted to a careful summary and evaluation of the contribution the existing IR literature has made to our understanding of this behavior.

**Existing Research about Military Intervention**

Looking broadly at the body of IR literature relevant to a study of military intervention, it becomes clear that a comprehensive review must begin by going back to

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2 This ultimate conception is exemplified by the Correlates of War (COW) definition of intervention into an ongoing conflict: “direct military participation of such a magnitude that either 1,000 troops are committed to the combat zone or, if the force is smaller or the size unknown, 100 deaths are sustained.” Their justification for this definition is as follows: “By choosing a physical indicator of military participation, we
the beginnings of the IR literature. Since the early 1900s, scholars of international law and organization have written prescriptive essays on the legality, morality and strategy of intervention as a foreign policy choice (Oppenheim 1905; Fenwick 1945; Bull 1984; among many others). Literature in this tradition is particularly common during the Cold War (Wright 1956, 1959, 1960; Morgenthau 1967), and exists today in the form of policy debates over the appropriate course of action in situations like the former Yugoslavia, the Middle East and Africa (Betts 1994; Christopher 1995). For the most part, this body of work deals with three questions:

1) Is intervention “legal”, according to international law?
2) Is intervention “moral”?
3) How can intervention be done “successfully”?

While these questions are interesting and important from a legal, ethical or strategic perspective, and are certainly worth entertaining in the proper context, they provide only limited leverage on the topic from an explanatory perspective. Because these scholars’ main concerns tend to lie more with prescription than explanation, the types of questions they ask and the answers they find often do not yield significant insight about the causes or effects of intervention. Rather than seeking to explain the conditions under which intervention occurs, this sort of literature tends to be more concerned with reconciling and justifying its occurrence with the norm of non-intervention implied by notions of state sovereignty and the illegality of intervention according to international law. Rather than examining the effects of intervention on how

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ignore even the most blatant cases of financial and material intervention, but at the same time we are not required to make tenuous judgments about clandestine involvements.” (Singer and Small 1982)

3 See Morgenthau 1967 for an excellent discussion of this.
disputes evolve and are resolved, this sort of literature tends to be more concerned with offering policy prescriptions about whether or not actors should intervene into particular disputes, or how it may be done "successfully," bringing about the desired outcome with the least possible cost. Beyond these epistemological differences, the contribution of the traditional literature on intervention is also limited by its lack of scientific rigor. For the most part, the insights and prescriptions offered by this research tend to be the products of concepts that are not well specified, conclusions that do not necessarily follow from the premises, and single case examples not representative of general classes of events. As a result, what explanatory insights have been yielded by this approach have more often than not been suggestive notions rather than systematically constructed theories.

With the advent of the "scientific revolution" in the field in the 1960s, many international relations scholars have become increasingly critical of the traditional approach to studying intervention, calling instead for the application of the standards of social scientific inquiry to the topic. The argument for this is succinctly put by Rosenau (1969):

For all the vast literature on the subject.... not much is known about intervention.... The factors that foster, precipitate, sustain, channel, and/or curb intervention simply have not been scientifically explored, with the result that the literature is barren of any established generalizations. All that exists is an enormous amount of conventional and legal wisdom in which conclusions are asserted on the basis of a jumble of ringing affirmations, impressive insights, clear cut preferences, and supportive historical examples. It is as if the literature on lung cancer consisted of treatises written by either thoughtful smokers or concerned spouses.

As a result, over the past 40 years intervention has been revitalized as a topic of study by scholars employing a more systematic approach and seeking the sort of generalizations scholars like Rosenau have called for. The resulting body of literature has made substantial progress toward improving our understanding of intervention by
asking a multitude of different research questions and discovering a number of explanatory insights. Examining this body of work, the existing social scientific research regarding third-party intervention addresses questions that fall into two main categories: the first of these regards questions about the *effects* of intervention, that is, how the entrance of third parties into militarized disputes in international politics affects the ways these disputes evolve and are eventually resolved. Included in this body of work are empirical analyses of the impact of intervention on the conflict process, (Jones, et al. 1996; Cusack and Eberwein 1982), formal-theoretic treatments of multiparty crises (Morgan 1994; Morrow 1986), studies of extended-immediate deterrence (Huth 1988; with Russett 1984, 1988; Fearon 1994), and recent research examining how the expectation of intervention impacts the behavior of disputants in international conflicts (Fearon 1994; Smith 1996, 1998; Morrow 1994; Siverson 1995; Gartner and Siverson 1996). The second category of questions addressed in this literature regards the *causes* of intervention, that is, the specific conditions under which intervention does and does not occur in militarized disputes in international politics. Included in this body of work are contributions to the theoretical debate over whether third parties tend to “balance,” by joining the weaker side in disputes (Morgenthau [1948] 1978; Gulick 1955; Waltz 1979; Cusack and Stoll 1990; Vasquez 1997), or “bandwagon,” by joining the stronger side (Schweller 1994; David 1991; Larson 1991), empirical studies of interstate war diffusion (Most and Starr 1976, 1980, with Siverson 1989; Siverson and Starr 1991), and decision-theoretic models of third-party choices over joining into an ongoing war (Altfeld and Bueno de Mesquita 1979; Bueno de Mesquita and Lalman 1992). In the following sections, I review each in turn.
Existing Research on the Effects of Third-Party Intervention

My review of the existing research on the effects of third-party intervention begins with a group of studies providing empirical evidence that the entrance of third parties into international conflicts has important effects on how these conflicts evolve and are eventually resolved. While the entrance of third parties has long been thought to play an important role in the occurrence and development of international conflict, modern social scientific research on the subject begins with findings that intervention tends to be associated with militarized disputes that are more serious and more likely to result in war. For example, in one study, it has been shown that militarized interstate disputes in which intervention occurs tend to reach higher levels of hostility and have higher levels of casualties than other MIDs (Jones, et al. 1996). Another has found evidence of a positive relationship between intervention and the likelihood that militarized interstate disputes escalate to full-scale war (Cusack and Eberwein 1982). Thinking about these findings, they provide a theoretical basis for the idea that the entrance of a third party into a militarized dispute tends to make the conflict more severe as the intervener fights on behalf of their preferred side. While empirical evidence of this general tendency is

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4 For example, in Blainey’s (1988, p. 57) historical account of the causes of war, he writes, “Every decision to wage war is influenced by predictions of how outside nations will affect the course of the war.”
5 Another vein of literature that is indirectly applicable here regards research by Cusack (1989; with Stoll 1990, 1994) and Stoll (1997) examining how the use of specific strategies for intervention by third parties, such as intervention according to the principles of collective security, affects the outcome of militarized disputes, the survival of intervener states, and the character of the international system. Using a computer simulation of the international system, Stoll (1997) shows that states that intervene into militarized interstate disputes in a manner consistent with the principles of collective security tend to be on the winning side of disputes; that is, states that intervene in support of the “status quo”, as opposed to being “revisionist”, tend to be victorious. Such states also do better in the long term; the computer simulation posits that states intervening in a manner consistent with collective security have a better chance of survival than other types of states and tend to fare better in terms of relative power position (Cusack 1989; Cusack and Stoll 1990, 1994). Finally, the simulation posits that such states are good for the international system as a whole, in that a greater number of states practicing collective security positively affects system endurance (Cusack and Stoll 1994).
instructive, a second vein of literature offers a more powerful explanation of how the entrance of third parties can affect the development of ongoing militarized disputes by specifying the conditions under which intervention leads to more severe violence and the conditions under which it leads the disputants to seek a negotiated settlement rather than escalate to war.

This body of research, comprised of formal-theoretic treatments of multiparty crises, is exemplified by the work of Morgan (1994), who synthesizes expected utility-based bargaining models with the spatial theory of voting to yield insights about how the resolve and relative power of states affect whether an international crisis is resolved by bargaining or by the use or force. While Morgan's model is developed mainly around two-player crises, it is very general and may be applied to multiparty conflicts to produce implications about how third-party intervention affects the development of ongoing militarized disputes. According to the model, the effects of third-party intervention are captured by two main theoretical factors: the first regards the distribution of preferences among the crisis participants over the issues at stake, specifically the degree of similarity between a third party's preferences and the disputant whose demand is closest to its ideal point. The closer these preferences are aligned, the more willing a third party is to go to war on behalf of the disputant, and, thus, the greater the resolve of the coalition. The second is the distribution of military resources among the crisis participants, which determines which side is most likely to win if the dispute escalates to full-scale war. Morgan's model posits that the resolve of the actors involved in a crisis interacts with the distribution of resources to produce outcomes in the following manner:
If a third party's ideal point lies close to the position of one of the disputants, then they may enter into the crisis as an ally. In this case, the intervener and disputant act as one strategic actor, and the model may be solved as a two-player game. In this, if the addition of the third party's resources lead to conditions of power parity, then war is less likely, while if they lead to conditions of power disparity, war is more likely. If a third party's ideal point does not lie particularly close to that of either disputant, then the third party engages in a game of coalition formation with the disputants in which the formation of an alliance improves their ability to impose costs on their opponent and increases their likelihood of victory in conflict, but also imposes costs on its members in terms of concessions that must be made on their joint position\textsuperscript{6}. Given this, the actors involved in the conflict make decisions over whether the support of an ally is worth the concessions they must make to that ally.

In such a situation, the effects of third-party intervention on how the dispute evolves depend upon what coalitions form and the changes in the distribution of resources that follow. If the coalitions form in the crisis such that power is relatively equal between the sides, then escalation to war becomes less likely. If coalitions form such that power is asymmetric between the sides, then escalation to war becomes more likely. In addition, in cases where coalition members are defending a position somewhat removed from their ideal points, each may be less resolved to go to war to achieve the coalition demands than it would have been to achieve its own ideal point. Finally, if an

\textsuperscript{6} In this situation, Morgan's (1994) model is equivalent to Morrow's (1986) spatial model of multiparty conflict.
alliance is formed because a crisis creates a nonseparable additional issue for the third party, the probability of war increases\textsuperscript{7}.

Thinking about the implications this model offers regarding the effects of third-party intervention, useful insights emerge not only about directions for theoretical development, but also about potentially fruitful methods that may be employed in the construction of a theory that explains the occurrence of intervention. The approach, combining spatial and expected utility theory, allows the model to capture in one simple, unified structure how multiple actors involved in a militarized dispute base their decisions (over escalating to war versus backing down from their demands and accepting a negotiated settlement) on their expectations about the costs and benefits of the outcomes that follow from their strategy choices\textsuperscript{8}. Within this structure, the effects that third-party intervention has on how militarized disputes evolve and are resolved are products of alterations in the two main theoretical factors focused on in the model (power and resolve). In this, the entrance of third parties can alter the probable outcome of a war and affect the willingness of one or both disputants to fight, thus changing the optimal strategies of the actors involved and the likely outcome of the dispute. In sum, this

\textsuperscript{7} The focus here is on situations in which the third party considers fighting on behalf of one of the sides in the crisis, that is, situations in which the third party considers military intervention. But, it is important to note that Morgan's general model also yields implications about the effects of non-military intervention, that is, situations in which the entrance of the third party is not coercive, but persuasive. Such situations are addressed in the model in the following manner: if a third party's ideal point lies between the positions of the disputants, then they may enter into the dispute as a mediator, and the interaction among the disputants and the intervener may be understood as a coalition game. In this game, the original disputants shift their positions toward each other and the mediator in order to form a coalition to bring about a settlement. Morgan argues that the actions of competing to form a coalition will tend to lessen the probability of war, and that mediators may perform a number of other functions which lessen the probability of war, such as improving communications and suggesting creative settlement proposals through issue linkage.

\textsuperscript{8} In fact, the model even allows the derivation of implications about how multiple issues, such as those that arise out of the formation of a coalition, affect the likelihood that crises escalate to war or are resolved with a negotiated settlement. See Morgan (1994, pp. 125-140).
research shows the potential for employing formal methods to construct theories that, while comprised of only a few fundamental factors, yield a range of interesting substantive implications. By doing so, this approach to theory construction not only produces a large number of hypotheses with which the theory may be empirically evaluated, but also is likely to illuminate directions for further theoretical development.

For example, as Morgan (1994) points out, the explanatory framework of the spatial model may serve as a useful tool for understanding not only the effects of a third party joining into a dispute and fighting on behalf of one of the disputants, but also the effects of a third party threatening to intervene into a militarized dispute if it escalates to violence. This brings to light a third vein of literature relevant to this review: there is a substantial amount of existing research devoted to the study of threats to intervene on behalf of one side in militarized disputes, much of which may be found under the rubric of “extended-immediate deterrence.” In this research program, cases of extended-immediate deterrence regard disputes in international politics in which a third-party “defender” attempts to deter one disputer (the “challenger”) from attacking another (the “target” or “protégé”) by threatening or displaying the use of force. For the most part, the theoretical focus of this body of work has been on specifying the conditions under which the threat or display of force by an intervener deters a challenger state from escalating a dispute by using force. In it, it has been found that deterrence success is largely a function of the distribution of military resources among the challenger, protégé, and defender, as well as the past bargaining behavior exhibited by the defender. Specifically,

\[\text{Specifically, scholars like Huth study "deterrence failure," which he defines as cases in which a "potential attacker commits its armed forces on a large scale and in sustained combat against the defender and protégé}\]
the most important factors improving the likelihood of deterrence success are the degree to which the immediate and short-term balance of military forces favors the defender and protégé, and whether the defender adopts a policy of tit for tat in military escalation and a firm-but-flexible bargaining posture with the challenger (Huth and Russett 1984, 1988; Huth 1988).

Building on the deterrence literature, recent research has begun to focus more generally on how expectations about the likelihood of third-party intervention can affect the behavior of the actors involved in a dispute. Two developments in particular have advanced this literature: the first is that scholars have begun to think very carefully about the role that information plays in the sequence of decisions made by the actors involved in conflicts; the second is that scholars have recognized that the possibility of intervention can influence the behavior not only of one disputant (the challenger in the deterrence literature), but both disputants. Regarding the former, research by Smith (1998) and Morrow (1994) theorizes about how pieces of information that are observable to disputants during a crisis can convey information about the willingness of third parties to intervene and fight on behalf of one side. According to Smith (1998), valuable pieces of information about the credibility of third-party threats to intervene are conveyed by a state's domestic political institutions. In making this argument, he draws upon a body of theorizing in recent IR literature positing that the way democratic political institutions hold leaders accountable to their citizens is such that voters use policy outcomes as signals of leader's quality (Richards, et al. 1993; Fearon 1994, 1997). Leaders who make threats and do not carry them out face costs in the form of decreased support and possible (totaling more than 200 fatalities) or forces the defender to accede to its demands under the threat of war†
removal. Because of this, "audience costs" create a mechanism through which the threats of democratic leaders can make more credible commitments. At the same time, the electoral cycle creates incentives for democratic leaders to make more threats, and for the targets of these threats to be less inclined to reciprocate. Incorporating these ideas into a formal model, Smith shows how a potential attacker can be deterred from escalating an ongoing dispute to war by a democratic third party who intervenes with the threat that they will fight if war occurs. Autocratic third parties, whose leaders do not have to pay such audience costs for failing to back up their threats, are less likely to have such an effect.

Another observable factor that can convey information about the willingness of a third party to intervene into a militarized dispute is theorized about by Morrow (1994), who argues that alliances are the strongest signal a third party can send that they are willing to fight on behalf of a disputant. He theorizes that alliances may be credible signals of a third party’s willingness to fight for two reasons: first, they increase the ability of allies to fight together through prewar coordination of military and foreign policy; second, they impose peacetime costs on allies by forcing them to specialize their forces and limiting their flexibility in war. Formalizing these ideas in a game-theoretic model, Morrow derives a number of substantive implications about the formation, credibility and deterrent effects of alliances, such as the prediction that the "tightness" of an alliance – the degree of coordination between allies – increases its deterrent value because it is sends a more credible signal that the ally is willing to fight should war occur.

(Huth 1988, p. 27).
Smith (1996) builds on this kind of careful thinking about alliances, and makes a similar argument that more reliable alliances are more credible signals that a third-party state will intervene into a conflict. But, rather than focusing singularly on how this affects the behavior of the enemy of their preferred side in the dispute (the challenger), he theorizes about how this affects the behavior of both disputants (the challenger and the target). Smith argues that the reliability of alliances should be related to the occurrence of conflict in two ways: more reliable alliances should 1) decrease the likelihood that a potential attacker uses force, but 2) increase the likelihood that a target would resist such an attack. As a result, the aggregate effect of alliances on the occurrence of conflict is unclear. To test these ideas, Smith estimates the reliability of alliances and finds evidence that targets condition their decision whether to retaliate when attacked upon the likelihood that a third party will fight on their behalf.

Additional research has taken this kind of thinking a step farther back in the conflict process, theorizing that these same observable factors that affect the behavior of actors involved in international conflict can also affect the decisions of these actors before conflicts are even started. Specifically, it has been argued by scholars like Fearon (1994), Siverson (1995), and Gartner (with Siverson 1996) that factors conveying information about the willingness of third parties to intervene into conflicts can affect whether would-be disputants initiate conflicts at all\(^\text{10}\). Siverson (1995) makes this point

\(^{10}\text{Fearon (1994) applies this argument to the extended-immediate deterrence literature, claiming that the effects of observable factors like the signals of third parties and their military resources should primarily be seen at the level of general deterrence and not at the level of immediate deterrence. He theorizes that observable indicators of capabilities and interests should be related to general deterrence success, but immediate deterrence failure. Specifically, when the observable balance of interests favors the defender, only resolved challengers will threaten, implying that the defender's attempt at immediate deterrence will be unlikely to succeed. When the balance of capabilities favors the defender, challenges will occur on issues of doubtful interest to the defender; in this case, a strong deterrent signal by the defender will be}\)
succinctly:

The argument is that leaders who, for whatever reason, are contemplating fighting another country attempt to calculate the likely outcome of the war. In this calculation they estimate the probability that they could defeat their adversary in a bilateral war, and make estimates of the likelihood that their adversary will obtain help in the form of wartime coalition partners. The potential initiator also assesses whether it requires coalition partners of its own. Absent a favorable calculation, war is not undertaken. Put simply, the fundamental hypothesis is that wars do not expand because initiators have in the aggregate made accurate guesses about the help their targets will not receive from third-parties.... This has two empirical consequences: (1) initiators will tend to be winners, (2) unless a third-party enters the war on the side of the target.

Gartner and Siverson (1996) test these predictions and find empirical evidence that the initiators of interstate wars win most often when the conflicts remain dyadic, and least often when targets receive help from third-party interveners. Thinking carefully about this, this vein of research yields interesting implications about the role of third-party intervention in international relations: first, it raises the point that many observed events in international relations, including cases of third-party intervention, are products of selection effects because they result from the joint behavior of strategic actors. Second, it provides a rationale for the somewhat counter-intuitive idea that the occurrence of third-party intervention is a relatively rare event in international relations but, at the same time, plays an important role in the conflict process. That is, if strategic disputants do not become involved in conflicts in which they expect the entrance of a third party will result in a losing outcome, then the possibility of intervention is an important factor leading to these counterfactual non-disputes. At the same time, in cases in which disputes are initiated, this implies that the actors involved do not expect their

likely to work, but due to the challenger's initial beliefs and choice of issue rather than (directly) due to the defender's superior military power.

11 For an excellent treatment delving into the implications of selection effects in international relations, see Tetlock and Belkin (1996). For a nice discussion of how game theory may be fruitfully applied to explore these implications, see Bueno de Mesquita (1996).
enemy to receive third-party help sufficient to alter their expected outcome of the conflict, which makes the occurrence of intervention a particularly interesting phenomenon.

Putting all of this together, the existing literature studying the effects of third-party intervention has produced a number of interesting insights relevant to this dissertation project: first, to summarize the above review, this research has done an excellent job of showing how intervention can play an important role in the conflict process, making conflicts more severe as third parties fight on behalf of one side, altering the distribution of resources among the involved actors, and in some cases changing the outcome of the conflict. Recent research has taken this line of theorizing further, showing how even the expectation of third-party intervention can affect the behavior of actors making decisions in the midst of conflicts of interest. Given these important effects on how international conflicts evolve and are resolved, questions arise about the causes of intervention, and suggest that the development of a theory that specifies the conditions under which the behavior does and does not occur may make a reasonable contribution to our knowledge of this subject.

Thinking about how such a theory might be constructed, a second insight that emerges from the above literature is that, if we assume the actors involved in international conflict are strategic actors (an assumption that has made a substantial contribution to the development of the above literature), then understanding the effects of intervention are fundamental to understanding its causes. That is, following the logic of the rich theoretical development that has shown how the possibility of intervention affects the choices of disputants who make decisions about their involvement in conflict
based on their expectations about the costs and benefits of the outcomes that follow from their strategy choices, the construction of a theory of intervention must begin with the assumption that third parties base their decisions about intervention on their expectations about how their involvement will affect the evolution and resolution of the conflict.

Moreover, to raise a third (and possibly the most important) insight that emerges from the above-reviewed literature, because it has been shown in this research that militarized disputes are products of the decisions of actors made at previous stages of the conflict process, in order to construct a theory that explains the occurrence of intervention in such disputes, this theory must not only examine the decisions of third parties over intervening versus staying neutral, but must also take into account the decisions of actors involved in earlier stages of these conflicts who create the opportunities for third parties to intervene. Just as the above-reviewed research makes it clear that the decisions of strategic disputants to become involved in conflicts are dependent on the decisions of third parties over intervention (as evidenced by the amount of theoretical and empirical attention paid to the credibility of third-party threats to intervene in this literature), it suggests at the same time that the decisions of strategic third parties are dependent on those of the actors originally involved in disputes. That is, even if a third party is fully willing to fight on behalf of one side in a militarized dispute, the side receiving the help must still be willing to escalate the dispute to violence in order to give the third party the opportunity to intervene. In sum, this theory of intervention must focus on the strategic interaction that exists among disputants and third parties as they make sequential
decisions that shape the processes by which conflicts occur, evolve, and are eventually resolved.

*Existing Research on the Causes of Third-Party Intervention*

With these ideas about how a theory of third-party intervention may be constructed in mind, the next step in this review is to assess the state of theoretical development on the causes of intervention in the existing IR literature. To do this, I now review the second main category of research mentioned above, the existing social scientific literature examining the conditions under which the behavior does and does not occur in militarized disputes in international politics. Looking broadly at the body of work that falls into this category, I begin with a number of empirical studies yielding insights about patterns in the occurrence of the intervention, such as its relative frequency and continuity over time (Jones, et al. 1996; Pearson, Baumann and Pickering 1994). These studies provide evidence that military intervention, while a relatively rare event, is a constant feature of international conflict. For example, according to one study of the characteristics of militarized interstate disputes over the period 1816-1992, third-party intervention occurs in approximately 10% of MIDs (Jones, et al. 1996). While this suggests that intervention does not occur in the vast majority of militarized disputes, it is important to remember that those that in which it does occur tend to be the most severe, longest lasting, and have the greatest number of fatalities (Jones, et al. 1996). In short, intervention is the means by which ordinary conflicts become important world conflagrations, such as World Wars I and II, the Korean War, and the Persian Gulf War.

Furthermore, it has been found that intervention is not a behavior exhibited only by strong states like major powers, as is commonly believed in the conventional wisdom.
While more powerful states are proportionally the most common interveners, a substantial amount of intervention is undertaken by relatively weak states: according to one study, weak states making up approximately 80% of the international system account for approximately 44% of cases of intervention over the period 1946-1988 (Pearson, Baumann and Pickering 1994). Thinking about this research, while these findings are instructive because they suggest that intervention is an important, recurring event in international politics that is undertaken by both strong and weak states, they leave unanswered the question of the specific conditions under which it does and does not occur. That is, they do not offer a theory of intervention.

A second vein of research that does pay substantial theoretical attention to the occurrence of intervention regards the ongoing debate in the IR literature over whether third parties tend to “balance” by joining the weaker side in ongoing conflicts or “bandwagon” by joining the stronger side. The argument for balancing behavior is derived from balance-of-power theory, a central tenet of the realist paradigm that has historically dominated the study of world politics. According to scholars in this tradition, states should behave in ways that tend toward the creation of “balances of power” (Morgenthau [1948] 1978; Gulick 1955; Waltz 1979). This is because, in an anarchic international system of states in which all wish to survive, each member of the system cautiously monitors the power of the other members in order to prevent one from becoming so powerful that they are able to dominate the rest. Should one state become too powerful, other states in the system will ally against it. While it is a matter of considerable debate whether the creation of balances of power prevents the outbreak of
war\textsuperscript{12}, most balance of power theorists would agree that in the event of war there
should be a general tendency for states to come to the aid of the weaker side. As put
succinctly by Cusack and Stoll (1991), “Balancing is arguably one of the hallmarks of a
realist system. That is, in a realist world there is a tendency for the weaker or threatened
states to attract enough support to avoid destruction, either by preventing the outbreak of
conflict, or, should conflict occur, by the appearance of sufficient aid to prevent a
successful attack.”

On the other side of the debate are a number of scholars who take issue with the
general balancing proposition, and argue that there exist clearly identifiable conditions
when third parties do not balance, but rather bandwagon with the stronger side in
these scholars, the proposed motivations for bandwagoning may be broken down into two
main classes of argument: the first of these regards an avenue of theorizing in which
researchers claim to “refine” balance-of-power theory in realpolitik terms by suggesting
external motivations for bandwagoning, such as 1) the desire to appease a stronger state
and divert an attack elsewhere, or 2) the desire to share in the gains of victory in conflict.
Walt (1987) focuses on the former idea, and argues that weaker states are more likely to
bandwagon than stronger states, particularly in conflicts involving strong states.
Schweller (1994) focuses on the latter idea, and argues that “revisionist” third parties tend
to bandwagon to gain the spoils of war. The second avenue of theorizing regards the
work of scholars who go beyond the realpolitik model of the world, and argue that
domestic political factors can have important effects on the conditions under which third

\textsuperscript{12} Some scholars, such as Gullick (1955) and Waltz (1979), argue that war is how adjustments are made in
parties balance or bandwagon, by providing the leaders of some third parties with incentives to bandwagon in exchange for assistance in fending off internal challengers to their position of leadership in their regimes. Larson (1991), for example, argues that this is the case for states with “weak” domestic political institutions, and David (1991) makes a similar argument that this is the case for states in the “Third World.”

Despite the wealth of theorizing in this area, the scholars involved in this debate have not been able to produce a definitive answer to the question of whether balancing or bandwagoning is more common in international relations. While some attention has been given to empirical testing of the general balancing proposition, the results have been a “mixed bag.” For example, Cusack and Stoll (1991) find evidence that in cases of intervention into militarized interstate disputes over the period 1816-1976, the balance of resources tends to shift to favor the initially weaker side, which supports the idea that the weaker side in disputes will tend to receive third-party help sufficient to create a “balance.” But, at the same time, looking at the number of cases of each behavior in these data, they also find that balancing and bandwagoning occur about equally often, which does not support the idea that third parties tend to balance substantially more often than they bandwagon.¹³

Thinking about this body of literature, while the specific arguments of these scholars differ across and even within the sides the of the debate, they all share the underlying assumption that the distribution of resources among the actors involved in a dispute is a fundamentally important factor in the occurrence of intervention. Given the

the balance.
central role that the conception of power as resources plays in the study of international relations, the focus on this theoretical factor is not surprising. But, what is somewhat surprising is that, despite the serious amount of theoretical attention it has received, no definitive answers about the role the distribution of resources plays in the occurrence of intervention have been produced by the debate. In the view of this researcher, this does not necessarily imply that the distribution of resources among the actors is unimportant, but rather that these scholars are not correctly capturing the manner in which it is important. Specifically, it may not be singularly the distribution of resources between the disputants that plays in important role in whether and how intervention occurs, but rather the distribution of resources among the disputants and the third party. In sum, the balancing versus bandwagoning literature suggests an avenue for further theoretical development about how the distribution of resources among the actors involved in a militarized dispute affects the likelihood that intervention occurs, but raises more questions about this than it answers\textsuperscript{14}.

Beyond the balancing versus bandwagoning literature, social scientific attempts to address the causes of intervention may mainly be found in the literature studying interstate war expansion. One such area of research that has given substantial attention to the joining of third parties into ongoing wars regards the “opportunity and willingness” framework proposed by Most and Starr (1976, 1980, with Siverson 1989; Siverson and Starr 1991), in which it is argued that factors like geographic proximity and alliances

\textsuperscript{13} It is interesting to note that very little attention has been given to empirical testing of the theoretical ideas about the occurrence of bandwagoning posited by this side of the debate. This is an issue that will be addressed in detail later in this dissertation project.

\textsuperscript{14} The questions raised by the balancing versus bandwagoning literature will be addressed later in this dissertation project by applying the theory of intervention developed in Chapters III and V to inform the
create "interaction opportunities" that are necessary conditions for the diffusion of war across space and time. Within this body of work, research addressing the spatial diffusion of an ongoing war, labeled "infection," is directly relevant to the causes of intervention.\textsuperscript{15}

According to these scholars, "the spatial diffusion of wars is likely to be dependent on the degree of interaction that exists between the nations experiencing war/large-scale violent conflict and potential new war participants (nations at peace that could enter into large-scale violence). To the extent that a war is being waged by nations that have no close ties with other states, we would not expect that war to alter the probability that other nations would begin new wars or join the initial war" (Most, et al. 1989). From this, they argue that interaction is a necessary (but not sufficient) condition for diffusion because it creates the "opportunity" for third parties to become involved. Furthermore, the closer two states are to each other, the greater the number of "interaction opportunities" they have, which implies that states that share geographic proximity are more likely to become involved in an ongoing war than other third parties. Using borders as an operational measure for geographic proximity, these scholars have

\textsuperscript{15} These scholars study the diffusion of war as a general phenomenon, and break down the ways conflict may spread into a few analytically distinct classes. The first two regard the spread of conflict over time: 1) "positive reinforcement," in which a nation's war participation at time $t$ increases the probability of participation at time $t + 1$, and 2) "negative reinforcement," the reverse of the previous process. The remainder regard the spread of conflict over space: 3) "positive spatial diffusion," in which the participation of a nation in a new war increases the probability that other nations will experience war participation (in a different war), 4) "negative spatial diffusion," which is the reverse of the previous process, and 5) "infection," which regards the spread of a war to include new participants. Excellent discussions of the different types of war diffusion may be found in Most and Starr (1980, p. 933), Most, et al. (1989, p. 115) and Siverson and Starr (1991, pp. 8-14).
found empirical evidence that states closer to the location of a war are more likely to join in the conflict than other states (Most and Starr 1980; Siverson & Starr 1991).

A second theoretical factor of import in the opportunity and willingness research program regards the effects of alliances as agents of diffusion. Incorporating the body of literature examining the reliability of shared alliances into their framework, these scholars argue that, because states enter into alliances through a process of deliberate policy choice, they may be thought of as observable indicators of shared preferences over foreign policy issues. Furthermore, because states are most likely to interact with those with whom they share policy preferences, alliances create “manipulable interaction opportunities” for third parties to become involved in ongoing wars (Most, et al. 1989). As such, shared alliances between participants in ongoing wars and third parties may be thought of as a factor that increases the “willingness” of third parties to join into ongoing wars and fight on behalf of their allies.

Empirically, the study of the effects of alliances on the diffusion of war has produced two main insights: the first is that alliances do seem to act as a “contagion device” by drawing third parties into ongoing wars. Siverson and King (1979), for example, hypothesize that a war begun between two states that do not have shared alliances with neutral third parties has a much lower probability of spreading than if two states with alliances begin fighting, and find empirical evidence that the latter tend to be larger wars. At the same time, the second insight produced by this body of literature is that the majority of states sharing alliances with participants in ongoing wars do not enter into these wars and fight on behalf of their allies. Sabrosky (1980), for example, finds that over the period 1816-1965 third parties honored their commitment to fight on behalf
of an ally only around 27% of the time. In a follow-up study, Siverson and King (1980) also confirm this, finding that approximately 80% of alliance commitments were not honored by third parties, and that some third parties (namely major powers) were more likely to honor their commitments than others\textsuperscript{16}.

Thinking about this body of work, the opportunity and willingness research program has advanced our understanding of the causes of intervention by systematically constructing theory about how factors like geographic proximity and alliances influence the likelihood that third-party intervention occurs in ongoing interstate wars. By specifying these factors in their broad opportunity and willingness framework, they make it explicit that a theory that fully explains the occurrence of intervention must account for both necessary and sufficient conditions required for the behavior to occur. At the same time, it is clear from the empirical analyses in this line of research that neither geographic proximity nor shared alliances are necessary and sufficient conditions for the occurrence of intervention. While geographic proximity may create interaction opportunities necessary for third parties to consider intervening into an ongoing war, and therefore have a systematic positive impact on the likelihood that the behavior occurs, it is nevertheless the case that 1) not all third parties who intervene into ongoing wars are geographically proximate and 2) most third parties that are geographically proximate do not intervene. In similar fashion, while the presence of alliances may indicate an increased willingness of third parties to fight on behalf of an allies with whom they share

\textsuperscript{16} Two additional insights must be noted here: first, research by Huth (1994, 1998) suggests that these same theoretical factors – geographic proximity and alliances – have a positive effect on whether third parties take on extended-immediate deterrence commitments (as discussed above, threats to intervene if the adversary disputant escalates and uses force). Second, it is interesting to note that this body of literature showing that most alliance commitments are not honored by third parties has served as the impetus for
foreign policy preferences, and therefore also have a systematic positive impact on the likelihood that the behavior occurs, it is nevertheless the case that 1) many third parties who do not share alliances with war participants do intervene and 2) most third parties who do share alliances with war participants do not intervene¹⁷.

In sum, while Most and Starr certainly advance the state of theoretical development on the subject, their research does not result in a theory that specifies the conditions under which intervention does and does not occur. To construct such a theory, in the view of this researcher, it is necessary to move beyond identifying factors that play a role in the occurrence of intervention to a focus on specifying the processes through which these factors interact that leads to the occurrence of the behavior. That is, to employ an analogy made by Bremer (1993), we must go beyond illuminating some of the important “ingredients” in an explanation of the behavior to focus on explaining the sequence in which these ingredients are mixed together in the “recipe” for intervention¹⁸. To date, the closest the existing research has come to the construction of such a theory is an application of expected-utility theory to third-party joiners into interstate wars by Altfeld and Bueno de Mesquita (1979).

In this early application of rational-choice modeling to the study of international conflict, an explanation for the occurrence of intervention into ongoing wars is

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¹⁷ See Most, et al. (1989) for their assessment of the empirical evidence regarding geographic proximity and alliances. Furthermore, as scholars like Fearon (1994, 1997) and Smith (1996, 1998) have theorized, the finding that alliances are not honored most of the time may be explained by the idea of selection effects – challengers do not test the reliability of alliances which they expect to be honored, only those that they expect not to be honored. So, the observed distribution of conflicts are those in which alliances tend not to be honored.
constructed using a simple model that focuses on the decision calculus of third parties. In the model, third parties are assumed to have some value for the outcome that occurs if the initially stronger side in an ongoing war wins, and some value for the outcome that occurs if the initially weaker side wins. Assuming the initially stronger side is most likely to win the war between the two sides, a third party considers how their entrance into the conflict alters the balance of military resources between the sides, and thus affects the likely outcome. The model posits that these two theoretical factors – the third party’s values for the issues under contention and their estimates of their ability to influence the outcome of the war – interact to produce an expected utility for the outcomes associated with each of the third party’s choices, and that the third party chooses to join the initially weaker side, stay neutral, or join the initially stronger side by maximizing their expected utility\textsuperscript{19}. The primary prediction of the model is that very powerful third parties are much more likely to join ongoing wars than are weak third parties, ceteris paribus, for which the authors find substantial empirical support\textsuperscript{20}.

This point marks the state of theoretical development on the causes of intervention in the existing social scientific IR literature. Thinking about this body of work, a number of conclusions may be drawn: the first is that, compared to the amount of research examining the effects of intervention, the causes of the behavior have not

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\textsuperscript{18} This is particularly important when one considers the role 1) strategic interaction and 2) the sequence of decisions in the conflict process may play in the occurrence of intervention, as discussed above in the review of the existing research regarding the effects of intervention.

\textsuperscript{19} It is important to remember that rational-choice modeling does not require the assumption that actors actually perform these calculations, only that they act as if they do.

\textsuperscript{20} Although, it must be noted that Most, et al. (1989, pp. 132-133) take issue with the data analysis in this piece, and raise a number of problems that suggest the model’s predictive power may not be as good as the authors suggest. For example, the analysis excludes many cases of third parties joining into ongoing wars after the first two months of the war. Overall, the data in this analysis contain only 36 cases of third parties
received near as much nor as sophisticated theoretical attention. While the existing research has produced a rich body of theory and empirical evidence about how intervention – or even the expectation of intervention – plays an important role in the processes by which conflicts erupt, evolve, and are eventually resolved, the bulk of theorizing about the causes of the behavior has been limited to the identification of factors that may be components of an explanation that specifies the conditions under which it does and does not occur. Moreover, a second conclusion that emerges is that, while some of this research has produced empirically-supported ideas that may be useful in the construction of such a theory (for example, Most and Starr’s ideas about necessary and sufficient conditions for the diffusion of war), much of it raises more questions than it answers. The ongoing debate in this literature over whether balancing or bandwagoning is more common in international relations, in particular, raises questions about how the distribution of resources among the actors involved in a dispute affects the occurrence of intervention, but is not able to produce a theory that provides a definitive answer.

A third conclusion that emerges from this literature is that the application of expected-utility theory to the entrance of third parties into ongoing interstate wars by Altfeld and Bueno de Mesquita (1979) seems to offer a promising direction for further theoretical development that may lead to a general theory of intervention. The decision-theoretic model proposed by these scholars has a number of strengths: it offers a deductive, logically rigorous, general theoretical model that produces specific, observable

joining into ongoing wars, which suggests that the model's rate of >95% of cases predicted correctly may be largely due to the correct prediction of neutrality.
implications about the conditions under which third parties join into ongoing wars\textsuperscript{21}, and receives strong empirical support for its primary prediction that stronger states are the most common interveners. At the same time, the model does not capture the \textit{strategic interaction} between third parties and disputants that likely is a fundamentally important component of a more complete explanation for the role that intervention plays in the conflict process\textsuperscript{22}. That is, thinking carefully about this, if we know that the decisions of third parties and the disputants in conflicts of interest are interdependent, in that the decisions of disputants over escalating the dispute to violence versus backing down to their adversaries are dependent on their expectations about whether third parties will intervene \textit{and} the decisions of third parties over intervening versus staying neutral are dependent on the decisions of disputants over escalating the dispute to violence (and therefore giving third parties the opportunity to intervene), then a theory that fully captures the role that intervention plays in the conflict process must not only focus on the decision calculus of third parties, but also on the decision calculi of the original actors involved in the dispute before it escalates to war. This suggests that Altfeld and Bueno de Mesquita’s examination of third-party decisions to join after disputants have already chosen to escalate to war misses a significant amount of what makes the occurrence of intervention theoretically interesting.

\textsuperscript{21} The strengths of formal methods in theory construction are also brought to light in the work of Morgan (1994), as discussed above.

\textsuperscript{22} Continued theoretical development of Bueno de Mesquita’s expected-utility theory of war (1981; 1985; with Lalman 1992) has focused singularly on the strategic interaction between the original disputants in the conflict process, and does not further develop the conception of third parties as strategic actors modeled in Altfeld and Bueno de Mesquita (1979). Third parties are included in the “international interaction game” only insofar as they affect the payoffs and probabilities of the two disputants, and are excluded from the empirical analysis of conflict decisions. For a detailed discussion of this, see Bueno de Mesquita \\& Lalman (1992, p. 281).
With this in mind, the development of a general theory of intervention that focuses on the strategic interaction between third parties and disputants in the context of an ongoing militarized dispute may advance our understanding of the role intervention plays in the conflict process by yielding insights about the specific conditions required for intervention to occur and, in cases in which it does not occur, how the possibility of intervention shapes the occurrence of other outcomes to militarized disputes in international politics. For example, such a theory may yield insights about the conditions under which disputants foresee that third-party help is not forthcoming and thus decide to back down to their adversary in the dispute, as well as insights about the conditions under which such disputants choose to escalate the dispute to violence and fight on their own in this situation.

Furthermore, by capturing this strategic interaction in a systematically-constructed, logically rigorous theoretical model, the theory may produce additional insights about how specific factors – such as elements of the distribution of resources – affect the sequence of decisions made by third parties and disputants, and thus impact the likelihood that intervention occurs. If the implications of the model find support when subjected to empirical testing, then this may lead to potentially interesting applications of the theory, such as employing it to inform the ongoing debate about how the resources of the disputants affect the occurrence of intervention in the balancing versus bandwagoning literature.

**Conclusion**

Putting all of this together, this review of the existing literature has served a very useful purpose: by surveying the broad range of international relations literature devoted
to the study of intervention, the existing research on the subject is broken down into
two analytically distinct bodies of work, the “conflict management” literature and the
“military intervention” literature. Then, focusing on the latter conception of intervention
as fighting on behalf of one side in a militarized dispute in international politics, the
existing social scientific literature addressing the effects and causes of military
intervention is summarized and critically evaluated. Having done this, the development
of a theory of intervention may now begin with a clear understanding of what is and is
not known about the behavior. In the next chapter of this dissertation project, I set out
upon this task, beginning with a story about the important role intervention plays in the
conflict process and formalizing it into a game-theoretic model that captures the strategic
interaction between the decisions of third parties and disputants.
Chapter III
A Simple Theory of Intervention: Model I

Introduction: Beginning Theoretical Development

This chapter develops a theory of intervention. Broadly speaking, there are many ways this theory could be constructed. The choice of which is best depends on the goals of the researcher and the contribution the project is intended to make to the field. For example, an historical approach to the study would involve detailed analysis of a few cases of intervention, describing the precise unfolding of events in each, and looking for common factors among them (for example, Valenta 1991; Lucas 1991). But, this approach, as do all approaches, has tradeoffs. In this case, the costs are logical rigor and generalizability. Another approach might be a largely inductive, empirical approach, which examines many cases of intervention, looking for patterns in the data about what factors correlate with the occurrence of intervention (for example, Huth 1998). But, this approach is employed at the cost of not being able to provide a solid theoretical basis for the empirical regularities discovered. Still another approach that might be used to construct a theory of intervention is the development of an abstract, formal model. This approach allows the researcher to analyze the specific relationships among the components of the theory with great precision and deduce logically consistent implications (see Kim 1991). But, it does so at the cost of relying upon restrictive

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23 This is not to suggest that there is no place for case studies in social scientific research. Rather, the point is that history and social science are different but complementary endeavors. Historians tend to construct theories focusing on the explanation of single events (which they perceive as unique) with factors that are very rich in the detail and context of the situation. Social scientists seek to explain classes of events with broadly applicable generalizations. In my view, case studies may be used in conjunction with systematic theory as means of linking the theory to the empirical world.
assumptions, possibly oversimplifying the phenomena under study, and missing much of the richness and detail of individual events.

As the researcher, my goal in this project is the development of a general, causal explanation for third-party intervention in disputes in international politics. In my view, an explanation for intervention identifies the specific conditions under which the behavior occurs. Toward this end, I subscribe to the belief that the most powerful way of attempting to discover this knowledge is by applying the principles of the scientific method to the research problem. I seek a more powerful explanation of third-party intervention than can be found in the existing literature on this subject. My standard for what determines a more powerful explanation is based on the Lakatosian criterion that a theory is rejected only if it has been superseded by a more powerful one.²⁴

There are two essential components to this endeavor: the first regards the construction of systematic theory. By systematic theory construction, I mean the development of a deductive, logically rigorous, series of statements that lead to clear, falsifiable, observable implications. The second component regards the evaluation of the theory with rigorous empirical tests of its implications. By rigorous, empirical testing, I mean the examination of the predictions of the theory against many cases in the empirical world. These tests should be reproducible, so that other researchers may build on any knowledge discovered. In this, the importance of both theory and testing cannot be

²⁴ The specific Lakatosian criterion for theoretical advancement is known as sophisticated methodological falsificationism, and is defined as follows: a scientific theory T is falsified if and only if another theory T' has been proposed with the following characteristics: (1) T' has excess empirical content over T: that is, it predicts novel facts, that is, facts improbable in the light of, or even forbidden by, T; (2) T' explains the previous success of T, that is, all the unfurled content of T is included (within the limits of observational error) in the content of T'; and (3) some of the excess content of T' is corroborated Lakatos (1978, p. 32).
understated – they go hand in hand. This chapter of the project is devoted to the former, the development of the theory. I do this using formal theory.

**Theory Construction with a Formal Model**

The theory of intervention is formalized into a mathematical model. With this model, I state the premises of the theory as mathematical propositions, which allows the interactions among the components of the theory to be specified and the logical implications of the model to be deduced in a clear and precise manner. The use of formal theory has both strengths and weaknesses: it makes the theoretical structure explicit, requiring that assumptions be stated, premises be clearly laid out, and implications derived using the rules of logic. This makes it easier to spot errors in reasoning and makes it possible to derive counter-intuitive implications difficult to discern in more traditional constructions. But, as briefly mentioned above, because formal models simplify reality to a high degree, they sacrifice much in the way of descriptive power. To this researcher, the explicit assumptions, clearly-stated propositions, and logically rigorous deductions afforded by the formal approach outweigh this loss of detail. It is, very simply, the most powerful method available for generating empirically testable hypotheses.

Specifically, I employ game theory to develop the theory. Game theory is a theory of interdependent decision, designed to yield insights about the optimal behavior of actors in situations of strategic interaction. In my view, game theory is a good choice for modeling intervention because it allows the researcher to focus with great precision on the strategic interaction between disputants and third parties that lies at the essence of the research problem. To do this, I organize the situation faced by third parties
considering intervention into a game structure. This structure specifies the choices faced by actors, how those choices lead to particular outcomes, and how the actors evaluate those outcomes (Morrow 1994). Solving the game for its equilibria allows the researcher to deduce the theory's predictions about the conditions under which intervention will occur.

The model is developed in two stages. The first of these is a formalization of a very simple theory of intervention. The point of formalizing this very simple theory is to capture some intuitive, commonly-held notions about intervention, see what their logical implications are, and then see how well these expectations hold up to empirical testing. It is important to note that the point of Model 1 is not to present a fully developed theory of intervention. Rather, it serves as a starting point toward the construction of such a theory by formalizing the conventional wisdom and assessing the extent to which it explains the world. In truth, it is not expected that Model 1 will be particularly powerful. But, in the view of this researcher, this is not necessarily a bad thing.

As a starting point for theory construction, Model 1 is instructive whether it explains all cases of intervention or no cases of intervention. In the former case, we learn that the conventional wisdom has considerable explanatory power, that power politics ideas of military power being the singular determinant of whether nor not third parties intervene do in fact have some truth. In the latter case, we learn that the conventional wisdom does not provide us with much explanatory leverage on the topic, that an explanation for intervention cannot be constructed solely from these commonly-accepted intuitions. Perhaps most importantly, we learn what direction theoretical development on the topic should proceed. In the following section, the development of the theory begins
with a discussion of the context in which third-party intervention occurs, and the theoretical factors thought to be important in its occurrence.

_The Context of Intervention_

The theory developed in this chapter posits that intervention is a product of a strategic game that occurs in the context of militarized disputes in international politics. The concept of a militarized dispute stems from the idea that international conflict occurs as a product of a "conflict process", in which the transition from peace to war takes place through a sequence of moves and counter-moves among two or more actors. This notion has had an important impact on the social scientific study of international relations, as researchers have increasingly come to realize that the transition from peace to war does not often happen instantaneously (such as with a surprise attack), but rather more often through a systematic series of stages of demands, threats, displays and uses of force culminating in full-scale war\(^\text{25}\). In this, theories of war have increasingly become theories of the stages in the conflict process that lead to war. Militarized disputes may be thought of as an important stage in this process, in the middle ground between peace and war. To specify this, a brief discussion of this context is warranted here, as follows.

In a perfect world, all actors in the international system would be in harmony. That is, all actors would have their most preferred outcome on all of the issues in international politics\(^\text{26}\). But, as we well know, this is not a perfect world. Conflicts of interest abound among actors in international relations. In the social scientific study of international conflict, it is commonly thought that these conflicts of interest arise from the

\(^{25}\) For excellent discussions of this, see Bremer's (1993) discussion of the need for a "process model" of international conflict and Vasquez's (1987) discussion of the "steps to war."

\(^{26}\) This would be pure cooperation; all actors would have the same preference orderings.
set of political, economic, military, social and geographic conditions that exist at a moment in time (Bremer 1993). Sometimes they are tolerated; but sometimes they are not. If the decision is made not to tolerate a conflict of interest, then one actor may make a demand of another, initiating a dispute and setting the conflict process in motion. Once a demand has been made, the actor receiving the demand may choose to resolve the conflict of interest through negotiation, or they may choose to resist the demand. Should they resist the demand, one or both of the actors may choose to militarize the dispute.

Militarization regards a step in the conflict process when one actor threatens, displays, or uses military force against another. From a theoretical perspective, this is thought to be an important threshold in the conflict process because it signals that the parties involved are reasonably likely to resort to war to resolve the dispute. Both sides have made demands of the other in some form, and the disputants invest energy, attention, resources, and credibility in an effort to thwart, resist, intimidate, discredit, or damage those representing the other side (Jones, et al. 1996). In the international relations literature, these situations are also often referred to as "international crises." According to a commonly accepted definition, crises are sequences of interactions between the governments of two or more sovereign states in severe conflict, short of actual war, but involving the perception of a dangerously high probability of war (Snyder and Diesing 1977)\textsuperscript{27}. What is significant about this stage in the conflict process is that there exists the perception among the actors that the interests at stake are important enough to signal a willingness to risk war to defend them.

\textsuperscript{27} Another set of definitional criteria along these lines is offered by Leng (1993, p. 25), who argues that "militarized interstate crises" are militarized interstate disputes in which the threat, display or use of force is reciprocated by a member of the interstate system on the other side.
From here, disputes may evolve in different ways. In most, the actors engage in a dangerous game of threats, bluffs and actions designed to show that they are willing to go to war over the issues under contention as part of an attempt to get the other side to back down. Sometimes one side does back down, and the dispute ends. But, sometimes neither side backs down and the dispute escalates to a higher level of violence, possibly culminating in war. In the study of international conflict, a significant amount of theoretical and empirical attention has been given to identifying the factors that determine whether the actors in disputes back down or escalate to war. These factors may be thought of in two broad categories: the first regards contextual factors like the balance of military resources between the disputants, the alliance commitments of the disputants, whether or not the disputants are geographically contiguous, and whether or not they are involved in an arms race. The second category regards factors relating to the behavior of the disputants in crises, such as whether they employ bullying, reciprocating, or appeasing bargaining strategies.

It is at this point where another factor – the possibility of third party intervention – becomes theoretically important. As a dispute occurs and evolves to the point where it becomes militarized, other actors in the international system take notice and consider the ways the situation will affect them. There are a number of things third party actors can do to help the side they favor in the dispute achieve their preferred outcome: third parties may provide their allies with economic assistance like foreign aid, give them access to

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28 There is a voluminous literature devoted to the study of escalation. Some noteworthy examples of this literature are Schelling (1960), Kahn (1965), Ellsberg (1975), Leng (1993), Maoz (1983), Morrow (1989), Morgan (1994), and Snyder and Diesing (1977). For excellent reviews, see Carlson (1995) and Partell (1997).

29 For an excellent review, see Siverson and Miller (1993).
intelligence, sanction their enemy, or provide them with military assistance like equipment and training. At the ultimate level, third parties may intervene by fighting on behalf of one of the disputants in conflict.

If a third party does intervene into a dispute, then this can have important effects on the outcome of the conflict. At one level, the introduction of a third party can affect the outcome of a dispute by altering the balance of resources among the disputants, and thus altering the chances that each side has of winning in conflict. At another level, because the disputants themselves are strategic actors who are aware that third parties may intervene, the prior expectation of third-party intervention can affect their behavior before third parties are given the opportunity to get involved, particularly their decisions over backing down or escalating to war. All of this implies that, in order to understand the role that intervention plays in the conflict process, it is necessary to consider both the decisions faced by third parties (intervention versus staying neutral) and the decisions faced by disputants (escalation versus backing down) because they are interdependent. This is an important insight because it illuminates the important role that strategic interaction must play in the construction of a theory of intervention. In the following section, I begin the development of such a theory by laying out a “story” of intervention. This story specifies a few important theoretical factors and the processes through which they interact in third party decision making over intervention and disputant decision making over escalation. Having done this, these theoretical ideas may then be formalized in a simple, game-theoretic model.
A Story of Intervention Decision Making

I posit a simple story about how third parties consider intervention. The essence of this story is the notion that third parties make decisions over intervention into a dispute by weighing the costs and benefits of joining and fighting on behalf of one side in the dispute against the costs and benefits of staying neutral and allowing the disputants to resolve the issues under contention themselves, either by negotiating a solution or by escalating to war. These costs and benefits are comprised of three main factors: the first regards the issues at stake in the dispute. As third parties observe the exchange of demands and “competitions in risk-taking” (Kahn 1965) going on between the disputants, they attach some value to the preferred outcome of each side in the dispute. In some cases, a third party’s preference of one side’s demand over the other may be intense; in others, it may be marginal. Which demand is realized when the conflict ends is determined by which side emerges victorious from the dispute. Naturally, the victor achieves their demand while the loser suffers the demand of their adversary. Victory in the dispute can be achieved in one of two ways: if one side believes the other is willing to go to war over the issues at stake in the dispute, and they themselves are not, then they may acquiesce to their adversary rather than stand firm and have to fight in war. In this case, that disputant concedes the other side its preferred demand. If, however, neither side is willing to back down to the other in the dispute, then the joint escalation of the disputants results in a war. Which side is victorious in war is a product of the military resources of the disputants.

This leads to a second theoretical factor important in third party decisions over intervention – the balance of resources among the disputants. Third parties observe the
balance of military resources across the actors involved in a dispute and use this information to estimate with side is most likely to be victorious if the dispute escalates to war. Implicit in this is the assumption that each actor’s likelihood of victory in a conflict is some function of the share of military resources they are able to bring to bear in the fight. With this information, third parties are able to estimate how the addition of their own military resources into the conflict affects the share of resources held by each side, and thus how their entry affects the likelihood of victory in conflict for the side whose demand they prefer.

While the addition of the third party’s military resources may increase the likelihood that the favored side will win if the dispute escalates to war, there are costs associated with fighting on behalf of a disputant, which leads to the third theoretical factor important in the story of intervention posited here. At one level, the costs of fighting in war regard the opportunity costs of allocating resources to the conflict, such as military personnel and materiel, and the costs of having some or all of these resources destroyed. In addition, depending on where the conflict takes place, there may be costs associated with the loss of territory, destruction of property and civilian casualties. At another level, there may be political costs associated with the use of force. In recent international relations research, it has been argued that national leaders face political costs associated with the decision to wage war because citizens feel that the resort to arms is a failure of their leadership to resolve crises peacefully. Citizens may then impose costs on their leader in the form of decreased support or even challenges to the leadership position (Bueno de Mesquita, Siverson and Woller 1992; Bueno de Mesquita and Siverson 1995).
At the same time, as third parties estimate their values for the demands of the disputants, the balance of resources across the disputants, and the costs of fighting in war, the disputants themselves are aware that third parties may decide to intervene and factor this into their own decision making. I posit that disputants employ a simple decision calculus in their choices over backing down versus escalating to war that is similar to that employed by third parties in their choices over intervention. In essence, I posit that disputants make decisions over escalation by weighing the costs and benefits of fighting in war against the costs and benefits of backing down and accepting the demand of their adversary. At one level, the decisions faced by disputants over escalation are similar to those faced by third parties over intervention because they share the same fundamental factors – the values each side attaches to the issues at stake in the dispute, the likelihood of victory in conflict, and the costs of fighting. But, the decisions of disputants over escalation are made more complex by the fact that they must decide whether or not to escalate with the knowledge that third parties may or may not intervene and alter the balance of military resources across the sides. That is, likelihood of victory in war for each disputant may be altered by the addition of third party military resources into the dispute after the decision to escalate to war has been made. Disputants thus must not only estimate their likelihood of victory in war when fighting on their own, but also how this likelihood may be affected by the entrance of third parties. As such, depending upon which side in the dispute a third party favors, the expectation of intervention can either deter or encourage disputants to escalate.

Putting all of this together, third parties and disputants face interdependent choices over intervention and escalation, respectively. Third parties decide whether or
not to intervene into a conflict by determining if the potential rewards of fighting on behalf of an ally outweigh the costs of participating in the war. But, in order to be given the opportunity to intervene, the side in the dispute whose demand they prefer must be willing to resist the demand of their adversary and escalate to war. So, a third party's decision to intervene is dependent upon the decision of the side they prefer to escalate. At the same time, the decision disputants face over escalation is dependent on whether or not third parties will intervene if they choose to fight. While a disputant backing down to their opponent leads to their value for the demand of their adversary with certainty, the outcome of escalating to war is a lottery that depends on the behavior of the third party. If a third party intervenes into the dispute, it alters the balance of resources across the sides in the conflict, which changes each side’s likelihood of victory in the conflict. In the following section, I formalize this situation into a game-theoretic model that focuses on the strategic interaction between third parties and disputants in militarized disputes and examines its implications for the occurrence of intervention.

**Model 1**

In this section, I formalize this simple theory of intervention. The first step in this construction is to state explicitly the assumptions underlying the model. As mentioned above, formal theory is often criticized for its reliance upon simplifying assumptions. It is important to note, however, that all models, formal or not, are by their very nature simplifications of reality and, therefore, rely upon simplifying assumptions. The purpose of constructing a model of a social phenomenon is not to mirror reality exactly, but rather to use the model as a simplification of reality that helps explain the world (Morgan 1994). Ultimately, the explanatory power of the model will be judged by evaluation of its
implications, not its assumptions. So, it is not necessary that the assumptions of the model precisely conform to the full complexity of the real world. This having been said, one of the strengths of a formal approach is that it forces the researcher to make these simplifying assumptions explicit. This is a good thing because it allows the researcher to see clearly how particular assumptions can affect the predictions of the model. By altering specific assumptions, different implications can be derived from the model and be compared. In the following section, the assumptions underlying the model of intervention are explicitly stated and discussed.

**Assumptions**

**Assumption 1: Players in the model behave as unitary actors.** The model assumes that disputants and third parties behave as unitary actors. This assumption is a subject of debate in the IR literature, and a number of scholars have raised objections to its use. As stated above, it is the view of this researcher that the inclusion of this assumption (all assumptions, for that matter) should be judged according to whether or not the implications derived from the models employing it are borne out. Nevertheless, in order to be as clear as possible about what this assumption means, some substantive discussion of these objections is included here.

While in some states, particularly those with autocratic domestic political institutions, policy decisions are made by a single individual (Saddam Hussein in Iraq, for example), in many states, the power over policy choices is shared among more than one decision maker according to a set of institutional rules (such as the shared powers between the executive, legislative, and to some extent judiciary branches of government in the United States). In this, the processes by which policy decisions are made regard
the aggregation of individual preferences into a collective social choice. In social choice situations, it has been shown that many methods of preference aggregation can lead to unstable collective decisions in the form of cycles (Arrow 1963; McKelvey 1979). This suggests that the assumption that foreign policy decisions are made by a single leader is problematic because of the possibility of intransitivities in the policy choices of states.

One answer to this objection regards the important finding in the American politics literature that institutional rules can induce stability in the aggregation of individual preferences (structure-induced equilibria). For example, in the legislative bodies like the United States Congress, institutional structures like committee systems, jurisdictional arrangements, amendment control rules, and agenda rules induce stability in group decision-making (Shepsle 1979; Shepsle and Weingast 1981; Ordeshook and Schwartz 1987; Wilson 1986). One particular study in this line of research focuses on how institutional rules like veto power can provide a leader with the ability to make stable policy decisions, and finds empirical evidence that leaders are able to induce stability by skewing outcomes in their favor (Haney, Herzberg and Wilson 1992). While this does not imply that leaders have complete control over the policymaking process, it does suggest that the powers they are afforded by their domestic political institutions make it possible for them to make stable policy decisions that broadly reflect their preferences. There is also a second answer to this objection, regarding the policy domain of the decisions in the model. It has commonly been argued by scholars of international relations that decisions in the domain of foreign policy, particularly over the use of military force, are generally made by one individual, the national leader (Bueno de
Mesquita and Lalman 1992). Altogether, these answers suggest that the assumption that foreign policy decisions at the nation-state level are made by unitary actors, specifically national leaders, is not entirely unreasonable.

**Assumption 2: Players in the game behave as rational actors.** The model assumes that the players in the game behave as rational actors. This assumption is also a subject of debate in the IR literature, in part because it is often misunderstood. Rational decision making, in the sense employed here, does not imply that the actors in the game always choose strategies that are well thought out, are morally righteous, or lead to their most preferred outcomes. Rather, the strict, textbook definition of rationality employed here is simply that the players in the game have preferences orderings that are connected and transitive over the outcomes in the game. Connectedness means that, for a given set of outcomes A, B and C, there exists a basis for comparison among them in their respective pairwise comparisons, (A,B), (A,C) and (B,C). Transitivity means that if outcome A is preferred in the pairwise comparison (A,B) and B is preferred in the paired comparison (B,C), then A must be preferred in the pairwise comparison (A,C). All of this simply means that the players in the game can rank the outcomes from best to worst.

It is important to note that this implies nothing about where the preferences of the players come from. In this, the preferences of any player, regardless of their content, can be rational as long as they are connected and transitive. The classic example used to make this point is Adolf Hitler. Hitler pursued evil goals and took great risks that led to his state’s defeat in World War II. Even today, Hitler’s legacy as an irrational “madman” lives on. But, according to the strict definition employed here, Hitler’s preferences to
change Germany and eventually conquer the world may be thought of as rational, in that his preferences were connected and transitive.

Assumption 3: Players in the game have complete and perfect information. The model assumes that the players in the game have complete and perfect information. Complete information means that the players’ payoffs for the outcomes are common knowledge (Morrow 1994). So, each actor knows how the others value the outcomes in the game, and each knows that the others have this information. Perfect information means all information sets in the game are singletons (Morrow 1994). That is, when making a decision, each player has full information about all prior moves in the game.

While objections may be raised that this assumption is highly restrictive because actors generally do not know what values their opponents have for the issues at stake in disputes, it is important to remember that the purpose of the model is to produce a very simple theoretical structure to determine what insights the conventional wisdom yields about the causes of intervention. The assumption of complete and perfect information greatly simplifies this “first cut” at a theory of intervention. Ultimately, if this assumption truly is overly restrictive, then the implications of the model will not be borne out.

Assumption 4: The side with greater resources wins in war with certainty. The model assumes that the side holding the majority of military resources always wins in conflict. The rationale for this assumption stems from the notion that “God favors the side with the largest battalions”; that is, in military conflict, the side that is able to bring the greatest amount of military personnel and materiel to bear tends to be victorious. This is an argument well accepted in the international relations literature, with substantial
empirical evidence in its favor (Cannizzo 1980; Bueno de Mesquita 1981; Maoz 1983). However, some objections may be raised to it stemming from the fact that, on occasion, the stronger side in conflict does not win. A classic example is the Vietnam War: while there is no question that the United States was the militarily stronger side in the Vietnam War, it is commonly accepted that the US was on the losing side in the conflict. This is known in international relations parlance as the "paradox of unrealized power." (Ray 1998).

Despite the rare occurrence of these paradoxes, the assumption that the militarily stronger side wins in conflict is employed here for several reasons: first and foremost, the simple fact that the assumption is largely consistent with the empirical world suggests that it is not unreasonable *ipso facto*. Second, although there may exist a few cases of conflicts in which the assumption is at odds with reality, there does not exist an alternative assumption that accounts for these paradoxes. Third, finally, it must be restated that the enterprise of modeling requires some simplifications that are at odds with the complexity of the empirical world. At this stage, the simplifying assumption that the stronger side wins in war with certainty allows the model to capture notions in the conventional wisdom and explore their logical implications. To the extent that these implications are supported or not, the assumptions of the model may then be adapted as the theoretical development continues. The structure of the model is laid out in the next section, as follows.

*Model Structure*

Figure 3.1 shows the extensive form of the game. The sequence of moves depicted in the model begins with a move by nature that gives one disputant the
Figure 3.1
Model 1
opportunity to escalate to a higher level of violence, such as escalation to war. In the model, this disputant is player T\textsuperscript{30}. If player T decides not to escalate the dispute, then she\textsuperscript{31} backs down, the dispute ends, and the game ends by definition. If player T decides to escalate the dispute to war, then player I faces a decision over whether or not to intervene on the side of player T. The intersection of player T and player I’s strategy choices lead to three possible outcomes for the game. Player T’s decision not to escalate implies she backs down to player C, resulting in a loss for player T and a victory for player C. If player T decides to escalate, then player I must decide whether or not to intervene into the dispute. If player T escalates and player I does not intervene, then this leads to an outcome in which player T fights alone in a war with player C. If player T escalates and player I does intervene, then this leads to a war in which players T and I fight as allies against player C.

Each of the three possible outcomes is associated with a particular payoff for each player. These payoffs are specified in terms of a few simple theoretical components: the demands of the players and the costs of fighting in war. In the dispute, each player has a most preferred policy outcome, expressed as a demand made of the other player. The player who is victorious in the dispute receives her value for her own demand, while the player on the losing side in the dispute receives her value for her opponent’s demand. In the outcomes in which war occurs, which side is victorious in the conflict is determined by the side with greater military capabilities (by Assumption 4). This implies that the

\begin{footnotesize}
\textsuperscript{30} Player T may thus be thought of as the “ally” of the potential intervener, and player C as the “opponent” of the potential intervener with no loss of generality.
\textsuperscript{31} The personal pronouns in the discussion of the model differ solely to maximize the clarity of the discussion. The original disputants are referred to as “she” and third parties are referred to as “he.” I flipped a coin to determine the gender of the players in the model.
\end{footnotesize}
payoffs associated with the war outcomes can differ according to how military resources are distributed among the players in the game.

There are three possible ways that resources can be distributed: one is the case in which the resources of player C are greater than the resources of players T and I combined. That is, $R_T + R_I < R_C$, where $R_i$ represents the resources of player $i$. In this case, a war outcome always leads to a victory for player C, regardless of whether or not player I intervenes. A second possible way resources may be distributed among the players is the case in which player C has greater resources than player T, but fewer resources than the coalition of players T and I formed if player I intervenes. That is, $R_T < R_C$ AND $R_T + R_I > R_C$. In this case, a war between players T and C always leads to a victory for player C; but, if player I intervenes, war produces a victory for the coalition of players T and I. Finally, the third possible way resources may be distributed among the players is the case in which player T has greater resources than player C, $R_T > R_C$. In this case, war always produces a victory for player T, regardless of whether or not player I intervenes. The payoffs for each outcome in each of the cases are shown in Table 3.1.

In the figure, the columns regard the outcomes of the game and the rows regard the possible distributions of resources among the players. The first column shows the payoffs associated with the outcome in which player T backs down to the demand of player C ($s_T, s_I$). If this occurs, then player T receives her value for player C’s demand and player I receives his value for player C’s demand. This holds true across all of the three cases.

The second column shows the payoffs associated with the outcome in which
Table 3.1
Cases, Outcomes and Payoffs in the Simple Intervention Game

<table>
<thead>
<tr>
<th></th>
<th>((s_T, s_I))</th>
<th>((r_T, r_I))</th>
<th>((q_T, q_I))</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>(R_T + R_I &lt; R_C)</strong></td>
<td>(T:) value of player C's demand</td>
<td>(T:) value of player C's demand minus cost of fighting</td>
<td>(T:) value of player C's demand minus cost of fighting</td>
</tr>
<tr>
<td></td>
<td>(I:) value of player C's demand</td>
<td>(I:) value of player C's demand</td>
<td>(I:) value of player C's demand minus cost of fighting</td>
</tr>
<tr>
<td><strong>(R_T &lt; R_C)</strong></td>
<td>(T:) value of player C's demand</td>
<td>(T:) value of player C's demand minus cost of fighting</td>
<td>(T:) value of player T's demand minus cost of fighting</td>
</tr>
<tr>
<td><strong>AND</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>(R_T + R_I &gt; R_C)</strong></td>
<td>(T:) value of player C's demand</td>
<td>(T:) value of player C's demand minus cost of fighting</td>
<td>(T:) value of player T's demand minus cost of fighting</td>
</tr>
<tr>
<td></td>
<td>(I:) value of player C's demand</td>
<td>(I:) value of player C's demand</td>
<td>(I:) value of player T's demand minus cost of fighting</td>
</tr>
<tr>
<td><strong>(R_T &gt; R_C)</strong></td>
<td>(T:) value of player C's demand</td>
<td>(T:) value of player T's demand minus cost of fighting</td>
<td>(I:) value of player T's demand minus cost of fighting</td>
</tr>
<tr>
<td></td>
<td>(I:) value of player C's demand</td>
<td>(I:) value of player T's demand</td>
<td>(I:) value of player T's demand minus cost of fighting</td>
</tr>
</tbody>
</table>
player T fights alone in war against player C \((r_T, r_I)\). In the first case discussed above, 
\[ R_T + R_I < R_C \]
the payoffs associated with this outcome are as follows: because she loses the war, player T receives her value for the demand of player C minus the cost of fighting the war. Player I receives his value for the demand of player C because player C is victorious in the war. But, player I does not have to pay the cost of fighting because he did not intervene on behalf of player T. In the second case, \(R_T < R_C\) AND \(R_T + R_I > R_C\), the payoffs associated with this outcome are identical to those in the first case: player T receives her value for the demand of player C minus the cost of fighting the war; player I receives his value for the demand of player C. In the third case, \(R_T > R_C\), player T wins the war and thus receives her value for her own demand minus the cost of fighting.

Player I receives his value for player T’s demand because player is victorious in the conflict, but does not have to pay the cost of fighting because he did not intervene.

The third column shows the payoffs associated with the outcome in which players T and I fight in war against player C \((q_T, q_I)\). In the first case, \(R_T + R_I < R_C\), the payoffs associated with this outcome are as follows: player T loses the war; thus, she receives her value for the demand of player C minus the cost of fighting the war. Player I, having intervened on the losing side in the war, receives his value for the demand of player C minus the cost of fighting. In the second case, \(R_T < R_C\) AND \(R_T + R_I > R_C\), the payoffs associated with this outcome are as follows: with the assistance of player I, the coalition of players T and I is victorious in war, yielding player T her value for her own demand minus the cost of fighting. Player I receives his value for the demand of player T minus the cost of fighting. Finally, in the third case, \(R_T > R_C\), the payoffs are identical: player
T receives her value for her own demand minus the cost of fighting and player I receives his value for the demand of player T minus the cost of fighting.

**Solution Concept and Equilibria Outcomes**

In this section, Model 1 is solved for its equilibria. In equilibrium, no actor wishes to change its behavior on its own. Specifically, behavior at an equilibrium is stable in the sense that no actor, given its current position and knowledge, can improve its own position unilaterally\(^{32}\). Equilibrium analysis of the model is instructive because determining the equilibrium conditions for each outcome in the game shows the conditions under which the players will choose those strategies that lead to that outcome.

The first step toward solving the model is to determine an appropriate equilibrium concept. The most common equilibrium concept used to solve simple, game-theoretic models is a Nash equilibrium, defined as follows:

A Nash equilibrium is a profile of strategies such that each player’s strategy is an optimal response to the other players’ strategies (Fudenberg and Tirole 1991). In technical terms, it is a strategy-profile, \(\sigma^*\), that fulfills the following condition for all players, \(i\):

\[
u_i(\sigma_i^*, \sigma_{-i}^*) \geq u_i(s_i, \sigma_{-i}^*) \quad \text{for all } s_i \in S_i.
\]

In intuitive terms, Nash equilibria simply require the players in the game to pursue strategies that are best replies to each other. Unfortunately, while the Nash equilibrium concept is attractive because of its simplicity and ease of interpretation, its usefulness is limited by the fact that it is not very stringent. That is, because Nash equilibria compare complete strategies of the players to see if they are best replies to each other, they do not account for how the sequence of the game can affect the moves the

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\(^{32}\) It is important to note that equilibria are not assumed to be fair or balanced to the actors or desirable according to any ethical criteria. Often the equilibria of a model are grossly unfair to one actor or reflect a socially suboptimal outcome (Morrow 1994).
players make. Nash equilibria examine the moves of players only on the equilibrium path (that is, at nodes reached in equilibrium). But, it is possible that a player's choice on the equilibrium path can depend on another player's choice off the equilibrium path. If the latter player makes an irrational move off the equilibrium path, then this could alter the first player's choice on the equilibrium path (Morrow 1994). As a result, the Nash equilibrium concept allows players to credibly commit to future moves that are not in their own interest to make. By doing so, players can make incredible threats to force their opponents to choose strategies to avoid having the threat carried out. This violates the idea that games are sequences of decisions.

Ultimately, in many games, there exist multiple Nash equilibria, which makes it difficult to derive determinate predictions. That is, if there exist a multitude of strategy combinations that are Nash equilibria, then the model is not able to yield specific expectations about which particular strategy choices the players will make and therefore what behaviors the model expects. In its current stage of development, game theory offers no commonly-accepted answer to how players choose strategies when multiple equilibria exist. One way researchers have dealt with this problem is to assume that players hold a "common conjecture" about how the game is going to be played. When players hold a common conjecture, they are able to correctly anticipate one another's strategies and thus choose moves that are on the equilibrium path. These common conjectures can arise from communication between the players in the game or particular outcomes that are distinctive for some reason, known as "focal points." A second way researchers have dealt with multiple Nash equilibria is to employ more stringent
equilibrium concepts. One such concept is subgame perfection, defined as follows (Fudenberg and Tirole 1991):

A strategy profile $s$ of a multi-stage game with observed actions is a subgame-perfect equilibrium if, for every $h^k$, the restriction $s_i h^k$ to $G(h^k)$ is a Nash equilibrium of $G(h^k)$.

where:

$h^k$ is the history of moves before stage $k$; and
$G(h^k)$ is the game from stage $k$ on with history $h^k$.

The subgame perfect equilibrium concept tests the credibility of moves both on and off the equilibrium path by requiring players to play Nash equilibria at each subgame. In finite games of perfect information, subgame perfect equilibria can be found using backward induction. Backward induction involves solving the game for the optimal choice of the last player to move for each possible situation they may face and working backward to compute the optimal choice for the player before (Fudenberg and Tirole 1991). By requiring players to make optimal moves at each node, backwards induction assesses the rationality of all moves in a strategy, both on and off the equilibrium path. That is, while backwards induction ultimately produces a Nash equilibrium, it does not find all the Nash equilibria in a game, only those that are on the equilibrium path (Morrow 1994). In the following section, I use backward induction to solve the model for its subgame perfect equilibria. Consider first the outcome in the game in which player T backs down to the demand of player C (that is, outcome $(s_T, s_i)$ in the terms of the model).

*Acquiescence.* As a first step, it is necessary to determine what strategy combinations lead to this outcome. The acquiescence outcome can occur as a product of two different strategy combinations. To observe the first of these, return to Figure 3.1
and examine player I's choice over intervening (int) or not intervening (~int). When player I has preferences over the outcomes in the game such that I: \( r_I > q_I \), he chooses the strategy in which he stays neutral and does not intervene (~int). The next step is to move backward up the extensive form of the game to player T's choice over escalating and fighting (esc) or not escalating and backing down (~esc). When player T has preferences over the outcomes in the game such that T: \( s_T > r_T \), he chooses to back down (~esc). If this occurs, then the outcome of the game is an acquiescence by player T \( (s_T, s_I) \). So, the strategy combination of player I intervening and player T not escalating (~esc; ~int) is one way this outcome can occur.

To observe the second combination of strategies that leads to the acquiescence outcome, return to the last move in the game in Figure 3.1, Player I's decision regarding intervention. Here, if player I has the preference ordering I: \( q_I > r_I \), he chooses the intervention strategy (int). Moving up the extensive form of the game to player T's decision node, if player T has preferences over the outcomes in the game such that T: \( s_T > q_T \), he chooses to back down rather than escalate (~esc). If this occurs, then the outcome of the game is also an acquiescence by player T \( (s_T, s_I) \). So, the strategy combination in which player I does not intervene and player T does not escalate (~esc; int) is a second way this outcome can occur.

Having specified these strategy combinations, it now becomes possible to answer substantive questions about the conditions under which the players will have preferences over the outcomes that lead them to choose these strategies. First, under what conditions will the players in the game choose the (~esc; ~int) strategy combination leading to the acquiescence outcome? To answer this question, I use backward induction to deduce the
players' strategy choices in each of the three possible distributions of resources discussed above. This is necessary because the players' preferences over the outcomes can differ according to which side wins if war occurs, which is determined by the distribution of resources among the players (as specified in Assumption 4). I begin with the first possible distribution of resources discussed above, $R_T + R_I < R_C$.

*Case 1, $R_T + R_I < R_C$.* To solve the model for the acquiescence outcome in this case, return to player I's decision over intervention, the last node in Figure 3.1. Recall that player I's non-intervention strategy choice leads directly to the $r$ outcome while his intervention strategy choice leads directly to the $q$ outcome. When the distribution of resources among the players is such that the resources of player C are greater than the resources of players T and I combined, player I's payoff associated with outcome $r$ is his value for the demand of player C, while his payoff associated with outcome $q$ is his value for the demand of player C minus the cost of fighting in war\(^33\). When player I compares these payoffs, it is clear that the payoff associated with outcome $r$ must always be greater than the payoff associated with outcome $q$. The logic behind this is a product of Model I's assumption that the side with greater resources wins in conflict with certainty (Assumption 4): because player C has greater resources than players T and I combined, she will win in war with certainty regardless of whether player I intervenes on behalf of player T. Because of this, player I will receive his value for the demand of player C regardless of whether he chooses to intervene or stay neutral. But, by staying neutral, he can avoid paying the cost of fighting. As such, in this case, player I always prefers

\(^33\) This may be seen in Table 3.1 by examining player I's payoffs associated with outcomes $r$ and $q$ (the second and third columns) in the first possible distribution of resources (the first row).
outcome r to outcome q. This implies that, in this case, player I will always choose the non-intervention strategy (~int).

The next step in this backward induction is to move up the game tree to player T’s decision over escalation. Here, player T knows that player I will choose the non-intervention (~int) strategy leading to the r outcome. So, at this node, she chooses between not escalating (~esc), which leads directly to the acquiescence outcome, or escalating (esc), which leads to a war with player C in which she receives no help from player I. In the case when RT + R1 < RC, player T’s payoff associated with the s outcome is her value for the demand of player C and her payoff associated with the r outcome is her value for the demand of player C minus the cost of fighting in war\(^{34}\). When player T compares these payoffs, the payoff associated with outcome s must always be greater than the payoff associated with outcome r. The logic behind this is also a product of Model 1’s assumption that the side with greater resources wins in conflict with certainty (Assumption 4): because player C will win in war with certainty, player T will receive her value for the demand of player C regardless of whether she chooses to fight or back down. But, by backing down, player T can avoid paying the cost of fighting. As such, in this case, she always prefers outcome s to outcome r. This implies that, in this case, player T will always choose the non-escalation strategy (~esc).

Now, I examine the second combination of strategies that leads to the acquiescence outcome, and ask the question: under what conditions will the players in the game choose the (~esc; int) strategy combination? To answer this, recall from the above discussion that, when resources are distributed such that \(RT + R1 < RC\), player I
always prefers outcome r to outcome q (because he does not have to pay the cost of fighting in war if he stays neutral). As such, player I will always choose the non-intervention strategy. This implies that the second strategy combination leading to the acquiescence outcome (\(esc; int\)) will never be played in this case.

In substantive terms, these solutions suggest that actors involved in a dispute will back down to their opponents when they face a military disadvantage serious enough that the aid of a third party is not enough to tip the military balance in their favor. To a third party considering intervention into a dispute, if he observes that the resources he is able to contribute to the conflict are not sufficient to tip the military balance in favor of the side he prefers, then he has no incentive to pay the costs of fighting associated with intervention. Disputants thus face a situation in which the third party is unwilling to intervene on their behalf; but, even if he was willing to intervene, it would not help enough to alter the outcome of the war from a loss to a victory. So, rather than fight a war she will lose, she chooses to back down and avoids having to pay the costs of fighting. This implies that the acquiescence outcome should be observed in disputes when the distribution of resources among the actors is \(R_T + R_I < R_C\). This leads to the following testable hypothesis:

**Acquiescence Hypothesis 1:** When the resource distribution among the actors in a dispute is \(R_T + R_I < R_C\), the dispute outcome will be an acquiescence by player T.

**Case 2,** \(R_T < R_C AND R_T + R_I > R_C\). To solve the model for the acquiescence outcome in this case, I repeat the above process of determining the conditions under

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34 This may be seen in Table 3.1 by examining player T's payoffs associated with outcomes s and r (the first and second columns) in the first possible distribution of resources (the first row).
which the players in the game choose the \((\sim esc; \sim int)\) and \((\sim esc; int)\) strategy combinations. Begin by returning to player I’s decision over intervention, the last node in Figure 3.1. Recall that player I’s non-intervention strategy choice leads directly to the r outcome while his intervention strategy choice leads directly to the q outcome. When the distribution of resources among the players is such that player C has greater resources than player T, but fewer resources than the coalition of players T and I, then player I’s payoff associated with outcome r is his value for the demand of player C, while his payoff associated with outcome q is his value for the demand of player T minus the cost of fighting in war\(^{35}\). When player I compares these payoffs, there are two possibilities: if player I’s value for the demand of player C is greater than his value for the demand of player T minus the cost of fighting in war, then player I prefers outcome r to outcome q and thus chooses the non-intervention strategy \((\sim int)\).

If this occurs, then, moving back up the game tree to player T’s decision over escalation, she faces a choice between outcome s and outcome r. At this point, player T knows that player I will choose the non-intervention \((\sim int)\) strategy leading to the r outcome. This decision is the same as that discussed above in the case when \(R_T + R_I < R_C\): she chooses between not escalating \((\sim esc)\), which leads directly to the acquiescence outcome, or escalating \((esc)\), which leads to a war with player C in which she receives no help from player I. In the case \(R_T < R_C\ AND\ R_T + R_I > R_C\), player T’s payoff associated with the s outcome is her value for the demand of player C and her payoff associated with

\(^{35}\) This may be seen in Table 3.1 by examining player I’s payoffs associated with outcomes r and q (the second and third columns) in the second possible distribution of resources (the second row).
the r outcome is her value for the demand of player C minus the cost of fighting in war\textsuperscript{36}. As shown above, in this decision, player T always prefers the s outcome to the r outcome because she receives her value for the demand of player C in her payoff for both outcomes, but does not have to pay the cost of fighting if she backs down. This implies that, if player I values the demand of player C more than the demand of player T minus the cost of fighting, then the actors will play the strategy combination (~esc; ~int), resulting in the acquiescence outcome.

In substantive terms, this suggests that actors involved in a dispute will back down to their opponents when they do not expect third party help that would tip the military balance in their favor. Third parties considering intervention, even if they have sufficient resources to tip the military balance, may not value the demand of one side over the other enough to justify paying the costs of fighting in war. So, even if they are able to alter the outcome of the dispute from a loss to a victory in war, they may not choose to intervene. Disputants thus face a situation where escalating to war would produce a victory if they receive third-party help, but a loss if they are left to fight on their own. If they observe that a third party is unwilling to intervene on their behalf, then they receive their value for the demand of their opponent regardless of whether they fight or back down. But, if they choose to back down, they can avoid having to pay the costs of fighting in war. This implies that the acquiescence outcome should be observed in disputes when the distribution of resources among the actors is $R_T < R_C \text{ AND } R_T + R_I > R_C$ and player I values the demand of player C more than the demand of player T minus

\textsuperscript{36} This may be seen in Table 3.1 by examining player T’s payoffs associated with outcomes s and r (the first and second columns) in the second possible distribution of resources (the second row).
the cost of fighting. This leads to the following hypothesis:

**Acquiescence Hypothesis 2:** When the resource distribution among the actors in a dispute is $R_i < R_C$ AND $R_i + R_t > R_C$, if player I values the demand of player C more than the demand of player T minus the cost of fighting, then the dispute outcome will be an acquiescence by player T.

The other possibility is that player I values the demand of player T minus the cost of fighting more than the demand of player C. If so, then player I prefers outcome q to outcome r and chooses the intervention strategy (int) at his decision node. If this occurs, then, moving back up the game tree to player T’s decision over escalation, she observes that player I will choose the intervention (int) strategy leading to the q outcome. So, she faces a choice between outcome s and outcome q. In this distribution of resources, player T’s payoff for the s outcome is her value for the demand of player C and her payoff for the q outcome is her value for her own demand minus the cost of fighting in war\(^{37}\). If player T values the demand of player C more than her own demand minus the cost of fighting in war, then she prefers the s outcome and chooses the non-escalation strategy ($\neg esc$). This implies that, if player I values the demand of player T minus the cost of fighting more than the demand of player C AND player T values the demand of player C more than her own demand minus the cost of fighting, then the actors will play the strategy combination ($\neg esc; int$), resulting in the acquiescence outcome.

In substantive terms, this solution suggests that actors involved in a dispute may back down to their opponents even when a third party with sufficient resources to tip the military balance in their favor is willing to intervene on their behalf. In this situation,

\(^{37}\) This may be seen in Table 3.1 by examining player T’s payoffs associated with outcomes s and q (the first and third columns) in the second possible distribution of resources (the second row).
third parties observe that the actor they favor in a dispute is unable to win in conflict on her own. The third party values the demand of this actor over the demand of their opponent to such an extent that the difference between the demands outweighs the cost of fighting in war. However, even though she observes that the third party will intervene on her behalf, the disputant may be unwilling to pay the costs of fighting herself, and may thus back down. This implies that the acquiescence outcome should be observed in disputes when the distribution of resources among the actors is $R_T < R_C$ AND $R_T + R_I > R_C$ under the following conditions: first, player I values the demand of player T minus the cost of fighting more than the demand of player C; and, second, player T values the demand of player C more than her own demand minus the cost of fighting. This leads to the following hypothesis:

**Acquiescence Hypothesis 3:** When the resource distribution among the actors in a dispute is $R_T < R_C$ AND $R_T + R_I > R_C$, if player I values the demand of player T minus the cost of fighting more than the demand of player C AND player T values the demand of player C more than her own demand minus the cost of fighting, then the dispute outcome will be an acquiescence by player T.

**Case 3, $R_T > R_C.$** To solve the model for the acquiescence outcome in this case, I repeat one final time the above process of determining the conditions under which the players in the game choose the ($\neg esc; \neg int$) and ($\neg esc; int$) strategy combinations. Here, at player I's decision between the non-intervention strategy leading to the $r$ outcome and the intervention strategy leading to the $q$ outcome, the payoffs associated with the outcomes are as follows: given a distribution of resources such that $R_T > R_C$, player I's payoff for the $r$ outcome is his value for the demand of player T, while his payoff for the
q outcome is his value for the demand of player T minus the cost of fighting in war. When player I compares these payoffs, the payoff associated with outcome r must always be greater than the payoff associated with outcome q. This is logically implied by the assumption that the side with greater resources wins in war with certainty. Because player T has greater resources than player C, she will win in war with certainty regardless of whether or not player I intervenes. As such, player I receives his value for the demand of player T regardless of whether or not he intervenes. But, by not intervening, he is able to avoid paying the costs of fighting in war. As such, in this case, player I always prefers outcome r to outcome q and therefore will always choose the non-intervention strategy (¬int).

Next, moving up the game tree to player T’s decision over escalation, she knows that player I will always choose the non-intervention (¬int) strategy leading to the r outcome. So, at this node, she chooses between not escalating (¬esc), which leads directly to the acquiescence outcome, or escalating (esc), which leads to a war with player C in which player I does not intervene. In the case when \( R_T > R_C \), player T’s payoff associated with the s outcome is her value for the demand of player C and her payoff associated with the r outcome is her value for her own demand minus the cost of fighting in war. When player T compares these payoffs, if she values the demand of player C more than her value for her own demand minus the cost of fighting in war, then she prefers outcome s to outcome r and therefore chooses the non-escalation strategy (¬esc), resulting in the strategy combination (¬esc; ¬int) and the acquiescence outcome.

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38 This may be seen in Table 3.1 by examining player I’s payoffs associated with outcomes r and q (the second and third columns) in the third possible distribution of resources (the third row).
Now, I solve for the second combination of strategies that leads to the acquiescence outcome, and ask the question: under what conditions will the players in the game choose the \((\neg \text{esc}; \text{int})\) strategy combination? To answer this, recall from the above discussion that, when resources are distributed such that \(R_T > R_C\), player I always prefers outcome \(r\) to outcome \(q\) (because he does not have to pay the cost of fighting in war by staying neutral). As such, player I will always choose the non-intervention strategy, implying that the second strategy combination leading to the acquiescence outcome will never be played in this case.

In substantive terms, these solutions suggest that actors involved in a dispute may back down to their opponents even when they have a military advantage. In this situation, third parties observe that the side they favor in a dispute has sufficient resources to win in conflict on her own. Because the third party receives his value for the demand of the disputant he favors regardless of whether or not he intervenes, he has no incentives to intervene and pay the costs of fighting. Disputants observe that the third party is unwilling to intervene on her behalf, but because she has greater resources than her opponent she is able to win in conflict without his help. Nevertheless, although she is able to win and her receive her value for her own demand, it is possible that having to pay the costs of fighting in order to realize this demand makes it less valuable to her to fight than to simply back down. This implies that the acquiescence outcome should be observed in disputes when the distribution of resources among the actors is \(R_T > R_C\) and player T values the demand of player C more than her own demand minus the cost of

\[\text{This may be seen in Table 3.1 by examining player T's payoffs associated with outcomes } s \text{ and } r \text{ (the first and second columns) in the third possible distribution of resources (the third row).}\]
fighting. This leads to the following hypothesis:

**Acquiescence Hypothesis 4:** When the resource distribution among the actors in a dispute is \( R_T > R_C \), if player T values the demand of player C more than her own demand minus the cost of fighting, then the dispute outcome will be an acquiescence by player T.

**Dyadic War.** It is now possible to solve the model for the outcome in which players T and C fight in dyadic war. To do this, the first step is to determine what strategy combinations are required for this outcome to occur. The dyadic war outcome can occur as a product of one strategy combination. To observe this, return to Figure 3.1 and examine player I’s choice over intervening (\( int \)) or not intervening (\( \sim int \)). When player I has preferences over the outcomes in the game such that \( r_I > q_I \), he chooses the strategy in which he stays neutral and does not intervene (\( \sim int \)). Moving backward up the game tree to player T’s choice over escalating and fighting (\( esc \)) or not escalating and backing down (\( \sim esc \)), when she has preferences over the outcomes in the game such that \( T: r > s \), she chooses to escalate (\( esc \)). If this occurs, then the outcome of the game is a dyadic war between player T and player C. So, the strategy combination comprised of player I not intervening and player T escalating (\( esc; \sim int \)) produces this outcome. Having done this, I am now able to use backward induction to address the substantive question about the conditions under which the players in the game choose the (\( esc; \sim int \)) strategy combination leading to the dyadic war outcome. In similar fashion to the above analysis, I do this using backward induction in each of the three possible distributions of resources, beginning with the first case, \( R_T + R_I < R_C \).
Case 1, \( R_T + R_I < R_C \). Here, the backward inductions used to derive the
conditions under which the acquiescence outcome occurs given this distribution of
resources also yield predictions about the occurrence of dyadic war. The above solutions
for the acquiescence outcome show that, given the distribution of resources \( R_T + R_I < R_C \),
player I always plays the non-intervention strategy \((\sim \text{int})\) and player T always plays the
non-escalation strategy \((\sim \text{esc})\)^{40}. This solution implies that the only dispute outcome that
can occur in this case is acquiescence, which by definition implies the additional testable
implication that dyadic war cannot occur in this case. This hypothesis may be tested as a
corollary to Acquiescence Hypothesis 1, as follows:

**Dyadic War Hypothesis 1:** When the resource distribution among the actors in a
dispute is \( R_T + R_I < R_C \), then the dispute outcome will
not be a dyadic war between player T and player C.

Case 2, \( R_T < R_C \ AND R_T + R_I > R_C \). To solve the model for the dyadic war
outcome in this case, I repeat the above process using backward induction to determine
the conditions under which the players in the game choose the \((\text{esc}; \sim \text{int})\) strategy
combination. In this case, the above solutions for the acquiescence outcome also have
further implications about the occurrence of dyadic war. Recall the derivation regarding
Acquiescence Hypothesis 2, in which it is shown that: when the resource distribution
among the actors in a dispute is \( R_T < R_C \ AND R_T + R_I > R_C \), if player I values the

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^{40} To briefly review this solution here, recall that player I's decision over intervention regards the
comparison of his payoffs for the r and q outcomes, for which the associated payoffs are as follows: for
outcome r, he receives his value for the demand of player C; for outcome q, he receives his value for the
demand of player C minus the cost of fighting in war. Given this, player I always prefers the r outcome to
the q outcome because he receives his value for the demand of player C in both, but avoids paying the cost
of fighting in r. So, given the distribution of resources \( R_T + R_I < R_C \), player I always plays the non-
intervention strategy \((\sim \text{int})\). Player T observes this and must choose between the r outcome and the s
outcome, for which the associated payoffs are as follows: for r, she receives her value for the demand of
demand of player C more than the demand of player T minus the cost of fighting, then
the dispute outcome will be an acquiescence by player T\textsuperscript{41}. In substantive terms, this
derivation shows that, if player I will not intervene, then player T always prefers to back
down rather than escalate and fight a war on her own. Given this, it is further implied
that dyadic war cannot occur as the dispute outcome in this case. This is a logical
implication of player I's decision not to intervene. Without player I's help, player T will
lose if she escalates to war against player C. So, since she receives her value for the
demand of player C regardless of whether she fights or backs down, she avoids paying
the cost of fighting by simply backing down.

Now, recall the derivation regarding Acquiescence Hypothesis 3, in which it is
shown that: when the resource distribution among the actors in a dispute is $R_T < R_C$
AND $R_T + R_I > R_C$, if player I values the demand of player T minus the cost of fighting
more than the demand of player C AND player T values the demand of player C more
than her own demand minus the cost of fighting, then the dispute outcome will be an
acquiescence by player T. In substantive terms, this derivation shows that, if player I will
intervene, then player T faces a choice between outcome s, an acquiescence to player C,
and outcome q, a war in which player I intervenes on her behalf. If she prefers the
demand of player C more than her own demand minus the cost of fighting, then she backs

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\textsuperscript{41} To review this, returning to player I's decision regarding intervention versus staying neutral, he compares
the payoffs associated with the dyadic war and intervention outcomes. Given the distribution of resources
$R_T < R_C$ AND $R_T + R_I > R_C$, he compares his payoff for outcome r, his value for the demand of player C,
with his payoff for outcome q, his value for the demand of player T minus the cost of fighting in war. If he
values the demand of player C more than the demand of player T minus the cost of fighting in war, then he
prefers outcome r and thus chooses the non-intervention strategy ($\neg int$). Player T observes this, and thus
compares her payoffs for the s and r outcomes, as follows: for outcome s, she receives her value for the
demand of player C; for outcome r, she receives her value for the demand of player C minus the cost of
down. Otherwise, she escalates and player I intervenes. By definition, this further implies that, if player I will intervene, then dyadic war cannot occur as the dispute outcome in this case.

Putting all of this together, these solutions imply that, regardless of whether or not player I chooses to intervene, the dyadic war outcome cannot occur when the distribution of resources among the actors in a dispute is $R_T < R_C$ AND $R_T + R_I > R_C$. This leads to the additional testable hypothesis that is a corollary to Acquiescence Hypotheses 2 and 3:

**Dyadic War Hypothesis 2:** When the resource distribution among the actors in a dispute is $R_T < R_C$ AND $R_T + R_I > R_C$, then the dispute outcome will not be a dyadic war between player T and player C.

**Case 3, $R_T > R_C$.** To solve the model for the dyadic war outcome in this case, I use backward induction to determine the conditions under which the players in the game choose the (esc; ~int) strategy combination when the distribution of resources among the player is $R_T > R_C$. In the above derivation regarding Acquiescence Hypothesis 4, it is shown that, in this case, player I always prefers the r outcome to the q outcome because he receives his value for the demand of player T in both, but avoids having to pay the costs of fighting in war if he does not intervene. Player T then decides between fighting a war on her own against player C versus backing down. It is then shown that when player T compares the payoffs for the r and s outcomes, if she values the demand of player C more than her own demand minus the cost of fighting, she backs down and the acquiescence outcome occurs. A further logical implication of this derivation is that, if player T's preference orderings are reversed (that is, she values her own demand minus

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fighting in war. Because her payoff for outcome s is always greater than her payoff for outcome r, she
the cost of fighting more than the demand of player C), then she chooses the escalation strategy. This leads to the additional hypothesis:

**Dyadic War Hypothesis 3:** When the resource distribution among the actors in a dispute is $R_r > R_c$, if player $T$ values her own demand minus the cost of fighting more than the demand of player $C$, then the dispute outcome will be a dyadic war between player $T$ and player $C$.

*Intervention.* Finally, having derived implications about the acquiescence and dyadic war outcomes, I now solve the model for the intervention outcome (outcome $(q_T, q_I)$ in the terms of the model). As a first step, I lay out what strategy combinations are required for this outcome to occur in the game. The intervention outcome can occur as a product of one strategy combination, as follows: at player I’s choice over intervening ($int$) or not intervening ($\neg int$), if player I has preferences over the outcomes such that $I: q_I > r_I$, then he chooses the intervention strategy. Then, as above, moving up the game tree to player $T$’s strategy decision over backing down to player $C$ ($\neg esc$) or resisting her demand and fighting ($esc$), if player $T$ has preferences such that $T: q_T > s_T$, she chooses to fight rather than back down. If this occurs, then the outcome of the game is a war in which player I intervenes on behalf of player $T$. Having specified the ($esc; int$) strategy combination, it is now possible to ask the substantive question: under what conditions will the players in the game have preferences over the outcomes such that they choose the ($esc; int$) strategy combination leading to the intervention outcome?

*Case 1, $R_T + R_I < R_C$.* In solving the model for the intervention outcome in this case, the backward induction solutions discussed above regarding the acquiescence and

always chooses the non-escalation strategy and backs down.
dyadic war outcomes in the game are instructive because they yield additional implications about the occurrence of intervention. Recall that, in the derivation regarding the acquiescence outcome, it is shown that, in this case, player I always plays the non-intervention strategy ($\neg \text{int}$) and player T always plays the non-escalation strategy ($\neg \text{esc}$). In the section on the dyadic war outcomes, it is discussed how this prediction further implies by definition that dyadic war cannot occur in this case. At this point, it is clear that this solution further implies that the intervention outcome cannot occur in this case.

To briefly revisit the logic behind this prediction, recall that player I chooses between staying neutral, which leads directly to the r outcome, or intervening, which leads directly to the q outcome. Given the distribution of resources $R_T + R_I < R_C$, player I's payoff for the r outcome is his value for the demand of player C and his payoff for the q outcome is his value for the demand of player C minus the cost of fighting in war. Because he receives his value for the demand of player C in both outcomes, but has to pay the cost of fighting if he intervenes, player I will always play the non-intervention strategy ($\neg \text{int}$). Player T then chooses between backing down to player C or escalating and fighting a war against player C on her own. If she escalates, she loses in war because player C has greater resources. So, in both cases, she receives her value for the demand of player C. But, in similar fashion to the decision faced by player I, if she chooses to fight, she has to pay the costs of fighting in war. As such, she always plays the non-escalation strategy, resulting in the acquiescence outcome.

In substantive terms, this suggests that third-party intervention will not occur in militarized disputes in international politics when the distribution of resources is such that $R_T + R_I < R_C$. In these disputes, third parties that are unable to tip the military balance
from a loss to a victory have no incentive to pay the cost of fighting associated with intervention. In fact, even if a third party was willing to intervene (which would be irrational according to the model), the disputant would still not be willing to escalate the dispute. Even with the help of the third party, she would still lose in war; so, she backs down and avoids paying the cost of fighting herself. This leads to the following testable hypothesis:

**Intervention Hypothesis 1:** When the resource distribution among the actors in a dispute is \( R_r + R_t < R_c \), then the dispute outcome will not be an intervention by player I.

Case 2, \( R_T < R_C \text{ AND } R_T + R_I > R_C \). To solve the model for the intervention outcome in this case, recall that player I chooses between staying neutral and intervening by comparing his payoffs for the dyadic war and intervention outcomes, \( r \) and \( q \), respectively. Recall also that, when the distribution of resources among the players in the game is such that player C has greater resources than player T, but fewer resources than the coalition of players T and I, then player I’s payoff associated with outcome \( r \) is his value for the demand of player C, while his payoff associated with outcome \( q \) is his value for the demand of player T minus the cost of fighting in war. If player I values the demand of player T minus the cost of fighting in war more than the demand of player C, then he prefers outcome \( q \) to outcome \( r \) and thus chooses the intervention strategy (\textit{int}). Moving up the game tree to player T’s decision, she observes player I’s decision and therefore chooses between backing down and escalating by comparing her payoffs associated with the acquiescence and intervention outcomes, \( s \) and \( q \), respectively. If she
values her own demand minus the cost of fighting in war more than the demand of player C, then she prefers outcome q to outcome s and thus chooses the escalation strategy (esc).

In substantive terms, this suggests that third party intervention will occur under specific identifiable circumstances. These circumstances regard not only the strategy choices of third parties, but those of the disputants. In order for third parties to intervene when given the opportunity, two conditions must be fulfilled: first, the third party must have sufficient resources to tip the military balance between the disputants in favor of the preferred side. That is, they must perceive their assistance to be necessary for their ally to be victorious in conflict. Second, they must value the demand of one side in the dispute over the demand of the other side to such an extent that the difference outweighs the cost of fighting in war. That is, they must have salient preferences over the issues at stake in the dispute.

At the same time, in order for third parties to be given the opportunity to intervene into the dispute, the disputation to whose aid the third party will come must be willing to escalate the dispute to war. For this to occur, there are also two conditions that must be fulfilled: first, the disputation must believe a third party’s promise to come to their aid in the war. That is, the third party must be able to make a credible commitment that they will intervene if the disputation escalates because, without their assistance, the disputation will lose if she escalates to war. Second, the disputation must value their own demand over that of their adversary enough to justify paying the costs of fighting in war alongside the third party. Putting all of this together, this implies that intervention will occur when
both the disputant and the third party foresee that their coalition will be victorious in conflict and both have preferences over the issues at stake salient enough to justify going to war. This leads to the following testable hypothesis:

**Intervention Hypothesis 2:** When the resource distribution among the actors in a dispute is \( R_r < R_c \) AND \( R_r + R_i > R_c \), if player I values the demand of player T minus the cost of fighting more than the demand of player C AND player T values her own demand minus the cost of fighting more than the demand of player C, then the dispute outcome will be an intervention by player I.

*Case 3, \( R_T > R_C \).* Finally, I solve the model for the intervention outcome when the distribution of resources is such that player T has greater resources on her own than player C. In this case, at player I's choice between neutrality and intervention, his payoff for the \( r \) outcome is his value for the demand of player T and his payoff for the \( q \) outcome is his value for the demand of player T minus the cost of fighting. At this point, it is clear that player I will never choose the intervention strategy under these circumstances because he receives his value for the demand of player T in both the \( r \) and \( q \) outcomes, but does not have to pay the cost of fighting if he stays neutral in the dispute. As such, the outcome of the dispute in this case is determined by the preferences of player T over backing down or escalating and fighting a war against player C on her own.

In substantive terms, this suggests that, regardless of the extent to which they prefer the demand of one side over the other, third parties will not intervene on behalf of disputants who they believe have sufficient resources on their own to achieve victory in conflict. In this situation, third parties observe that their contribution of military resources to the conflict would not increase the likelihood that their preferred side will
win. That is, because of the assumption in the model that the side with greater
resources wins in war with certainty, the fact that the preferred side already holds greater
resources than their opponent guarantees them a victory with certainty. So, because their
military resources are not necessary to bring about a victory, third parties have no
incentive to intervene and pay the costs of fighting in war.

**Intervention Hypothesis 3:** When the resource distribution among the actors in a
dispute is $R_I > R_o$, then the dispute outcome will not be an intervention by player I.

**Conclusion**

In this chapter, a simple theory of intervention is laid out and developed into a
game-theoretic model. This model formalizes elements of the conventional wisdom
about international conflict, in particular the assumption that the militarily stronger side
always wins in war, and derives logical implications about the occurrence of intervention
in disputes in international politics. The principal conclusion of the model is that
intervention can only occur when the distribution of resources among the disputants and
third party is such that intervention tips the balance of resources in favor of the side
whose demand the third party prefers in the dispute. This implication, that a particular
distribution of resources among disputants and a third party is a necessary condition for
intervention to occur, is a direct product of the assumption that holding a majority of the
military resources is assurance of victory in conflict. The assumption leads to the
implication that, given this distribution of resources, the entrance of the third party alters
the outcome of the conflict with certainty from a loss to a victory for the preferred side.
In this case, then, third parties will intervene when the gains from receiving the demand
of the side they prefer (as opposed to the demand of their adversary) outweigh the costs of fighting in the war.

Furthermore, the assumption directly leads to the implications that intervention cannot occur in either of the two other distributions of resources. When resources are distributed such that the side whose demand a third party prefers is weaker than their opponent and the addition of the third party’s resources is not sufficient to tip the balance in favor of the preferred side, then intervention is futile because it does not change the outcome of the conflict. Regardless of whether or not a third party intervenes, the outcome is a victory for the opponent. As such, there is nothing for a third party to gain from intervening. In an opposite case, when the distribution of resources is such that the side whose demand a third party prefers is stronger than their adversary without third-party assistance, then the preferred side wins in conflict regardless of whether the third party comes to their aid. As such, there is no need for the third party to intervene on behalf of their ally.

Having specified the model and derived these implications, its explanatory power may now be evaluated with empirical tests of its predictions. Some of the above-discussed predictions of the model about the occurrence of the acquiescence, dyadic war, and intervention outcomes may be evaluated with simple empirical tests. These tests are the subject of the next chapter in this thesis.
Chapter IV
Empirical Tests of Model I

Introduction: Beginning Evaluation of the Theory

In the previous chapter, a simple theory of intervention is laid out and developed into a game-theoretic model. This model yields a range of predictions about the occurrence of acquiescence, dyadic war, and intervention outcomes to militarized disputes in international politics. The principal conclusion of the model is that intervention can only occur when the distribution of resources among the disputants and third party is such that intervention tips the balance of resources in favor of the side whose demand the third party prefers in the dispute. In this chapter, several of the predictions derived from Model 1 are subjected to empirical testing. These tests allow the explanatory power of the theory to be evaluated and directions for further theoretical development to be discovered.

At this point, the importance of the link between these empirical tests and continued theoretical development cannot be overstated. Model 1 posits a very simple theory of intervention. The point of this exercise is to formalize elements of the conventional wisdom about international conflict and deduce their logical implications with regard to the occurrence of intervention. In this, empirical tests of these implications are useful regardless of whether the model's predictions are borne out or not. In the former case, we learn that a few key theoretical factors – the distribution of resources among disputants and third parties, their values for the issues at stake, and the costs of
fighting in war – account in large part for the occurrence of an important behavior in international relations. In the latter case, we learn that a more powerful explanation for intervention must go beyond these ideas. In both cases, we learn something about the world that is able to contribute to further theoretical development, leading to a more powerful theory of intervention.

The crucial connection between the theory, its empirical evaluation, and further development regards the *observable implications* of the theory. Because the model yields a range of predictions about dispute outcomes that are directly observable, these hypotheses may be tested in a manner that is clear and allows us to draw dependable inferences about the correctness of the theory. This point – that, in order to generate knowledge, theories must have observable implications that can be clearly tested – is made succinctly by King, Keohane and Verba (1994, p. 29):

> Any theory that does real work for us has implications for empirical investigation; no empirical investigation can be successful without theory to guide its choice of questions... We should ask of any theory: What are its observable implications? We should ask about any empirical investigations: Are the observations relevant to the implications of our theory, and, if so, what do they enable us to infer about the correctness of the theory? In any social scientific study, the implications of the theory and the observation of facts need to mesh with one another: social science conclusions cannot be considered reliable if they are not based on theory and data in strong connection with one another and forged by formulating and examining the observable implications of a theory.

With this in mind, the first step in evaluating the model is to select hypotheses for empirical testing. Of the ten hypotheses derived in Chapter III, five are very simple statements relating the distribution of resources among disputants and third parties to the occurrence of the acquiescence, dyadic war and intervention outcomes in the game. Because the distribution of resources among disputants and third parties is a component
of the theory that is directly observable and relatively easily measurable, these hypotheses may be tested in a clear manner by simply examining the occurrence of each of the outcomes across the three possible types of distributions of resources in cases of militarized disputes in international politics. For example, to the extent that intervention occurs in the distribution of resources predicted to be a necessary condition by the model, and does not occur in the distributions precluded by the model, Model 1 is borne out. To the extent that intervention does occur in these precluded distributions of resources, the model is not borne out. Hypotheses regarding the acquiescence and dyadic war outcomes may also be tested in this manner. More sophisticated tests may also be included, as needed. In the next section, I lay out the research design that will be employed in these tests.

**Research Design**

*Few versus Many Cases*

Broadly speaking, empirical tests of the hypotheses derived from Model 1 may be conducted using a number of different research designs. One particularly important design issue regards whether the tests should analyze a few cases of intervention in great detail or many cases of intervention in less exactitude. The choice of which approach is better depends on the goals of the researcher. An historian, for example, who may be more concerned with giving meaning to an event than understanding its causes, may choose the former approach because it allows the researcher to delve into the complexities and nuances of individual events. In this project, however, as discussed in Chapter III, the goal is the development of a general, causal explanation for third-party
intervention in militarized disputes in international politics. The standard chosen for this theory is the Lakatosian criterion that a theory must supersede what is already known in order to advance knowledge; that is, the theory must account for both previously explained facts and some novel facts.

With this goal and standard, the many cases approach has important advantages over the few cases approach: first, the few cases approach is more susceptible to biased conclusions resulting from measurement error because the cases selected for analysis may not be indicative of the full population of militarized disputes in international politics. The many cases approach significantly reduces the danger of this because it allows (relatively) controlled comparison across a larger sample of the population of disputes. Second, the many cases approach allows the researcher to make broader generalizations about classes of events while the few cases approach, by definition, places limits on the extent to which the conclusions reached may be generalized. In sum, the many cases approach provides the researcher with greater leverage on the research question and a higher probability of subsuming and adding to existing knowledge. As such, a many cases design will be employed in the analyses in this project.

*Selecting on the Dependent Variable versus Random Selection*

Having settled on a research design in which many cases will be analyzed, another important design issue regards the distribution of the dependent variable in these cases. As mentioned in the literature review, the most common research design employed in studies of intervention, particularly by historians and more traditional political scientists, has been to select a number of cases of intervention and examine them closely. From a
research design perspective, this approach is not particularly powerful because it does not include any variation in the dependent variable. That is, it is dangerous to draw inferences about the conditions under which intervention does and does not occur from a sample of cases that only includes cases in which intervention does occur. A more appropriate approach is to include a sample of cases, preferably a randomly selected sample, that includes both cases of intervention and non-intervention. The rationale for this is laid out clearly by King, Keohane and Verba (1994, p. 129):

Random selection with a large-n allows us to ignore the relationship between the selection criteria and other variables in our analysis. Once we move away from random selection, we should consider how the criteria used relate to each variable. That brings us to a basic and obvious rule: selection should allow for the possibility of at least some variation in the dependent variable. This point seems so obvious that we would think it hardly needs to be mentioned. How can we explain variations on a dependent variable if it does not vary? Unfortunately, the literature is full of work that makes this mistake of failing to let the dependent variable vary; for example, research that tries to explain the outbreak of war with studies only of wars, the onset of revolutions with studies only of revolutions, or patterns of voter turnout with interviews only of nonvoters.... When observations are selected on the basis of a particular value of the dependent variable, nothing whatsoever can be learned about the causes of the dependent variable without taking into account other instances where the dependent variable takes on other values. The bias induced by selecting on the dependent variable does not imply that we should never take into account values of the dependent variable when designing research. What it does mean... is that we must be aware of the biases introduced by such selection on the dependent variable and seek insofar as possible to correct for these biases.

This implies that the research design employed in tests of the hypotheses derived from Model 1 should employ a sample of militarized disputes in international politics in which intervention both does and does not occur. Moreover, going back to the quotation in the introduction to this chapter, in order to follow the recommendation of King, Keohane and Verba (1994) and design the analysis so that the theory and the data are in the strongest possible connection with one another, the analysis should include cases of each of the three possible outcomes in the game: acquiescence, dyadic war, and
intervention. By doing this, the analysis may be able to derive valid inferences about the conditions under which each of these outcomes does and does not occur. This is discussed in greater detail in the following section that lays out the selection of cases for the analysis.

*Case Selection*

As discussed above, the principal element in a solid research design is a strong link between the theory and the data used to test it. The first step toward constructing such a design is to think carefully about what characteristics the data used to test the theory should possess. Beginning this process, one issue that immediately emerges regards the general class of data to be used in the analysis. Among the many existing data sets in international relations, there exists a broad distinction between “event data” and “conflict episode data.”

*Event Data versus Conflict Episode Data.* Event data, such as McClelland’s (1976) World Events Interaction Survey (WEIS) and Azar’s (1980) Conflict and Peace Data Bank (COPDAB), attempt to chronologically record all reported interactions between states or other actors without any attempt to aggregate these actions into coherent cases, or discriminate one historical dispute from another. Instead, they break down complex phenomena into basic interactions and aggregate them into summary measures of foreign policy behavior (Schrodt 1995). Conflict episode data, on the other hand, such as the Correlates of War Project’s International and Civil Wars data set (Small and Singer 1982), Behavioral Correlates of War (BCOW) data set (Leng 1993), and the Militarized Interstate Dispute (MID) data set (Jones, Bremer and Singer 1996), focus on
specific episodes of tense interactions between states. While this places limits on the
domain of interactions captured in the data, it provides the researcher with a
systematically created, operationally explicit set of historically unified conflict episodes
for analysis.

Given the choice between the two, the theory's conception of ongoing militarized
disputes in international politics is better captured by conflict episode data than by event
data. While event data capture a broader spectrum of interactions among actors in the
international system, because these interactions are aggregated into summary measures of
foreign policy behavior, information about the specific interactions that occur between
actors in militarized disputes is lost. As the theory makes explicit, it is these very
interactions — the sequence of moves and countermoves that goes on throughout the
evolution of the conflict process — that are fundamentally important in the occurrence of
intervention. As such, because the observable implications of the theory deal explicitly
with conditions that exist during and outcomes that occur as a product of the specific
interactions during conflict episodes, these data allow greater explanatory leverage in the
analysis.

*Using the Theory to Guide the Choice among Conflict Episode Data Sources.*

Having settled on conflict episode data, the next step is to think carefully about what
aspects of conflict episodes exist in the observable implications of the theory and
therefore should be captured in the data. The principal dependent variable under study in
this project regards the occurrence of intervention in militarized disputes in international
politics. But, the formal model used to derive implications about the occurrence of
intervention also yields implications about the occurrence of acquiescence and dyadic war outcomes to militarized disputes in international politics. So, as mentioned above, the set of cases in the analysis should include occurrences of each of these outcomes. Recall that, in order for the acquiescence outcome to occur in the game, one disputant must back down to the other, rather than escalating to war. This implies that the set of cases selected for analysis must include cases of disputes that do not escalate to war and one side achieves some form of a victory. Next, recall that, in order for the dyadic war outcome to occur in the game, the disputant must choose to escalate rather than back down, and the third party must choose not to intervene. This implies that the set of cases selected for analysis must include cases of disputes that do escalate to war in which third party intervention does not occur (as discussed above). Finally, recall that, in order for the intervention outcome to occur in the game, the disputant must choose to escalate rather than back down and the third party must choose to intervene. This implies that the set of cases selected for analysis must include cases of disputes that do escalate to war in which third party intervention does occur. In sum, an ideal data set of cases for this analysis would include the population or a random sample of militarized disputes in international politics in which each of these outcomes occurs some of the time.

Moreover, because the theory is intended to be a general explanation for intervention, this data set should ideally include cases spanning the full range of types of militarized disputes, both those between states and those involving non-state actors, such
as violent separatist movements, revolutions, wars of independence and civil wars.\footnote{This notion of the full range of disputes in international politics raises issues about the distinctions among different types of conflict in international relations. While there exists a commonly accepted distinction in the literature between “international” and “domestic” conflict, operational definitions of what events fall into what categories differ among researchers. One useful classification scheme is that employed by the Correlates of War Project, whose decision rules focus on whether or not the actors involved are territorial states recognized as “members of the interstate system.” To be recognized as a member of the interstate system, an actor must meet minimal criteria of population (at least 500,000 total population) and diplomatic recognition (either by at least two major powers or membership in the League of Nations or United Nations). Based on this, according to the COW typology, there are two broad classes of wars, “international” and “civil.” Within the class of international wars, there are two sub-classes: “interstate” wars are those between recognized members of the interstate system, and “extra-systemic” are those involving at least one member of the interstate system and a political entity that is not a recognized system member. Within this category, extra-systemic wars are further divided into two sub-sub-categories, “imperial” wars and “colonial” wars. Imperial wars are those involving at least one interstate system member versus an adversary that is an independent political entity but does not qualify as a member of the interstate system (because of limitations on its independence, insufficient population to meet the interstate membership criteria, or a failure of other states to recognize it as a legitimate member), that is seeking to maintain its independence. Colonial wars are those involving at least one interstate system member versus an adversary that is a colony, dependency, or protectorate composed of ethnically different people and located at some geographical distance from the given system member, or at least peripheral to its center of government. Moving back up to the class of civil wars, in the COW typology, these are defined as armed conflicts involving a) military action internal to the metropole of the state system member, b) the active}

Unfortunately, as is often the case in international relations, the ideal data with which to test the theory do not currently exist. In general, data concerning interstate conflict is both more common and more comprehensive than data concerning conflicts involving non-state actors. This is not surprising given the predominant focus in the field on the interactions of states. What is surprising, however, is the scope of the difference in data availability – data regarding interstate conflict covers a much broader range of variables over a much longer span of time than that regarding intrastate conflict.

While data on wars involving states and some non-state actors (specifically, imperial, colonial, and civil wars) is available in the COW International and Civil Wars data set (Small and Singer 1982), data regarding non-state involvement in conflicts short-
of-war exists only in varied data sets capturing cases that seem related to but are not necessarily disputes. For example, data is available regarding coups in Africa between 1986 and 1990 (Wang 1997), protests and government repression in Europe between 1980 and 1995 (Francisco 2000), civil strife events between 1955 and 1970 (Gurr 1979\textsuperscript{43}), and ethnopoltical conflict since WWII (Minorities at Risk Project 2000). Leaving aside questions about the conceptual fit between these cases and militarized disputes, the most important limitation of these data sources is that they do not allow the researcher to identify cases in which third parties intervened (or cases in which third parties considered intervention but decided against it, for that matter). As such, for the purposes of this analysis, a more fruitful strategy for case selection may be to focus on cases of militarized disputes at the interstate level, for which this information is readily available.

*Settling on a Specific Set of Cases: Militarized Interstate Disputes.* Given all of this, in tests of hypotheses derived from Model 1, cases of militarized disputes will be obtained from the Militarized Interstate Dispute (MID) data set (Jones, Bremer and Singer 1996). The MID data set focuses on historical cases of conflict in which the threat, display or use of military force by one member state is explicitly directed toward the government, official representatives, official forces, property or territory of another state. This data source has a number of strengths relevant to this analysis: first, and most importantly, the definition of a militarized interstate dispute meshes nicely with the theory of intervention's conception of an ongoing militarized dispute in international

\textsuperscript{43} Participation of the national government, c) effective resistance by both sides, and d) a total of at least 1,000 battle deaths during each year of the war. See Sarkees (1997) for a detailed discussion of this typology.
politics. As discussed in Chapter III, the theory constructed in this project posits that intervention plays an important role in the conflict process because its occurrence, or even the expectation of its occurrence, can have important effects on how conflicts of interest in international politics evolve and are eventually resolved. As such, it is an important positive feature of the MID data that each case captures a relatively broad sample of the sequence of events comprising the conflict process, from the first incident that militarizes the dispute to its eventual resolution (or its de-escalation to non-militarized activity for a sustained period of time).

Second, in addition to meshing well with the context in which intervention occurs, the MID data connect well with the observable implications of the theory regarding the acquiescence, dyadic war, and intervention outcomes to militarized disputes. Because these data capture the conflict process from the initiation of a MID to its conclusion, it is possible to follow the evolution of each dispute to its outcome, and, therefore, construct measures for each of the possible outcomes to the game model of intervention, which is the dependent variable in the analysis. By doing so, it becomes possible to include some cases of each outcome in the tests of the hypotheses from Model 1, which makes for a strong research design. While the specific operational measures of the acquiescence, dyadic war and intervention outcomes will be discussed in greater detail in a later section.

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4 This is not a typographical error. It is how the ICPSR citation reads.

44 Although the MID data do not include cases of disputes that do not become militarized, it may be argued that the theory's orientation toward disputes that do become militarized is justified because it is these disputes that are most "serious," in that they have a significant chance of escalating to war. As such, it is these that are most interesting and important for analysis.
(the section on operationalizing the dependent variable), this is another positive feature of the MID data worth noting here.

A third strength of the MID data is that its cases have been constructed using a set of explicitly defined, operational coding rules. In essence, a militarized interstate dispute consists of a sequence of militarized incidents aggregated into a unified, historical episode. A militarized incident is defined as a single military action involving an explicit threat, display, or use of force by one system member towards another system member state. Sequences of militarized incidents are aggregated into MID s using specific coding rules, with particular attention paid to continuity of issue, continuity of location, and the interpretations of diplomatic historians\textsuperscript{15} (Jones, Bremer and Singer 1996). As a result, the researcher may have a degree of confidence about the validity of the cases in the MID data that is high relative to many of the available data sources currently available in international relations. Moreover, these explicit, clear coding rules allow other researchers to more easily replicate analyses that employ these data.

In addition, because the MID data set is a part of a broader data collection project in international relations, the University of Michigan’s Correlates of War Project (2000), the coding rules are designed to be consistent with those employed in other data sets used extensively in international relations research. For example, the MID data set employs the COW operational definition for war to distinguish those disputes that escalate to war from those that do not. By employing consistent coding rules, the insights discovered in analyses of these data are more likely to be congruent. This is an important positive
feature because it increases the likelihood that the analyses in this project may contribute
to a broader body of knowledge about intervention and international conflict in general.
That is, in the words of Dina Zinnes (1976), it increases the likelihood that this study and
the studies that follow may lead to integrative, and not just additive, cumulation.

A fourth and final strength of the MID data set is that, while its focus clearly lies
on disputes between states recognized as members of the interstate system, the case
selection does capture a limited sample of disputes involving non-state actors. MIDs
involving non-state actors may be included in the data in two ways: the first of these
regards cases of intervention by a third party that is a recognized system member against
another system member involved in an ongoing dispute with a non-state actor. In such
cases, if third party states do not become involved in the dispute, then the dispute would
not be included in the MID data because of the requirement that militarized incidents
must occur among, and be explicitly directed towards, one or more interstate system
members. But, if a third party does become involved, then because their intervention is a
legitimate interaction between two members of the interstate system, it qualifies for
inclusion in the data.

A second way disputes involving non-state actors may be included in these data
regards cases of MIDs within the context of a civil war. According to Jones, Bremer and
Singer (1996), in such cases, the side that controls the pre-war capital is said to be in
control of the government. When effective control of the capital, and hence the central
government, is lost by one side and gained by another faction, a change in government is

\[45\] For a detailed discussion of these coding rules, see Jones, Bremer and Singer (1996, pp. 174-177).
said to have occurred. A switch in control over the capital in a civil war may either 1) mark the onset of a MID between the new government and an interstate system member which supported the old government, or 2) signal the end of a MID because the conflict between the old government and the system member would no longer be between two members of the interstate system (Jones, Bremer and Singer 1996). So, to sum up this point, while the inclusion of these cases is inferior to a randomly-selected set of disputes involving non-state actors, a marginal degree of increased generalizability is suggested by the possibility that the data set does include a few cases of conflicts like violent separatist movements, revolutions, wars of independence, and civil wars. Altogether, given these strengths, it seems reasonable to conclude that the MID data set provides an appropriate set of cases with which to test the theory.

Summary Statistics of Key Variables in the MID Data Set. While detailed descriptions of the variables included in the MID data set are available elsewhere (Gochman and Maoz 1984; Jones, Bremer and Singer 1996), a brief discussion of a few of its key attributes is merited here: the MID data set contains dispute-level and participant-level data for 1,778 disputes over the period 1816-1984\(^4\). In these disputes, there are 4,227 participants, 3,770 “originators” and 457 “joiners.” MID researchers distinguished originators from joiners according to whether or not a particular participant was involved in a militarized incident on the first day of the dispute. Participants that

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\(^4\) Actually, the MID data has been updated to include cases through 1992. However, as will be discussed in the section regarding the operationalization of the independent variable, the measure of the distribution of resources among disputants and third parties employed in the analysis is available only through 1984. As
enter into MIDs at a date subsequent to the starting date of the dispute are "joiners."

Because this distinction between original disputants and joiners is included in the data, it is possible to identify third-party interveners in each MID. As such, this variable will be useful in operationalizing the intervention dependent variable in the analysis, as discussed in detail later in this chapter. For each dispute, the MID data provide detailed information about the behavior of dispute participants, such as dates of participation, types of military actions undertaken and the level of hostility reached. For the purposes of the analysis in this chapter, information regarding the level of hostility reached by disputants is important because it conveys whether a dispute escalated to war or was resolved by means short of war. The rationale and coding scheme for the MID data set measure of hostility level is described succinctly by Jones, Bremer and Singer (1996):

Militarized incidents can vary significantly in magnitude, reflecting differences between each type of action. To assist in understanding this, three sub-war categories, threat of force, display of force, and use of force were adopted by the Correlates of War Project. Threats are verbal indications of hostile intent, and since these are expressed in diplomatic language, they are not always easy to interpret. Diplomats often refer to the extreme, dire, serious, or dangerous consequences of an act without necessarily conveying that a threat to use force exists. Threatened actions can be ascertained when they are contingent and usually take the form of an ultimatum; the intention is to take a certain action against another state if the other state acts, fails to act, or does not refrain from acting in a specified manner. Displays of force involve military demonstrations but no combat interaction. The display of force category is usually easier to code because actions are generally more readily recorded than words, but displays of force are non-violent military acts, and they can occur without a target being specified. In other cases displays occur within a complicated series of events involving multiple actors in which the target is not clear. Uses of military force represent the highest of the three sub-war categories, and, with the exception of declarations of war, all incidents within the use of force of category share the commonality of active military operation... When militarized interstate disputes evolve, or escalate, to the point where military combat is sufficiently sustained that it will result in a minimum of 1,000 battle deaths (Small and Singer, 1982), they become interstate wars.

such, because the domain of analysis is restricted to the period 1816-1984, summary statistics for the set of
Using this coding scheme, the MID data records the hostility level at two levels of analysis: at the participant level, the hostility level regards the most severe military action taken by an actor in a dispute. So, for example, if in a dispute one actor displays force with the movement of naval forces and another actor uses force by attacking those naval forces, then, if the dispute ends with no further military action, the former disputer’s hostility level is coded as a “display of force” and the latter’s hostility level is coded as a “use of force.” At the dispute level, the hostility level variable measures the highest level of military action undertaken by any actor in a dispute. So, in the above example, the dispute would be coded as a “use of force” because the naval attack is the most severe military action occurring in the dispute.

With this variable, one common distinction made by researchers regards whether or not disputes escalate to violence or are resolved (relatively) peacefully. Of the 1,778 disputes in the data, a simple frequency analysis shows that 497 were resolved short of violence (with only threats or displays of force), while 1,281 were resolved violently (with the use of force or full-scale war). At the actor level, of the 4,227 MID participants, 1,073 did not employ actual violence (with only threats or displays of force), while 2,138 escalated to the use of force or full-scale war. The hostility level variable and the distinction between violent versus non-violent resolution of disputes will be employed in the operationalization of the dependent variables in the analysis, as will be discussed in greater detail in a later section.

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cases in the MID data will be discussed only for this period.

47 For the remaining, 1,016 participants, hostility level data are not available.
Another dispute characteristic important for the analysis in this chapter regards the outcomes of MIDs, because information about which actors are "winners" and "losers" in each dispute is also useful for operationalizing the outcomes in the game model. To illustrate this, recall that the acquiescence outcome in the Model 1 occurs when player T backs down to player C by not escalating to war, thus conceding player C her demand and ending the game. In order to operationalize this outcome in the MID data, information is required not only about player T's hostility level, but also about which player, if any, emerged victorious from the dispute. With the outcome variable in the MID data, cases in which player C emerges as the winner and player T the loser can be identified and employed in the analysis.

But, as a precursor, it is important to note that this variable must be employed with caution. In the abstract, a dispute ends with a victory for an actor when that actor achieves all of their operational demands in the conflict. Unfortunately, as discussed by Jones, Bremer and Singer (1996), this is very difficult to measure objectively because 1) the nature of an actor's demands can change over the course of a dispute, and 2) it is difficult to ascertain the extent to which the actors are satisfied after a dispute. To deal with these problems in this measure, MID researchers restricted the use of operational demands to those made by each state prior to the onset of the MID that were directly related to a challenge of the pre-existing status quo. By doing so, they were able to code dispute outcomes based on a comparison of the challenges made against the status quo and any alteration of the status quo that occurred as a result of the actions taken during the dispute. At the same time, because their coding is based in essence on alterations in
the status quo (instead of the degree of operational demand satisfaction), a state can only “win” a dispute when the status quo is changed in its favor. So, although an actor may gain tangible benefits from its successful maintenance of the status quo, the outcome of such a dispute is coded as a “stalemate” in the MID data, as long as the status quo remains unchanged.

Using these coding rules, dispute outcomes in the MID data are defined as follows (Jones, Bremer and Singer 1996):

**Victory.** A victory is defined by the favorable alteration of the status quo by one state through the use of militarized action which imposes defeat upon the opponent. It denotes the attainment of a tangible piece of territory, the significant change in an adversary’s foreign policy, or the successful downfall of another state’s political regime by force. A victory can be identified whenever one or more state(s) are able to secure a favorable change through the application of successful military actions which directly leads to a forced alteration of the pre-dispute status quo.

**Yield.** A yield is defined by the coerced submission by one state to the demands made by another state but short of any clear alteration of the status quo directly attributable to the threat, display or use of military force. Whenever a state offers concessions that alter the status quo in exchange for not being militarily threatened or stop further military attacks, the “losing” state has yielded to the pressure imposed by the “winning” state. As an outcome of a MID, a yield can be identified whenever one state capitulates by offering concessions which appease the demands of another state before the militarized forces of either state have secured any substantial tactical gains on the battlefield.

**Stalemate.** A stalemate is defined by the lack of any decisive changes in the pre-dispute status quo and is identified when the outcome does not favor either side in the dispute. Stalemates usually are produced when there was no alteration of the status quo. However, they can occur even if the status quo has changed so long as net balance results in a draw.

**Compromise.** A compromise is defined as a situation in which each side in the dispute agrees to give up some demands or make concessions with regard to the status quo. A compromise is identified whenever actors on both sides of a dispute agree to divide the spoils roughly equally, and hence, redefine the status quo, or agree to amicably settle their differences and accept the current status quo.

**Released.** A released outcome is applied only for situations in which a seizure of material or personnel defines the context of the dispute. It is identified whenever the seizure of material or personnel culminates with their release from captivity.

**Unclear.** An unclear outcome exists whenever the historical sources provided either conflicting interpretations or ambiguous information about post-dispute status quo.
A simple frequency analysis of this variable shows that MIDs do not have
determinate winners and losers all, or even most, of the time. Of the 1,778 disputes in the
data, there exists a clear winner and loser (a victory by one side or a yield by the other) in
only 349 MIDs. The most common outcome to MIDs seems to be some form of a
“draw,” in which neither side makes any concessions and the status quo remains
unchanged, or both sides make concessions and the status quo is redefined in a way that
benefits both disputants relatively equally. Together, the stalemate and compromise
outcomes make up approximately two-thirds of the values in the dispute outcome
variable (1,191 of 1,778 disputes). The remainder of disputes (214) have outcomes that
are unclear, in that the release of territory or hostages that returns the pre-dispute status
quo does not indicate a clear victor, or the information is simply unavailable.\footnote{In the remaining 24 disputes, the coded outcome is “joins ongoing war.”}

To sum up, in this section, the set of cases to be analyzed has been chosen and
briefly described. It has been shown that the MID data provide many cases of disputes in
international politics that mesh nicely with the theory’s conception of the context in
which intervention occurs. Furthermore, it has also been shown that the data contain
specific information that will be useful in operationalizing the variables of interest in the
theory. But, before these variables can be operationalized and the analysis can proceed,
careful thinking is required about the unit of analysis in these tests.
The Unit of Analysis: Third-party Decisions over Intervention

Going back to J.D. Singer's (1969) classic "Level of Analysis Problem in International Relations," the importance of careful thinking about the proper unit of analysis in international relations research has been stressed by a few prominent social scientists in the field (Singer 1969; King, Keohane and Verba 1994). Despite these warnings, a vast amount of research, including that studying intervention, has employed inappropriate research designs, such as those in which the unit of analysis in the theory differs from the unit of analysis in tests of the theory. As a result of these kinds of design problems, the body of findings that social scientific research in international relations has generated are often inconsistent and at times even contradictory. It has even been conjectured that this lack of attention to proper research design is one of the main reasons our field has not been able to make greater progress in explaining world politics in general (Singer 1969; Zinnes 1976; Bremer 1993).

In this chapter, I have made an attempt to think very carefully about the appropriate research design for tests of the theory of intervention developed in Chapter III. A crucial part of this research design regards the fit between the unit of analysis in the hypotheses derived from the theory and the unit of analysis in the tests of these hypotheses. In the model of intervention developed in the previous chapter, the theoretical focus lies on the strategic interaction that occurs in a dispute between a third party (player I) and the side in the dispute whose demand the third party prefers (player T, the ally of player I). Specifically, the game examines 1) the decision of the third party regarding intervention versus non-intervention and 2) the decision of the disputant
regarding escalation versus non-escalation (backing down). As such, in order to test implications derived the model at a consistent level of analysis, these tests must also examine the decisions of third parties and the disputants they favor.

This implies an appropriate operational unit of analysis that is not immediately straightforward. This level is dyadic, focusing on the game that goes on between a third party considering intervention and the side they favor in the dispute. But, because multiple third parties may intervene into a single dispute, there may exist several games relevant to each dispute in the data. To illustrate this, consider a hypothetical dispute between two states: Israel and Syria, for example. In this dispute, consider the three distinct games that would exist if the United States, Great Britain, and Iraq all intervene, the U.S. and Britain joining on the side of Israel and Iraq joining on the side of Syria. The first game regards the strategic interaction between the United States and the side they favor in the dispute, Israel. The second game regards the interaction between Great Britain and the side they favor in the dispute, also Israel. The third game regards the interaction between Iraq and the side they favor in the dispute, Syria. So, with regard to this one dispute, the level of analysis in the intervention game implies three distinct observations.

Moreover, because proper research design requires that the analysis include not only a sample of third parties that do intervene into disputes, but also a sample of those that consider intervention but decide against it (choosing instead to stay neutral)⁴⁹,

⁴⁹ This point is discussed in detail above, in the section of this chapter regarding selecting on the dependent variable versus random selection.
additional observations must be included in the analysis for those third parties that are non-interveners. To illustrate this, return to the above example: in this hypothetical dispute, there may exist a number of third parties that consider intervention but decide against it, such as China, Jordan, and Egypt (among many possible others). This implies (at least) three additional observations that must be included in the analysis: 1) the game between China and the side they favor in the dispute, 2) the game between Jordan and the side they favor in the dispute, and 3) the game between Egypt and the side they favor in the dispute. In sum, for this one hypothetical dispute, an appropriate research design includes (at least) six observations, one for each third party–disputant dyad. That is, in essence, the design must include one observation for each third party who makes a decision regarding intervention.

This unit of analysis is difficult to operationalize. In cases in which third parties intervene into disputes in international politics, it is clear to the observer that these states both considered intervention and had a clear preference for the demand of one side in the dispute over that of the other. That is, because intervention is an observable behavior, it is possible to deduce the results of their decision-making processes from their actions that follow. However, in cases in which third parties do not intervene, information about whether or not the third party actively considered intervention cannot be directly ascertained from their behavior. That is, third parties that went through a decision-making process regarding intervention into the dispute cannot be differentiated from those third parties that did not consider intervening at all. Even if the researcher is able to conclude with certainty that a particular third party did consider intervention but decided
against it, this does not necessarily imply that it would be clear on which side the third party would have joined.

As a result of this, operationalizing the sample of non-interveners to be included in the analysis is not a straightforward endeavor. Because it cannot be known with certainty whether a particular third party considered intervention, some systematic decision rules must be employed to define which states are “potential interveners.” With these rules, a data set at the appropriate unit of analysis may be constructed. This is the subject of the following section.

*Selecting the Set of Potential Interveners*

At the broadest possible level, when a militarized dispute in international politics occurs, all other actors in the international environment are potential interveners. As long as one side in the dispute is willing to accept the aid of a third party, in the abstract, that actor has the opportunity to intervene. At the same time, in reality, limitations on the interests and abilities of actors in international politics suggest that not all third parties consider intervening into all militarized disputes. In essence, there are two limiting factors on the set of third parties that may be considered potential interveners: the first of these regards the notion of “interests.”

As discussed in Chapter III, the theory of intervention developed in this project is based on the idea that militarized disputes occur as a product of a conflict of interest over some issue or issues between actors in international politics. When such a dispute occurs, third parties may or may not have salient preferences regarding the issues under contention. In the view of this researcher, this is because, in the milieu of international
affairs, actors pay attention only to those things they believe have a significant change of affecting them in important ways. Third parties who do not have an interest in the fundamental issues at stake in a dispute, or in issues that arise as a product of the dispute\textsuperscript{50}, do not have incentives to actively consider intervention.

A second factor that places limitations on the set of third parties that may be considered potential interveners regards the ability of actors to project military power into ongoing disputes. In order to fight on behalf of an ally, third parties must be able to project a substantial amount of military power from their location to the location where the militarized dispute is ongoing. Some third parties may not have sufficient military capabilities to actively participate in a militarized dispute, regardless of its location. Other third parties may have a sufficient amount of military personnel and materiel to fight, but lack the means to project their forces from their home base to the location of the dispute. For example, it seems silly to conjecture that the European state of Luxembourg is a legitimate potential intervener into an ongoing dispute between two South American states, because Luxembourg has neither 1) the armed forces required to fight in the dispute, nor 2) the means to transport such forces from their home base in Europe to the location of the fighting in South America.

Given all of this, in order to include non-interveners in the research design, it is necessary to construct some decision rules to define the set of potential interveners relevant to each dispute. In this project, the standard I have chosen to determine which

\textsuperscript{50} See Chapter 5 in Morgan (1994) for a excellent discussion of how additional issues may arise when a dispute occurs.
actors constitute the set of potential interveners into a particular dispute is based on the idea that third parties consider intervening into disputes that take place in their “politically relevant international environment.” The concept of a state’s politically relevant international environment (or PRIE), created by Zeev Maoz (1996), is designed to capture the environment that an international actor (specifically, a state) considers relevant when formulating its foreign policy, in particular its security policy. The rationale for this is explained succinctly by Maoz (1996):

Each state has an environment that it considers significant for its planning, actions, and calculations. This is a state’s politically relevant international environment (PRIE). A given state’s PRIE represents the set of political units (state and nonstate units) whose structure, behavior and policies have a direct impact on the focal state’s political and strategic calculus. This is the environment upon which decision makers, intelligence agencies, the media, and the public focus their attention on an almost daily basis. These units are deemed to deserve persistent and systematic attention whether or not important things or visible changes take place. This is so because developments in these units are perceived to have direct, immediate, and profound impact on one’s own state. The need to react to developments in the units making up the PRIE of a state is far stronger than the need to developments outside the PRIE. In addition, the threshold of a state’s tolerance to developments of units within its PRIE is considerably lower than the threshold of the state’s reaction to developments of units outside the PRIE. If a state within one’s PRIE increases its defense budget considerably, the tendency to react is far higher than the tendency to react to a substantial increase in the defense budget of states outside the PRIE. Likewise, an alliance between two states will be less likely to evoke a reaction from one’s state if these two states are outside its PRIE than if at least one of the states were in its PRIE.

In operational terms, a state’s PRIE is defined to include states directly or indirectly contiguous to it, all regional powers of its geographic region, and all major powers with global reach capability51. Maoz (1996) justifies this operational definition as

51 In this definition, Maoz employs the COW measure of direct contiguity, in essence direct land connection or short cross-water distance. He adds the category of indirect contiguity to capture the contiguity between state A and a colony or mandated territory, B, controlled by another state, C. For detailed discussions of these measures, see Gochman (1991) and Maoz (1996). The listing of global and regional powers is adapted from the COW listing in Small and Singer (1982), and is available in Maoz (1996).
follows: the first component, contiguity, has been emphasized as an important factor in the occurrence of violent conflict in international relations by a significant number of researchers (Vasquez 1993; Goertz and Diehl 1992; Siverson and Starr 1991; and Holsti 1991, to name a few, as cited by Maoz). While it is a matter of some debate whether territory is a causal factor in the occurrence of conflict, or instead creates a “context of relevance” among actors that can become contentious and lead to conflict, in either case, the presence of territorial contiguity is clearly associated with the occurrence of international conflict. Because of this link between territory and conflict, Maoz argues, contiguity makes two states politically relevant to each other.

The second component of the operationalization, geopolitical status, is included to capture the idea that global and regional powers have interests and capabilities beyond their interactions with contiguous states. Without delving into the issue of whether global (or regional) reach is a result of global (or regional) interests or whether global (or regional) reach causes states to adopt global (or regional) interests, both of these notions imply that a state with global or regional reach capacity possesses both the interests and the capability to take part in interactions with and between states spanning the entire globe or in a particular region of the world, respectively\(^2\). Because of this, all states in the system have political relevance with global powers, and all states in a particular region have political relevance with regional powers.

\(^2\) Interestingly, according to Maoz (1996), this also suggests that other states may be aware of the coincidence of intent and capacity of noncontiguous states to intervene in their own internal or external affairs, under certain circumstances. In the view of this researcher, this suggests that the application of the
Applying the PRIE concept to third-party intervention, I define the set of potential interveners into a particular militarized dispute as the set of third parties who are in the PRIE of at least one of the original disputants. In other words, for a given state, if a militarized dispute occurs involving a state that is in its PRIE, then the former state is a potential intervener into the dispute involving the latter state. The operational definition of this is as follows: the set of potential interveners relevant to a particular dispute is comprised of 1) all states directly or indirectly contiguous to at least one original disputant, 2) all regional powers of the geographic region(s) of the original disputants, and 3) all major powers with global reach capability.

While basing the selection of potential interveners on the PRIE concept and operationalization is one of a number of ways this research design issue may be addressed, the approach has several advantages that suggest it is superior to any of the available alternatives. Of these alternatives, as mentioned previously, the most commonly employed approach in existing research has been to focus singularly on cases of intervention, thus including no potential interveners who decided against joining into the dispute (see Kaufman 1992; Pearson, Baumann and Pickering 1994; Larson 1991; Werner and Lemke 1996; and Regan 1998). As discussed above in the section of this chapter regarding random selection versus selection on the dependent variable, such a design does not allow the researcher to derive causal inferences about the occurrence of PRIE concept to third parties considering intervention may even have been anticipated to by its inventor, which would seem to be a good thing.

53 This, of course, assumes the former state is not already involved in the militarized dispute as an originator. But, if this was the case, then this state would not be a third party and the point would be moot.
intervention and is therefore inferior to any design that includes a sample of non-interveners in the analysis.

A second alternative to the PRIE decision rule employed in existing research regards restricting the scope of the analysis to intervention by major powers with a design that includes all major power interveners and a sample of major power non-interveners (for example, see Huth 1998). While this approach is superior to those including only interveners because it allows variation in the dependent variable, it is limited by the fact that it does not allow inferences to be derived about third-party interveners beyond major powers. The seriousness of this limitation may be assessed by examining the frequency distribution of major and minor power interveners in the MID data described above. In these data, over the period 1816-1984, there are 60 cases of major power intervention and 115 cases of minor power intervention. This suggests that a design sampling only major powers omits a substantial number of cases of the behavior under study (66%, according to this sample), and thus limits the generalizability of the analysis. Comparing this alternative to the PRIE decision rule employed in this project, because the latter includes both major and minor power potential interveners, it allows the analysis to capture a sample of third parties that is more representative of the actual distribution of potential interveners in the empirical world. Based on this, it seems reasonable to conclude that the PRIE approach provides a stronger research design for this analysis.

Beyond this, at the most essential level, a fundamental criterion for evaluating the validity of this decision rule regards the extent to which it captures the range of observed cases of intervention in the data. If the measure of the set of potential interveners into a
particular dispute captures all or most of the observed cases of intervention in the data, then it can be reasonably assumed that this measure also captures an appropriate sample of third-party non-interveners. To examine this, I operationalize the PRIE decision rule regarding the set of cases to be employed in the analysis, as discussed above. Doing so reveals that the PRIE decision rule captures 175 of the 215 cases of intervention\footnote{The specific operation definition of intervention used in this calculation is discussed below, in the section regarding the MID Intervention Data Set.} in the MID data over the period 1816-1984. While, in an ideal world, the decision rule employed in this analysis would capture 100% of the cases of intervention in the data, unfortunately, some level of empirical slippage from concept to measure is a common and grudgingly accepted reality in social scientific research in international relations. In the view of this researcher, the fact that the PRIE decision rule captures approximately 81% of the cases of intervention in the data suggests that the measure has sufficient validity to be employed in the analysis\footnote{The specific operation definition of intervention used in this calculation is discussed below, in the section regarding the MID Intervention Data Set.}. As such, using this decision rule, a data set for the analysis has been constructed from existing data sources. This data set is discussed in the following section.

\textit{The MID Intervention Data Set}

A MID Intervention data set has been constructed for the analyses in this dissertation project. The data set was created by obtaining information about the participants in militarized disputes from the MID data set (Jones, Bremer and Singer 1996) and calculating the set of potential interveners into each dispute using the above-
discussed PRIE decision rule (Maoz 1996). The data set contains 70,614 observations, each of which captures the decision of a third party regarding intervention into an ongoing militarized interstate dispute. Aggregated by dispute, these 70,614 cases regard 1,758 MID s over the period 1816-1984.

In the data, there are 175 cases of third-party intervention56. Cases of intervention are identified using two definitional criteria: first, the actor must be included as a “joiner” in the MID participant level data set. That is, they must meet the requirements of the MID researchers for inclusion as a participant in a particular dispute and they must have joined into the dispute on a date subsequent to the starting date. Second, in addition to being identified as a joiner, the actor must fight alongside their ally. That is, in MID coding rule terms, they must actively participate with a use of military force or in full-scale war, as measured by their hostility level.

This operational definition has both strengths and weaknesses: by relying on the MID coding of joiners, third-party participants in militarized disputes are identified using explicit, systematic coding rules that 1) focus on evidence of coordinated activity with one side in the MID and 2) are designed to be consistent with the interpretations of diplomatic historians. Because of this, the researcher can be reasonably confident that those states identified as joiners were actually engaged in a militarized incident (or series of incidents) with an originator in the dispute and that this interaction occurs in the

56 Of the 40 cases of intervention not captured by the PRIE definition of potential interveners, there is no clearly identifiable pattern among the third parties that suggests a superior decision rule. They do not seem to be clustered in any one time period or geographic region.
context of an ongoing MID\textsuperscript{57}. At the same time, because the MID coding is based
singly on participation, it is not possible to tell whether joiners became involved in an
ongoing militarized dispute voluntarily (and thus intervened into the conflict) or were
targeted by another state at a subsequent stage of a dispute (and thus were forced into the
conflict).

Regarding the second component of the operationalization, by requiring third
parties to engage in the use of military force or full-scale war in order to be coded as
interveners, the definition focuses on the ultimate level of intervention, fighting on behalf
of an ally. By doing so, a range of behaviors in which third parties provide some form of
aid to their allies involved in militarized disputes but do not actively employ military
force on their behalf are omitted. So, for example, while behaviors like the provision of
economic or military aid, intelligence or even covert operations may be considered to be
intervention at some level (as discussed in the literature review), here they are important
only to the extent that they represent threats to fight on behalf of an ally if the dispute
escalates to violence. While this coding rule limits the scope of the study of intervention

\textsuperscript{56} There are 221 cases of intervention if those for which third party hostility level data are not available, but
the dispute escalated to violence are included.

\textsuperscript{57} The MID researchers pay particular attention to this issue. The specific coding rule is: to be a part of a
unified militarized interstate dispute, each militarized incident must involve the same issue or set of issues,
and occur within the same geographic area – unless there was information provided by diplomatic historians
that led them to believe that seemingly unconnected issues and locations were linked to one another.
Incidents were aggregated into disputes when diplomatic historians suggested that a sequence of actions led
to a direct response to such actions, even if the militarized events encompassed more than one distinct issue
or geographic area. It is occasionally possible for two nations to be engaged in two different disputes at the
same time, if the militarized incidents along one front are not countered along the other front and the
respective governments clearly kept their diplomatic behavior regarding the disputes separate before,
during, and after the conflicts. The existence of two simultaneous militarized disputes can often be
determined by the presence of separate negotiations or separate treaties, the text of speeches of official
representatives, and by the interpretation of the historian (Jones, Bremer and Singer 1996).
to some extent, it does not require the researcher to make tenuous judgments about questionable or clandestine involvements in the data. In the view of this researcher, and in the view of the researchers of the COW Project, who employ a consistent definition of intervention\textsuperscript{58}, this loss of scope is a worthwhile tradeoff for the concreteness of the coding rule.

Using this operational definition, the 175 cases of intervention in the data suggest that a third party joins into a MID in one of every ten disputes, on average, over the period 1816-1984. However, this summary statistic must be interpreted with caution because it is possible for more than one third party to intervene into a given dispute. While in the majority of cases in which intervention occurs it is by a single third party, there do exist a few cases in the data with a large number of interveners. Among these outliers are the Seven Weeks War (9 interveners), World War I (13 interveners), WWII (23 interveners), the Vietnam War (7 interveners), and the Grenada conflict (6 interveners). All in all, the 175 cases of intervention occur in 76 of the 1,758 MIDs in the data. This suggests that, at the dispute level, intervention occurs in approximately 4% of the disputes in the sample\textsuperscript{59}. At the participant level, however, of the 70,614 third-party decisions over intervention in the data, less than 1% of potential interveners actually decide to join into ongoing MIDs (.2%, to be specific). Altogether, these patterns

\textsuperscript{58} In fact, in disputes in which a third party joins an ongoing war, the MID Intervention data set is identical to the Correlates of War Project definition of intervention: "direct military participation of such a magnitude that either 1,000 troops are committed to the combat zone or, if the force is smaller or the size unknown, 100 deaths are sustained." (Singer and Small 1982)

\textsuperscript{59} It is important to understand how the specific operational definitions employed in the MID Intervention data set impact this summary statistic. The analytical focus on intervention as fighting on behalf of an ally
confirm findings in existing research that intervention is a relatively rare event in world politics (Gartner and Siverson 1996; Altfeld and Bueno de Mesquita 1979; Jones, Bremer and Singer 1996).

At the same time, the data suggest that intervention is becoming a more common occurrence. A simple analysis of the frequency of cases of intervention over time shows a slight but distinct upward trend, as shown in Figures 4.1 and 4.2. Figure 4.1 is a chart showing the sum of cases of intervention occurring per year over the period 1816-1984. While there is substantial variation in the number of cases occurring per year (from zero to 24), the upward slope of the trendline indicates a slight, but steady increase over time. This may be seen more clearly in Figure 4.2, which shows the number of cases of intervention aggregated by decade. In this chart, the data suggest an increase of approximately one intervention per decade, on average (with significant variation from decade to decade, but a trend nevertheless), from zero cases in the decade 1816-1825 to 16 cases in the decade 1975-1984.

Thinking carefully about this, changes in the composition of the international system over time may partially explain this increase. That is, over the period 1816-1984, the number of states in the international system has continuously increased, particularly since WWII. Existing research has shown that this increase in the number of states has been associated with an increase in the number of militarized disputes (Jones, Bremer and


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in the data imply that only 72% of the included disputes (1,266 of 1,758) ever reach the minimum level of hostility required for intervention to occur. Of these, intervention occurs in 6% of cases.

*The overall mean of the data series implies that a third party intervenes into a militarized dispute, on average, once per year over the period 1816-1984. But, as this trend suggests, this is skewed over time.*
Figure 4.2
Cases of Intervention by Decade, 1816-1984
Singer 1996). As a result of these changes, there has been a gradual increase in both 1) the number of ongoing militarized disputes into which third parties can intervene, and 2) the number of third parties who consider intervening into each dispute. Taking a moment to examine this, in the MID Intervention data set, the average dispute has approximately 41 potential interveners. But, the number of potential interveners per dispute is not distributed evenly across time. A simple analysis indicates that the average number of potential interveners per dispute increases by approximately two per decade, from an average of approximately 11 per dispute in 1816 to 55 per dispute in 1984. This may be seen in Figures 4.3 and 4.4, which show the average number of potential interveners per dispute by year and by decade, respectively. In, both the upward trend is clearly observable. Given this, the increase in observed cases of intervention is not surprising.

Putting all of this together, having constructed this data set and briefly analyzed some of its key features, it becomes possible to employ these data in tests of the hypotheses derived from Model 1. Moreover, by paying particularly careful attention to research design issues in the construction of the data set, these tests may be performed using a strong research design. Specifically, by designing the data set to contain both interveners and non-interveners, and focusing on the decisions of third parties and disputants in the unit of analysis, a research design may be employed that maximizes the likelihood of the analysis producing dependable, causal inferences about the occurrence of intervention. Furthermore, as discussed above, because these data also allow the acquiescence and dyadic war outcomes in the game to be operationalized, tests of hypotheses derived from the model regarding the occurrence of each of the outcomes in
Mean Number of Potential Interveners per Dispute by Decade, 1816-1984

Figure 4.4
the theoretical model – acquiescence, dyadic war, and intervention – may be performed to evaluate the correctness of the theory. The next step in the design is thus to operationalize the dependent variable in the analysis, as follows.

*Operationalizing the Dependent Variable: the Acquiescence, Dyadic War, and Intervention Outcomes to Militarized Disputes in International Politics*

In this section, I operationalize the dependent variable in the analysis, which regards the three possible outcomes to militarized disputes in the model of intervention developed in Chapter III. To do this, recall that the unit of analysis in the MID Intervention data set constructed for this dissertation project regards the decisions of third parties over intervention into militarized disputes. Because the data contain information about 1,758 disputes over the period 1816-1984, and because for each dispute there exist an average of 41 potential interveners, there are over 70,000 observations in the data set that could be employed in these operationalizations. Thinking carefully about the relationship between the theoretical model and this data set, because the game captures the strategic interaction between players T and I, the appropriate level of analysis for the tests of the hypotheses derived from Model 1 is dyadic, with each observation capturing one third party-disputant dyad.

For each third-party disputant dyad, the model specifies that one of three outcomes occurs: 1) acquiescence by player T, 2) dyadic war between players T and C, and 3) intervention by player I on behalf of player T. Because the formal model lays out explicitly what strategies the players must play in order for each of these outcomes to occur, measures for each outcome may be constructed using strict, systematic coding
rules. Furthermore, because the MID data set contains a range of variables about the
characteristics of disputes and dispute participants, such as start and end dates, levels of
hostility reached, and dispute outcomes, these variables may be employed in the
construction of operational measures for the dependent variable. I lay out these coding
rules and the operational measures for each of the outcomes in the game as follows.

Beginning with the acquiescence outcome to Model 1, recall that this outcome
occurs when player T chooses to back down to player C rather than escalate to war, thus
conceding player C her preferred demand and ending the game. In operational terms, this
implies that an acquiescence outcome occurs in militarized disputes in international
politics in which player T does not escalate to war and player C achieves a victory in the
dispute. As such, cases of MIDs in which the side preferred by the third party 1) does not
escalate to war, and 2) is on the losing side in the dispute may be coded as acquiescence
outcomes. To capture the former criterion, I require that player T have a hostility level of
either threat or display of force (that is, below use of force or war) according to the MID
data. To capture the latter, I require that player T emerges from the dispute either having
yielded to player C or on the losing side of a victory by player C, according to the MID
data. Using this definition, in the MID Intervention data set, there are 76 disputes that
end in an acquiescence by the side favored by the third party. For each of these disputes,
recall that there can exist several third-party disputant dyads. This translates into 1,546
third party-disputant dyads in the data that end in an acquiescence by player T.

Moving on to the second outcome in Model 1, this outcome occurs when player T
escalates to war and player I does not intervene on her behalf. In operational terms, this
implies that a dyadic war outcome occurs in militarized disputes in international politics in which 1) the side favored by the third party chooses to fight rather than back down to her opponent, and 2) the third party does not intervene on her behalf. To capture the former criterion, I require that player T fight in a dispute in which there is sustained combat lasting at least one week, from which a clear winner and loser emerge. To measure this, MIDs meeting the following criteria are coded as dyadic wars: a) the disputants achieve a hostility level of use of force or full-scale war, b) the fighting is reciprocated, c) the fighting lasts at least one week, d) the fighting ends with a victory or yield by one side, and e) the third party does not join into the MID with a use of force or in full-scale war after the starting date, according to the definition of intervention discussed in the above section. My rationale for this strict definition is twofold: first, it is consistent with the idea of a dyadic war in the theory. In the model, the players base their decisions about intervention and escalation in part on their expectations about what would occur if player T must fight in war against player C, either with or without the help of player I. This requires, of course, that players T and C fight against each other (i.e., that the dispute is reciprocated) and that the fighting occurs until one side wins and the other side loses (i.e., that the fighting last a reasonable length of time and end with a clear victor). Second, this strict definition helps limit the skew in the distribution of the dependent variable resulting from the rare occurrence of intervention. As such,

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61 I include MIDs reaching a hostility level of use of force (4) with those that become full-scale wars (5) because the essential distinction I am trying to capture regards the evolution of the dispute to violence. To prevent relatively minor incidents from being included, I require that disputes last at least one week.
examining the MID Intervention data set, using this definition, the data contain 174 disputes that end in dyadic war. Once again, recall that, for each of these disputes, there can exist several third-party disputant dyads. This translates into 5,799 third party-disputant dyads in the data that end in a dyadic war between players T and C.

The third and final outcome to the game regards the principal object of study in this project, third-party intervention. This outcome occurs in Model 1 when 1) player T chooses to escalate the dispute to war rather than back down to player C and 2) player I intervenes on her behalf. As discussed above in the section introducing the MID Intervention data set, to capture the former criterion, I require that player T fight against player C with a hostility level of either use of force or full-scale war. To capture the latter, I require that player I joins into the MID after the starting date and achieves a hostility level of use of force or full-scale war. Using this definition, in the MID Intervention data set, there are 76 disputes that end in an intervention by player I. But, recall that multiple third parties may intervene into a single dispute. So, in the data, there are 175 cases in which a third party intervenes on behalf of the side whose demand they prefer in a MID. For ease of illustration, these outcomes are shown in 4.1. Now, having specified how the dependent variable in the analysis is measured, the final step in the research design regards the operationalization of the independent variable, the distribution of resources among players T, C and I. This is the subject of the following section.

Furthermore, only those participants that reach a hostility level of 4 or 5 are included as participants in dyadic wars.
Table 4.1
Operational Measures of the Outcomes to the Model of Intervention

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Operational Measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acquiescence</td>
<td>Third-party-disputant dyads in MIDs in which 1) player T has a hostility level of either threat or display of force, and 2) player T emerges from the dispute either having yielded to player C or on the losing side of a victory by player C.</td>
</tr>
<tr>
<td>Dyadic War</td>
<td>Third-party-disputant dyads in MIDs in which 1) the disputants achieve a hostility level of use of force or full-scale war, 2) the fighting is reciprocated, 3) the fighting lasts at least one week, 4) the fighting ends with a victory or yield by one side, and 5) the third party does not join into the MID with a use of force or in full-scale war after the starting date.</td>
</tr>
<tr>
<td>Intervention</td>
<td>Third-party-disputant dyads in MIDs in which 1) the disputants achieve a hostility level of either use of force or full-scale war, and 2) a third party joins into the MID after the starting date and achieves a hostility level of use of force or full-scale war.</td>
</tr>
</tbody>
</table>
Operationalizing the Independent Variable: the Distribution of Resources among Disputants and Third Parties

The principal theoretical factor of interest in Model 1 regards the distribution of resources among disputants and third party potential interveners in disputes in international politics. The conception of an actor's "resources" employed in this project is quite general, capturing a range of factors -- from military capabilities to economic productive capacity to geographical size to population and beyond. While each of these factors may be thought of as analytically distinct from the others, they are unified by the idea that each contributes to the ability of an actor to apply military force in conflict.\footnote{This conception of resources is closely related to the fundamentally important, but difficult to specify concept of "power." Because the term "power" is sometimes used synonymously with "resources" in this dissertation, it is particularly important to be clear about the relationship between these two terms. The term "power," as employed here, specifically regards an actor's control over resources, as opposed to the common conception of the term as control over outcomes in international relations. This latter conception is succinctly put by Morgenthau (1985): "When we speak of power, we mean man's control over the minds and actions of other men." In the view of this researcher (and in the view of Ray (1998)), while Morgenthau's definition suggests the intuition that greater amounts of resources tend to lead to greater control over outcomes, this concept may more appropriately be defined as influence. In any event, definitional differences aside, having specified power as resources for the purpose of this analysis, the}}
supplies that an actor is able to produce for the fight. So, in thinking about how to operationalize this theoretical factor for the analysis of Model 1, an ideal measure of the resources of the actors should be general enough to capture all or most of those factors thought to be important in fighting in war, but simple enough to be tractable and parsimonious.

Unfortunately (but not surprisingly), no such ideal measure exists. But, what does exist is a proxy that comes substantially closer to this ideal than any of the other available alternatives employed in existing research. The Correlates of War Composite Indicator of National Capabilities (CINC) (Singer, Bremer and Stuckey 1972) is an index measuring the share of resources held by a state in the international system along three dimensions thought to be fundamentally important in international conflict. The first of these regards population size. According to Ray (1998), a large population is a necessary but not sufficient condition for a state to be extremely powerful militarily. That is, historically, in order to put a large military into battle, a state must have a large number of personnel to do the fighting\(^3\). To capture this dimension, the CINC includes measures of a state's total population and urban population.

The second dimension included in the CINC regards industrial resources. Industrial resources are thought to be important to an actor's ability to fight in war

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\(^3\) Of course, this has become less true over time, as technological advances have allowed states to increase their ability to destroy things and kill people while putting fewer of their own military personnel into battle. But, the general point that more military personnel translates into greater military power remains valid today.
because the ability to produce more and better weaponry improves the chances of an actor winning in conflict. That is, while the military resources possessed by each side at the point in space and time when a war begins may determine which side wins the initial battle, if both sides continue to fight, then the side with the ability to produce more and better military capabilities has a greater chance of winning future battles and thus winning the war. In support of this, there exists empirical evidence showing that an advantage in industrial capabilities is more strongly associated with victory in conflict than an advantage in military or demographic capabilities (Wayman, Singer and Goertz 1983). Industrial resources are measured in the CINC with two proxies, energy consumption and iron/steel production.

The third and final dimension included in the CINC regards most obvious component of the ability to fight in war, military capabilities. Military capabilities are measured in the CINC with two proxies, military personnel and military spending. While these indicators are sometimes criticized because they do not account for such differences in military capability as technological advantages, they are the most clearly measurable (and most commonly employed, if grudgingly so) variables used to measure military resources employed in the field. With these six indicators – total population, urban population, energy consumption, iron/steel production, military personnel and military spending – a composite index is created by calculating each state’s system share (simply the percentage held by that state of the total amount in the international system) and then taking the average of the six system shares for each state by year. The CINC score is
available from Bennett and Stam’s (1999) *Eugene* data program for most of the states in the international system for the period 1816-1984.

While the *CINC* is a quite commonly employed measure of national resources in the social scientific study of international relations, there do exist a few alternatives employed in existing research that are worth considering here. One such alternative is a more narrowly-defined measure focusing singularly on military capabilities, such as Huth’s (1998) measures of the “immediate” and “short-term” balance of capabilities in extended-immediate deterrence scenarios⁶⁴. Thinking carefully about this kind of measure, while the idea of capturing the specific balance of military forces at the initiation of a conflict may be appealing for some research questions, it does not fully capture the idea of the *full extent of an actor’s ability to fight in war* that is the essence of the conception of resources in the theory of intervention developed in this dissertation project. To make this as clear as possible, the theory of intervention developed here does not posit that the actors involved in a dispute base their decisions on their expectations about who will win the first violent exchange between actors in a conflict, but rather who will win if the dispute escalates to full-scale war⁶⁵. Beyond these conceptual differences, Huth’s (1988) measures of the immediate and short-term balance of capabilities have additional limitations because they are available for a limited number of cases,

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⁶⁴ According to Huth (1998), the immediate balance of capabilities between a potential attacker, defender and protégé is defined as those land forces of a potential attacker in a position to initiate an attack and those land forces of the defender and protégé in a position to repulse such an attack. The short-term balance of capabilities between a potential attacker, defender and protégé is defined as the capacity of the attacker and defender and protégé to augment the immediate balance of forces by mobilizing ground and airforce manpower as well as the first class of trained reserves.
specifically 58 cases of extended-immediate deterrence situations over the period 1885-1983\(^6\). The CINC, in contrast, does capture the essence of an actor's ability to fight in full-scale war, and is available for a much broader spatial-temporal domain. For these reasons, in the view of this researcher, it is a clearly superior measure.

A second alternative to the CINC employed in existing research regards the use of national economic indicators as proxies for aggregate resources. Scholars such as Organski and Kugler (1980) have argued that a state's gross national product is the most parsimonious indicator of its total national capabilities. Based on this premise, they construct an index of national power that begins with a state's GNP and modifies it with two factors, 1) population and 2) the ability of the government to extract resources from its citizens\(^7\). Thinking carefully about this, while their index does attempt to capture the idea of the full extent of a state to fight in war by including the industrial and demographic dimensions of resources, it has both conceptual and empirical limitations stemming from its dependence on the GNP measure. Conceptually, GNP is a variable with clearly understood importance largely only for states with capitalist economies in the modern era (since the inception of Keynesian economics). In states with centrally planned economies, GNP is both difficult to calculate and difficult to interpret. Perhaps the most striking conceptual criticism of GNP is that the measure may be misleading because it includes aspects of economic production that do not really translate into

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\(^6\) This does not necessarily imply that all disputes that escalate to violence reach the level of full-scale war, only that disputants base their decisions on the possibility that it may do so.

\(^6\) For a detailed description of these cases, see Huth (1988, pp. 23-27).

\(^7\) For a detailed discussion of this measure, see the Organski and Kugler (1980, pp. 85-86).
resources directly or even indirectly convertible to military purposes, such as the service sector (Goertz and Diehl 1986). Empirically, GNP data is available only for a very limited spatial-temporal domain, usually only since WWI and usually only for capitalist, industrialized states. In contrast, the CINC measure of national resources does not suffer from such serious conceptual problems, and is available a much more general spatial-temporal domain (including a much broader range of states, like those with centrally planned economies and those in the third world). For these reasons, in the view of this researcher, it is a clearly superior measure.

As such, in the tests of hypotheses derived from Model 1, measures of the distribution of resources among disputants and third parties are constructed using the CINC. Recall from Model 1 that there exist three possible distributions of resources among the disputants, players T and C, and the third party, player I, in the game. The first of these is the case in which the resources of player C are greater than the resources of players T and I combined. That is, \( R_T + R_I < R_C \), where \( R_i \) represents the resources of player \( i \). This case is operationalized for the analysis using the simple formula, \( CINC_T + CINC_I < CINC_C \). The variable is dichotomous, coded 1 if the observation meets the criteria in the formula, and 0 if not. In the data set constructed for this dissertation project, of the 7,520 valid cases (1,546 cases of third party-disputant dyads ending in acquiescence + 5,799 cases of third party-disputant dyads ending in dyadic war + 175 cases of third party-disputant dyads ending in intervention), there exist 4,380 observations with this distribution of resources. The second possible way resources may be distributed among the players in Model 1 is the case in which player C
has greater resources than player T, but fewer resources than the coalition of players T and I formed if player I intervenes. That is, $R_T < R_C$ AND $R_T + R_I > R_C$. This distribution of resources is operationalized for the analysis using the simple formula, $CINC_T < CINC_C$ AND $CINC_T + CINC_I > CINC_C$. The variable is also dichotomous, coded 1 if the observation meets the criteria in the formula, and 0 if not. Using this coding rule, there exist 507 cases of this distribution of resources in the set of valid cases for analysis. The third and final possible distribution of resources in Model 1 is the case in which player T has greater resources than player C, $R_T > R_C$. This case is operationalized for the analysis using the simple formula, $CINC_T > CINC_C$, and is also dichotomous. Using this formula, there exist 2,633 cases of this distribution of resources in the set of valid cases for analysis. Finally, having operationalized both the dependent and independent variables for the analysis, the research design is complete and empirical tests of hypotheses derived from Model 1 may be conducted on 7,520 valid cases (cases in which there is valid data for both the dependent and independent variables). Descriptive statistics for these cases may be seen Table 4.2. The analysis follows.

**Analysis**

Two simple methods will be employed to test hypotheses derived from Model 1. First, because the hypotheses selected for analysis are deterministic statements about the conditions under which the acquiescence, dyadic war, and intervention outcomes will always or never occur, the most straightforward way to test them is simply to examine cross-tabulations of the dichotomous measures of the distribution of resources against dichotomous measures of the outcomes in the game. For example, recall from Chapter III
Table 4.2  
Frequencies of Variables in Tests of Hypotheses Derived from Model 1

Outcomes in the Model of Intervention

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acquiescence</td>
<td>1,546</td>
<td>20.6</td>
<td>20.6</td>
</tr>
<tr>
<td>Dyadic War</td>
<td>5,799</td>
<td>77.1</td>
<td>97.7</td>
</tr>
<tr>
<td>Intervention</td>
<td>175</td>
<td>2.3</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Distributions of Resources

<table>
<thead>
<tr>
<th>Condition</th>
<th>Frequency</th>
<th>Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>$R_T + R_I &lt; R_C$</td>
<td>4,380</td>
<td>58.2</td>
<td>58.2</td>
</tr>
<tr>
<td>$R_T &lt; R_C$ AND $R_T + R_I &gt; R_C$</td>
<td>507</td>
<td>6.7</td>
<td>65.0</td>
</tr>
<tr>
<td>$R_T &gt; R_C$</td>
<td>2,633</td>
<td>35.0</td>
<td>100.0</td>
</tr>
</tbody>
</table>
that Model 1 predicts that intervention cannot occur when the distribution of resources is such that $R_t + R_i < R_c$. To test this hypothesis, I construct a cross-tab table showing the relationship between the dichotomous independent variable measuring this distribution of resources and the dichotomous dependent variable measuring the occurrence of intervention. In these cross-tab tables, the occurrence of outcomes in distributions of resources predicted by the model offers supportive evidence, while the occurrence of outcomes in distributions of resources precluded by the model offers unsupportive evidence.

While this approach offers a very simple and clearly interpretable way of analyzing the relationships predicted by the model, it does not provide the researcher with a systematic standard for falsifying the hypotheses. In the absence of such a standard, the researcher is forced to rely on ad hoc methods for assessing the validity and magnitude of the relationships examined in the tests. As a result, the researcher is encouraged to adopt a rather stringent standard (a naïve methodological falsificationist standard, in philosophy of science terms), in which the occurrence of a single outcome at odds with the hypothesis is grounds for falsification. While this may be acceptable in some research, given the probabilistic nature of social scientific inquiry (in which very few things occur all of the time or none of the time), such a stringent approach may not be the most fruitful way to evaluate the theory in this analysis, particularly since the goal of Model 1 is to assess the explanatory power of the conventional wisdom as a building block for further theoretical development.
As such, I employ a second approach to testing the hypotheses derived from Model 1. Using basic social statistics commonly used in social scientific IR research, this approach provides the researcher with a systematic standard for falsification that is based on a less stringent, more probabilistic interpretation of the hypotheses derived from Model 1. To illustrate this, return to the above-mentioned prediction that intervention cannot occur when the distribution of resources is such that $R_t + R_i < R_c$. A more probabilistic interpretation of this hypothesis would suggest that there exists a general tendency for intervention to occur less in this distribution of resources than in the other possible distributions of resources in which intervention is not precluded by the model. To test this sort of hypothesis, there exist a number of appropriate statistical methods, each with its own strengths and limitations.

One alternative is to employ a chi-square test of the relationships in the cross-tab tables, which allows researcher to test whether or not the relationships are “statistically significant;” that is, whether the researcher can or cannot believe with reasonable confidence that the process that generated the data is systematic, as opposed to random. Another option regards measures of association, such as Gamma and Somer’s $d$, that allow the researcher to describe in quantitative terms the direction and magnitude of the relationships in the cross-tabs (Knoke and Bohrnstedt 1991). A third useful method is a difference of means test, which is a systematic way of examining whether and how two means in a population of cases are systematically different from each other.

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68 For a succinct discussion of this definition of statistical significance, see Knoke and Bohrnstedt (1991, pp. 113-114).
For the purposes of this analysis, a difference of means test is a particularly attractive choice because it allows the researcher to assess the statistical significance of the relationship between the independent and dependent variables and the direction/magnitude of this relationship (if it is statistically significant). The method may be employed in tests of the hypotheses derived from Model 1 in the following manner: as an example, return to the above-mentioned prediction that intervention cannot occur when the distribution of resources is such that \( R_r + R_t < R_c \). The first step is to state the null hypothesis, which posits that the mean of the distribution of the intervention dependent variable in the set of cases in which resources are distributed such that \( R_r + R_t < R_c \) is the same as the mean of the distribution of the intervention dependent variable in the set of cases including distributions of resources in which intervention is not precluded by the model. The next step is to state the alternative hypothesis, which posits that the mean of the former is less than the mean of the latter.

Having stated the null and alternative hypotheses, the null may be tested using an independent samples t-test. This is the appropriate test for these data because the observations in the MID Intervention data set capture only a sample of the true population of cases across space and time, which implies the population standard error is unknown. The t-test relies upon two main assumptions: first, that random samples are drawn from two independent, normally distributed populations (in the present example, the first population regards the set of cases of the intervention dependent variable in which resources are distributed such that \( R_r + R_t < R_c \) and the second regards the set of cases of the intervention dependent variable in which intervention is not precluded by the model);
and, second, that the two population variances are homoscedastic. To employ the test, an estimate of the population variance is constructed using a weighted average of the two sample variances, according to the following formula (from Knoke and Bohrnstedt 1991):

\[ s^2 = \frac{(N_1 - 1)s_1^2 + (N_2 - 1)s_2^2}{N_1 + N_2 - 2} \]

where \( N_1 + N_2 - 2 \) are degrees of freedom that are associated with \( s^2 \).

Equation 4.1

Having done this, the test statistic is calculated using the following formula (from Knoke and Bohrnstedt 1991):

\[ t_{(N_1+N_2-2)} = \frac{\bar{Y}_2 - \bar{Y}_1}{s\sqrt{1/N_1 + 1/N_2}} \]

Equation 4.2

If the value of the test statistic exceeds the critical value for a given level of confidence\(^69\) and the appropriate number of degrees of freedom, then the null hypothesis may be rejected and the difference in means is statistically significant. The mean difference may then be directly interpreted to describe the direction and magnitude of the relationship between the independent and dependent variable. Using this method, tests of the hypotheses derived from Model 1 are conducted in the following section.

*Test of Acquiescence Hypothesis 1*

Returning to Chapter III, recall that the first hypothesis derived from Model 1 states that, when the distribution of resources among the actors in a dispute is \( R_T + R_t < \)
$R_c$, the dispute outcome will be an acquiescence by player $T$. To test this hypothesis, I construct a cross-tabulation table showing the relationship between the independent variable measuring whether or not the distribution of resources among the disputants and third party fulfills the condition $R_T + R_i < R_c$ (coded 1 if yes and 0 if no) and the dependent variable measuring whether or not the outcome of the dispute is an acquiescence (coded 1 if yes and 0 if no). This cross-tabulation may be seen in Table 4.3.

Table 4.3 shows the relationship between third party-disputant dyads in which the distribution of resources among the actors is $R_T + R_i < R_c$ and the occurrence of the acquiescence outcome to the dispute they are involved in. Because the unit of analysis in these tests is the third party-disputant dyad, which is not immediately intuitive, particular care must be given to the examination of results of the table. First, recall that the prediction derived from the model being tested here regards the decisions of third parties over intervention, and that multiple third parties can consider intervening into the same dispute. As such, the calculations in the cross-tab table do not regard the number of disputes in which acquiescence occurs, but rather the number of third party decisions over intervention that result in a dispute ending in acquiescence. Second, recall that the hypothesis posits a one-directional relationship that cases in which the distribution of resources is $R_T + R_i < R_c$ will end in acquiescence. It is important to note that this does not imply the inverse relationship, that cases in which the distribution of resources is not $R_T + R_i < R_c$ will never end in acquiescence. So, the proper interpretation of this table

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9 The most commonly employed level of confidence in social scientific research in international relations is $\alpha = .05$. 
Table 4.3
Cross-Tabulation Test of Acquiescence Hypothesis 1

<table>
<thead>
<tr>
<th></th>
<th>~ Acquiescence</th>
<th>Acquiescence</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>(~ R_T + R_I &lt; R_C)</td>
<td>2,775</td>
<td>365</td>
<td>3,140</td>
</tr>
<tr>
<td>(R_T + R_I &lt; R_C)</td>
<td>3,199</td>
<td>1,181</td>
<td>4,380</td>
</tr>
<tr>
<td>Total</td>
<td>5,974</td>
<td>1,546</td>
<td>7,520</td>
</tr>
</tbody>
</table>
regards only the bottom row, which shows how the set of cases in which the distribution of resources is $R_r + R_t < R_c$ are distributed between the acquiescence and ¬acquiescence outcomes.

This having been said, the table implies that Acquiescence Hypothesis 1 is not borne out. Of the 4,380 observations in which the distribution of resources is such that $R_r + R_t < R_c$, 1,181 end in acquiescence by player T. This is approximately 27% of cases predicted correctly. To test this hypothesis using a more probabilistic standard for falsification, I perform a difference of means test. This test examines whether the acquiescence outcome is more likely to occur when the distribution of resources among the actors in a dispute is $R_r + R_t < R_c$ than when the distribution of resources is $R_r < R_c$ AND $R_r + R_t > R_c$ or $R_r > R_c$. The results of this test may be seen in Table 4.4.

Table 4.4 shows evidence in support of the hypothesis. According to the independent samples $t$-test, there exists a statistically significant\textsuperscript{70} mean difference of .1534 in the predicted direction. That is, in substantive terms, in the sample of cases in which resources are distributed according to $R_r < R_c$ AND $R_r + R_t > R_c$ or $R_r > R_c$, the mean likelihood\textsuperscript{71} of the acquiescence outcome is .1162 (approximately 11%). In the sample of valid cases in which the distribution of resources is $R_r + R_t < R_c$, the mean likelihood of the acquiescence outcome is .2696 (approximately 27%), indicating that the acquiescence outcome is more than twice as likely in this case. This suggests that, as the hypothesis predicts, the acquiescence outcome is more likely to occur when the

\textsuperscript{70} For a two-tailed test, $\alpha = .05$.

\textsuperscript{71} Because this variable is dichotomous, coded 1 for yes and 0 for no, it may be interpreted as a probability.
### Table 4.4
Difference of Means Test of Acquiescence Hypothesis 1

**Group Statistics**

<table>
<thead>
<tr>
<th></th>
<th>$R_T + R_I &lt; R_C$</th>
<th>N</th>
<th>Mean</th>
<th>Std. Dev</th>
<th>Std. Error Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acq</td>
<td>0</td>
<td>3,140</td>
<td>.1162</td>
<td>.3206</td>
<td>5.721E-03</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>4,380</td>
<td>.2696</td>
<td>.4438</td>
<td>6.706E-03</td>
</tr>
</tbody>
</table>

**Independent Samples t-test**

<table>
<thead>
<tr>
<th></th>
<th>Levene's Test for Equality of Variances</th>
<th>t-test for Equality of Means</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>F</td>
<td>Sig.</td>
</tr>
<tr>
<td>Acq</td>
<td>Equal variances assumed</td>
<td>1308.041</td>
</tr>
<tr>
<td></td>
<td>Equal variances ~assumed</td>
<td>-17.402</td>
</tr>
</tbody>
</table>
distribution of resources among the third party and disputants is such that $R_\tau + R_i < R_c$

than when the distribution of resources is $R_\tau < R_c$ AND $R_\tau + R_i > R_c$ or $R_\tau > R_c$. So,

putting all of this together, while there does not exist a deterministic relationship between

this distribution of resources and the occurrence of the acquiescence outcome, the

empirics do offer some supportive evidence for a general tendency in the direction of the

hypothesis.

**Test of Dyadic War Hypothesis 1**

Recall that this hypothesis states that when the distribution of resources among

the actors in a militarized dispute is $R_\tau + R_i < R_c$, then the dispute outcome will not be a
dyadic war between player T and player C. To test this hypothesis, I construct a cross-
tabulation table showing the relationship between the independent variable measuring

whether or not the distribution of resources among the disputants and third party fulfills

the condition $R_\tau + R_i < R_c$ (coded 1 if yes and 0 if no) and the dependent variable

measuring whether or not the dispute outcome is a dyadic war (coded 1 if yes and 0 if

no). This cross-tabulation may be seen in Table 4.5.

Table 4.5 shows the relationship between third party-disputant dyads in which the
distribution of resources among the actors is $R_\tau + R_i < R_c$ and the occurrence of the
dyadic war outcome to the dispute they are involved in. Again, particular care must be
taken in interpreting these results. Here, the calculations in the cross-tab table regard the
number of third party decisions over intervention that result in a dispute ending in dyadic
war. It is also important to remember that this hypothesis posits a one-directional
relationship that cases in which the distribution of resources is $R_\tau + R_i < R_c$ will not end
### Table 4.5
Cross-Tabulation Test of Dyadic War Hypothesis 1

<table>
<thead>
<tr>
<th></th>
<th>~Dyadic War</th>
<th>Dyadic War</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>~RT + RI &lt; RC</td>
<td>481</td>
<td>2,659</td>
<td>3,140</td>
</tr>
<tr>
<td>RT + RI &lt; RC</td>
<td>1,240</td>
<td>3,140</td>
<td>4,380</td>
</tr>
<tr>
<td>Total</td>
<td>1,721</td>
<td>5,799</td>
<td>7,520</td>
</tr>
</tbody>
</table>
in dyadic war. This does not imply the inverse relationship, that cases in which the
distribution of resources is \( R_r + R_t < R_c \) will always end in dyadic war. So, the proper
interpretation of this table regards only the bottom row, which shows how the set of cases
in which the distribution of resources is \( R_r + R_t < R_c \) are distributed between the dyadic
war and \( \sim \)dyadic war outcomes.

This having been said, the table implies that Dyadic War Hypothesis 1 is not
borne out. Of the 4,380 observations in which the distribution of resources is such that \( R_r + R_t < R_c \), 3,140 end in dyadic war between players T and C. This is approximately
28\% of cases predicted correctly. To test this hypothesis using a more probabilistic
standard for falsification, I perform a difference of means test. This test examines
whether the dyadic war outcome is less likely to occur when the distribution of resources
among the actors in a dispute is \( R_r + R_t < R_c \) than when the distribution of resources is \( R_r > R_c \).\(^{72}\) The results of this test may be seen in Table 4.6.

Table 4.6 shows evidence in support of the hypothesis. According to the
independent samples t-test, there exists a statistically significant\(^{73}\) mean difference of
.1506 in the predicted direction. That is, in substantive terms, in the sample of cases in
which resources are distributed according to \( R_r > R_c \), the mean likelihood\(^{74}\) of the dyadic
war outcome is .8675 (approximately 87\%). In the sample of valid cases in which the

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\(^{72}\) In this analysis, the appropriate test compares the mean in the \( R_r + R_t < R_c \) distribution of resources only
to the mean in the \( R_r > R_c \) distribution of resources, and does not include the \( R_r < R_c \) AND \( R_r + R_t > R_c \)
distribution of resources. This is because Dyadic War Hypothesis 2 predicts that the dyadic war outcome
cannot occur in the \( R_r < R_c \) AND \( R_r + R_t > R_c \) distribution of resources.

\(^{73}\) For a two-tailed test, \( \alpha = .05 \).

\(^{74}\) Because this variable is dichotomous, coded 1 for yes and 0 for no, it may be interpreted as a probability.
### Table 4.6
Difference of Means Test of Dyadic War Hypothesis 1

#### Group Statistics

<table>
<thead>
<tr>
<th>Dyadic War</th>
<th>(R_T + R_I &lt; R_C)</th>
<th>N</th>
<th>Mean</th>
<th>Std. Dev</th>
<th>Std. Error Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0</td>
<td>2633</td>
<td>.8675</td>
<td>.3392</td>
<td>6.909E-03</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>4380</td>
<td>.7169</td>
<td>.4506</td>
<td>6.808E-03</td>
</tr>
</tbody>
</table>

#### Independent Samples \(t\)-test

<table>
<thead>
<tr>
<th>Dyadic War</th>
<th>Levene's Test for Equality of Variances</th>
<th>(t)-test for Equality of Means</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>F</td>
<td>Sig.</td>
</tr>
<tr>
<td>Dyadic War</td>
<td>Equal variances assumed</td>
<td>1079.095</td>
</tr>
<tr>
<td></td>
<td>Equal variances ~assumed</td>
<td></td>
</tr>
</tbody>
</table>
distribution of resources is $R_T + R_i < R_c$, the mean likelihood of the dyadic war outcome is $0.7169$ (approximately 72%), indicating that the dyadic war outcome is substantially less likely in this case. This suggests that, as the hypothesis predicts, the dyadic war outcome is less likely to occur when the distribution of resources among the third party and disputants is such that $R_T + R_i < R_c$ than when the distribution of resources is $R_T > R_c$.

So, putting all of this together, while there does not exist a deterministic relationship between this distribution of resources and the occurrence of the dyadic war outcome, the empirics do offer some supportive evidence for a general tendency in the direction of the hypothesis.

*Test of Dyadic War Hypothesis 2*

Recall that this hypothesis states that when the distribution of resources among the actors in a dispute is $R_T < R_c$ AND $R_T + R_i > R_c$, then the dispute outcome will not be a dyadic war between player T and player C. To test this hypothesis, I construct a cross-tabulation table showing the relationship between the independent variable measuring whether or not the distribution of resources among the disputants and third party fulfills the condition $R_T < R_c$ AND $R_T + R_i > R_c$ (coded 1 if yes and 0 if no) and the dependent variable measuring whether or not the dispute outcome is a dyadic war (coded 1 if yes and 0 if no). This cross-tabulation may be seen in Table 4.7.

Table 4.7 shows the relationship between third party-disputant dyads in which the distribution of resources among the actors is $R_T < R_c$ AND $R_T + R_i > R_c$ and the occurrence of the dyadic war outcome to the dispute they are involved in. Here again, the above caveats about careful interpretation of these results apply. It is also important to
**Table 4.7**  
Cross-Tabulation Test of Dyadic War Hypothesis 2

<table>
<thead>
<tr>
<th>~R_T &lt; R_C AND R_T + R_I &gt; R_C</th>
<th>~Dyadic War</th>
<th>Dyadic War</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,589</td>
<td>5,424</td>
<td>7,013</td>
<td></td>
</tr>
<tr>
<td>R_T &lt; R_C AND R_T + R_I &gt; R_C</td>
<td>132</td>
<td>375</td>
<td>507</td>
</tr>
<tr>
<td>Total</td>
<td>1,721</td>
<td>5,799</td>
<td>7,520</td>
</tr>
</tbody>
</table>
remember that this hypothesis posits a one-directional relationship that cases in which the
distribution of resources is $R_t < R_c$ AND $R_t + R_i > R_c$ will not end in dyadic war. This
does not imply the inverse relationship, that cases in which the distribution of resources is
not $R_t < R_c$ AND $R_t + R_i > R_c$ will always end in dyadic war. So, the proper
interpretation of this table regards only the bottom row, which shows how the set of cases
in which the distribution of resources is $R_t < R_c$ AND $R_t + R_i > R_c$ are
distributed between the dyadic war and ~dyadic war outcomes.

Given this, the table implies that Dyadic War Hypothesis 2 is not borne out. Of
the 507 observations in which the distribution of resources is such that $R_t < R_c$ AND $R_t +
R_i > R_c$, 375 end in dyadic war between players T and C. This is approximately 26% of
cases predicted correctly. To test this hypothesis using a more probabilistic standard for
falsification, I perform a difference of means test. This test examines whether the dyadic
war outcome is less likely to occur when the distribution of resources among the actors in
a dispute is $R_t < R_c$ AND $R_t + R_i > R_c$ than when the distribution of resources is $R_t >
R_c$.\textsuperscript{75} The results of this test may be seen in Table 4.8.

Table 4.8 shows evidence in support of the hypothesis. According to the
independent samples $t$-test, there exists a statistically significant\textsuperscript{76} mean difference of
.1278 in the predicted direction. That is, in substantive terms, in the sample of cases in

\textsuperscript{75} In this analysis, the appropriate test compares the mean in the $R_t < R_c$ AND $R_t + R_i > R_c$ distribution of
resources only to the mean in the $R_t > R_c$ distribution of resources, and does not include the $R_t + R_i < R_c$
distribution of resources. This is because Dyadic War Hypothesis 1 predicts that the dyadic war outcome
cannot occur in $R_t + R_i < R_c$ distribution of resources.

\textsuperscript{76} For a two-tailed test, $\alpha = .05$.\textsuperscript{76}
Table 4.8  
Difference of Means Test of Dyadic War Hypothesis 2

Group Statistics

<table>
<thead>
<tr>
<th>Dyadic War</th>
<th>( R_T &lt; R_C ) AND ( R_T + R_I &gt; R_C )</th>
<th>N</th>
<th>Mean</th>
<th>Std. Dev</th>
<th>Std. Error Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0</td>
<td>2.633</td>
<td>.8675</td>
<td>.3392</td>
<td>6.609E-03</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>507</td>
<td>.7396</td>
<td>.4393</td>
<td>1.951E-02</td>
</tr>
</tbody>
</table>

Independent Samples \( t \)-test

<table>
<thead>
<tr>
<th>Dyadic War</th>
<th>Levene’s Test for Equality of Variances</th>
<th>( t )-test for Equality of Means</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>( F )</td>
<td>Sig.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dyadic War</td>
<td>Equal variances assumed</td>
<td>172.786</td>
</tr>
<tr>
<td></td>
<td>Equal variances ~assumed</td>
<td>6.205</td>
</tr>
</tbody>
</table>
which resources are distributed according to \( R_r > R_c \), the mean likelihood\(^7\) of the dyadic war outcome is \( .8675 \) (approximately 87\%). In the sample of valid cases in which the distribution of resources is \( R_r < R_c \) AND \( R_r + R_i > R_c \), the mean likelihood of the dyadic war outcome is \( .7396 \) (approximately 74\%), indicating that the dyadic war outcome is substantially less likely in this case. This suggests that, as the hypothesis predicts, the dyadic war outcome is less likely to occur when the distribution of resources among the third party and disputants is such that \( R_r < R_c \) AND \( R_r + R_i > R_c \) than when the distribution of resources is \( R_r > R_c \). So, putting all of this together, while again there does not exist a deterministic relationship between this distribution of resources and the occurrence of the dyadic war outcome, the empirics do offer some supportive evidence for a general tendency in the direction of the hypothesis.

*Test of Intervention Hypothesis 1*

After finding moderate support for the acquiescence and dyadic war hypotheses deduced from Model 1, I now test two hypotheses that regard the principal object of study, the occurrence of intervention in militarized disputes in international politics.

Returning to Chapter III, recall that Intervention Hypothesis 1 states that when the distribution of resources among the actors in a dispute is \( R_r + R_i < R_c \), then the dispute outcome will not be an intervention by player I. To test this hypothesis, I construct a cross-tabulation table showing the relationship between the independent variable measuring whether or not the distribution of resources among the disputants and third party fulfills the condition \( R_r + R_i < R_c \) (coded 1 if yes and 0 if no) and the dependent

\(^7\) Because this variable is dichotomous, coded 1 for yes and 0 for no, it may be interpreted as a probability.
variable measuring whether or not the dispute outcome is an intervention (coded 1 if yes and 0 if no). This cross-tabulation may be seen in Table 4.9.

Table 4.9 shows the relationship between third party-disputant dyads in which the distribution of resources among the actors is $R_T + R_i < R_C$ and the occurrence of the intervention outcome to the dispute they are involved in. In interpreting the table, it is important to remember that this hypothesis posits a one-directional relationship that cases in which the distribution of resources is $R_T + R_i < R_C$ will not end in intervention. This does not imply the inverse relationship, that cases in which the distribution of resources is not $R_T + R_i < R_C$ will always end in intervention. So, the proper interpretation of this table regards only the bottom row, which shows how the set of cases in which the distribution of resources is $R_T + R_i < R_C$ are distributed between the intervention and $\sim$-intervention outcomes. Looking at the table, of the 4,380 observations in which the distribution of resources is such that $R_T + R_i < R_C$, 59 end in intervention. This is approximately 99% of cases predicted correctly.

While at an intuitive level this result seems to provide evidence in support of the hypothesis, it is actually difficult to interpret. Because intervention is such a rare event, it is hard to discern whether this test actually capturing the relationship posited by the theory or whether it is driven by the lack of cases of intervention in the data. On one hand, a level of predictive accuracy of almost 99% speaks for itself. But, on the other hand, despite the rarity of intervention in the data, there exist 59 occurrences of the behavior in the distribution of resources in which it is precluded by the theory; this represents a full 34% of the cases of intervention in the data. So, without a systematic
Table 4.9
Cross-Tabulation Test of Intervention War Hypothesis 1

<table>
<thead>
<tr>
<th></th>
<th>~Intervention</th>
<th>Intervention</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>~ $R_T + R_I &lt; R_C$</td>
<td>3,024</td>
<td>116</td>
<td>3,140</td>
</tr>
<tr>
<td>$R_T + R_I &lt; R_C$</td>
<td>4,321</td>
<td>59</td>
<td>4,380</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>7,345</td>
<td>175</td>
<td>7,520</td>
</tr>
</tbody>
</table>
standard for falsification, no real conclusions may be reached from this test. As a result, the more systematic, probabilistic difference of means test is particularly instructive for this analysis. This difference of means test examines whether the intervention outcome is less likely to occur when the distribution of resources among the actors in a dispute is $R_\tau + R_t < R_c$ than when the distribution of resources is $R_\tau < R_c \ AND \ R_\tau + R_t > R_c$. The results of this test may be seen in Table 4.10.

Table 4.10 shows evidence in support of the hypothesis. According to the independent samples $t$-test, there exists a statistically significant mean difference of .0516 in the predicted direction. That is, in substantive terms, in the sample of cases in which resources are distributed according to $R_\tau < R_c \ AND \ R_\tau + R_t > R_c$, the mean likelihood of the intervention outcome is .0651 (approximately 7%). In the sample of valid cases in which the distribution of resources is $R_\tau + R_t < R_c$, the mean likelihood of the intervention outcome is .0135 (approximately 1%), indicating that the intervention outcome is seven times less likely in this case. This suggests that, as the hypothesis predicts, the intervention outcome is less likely to occur when the distribution of resources among the third party and disputants is such that $R_\tau + R_t < R_c$ than when the distribution of resources is $R_\tau < R_c \ AND \ R_\tau + R_t > R_c$. So, putting all of this together, while again there does not exist a deterministic relationship between this distribution of

\footnote{In this analysis, the appropriate test compares the mean in the $R_\tau + R_t < R_c$ distribution of resources only to the mean in the $R_\tau < R_c \ AND \ R_\tau + R_t > R_c$ distribution of resources, and does not include the $R_\tau > R_c$ distribution of resources. This is because Intervention Hypothesis 3 predicts that the intervention outcome cannot occur in the $R_\tau > R_c$ distribution of resources.}

\footnote{For a two-tailed test, $\alpha = .05$.}

\footnote{Because this variable is dichotomous, coded 1 for yes and 0 for no, it may be interpreted as a probability.
### Table 4.10
Difference of Means Test of Intervention Hypothesis 1

#### Group Statistics

<table>
<thead>
<tr>
<th>Intervention</th>
<th>$R_T + R_I &lt; R_C$</th>
<th>N</th>
<th>Mean</th>
<th>Std. Dev</th>
<th>Std. Error Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0</td>
<td>507</td>
<td>6.509E-02</td>
<td>.2469</td>
<td>1.097E-02</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>4380</td>
<td>1.347E-02</td>
<td>.1153</td>
<td>1.742E-03</td>
</tr>
</tbody>
</table>

#### Independent Samples $t$-test

<table>
<thead>
<tr>
<th>Intervention</th>
<th>Levene's Test for Equality of Variances</th>
<th>$t$-test for Equality of Means</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>F</td>
<td>Sig.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intervention</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Equal variances assumed</td>
<td>256.033</td>
<td>.000</td>
</tr>
<tr>
<td>Equal variances ~assumed</td>
<td>4.649</td>
<td>531.820</td>
</tr>
</tbody>
</table>
resources and the occurrence of the intervention outcome, the empirics do offer some supportive evidence for a general tendency in the direction of the hypothesis.

Test of Intervention Hypothesis 3

Finally, to test the second hypothesis derived from Model 1 regarding the occurrence of intervention, recall that this hypothesis states that when the distribution of resources among the actors in a dispute is \( R_{\tau} > R_c \), then the dispute outcome will not be an intervention by player I. In the test, I construct a cross-tabulation table showing the relationship between the independent variable measuring whether or not the distribution of resources among the disputants and third party fulfills the condition \( R_{\tau} > R_c \) (coded 1 if yes and 0 if no) and the dependent variable measuring whether or not the dispute outcome is an intervention (coded 1 if yes and 0 if no). This cross-tabulation may be seen in Table 4.11.

Table 4.11 shows the relationship between third party-disputant dyads in which the distribution of resources among the actors is \( R_{\tau} > R_c \) and the occurrence of the intervention outcome to the dispute they are involved in. In interpreting the table, it is important to remember that this hypothesis posits a one-directional relationship that cases in which the distribution of resources is \( R_{\tau} > R_c \) will not end in intervention. This does not imply the inverse relationship, that cases in which the distribution of resources is not \( R_{\tau} > R_c \) will always end in intervention. So, the proper interpretation of this table regards only the bottom row, which shows how the set of cases in which the distribution of resources is \( R_{\tau} > R_c \) are distributed between the intervention and \(-\)intervention outcomes.
Table 4.11  
Cross-Tabulation Test of Intervention War Hypothesis 3

<table>
<thead>
<tr>
<th></th>
<th>~Intervention</th>
<th>Intervention</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>~ $R_T &gt; R_C$</td>
<td>4,795</td>
<td>92</td>
<td>4,887</td>
</tr>
<tr>
<td>$R_T &gt; R_C$</td>
<td>2,550</td>
<td>83</td>
<td>2,633</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>7,345</strong></td>
<td><strong>175</strong></td>
<td><strong>7,520</strong></td>
</tr>
</tbody>
</table>
Looking at the table, of the 2,633 observations in which the distribution of resources is such that $R_t > R_c$, 83 end in intervention. This is approximately 97% of cases predicted correctly. However, for the same reasons as in the above test of Intervention Hypothesis 1, these results must be interpreted with particular caution. Given this, a more appropriate test of Intervention Hypothesis 3 may be the difference of means test. This test examines whether the intervention outcome is less likely to occur when the distribution of resources among the actors in a dispute is $R_t > R_c$ than when the distribution of resources is $R_t < R_c$ AND $R_t + R_i > R_c$. The results of this test may be seen in Table 4.12.

Table 4.12 shows evidence in support of the hypothesis. According to the independent samples $t$-test, there exists a statistically significant mean difference of .0516 in the predicted direction. That is, in substantive terms, in the sample of cases in which resources are distributed according to $R_t < R_c$ AND $R_t + R_i > R_c$, the mean likelihood of the intervention outcome is .0651 (approximately 7%). In the sample of valid cases in which the distribution of resources is $R_t > R_c$, the mean likelihood of the intervention outcome is .0315 (approximately 3%), indicating that the intervention outcome is more than two times less likely in this case. This suggests that, as the hypothesis predicts, the intervention outcome is less likely to occur when the distribution

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81 In this analysis, the appropriate test compares the mean in the $R_t > R_c$ distribution of resources only to the mean in the $R_t < R_c$ AND $R_t + R_i > R_c$ distribution of resources, and does not include the $R_t + R_i < R_c$ distribution of resources. This is because Intervention Hypothesis 1 predicts that the intervention outcome cannot occur in the $R_t + R_i < R_c$ distribution of resources.

82 For a two-tailed test, $\alpha = .05$.

83 Because this variable is dichotomous, coded 1 for yes and 0 for no, it may be interpreted as a probability.
Table 4.12
Difference of Means Test of Intervention Hypothesis 3

Group Statistics

<table>
<thead>
<tr>
<th>Intervention</th>
<th>$R_T &gt; R_C$</th>
<th>N</th>
<th>Mean</th>
<th>Std. Dev</th>
<th>Std. Error Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0</td>
<td>507</td>
<td>6.509E-02</td>
<td>.2469</td>
<td>1.097E-02</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>2633</td>
<td>3.152E-02</td>
<td>.1748</td>
<td>3.406E-03</td>
</tr>
</tbody>
</table>

Independent Samples $t$-test

<table>
<thead>
<tr>
<th>Intervention</th>
<th>Levene’s Test for Equality of Variances</th>
<th>$t$-test for Equality of Means</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>F</td>
<td>Sig.</td>
</tr>
<tr>
<td>Equal variances assumed</td>
<td>52.248</td>
<td>.000</td>
</tr>
<tr>
<td>Equal variances ~assumed</td>
<td>2.923</td>
<td>607.229</td>
</tr>
</tbody>
</table>
of resources among the third party and disputants is such that $R_r > R_c$ than when the
distribution of resources is $R_r < R_c$ AND $R_r + R_t > R_c$. So, putting all of this together,
while again there does not exist a deterministic relationship between this distribution of
resources and the occurrence of the intervention outcome, the empirics do offer some
supportive evidence for a general tendency in the direction of the hypothesis.

**Summary and Conclusion**

Overall, two broad conclusions may be reached from the analysis: the first is that
Model 1's predictions regarding the occurrence of the acquiescence, dyadic war and
intervention outcomes to militarized disputes in international politics are not borne out by
the more stringent form of test, the cross-tabulations. In substantive terms, the main
theme of the first three hypotheses examined above – Acquiescence Hypothesis 1, Dyadic
War Hypothesis 1, and Dyadic War Hypothesis 2 – is that the actors involved in a dispute
will not escalate to violence if the balance of resources favors their opponent and they do
not expect third-party help sufficient to tip this balance in their favor. The evidence
found in the cross-tabulations suggests that this is not the case, that disputants are
sometimes willing to escalate to violence against an opponent with greater resources
rather than back down. In fact, in the majority of cases in the tests of these hypotheses,
disputants chose to escalate to violence and fight on their own against a militarily
stronger opponent rather than acquiesce\(^{84}\).

\(^{84}\) Specifically, this occurs in approximately 72% of cases in the $R_r + R_t < R_c$ distribution of resources and
approximately 74% of cases in the $R_r < R_c$ AND $R_r + R_t$ distribution of resources.
In the final two hypotheses examined above—Intervention Hypotheses 1 and 3—the main prediction is that intervention can only occur when the distribution of resources among the disputants and third party is such that intervention tips the balance of resources in favor of the side whose demand the third party prefers in the dispute. These hypotheses are also not borne out in the cross-tabulations. The analysis shows that a substantial amount of intervention occurs in situations when the third party does not have sufficient resources to tip the military balance in favor of the preferred side in the dispute (approximately 34% of the total number of occurrences of intervention in the data) and in situations when the preferred side is militarily stronger than their opposition on their own (approximately 47% of the total number of occurrences of intervention in the data).

At the same time, a second broad conclusion that emerges from the analysis is that Model 1’s predictions about the occurrence of acquiescence, dyadic war and intervention are borne out by the less stringent, more probabilistic difference of means tests. This suggests that, while the relationships in the empirical world may not exist in the deterministic form predicted by the formal logic of Model 1, they do exist in the form of systematic patterns in the behavior of actors in international politics. So, while the actors involved in a dispute may sometimes escalate to violence in situations in which the balance of resources favors their opponent and they do not expect third-party help sufficient to tip this balance in their favor, there exists a general pattern that they tend to do this less than in situations in which they either expect third-party help sufficient to tip the military balance or are stronger than their enemy fighting on their own.
In addition, and perhaps most importantly, the predictions of the model regarding the principal object of study in this project – the occurrence of third-party intervention in militarized disputes in international politics – are borne out in the difference of means tests. These tests show that, while intervention does sometimes occur in situations when the theory says it should not (namely, when resources are distributed among the actors such that $R_t + R_i < R_c$ or $R_t > R_c$), there exists systematic evidence that it occurs less in these situations than in those in which intervention is not precluded by the theory (namely, when resources are distributed among the actors such that $R_t < R_c$ AND $R_t + R_i > R_c$). Altogether, these results suggest that there may be some truth to the principal conclusion of Model 1, that intervention can only occur when the distribution of resources among the disputants and third party is such that intervention tips the balance of resources in favor of the side whose demand the third party prefers in the dispute. That is, while intervention does occur in all of the three possible distributions, it is most likely to occur when it tips the military balance.

Putting all of this together, the evaluation of Model 1 in this chapter yields several useful insights. In essence, Model 1 formalizes an important, commonly-accepted element of the conventional wisdom about international conflict – that the side with greater military resources always wins in conflict – and derives its implications with regard to the occurrence of third-party intervention in disputes in international politics. The systematic evidence found in moderate support of the model’s principal conclusion suggests that these ideas do have some explanatory power, that the distribution of resources among the actors in a militarized dispute does in fact play a role in the
occurrence of intervention. This in and of itself is a useful insight. But, the most useful insight gleaned from this exercise may actually regard what Model 1 is not able to explain. That is, while we learn here that the distribution of resources among the actors in a militarized dispute does have an effect on the behavior of disputants and third parties, we also learn that it does not singularly, deterministically govern their behavior. Instead, the distribution of resources may play a role in the occurrence of intervention that is more probabilistic and conditioned by other theoretical factors.

In the next chapter of this dissertation, I make use of these insights by further developing the theory of intervention with the construction of a second formal model. Model 2 builds on the simple structure of Model 1, but loosens the restrictive assumption that the militarily stronger side always wins in war. By doing so, different assumptions about the relationship between the share of resources held by an actor and that actor's likelihood of victory in conflict may be employed and the different implications of these assumptions regarding the occurrence of intervention may be examined. These differing implications may then be empirically tested and the theory evaluated.
Chapter V
Developing the Theory of Intervention: Model 2

Introduction: Continuing Theoretical Development

At this point in the project, a simple theory of intervention has been laid out, developed into a game-theoretic model, and empirically evaluated. The first model of intervention examined in Chapter III formalizes a number of elements of the conventional wisdom about international conflict, particularly the assumption that the militarily stronger side always wins in conflict, and derives their logical implications with regard to the occurrence of intervention in militarized disputes in international politics. In Chapter IV, empirical tests of these hypotheses reveal a number of insights, finding moderate support for the model's predictions about the occurrence of intervention but finding also that it leaves much to be explained. In this chapter, the insights gleaned from this exercise are employed to further develop the theory, with the construction of a second game-theoretic model.

Model 2 develops the theory of intervention by building on two insights discovered in the previous chapter: first, recall that the analysis of Model 1 finds moderate support for the model's predictions about the relationship between the distribution of resources among the actors and the occurrence of third-party intervention. Specifically, the analysis shows a systematic trend that intervention occurs more often when the distribution of resources among the disputants and third party is such that intervention tips the balance of resources in favor of the side whose demand the third party prefers in the dispute. At the same time, a second insight gleaned from the analysis
is that a considerable amount of intervention occurs when the model says it should not, specifically, when the distribution of resources is such that 1) the third party does not have sufficient resources to tip the balance in favor of the side it prefers, and 2) the side whose demand is preferred by the third party has an advantage in resources on its own.

Putting these two insights together, this suggests that the distribution of resources among disputants and third parties does play some causal role in the occurrence of intervention in militarized disputes, but that this role is not as simple as the conventional wisdom would suggest. To attempt to explain this role, two important theoretical developments are included in Model 2: first, the model features a more complex, but potentially more powerful conception of the relationship between the resources held by an actor and their likelihood of victory in conflict. Rather than assuming a deterministic relationship between an advantage in resources and victory in conflict (as in Model 1), Model 2 employs a general function mapping the share of resources held by an actor to a particular probability that they will win if the dispute escalates to war. Because this function is general, it allows the researcher to vary its shape and derive implications about the occurrence of intervention based on different specific assumptions about the relationship between the share of resources held by an actor and their likelihood of victory in conflict. Second, Model 2 includes the additional assumptions of utility theory to capture how the players make decisions given this probabilistic relationship between resources and military victory. By doing so, the model’s conception of the role played by the distribution of resources in the occurrence of intervention is both probabilistic and conditioned by other theoretical factors, like the players’ values for the issues at stake in
the dispute. In the following section, Model 2 is introduced and these developments are discussed in greater detail.

**Model 2**

**Assumptions**

Model 2 retains a few key assumptions from Model 1. First, the model continues to assume that the players in the game behave as unitary actors. To reiterate from the discussion of this assumption in Chapter III, this does not imply that a single leader has absolute control over the policymaking process all of the time. Rather, it reflects the idea that national leaders are able to make stable policy decisions that are broadly consistent with their preferences in most cases, particularly in the arena of foreign policy. Second, the model continues to assume that the players in the game are rational actors. Again, to reiterate from the discussion in Chapter III, this implies only that the players have preference orderings over the outcomes in the game that are connected and transitive, not that they always make the “best” choice. Third, the model continues to assume that the players in the game have complete and perfect information. As stated in Chapter III, complete information simply means that the players’ payoffs for the outcomes are common knowledge. So, each actor knows how the others value the outcomes in the game, and each knows that the others have this information. Perfect information means all information sets in the game are singletons (Morrow 1994). That is, when making a decision, each player has full information about all prior moves in the game.

Model 2 includes two assumptions that differ from Model 1. The first of these regards its assumption about the relationship between the share of resources held by a
player and their likelihood of victory in conflict. As discussed above, the principal
assumption of Model 1 states that the side with greater resources always wins in war with
certainty. Model 2 loosens this restrictive assumption, stating instead that an actor's
probability of victory in conflict is a function of the share of total resources their side
holds in the dispute. The share of resources held by each side simply regards the
percentage held by that side of the sum of the resources of all actors in the dispute. This
is measured using the following formula, beginning with player $T$:

$$Share_T = \left( \frac{R_T}{R_T + R_C} \right).$$

Equation 5.1

In similar fashion, player $C$'s share of resources in the dispute is measured as

$$Share_C = 1 - \left( \frac{R_T}{R_T + R_C} \right).$$

Equation 5.2

If a third party intervenes into the dispute, its resources are aggregated with those of the
disputant whose demand it prefers (player $T$). In this case, the formula used to calculate
the share of total resources held by the coalition of players $T$ and $I$ becomes

$$Share_{T\|I} = \left( \frac{R_T + R_I}{R_T + R_I + R_C} \right)$$

Equation 5.3
while player C’s share of resources becomes

$$Share_{CII} = 1 - \left( \frac{R_r + R_i}{R_r + R_i + R_C} \right).$$

Equation 5.4

With these formulae, I employ a general function mapping the share of resources held by each side in the dispute to their likelihood of victory in conflict, stated as follows:

$$f(Share) = \begin{cases} Share + a(Share - 2Share^2) & \text{if } Share \leq .5 \\ Share + a(2Share^2 - 3Share + 1) & \text{if } Share > .5 \end{cases}$$

where:

- $f(Share)$ = probability of winning in war;
- $Share$ = share of total resources held; and
- $a$ = shape parameter

Equation 5.5

Equation 5.5 is a general function mapping the share of resources held by an actor to the probability they will win if war occurs. Rather than assuming a specific relationship between resources and the likelihood of victory in war, the function is general and is therefore capable of assuming any one of a wide variety of possible shapes. This makes the model more powerful by allowing the researcher to derive different testable implications when relying upon different assumptions about the relationship between resources and the likelihood of victory in conflict. In essence, it is a linear function, $f(Share) = Share$, altered with a quadratic component, $(Share - 2Share^2)$ if $Share \leq .5$ and $(2Share^2 - 3Share + 1)$ if $Share > .5$, that creates curves in the line. $a$ is the parameter in the function that increases or decreases the effect of the quadratic
component, thus altering the contours of the function and making it more or less linear. The function has a few technical features that merit discussion here.

First, the function is positively weakly monotonic, which captures the intuitive notion that increases in the share of resources held by a side must have a non-negative effect on their probability of winning in war. To maintain this property, the \( a \) parameter in the function is restricted such that \(-1 \leq a \leq 1\). Second, the function is symmetric across the actors, meaning that it always yields values that sum to one. This is an important feature because the function yields values that are probabilities; so, if one side has a probability of victory of .10, then the other side must have a probability of victory of .90. This may be expressed in technical terms as \( f(.1) = (1 - f(.9)) \). Third, the function is designed to capture a range of possible relationships that may exist between resources and the likelihood of victory in conflict. While allowing room for variation in the specific form, the function remains consistent with the reasonable ideas that 0% of total resources yields 0% chance of winning in war, 50% of total resources yields a 50% chance of victory, and 100% of total resources yields a 100% chance of victory. That is, in technical terms, \( f(0) = 0, f(.5) = .5, \) and \( f(1) = 1 \). A few examples of possible shapes of the general function are shown in Figure 5.1. The simplest, shown as Example 1 in the figure, is a linear function in which a certain percentage of resources maps to an equal likelihood of victory in war. Examples 2 and 3 show how it is possible to base the model on relationships in which alterations in resources have a greater or lesser effect on the likelihood of victory at different points in the function. Substantively, these examples capture commonly conjectured notions that alterations in resources can matter more or
Figure 5.1
Example Functional Forms in Model 2

Share of Total Resources Held

Probability of Winning in War

Example 1
Example 2
Example 3
less at particular points in a conflict, such as when they "tip the military balance" or give one side a "3:1 advantage."

A second new assumption employed in Model 2 regards a more complex conception of how the players in the game make decisions. In the model developed in this chapter, I assume the players in the game maximize their expected utility. While this assumption is commonly employed in game-theoretic models in international relations research, a discussion of its merits is warranted here. In Model 1, the players in the game make decisions with full knowledge of which outcomes would occur with certainty. This is a direct product of the assumptions that 1) the players have complete and perfect information and 2) the side with greater resources wins in war with certainty. Because of this, the only necessary simplifying assumption about how the players make decisions is that they are rational, which implies that they have preferences represented on an ordinal scale in a manner that is consistent and transitive. In Model 2, however, because the players in the game no longer have certain knowledge of which side will win if war occurs, they make decisions under conditions of risk. Because the ordinal preference rankings implied by the rationality assumption are not able to capture the preferences of the players over all possible risky choices, the rationality assumption must be supplemented with the additional assumptions of utility theory in Model 2.

Utility theory captures decision-making under conditions of risk by representing players' preferences on a cardinal scale with Von Neumann-Morgenstern utility functions. These functions represent risky choices over the outcomes in a game as lotteries in which one outcome is selected from a fixed set of consequences with known
probabilities of selecting each outcome. If a player can rank all possible lotteries over the consequences and those preferences over the lotteries observe certain regularity conditions, then a utility function can be calculated to reflect those preferences\(^8\). In substantive terms, Von Neumann-Morgenstern utility functions measure the attractiveness of outcomes to the players by their willingness to take risks to obtain preferred outcomes. A probability distribution over the possible states of the world captures a player’s assessment of the likelihood of each state of the world. Expected utilities are calculated by multiplying the value of each possible outcome by the probability that it will occur if the action is chosen, and summing across all possible outcomes. The assumption that players are expected-utility maximizers implies that they always choose the action associated with the highest expected utility (Morrow 1994).

While it is the view of this researcher that the inclusion of any assumption in a model should be judged by the extent to which the implications derived from the model are borne out (as argued in Chapter III), in order to be as explicit as possible in laying out the model, some discussion of possible objections to this assumption is merited here. For the most part, objections to the use of this assumption in social scientific models of international relations have centered on the point that decision makers do not actually perform the calculations required to maximize expected utility. In the view of this researcher, the appropriate answer to this criticism is that the point is irrelevant. Regardless of whether or not national leaders make decisions by literally calculating expected utilities, if they act as if they do in their behavior, then the implications of the
models relying on the assumption will be borne out when the model is empirically evaluated. Whether or not the assumption should be employed here, then, can only be determined by analyzing the model and assessing its explanatory power.

*Model Structure*

The players, sequence of moves and strategies in Model 2 remain identical to those in Model 1. The extensive form for Model 1 shown in Chapter III (Figure 3.1) may also be used to illustrate Model 2. It is presented again here as Figure 5.2.

To briefly review, in this model, the game begins with player T’s decision over escalating the dispute to war versus backing down and accepting the demand of her opponent, player C. If she chooses to back down, player C achieves her preferred outcome, the dispute ends, and the game ends by definition. If she chooses to escalate the dispute to war, then player I faces a decision over whether or not to intervene on the side of player T. The intersection of player T and player I’s strategy choices lead to three possible outcomes. Player T’s decision not to escalate implies she backs down to player C, resulting in a loss for player T and a victory for player C. If player T decides to escalate, then player I must decide whether or not to intervene into the dispute. If player T escalates and player I does not intervene, then this leads to an outcome in which player T fights alone in a war with player C. If player T escalates and player I does intervene, then this leads to a war in which players T and I fight as allies against player C.

While the structure of the model remains similar to Model 1, the payoffs associated with each of the outcomes are different in Model 2. Because the war

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85 These conditions are stated explicitly in the Expected Utility Theorem. For an excellent discussion, see
Figure 5.2
Model 2

outcomes in the model developed in this chapter are probabilistic, their associated payoffs are expressed as expected-utility calculations that capture the risks of winning versus losing and the costs and benefits associated with each outcome for each player. As a result, the payoffs associated with each outcome may be expressed using the same formulae across all of the three possible distributions of resources among the players discussed in Chapter III. These payoffs are shown in Figure 5.3.

Beginning with the intervention outcome \((q_T, q_l)\), player T’s payoff associated for this outcome is her probability of victory in conflict fighting alongside player I \((P^{TII})\) multiplied by her value for her own demand \((Δ^T_T)\) plus her probability of defeat in conflict fighting alongside player I \((1 - P^{TII})\) multiplied by her value for the demand of player C \((Δ^C_T)\), minus her cost of fighting in war \((k_T)\). Altogether, this outcome may be represented as \(P^{TII}[Δ^T_T] + (1- P^{TII})[Δ^C_T]-k_T\), and is shown in the first row, first column of Figure 5.3. Player I’s payoff associated with the intervention outcome is his probability of victory fighting alongside player T \((P^{TII})\) multiplied by his value for the demand of player T \((Δ^T_I)\) plus his probability of defeat fighting alongside player T \((1 - P^{TII})\) multiplied by his value for the demand of player C \((Δ^C_I)\), minus his cost of fighting in war \((k_I)\). Altogether, this outcome may be represented as \(P^{TII}[Δ^T_I] + (1- P^{TII})[Δ^C_I]-k_I\), and is shown in the first row, second column of Figure 5.3.

Moving on to the dyadic war outcome \((r_T, r_l)\), player T’s payoff associated with this outcome is her probability of victory in conflict fighting on her own \((P^T)\) multiplied by her value for her own demand \((Δ^T_T)\) plus her probability of defeat in conflict fighting
Figure 5.3
Outcomes and Associated Payoffs in Model 2

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Utility for T</th>
<th>Utility for I</th>
</tr>
</thead>
<tbody>
<tr>
<td>((q_T, q_I))</td>
<td>(P_{\text{TI}}[\Delta_T^T] + (1 - P_{\text{TI}})[\Delta_C^T]-k_T)</td>
<td>(P_{\text{TI}}[\Delta_I^T] + (1 - P_{\text{TI}})[\Delta_C^I]-k_I)</td>
</tr>
<tr>
<td>((r_T, r_I))</td>
<td>(P^T[\Delta_T^T] + (1 - P^T)[\Delta_C^T]-k_T)</td>
<td>(P^T[\Delta_I^T] + (1 - P^T)[\Delta_C^I])</td>
</tr>
<tr>
<td>((s_T, s_I))</td>
<td>(\Delta_C^T)</td>
<td>(\Delta_C^I)</td>
</tr>
</tbody>
</table>

where:
- \(P_{\text{TI}}\) is the probability that \(T\) wins in war given that \(I\) intervenes on her behalf;
- \(P^T\) is the probability that \(T\) wins in war given that \(I\) does not intervene;
- \(\Delta_T^T\) is the demand of player \(T\) for a given player, \(i\);
- \(\Delta_C^I\) is the demand of player \(C\) for a given player, \(i\); and
- \(k_i\) is the cost of fighting in war for a given player, \(i\).
on her own \((1 - P^T)\) multiplied by her value for the demand of player C \((\Delta^C_T)\), minus
her cost of fighting in war \((k_T)\). Altogether, this outcome may be represented as \(P^T[\Delta^T_T] + (1 - P^T)[\Delta^C_T] - k_T\), and is shown in the second row, first column of Figure 5.3. Player I’s
payoff associated with the dyadic war outcome is his observed probability that player T
wins fighting on her own \((P^T)\) multiplied by his value for the demand of player T \((\Delta^T_I)\)
plus his observed probability that player T loses fighting on her own \((1 - P^T)\) multiplied
by his value for the demand of player C \((\Delta^C_I)\) (Note that he does not pay the cost of
fighting in his payoff for this outcome because he stays neutral.). Altogether, this
outcome may be represented as \(P^T[\Delta^T_I] + (1 - P^T)[\Delta^C_I]\), and is shown in the second row, second column of Figure 5.3.

Finally, regarding the acquiescence outcome \((s_T, s_I)\), player T’s payoff associated
with this outcome is simply her value for the demand of player C \((\Delta^C_T)\), and is shown in
the third row, first column of Figure 5.3. Note that she receives this payoff with certainty
because, by backing down to player C, she concedes her opponent her preferred demand
and thus has no chance of achieving her own preferred demand. Player I’s payoff
associated with this outcome is his value for the demand of player C \((\Delta^C_I)\), and is shown
in the third row, second column of Figure 5.3. In similar fashion, in this outcome, he
receives this payoff with certainty because player T’s acquiescence leads to player C
achieving her preferred demand with certainty.
Approach to Solving Model 2 and Equilibrium Conditions for Intervention

In this section, I lay out the approach that will be employed to derive testable hypotheses from Model 2 and begin the analysis by deriving the equilibrium conditions required for intervention to occur. The first step in this process is to select an appropriate solution concept. Having settled on an appropriate solution concept, equilibrium analysis of the model allows the researcher to specify the precise conditions under which the players in the game choose the strategy combinations that lead to particular outcomes. These equilibrium conditions may then be subjected to further analysis, yielding additional insights about the conditions under which the outcomes do and do not occur.

In this analysis, in similar fashion to the solutions to Model 1 in Chapter III, I employ backward induction to solve Model 2 for its subgame perfect equilibria. My reasoning for this choice, to summarize from the discussion in Chapter III, is that subgame perfection is the simplest available concept that produces determinate solutions and, thus, substantively meaningful predictions. While the Nash equilibrium concept is the most commonly employed solution concept for simple game-theoretic models in social scientific research, as well as being simple and easy to interpret, its usefulness in this analysis is limited because it is not very stringent. Nash equilibria, in essence, require only that the complete strategies of the players be mutual best replies. As such, only the moves of the players on the equilibrium path are examined, which allows the players to commit to incredible threats, and thus violates the idea that games are sequences of decisions. Moreover, because in many games there exist multiple Nash
equilibria, deriving specific predictions about the conditions under which particular outcomes will occur can be very difficult.

The subgame perfect equilibrium concept, on the other hand, is more stringent because it tests the credibility of moves both on and off the equilibrium path by requiring players to play Nash equilibria at each subgame. As discussed in Chapter III, in finite games of perfect information, subgame perfect equilibria can be found using backward induction. Backward induction involves solving the game for the optimal choice of the last player to move for each possible situation they may face and working backward to compute the optimal choice for the player before (Fudenberg and Tirole 1991). By requiring players to make optimal moves at each node, backwards induction assesses the rationality of all moves in a strategy, both on and off the equilibrium path. So, while backwards induction ultimately produces a Nash equilibrium, it does not find all the Nash equilibria in a game, only those that are on the equilibrium path (Morrow 1994). As such, in the analysis of Model 2, I use backward induction to solve the game for its subgame perfect equilibria.

Now that this is settled, it is important to note that the approach to deriving the logical implications of the model employed in the present analysis has a few important differences from that employed in the analysis of Model 1 in Chapter III. First, rather than deriving and analyzing the equilibrium conditions for each of the three possible outcomes to the game – acquiescence, dyadic war, and intervention – as in the examination of Model 1, in the present analysis, I focus singularly on the occurrence of the intervention outcome. My reasoning for this is as follows: while the model's
implications about the occurrence of the acquiescence and dyadic war outcomes are certainly valid, testable predictions that may be used to evaluate the explanatory power of the model, it is important to remember that the principal object of study in this dissertation project regards the occurrence of third-party intervention in militarized disputes in international politics. By focusing on the equilibrium conditions for the intervention outcome in the game, and employing an analytic approach that is less broad, but more deep, subjecting these conditions to careful, detailed analysis, the research may produce more specific and potentially more informative insights about the principal object of study in this project. These insights may then be empirically tested, and the extent to which the model explains third-party intervention may then be evaluated, resulting in greater explanatory leverage on the topic of this dissertation.

Second, the methods employed to derive testable implications from Model 2 differ from those used in the analysis of Model 1 in that they are more sophisticated, but potentially more powerful. In the analysis of Model 2, I begin by solving the model for its subgame perfect equilibrium conditions and examining what they tell us in substantive terms about the occurrence of intervention in militarized disputes in international politics, as in the analysis of Model 1. By doing so, I am able to show how the components of the theory interact to produce necessary and sufficient conditions for intervention to occur. After having done this, I then employ a second method to examine these conditions in a different way, looking at how alterations in the individual components of the theory – specifically, elements of the distribution of resources among the disputants and third party – affect the decisions of the actors in the game and thus impact the likelihood that
third party intervention occurs. To do this, I calculate the partial derivatives of the expressions showing player I's expected utility for intervening when given the opportunity in the game and player T's expected utility for escalating the dispute to violence with respect to the resources of players I, T and C. By examining the direction of these partial derivatives, and paying particular attention to the sequence of decisions of the players in the game, I am able to produce substantive implications about how changes in the components of the theory affect the likelihood that third-party intervention occurs in militarized disputes in international politics.

With this in mind, I now proceed to derive the backward induction solutions for intervention in Model 2. Recall from Chapter III that the intervention outcome can occur as a product of one strategy combination, in which player I chooses the intervention strategy and player T chooses the escalation strategy; that is, \((int; esc)\). To observe this, begin at player I's decision node in Figure 5.2, at which he faces a choice between intervening and staying neutral. If he chooses the intervention strategy, the game ends with the outcome \((q_T, q_I)\) and he receives the payoff, \(P^{III}[\Delta^T_I] + (1 - P^{III})[\Delta^C_I] - k_i\). If player I chooses the non-intervention strategy, then the game ends with the outcome \((r_T, r_I)\) and he receives the payoff, \(P^T[\Delta^T_I] + (1 - P^T)[\Delta^C_I]\). Note that, because he does not fight alongside player T in this outcome, player I does not have to pay the cost of fighting in war here. Given this choice, player I compares the payoffs associated with the outcomes, and if his payoff for the \(q\) outcome is greater than his payoff for the \(r\) outcome, then he
chooses the intervention strategy. This condition may be represented mathematically as

\[ q_t > r_t. \]

which expands to

\[ P^{TII}[\Delta^T_t] + (1 - P^{TII})[\Delta^C_t] - k_t > P^T[\Delta^T_t] + (1 - P^T)[\Delta^C_t], \]

and simplifies to

\[ (P^{TII} - P^T)[\Delta^T_t] + (P^T - P^{TII})[\Delta^C_t] - k_t > 0. \]

Equation 5.6

Equation 5.6 is a precise mathematical statement showing player I's expected utility for intervening when given the opportunity in the game. Looking at it carefully, the expression captures the interaction between in the increased probability of victory in conflict resulting from the addition of player I's resources into the fight, the difference between his values for the demands of the players, and his costs for fighting alongside player T. Here, player I's decision between intervening versus staying neutral is essentially a choice between two lotteries. If he stays neutral, then the outcome is a risky dyadic war, in which he has some probability of receiving his preferred demand (if player T emerges victorious from the conflict) and some probability of receiving his unpreferred demand (if player C defeats player T in the conflict). If he intervenes, then the outcome is a less risky, but more costly fight between the combined forces of players T and I versus player C, in which he has a higher probability of receiving his preferred demand (if the coalition of players T and I emerge victorious from the conflict) and a lower probability of receiving his unpreferred demand (if player C defeats players T and I in the
conflict), but also a cost of participating in the fight that must be paid regardless of whether he wins or loses. So, at the most essential level, if player I’s expected value for the lottery in which there exists an increased likelihood of victory, but also the cost of fighting resulting from his participation in the conflict, is greater than his expected value for the lottery in which player T fights on her own, then the condition is fulfilled and he intervenes when given the opportunity in the game.

Recall that, in order for player I to be given this opportunity, player T must also choose to escalate the dispute to violence. To observe this, move back up the game tree to player T’s decision. Here, because she observes player I’s decision and thus knows that he is willing to intervene on her behalf, she faces a choice between escalating, which leads to the intervention outcome \((q_T, q_I)\), or backing down to player C, which leads to the acquiescence outcome \((s_T, s_I)\). Player T’s payoff associated with the intervention outcome is \(P^{TII}R^T_T + (1 - P^{TII})[R^C_T] - k_T\), and her payoff associated with the acquiescence outcome is simply her value for the demand of player C \((C^C_T)\). Given this choice, player T compares the payoffs associated with the outcomes, and if her payoff for the \(q\) outcome is greater than her payoff for the \(s\) outcome, then she chooses the escalation strategy.

\[ q_T > s_T, \]

which expands to

\[ P^{TII}R^T_T + (1 - P^{TII})[R^C_T] - k_T > C^C_T, \]

and simplifies to

\[ P^{TII}R^T_T + (1 - P^{TII})[R^C_T] - k_T - C^C_T > 0. \]

Equation 5.7
Equation 5.7 is a precise mathematical statement showing player T's expected utility for escalating the militarized dispute to violence. Looking at it carefully, the expression captures the interaction between the increase in the likelihood of victory in conflict resulting from the addition of the resources of player I, the difference between player T's value for her own demand and the demand of her adversary, and her costs of fighting in war. Here, player T's decision between escalating versus backing down to player C is essentially a choice between a lottery and a certain outcome. If she backs down, then the game ends by definition and the outcome is an acquiescence, in which she receives her value for the demand of player C with certainty. If she escalates, then the outcome is a risky war in which she fights alongside player I against player C. In this fight, she has some probability of emerging victorious from the conflict and receiving her preferred demand, but also some probability of being defeated in the conflict and being forced to accept the demand of player C, as well as a cost of fighting that she must pay regardless of whether she wins or loses. So, at the most essential level, if player T's expected value for the lottery in which she fights with the increased probability of victory resulting from the help of player I, but also pays the cost of fighting, is greater than her value for the demand of player C, then the condition is fulfilled and she escalates the dispute to violence. By doing so, she gives player I the opportunity to join into the conflict, making it possible for intervention to occur.

*Substantive Implications of the Model Regarding the Occurrence of Intervention*

Now, having derived these equilibrium conditions from the game and examined them in detail, it becomes possible to think about what they imply substantively about the
occurrence of militarized intervention in disputes in international politics.

Summarizing the above discussion, Model 2’s main prediction is that intervention will occur when the conditions in Equations 5.6 and 5.7 are fulfilled, that is, when player I has positive expected utility for intervention and player T has positive expected utility for escalation. Translating these conditions into substantive terms, this means that intervention will occur when two specific criteria are met. The first regards the decision making of a third party. In this, he decides whether or not to intervene into a militarized dispute by considering the following: if he aids his ally by fighting on his side in the dispute, then this increases the probability that his favored side will win the conflict and he will receive his value for the demand of his ally (which he prefers to the demand of his adversary, of course). But, by choosing to enter into the dispute, he must pay the cost of fighting, regardless of whether he wins or loses in the war. If he does not intervene, then his ally fights against the adversary on her own, with some chance of winning and some chance of losing. Naturally, though, her chance of winning is higher with the aid of the third party than without. So, the third party’s decision is a calculation of his expected value for the war lottery in which he fights on behalf of his ally, minus the costs of fighting he incurs by joining into the conflict, versus his expected value for the war lottery in which his ally fights on her own. Boiling this down to its essence, the third party’s decision is quite simple: if the increase in the probability that he achieves his
desired demand produced by the aid he is able to deliver to his ally in the conflict is more valuable to him than the cost of fighting, then he is willing to intervene\textsuperscript{86}.

The second condition that must be fulfilled for intervention to occur regards the decision making of the allied disputant. Looking at the substance of her choice over escalating the dispute to violence and giving the third party the opportunity to intervene versus backing down to her adversary, she decides whether or not to escalate by considering the following: if she backs down to her adversary, then she receives her value for the demand of her adversary with certainty. If she escalates, then she receives her expected value for the lottery in which she fights with the help of the third party, minus her cost of fighting in war. So, the allied disputant's decision is also quite simple, essentially a comparison of the war lottery fighting with the help of the third party, minus the cost of fighting, versus her value for the demand of her adversary. If the former has greater value to her than the latter, then she escalates, giving the third party the opportunity to get involved in the dispute, and making it possible for intervention to occur.

These simple conditions suggest a broader range of predictions about the conditions under which intervention may occur. Recall from Chapter III that the principal conclusion of Model 1 is that intervention can only occur when the distribution

\textsuperscript{86} This is because the expression \([\text{war lottery in which third party intervenes}] - [\text{cost of fighting}] = [\text{war lottery in which third party does not intervene}] - [\text{war lottery in which third party does not intervene}] = [\text{cost of fighting}].\) The expression \([\text{war lottery in which third party intervenes}] - [\text{war lottery in which third party does not intervene}]\) equals the difference between the ally's chances of winning in conflict with the aid of the third party and her chances of winning fighting on her own. So, this decision simplifies to \([\text{the difference between the ally's chances of winning in conflict with the aid of the third party and her chances of winning fighting on her own}] = [\text{cost of fighting}].\)
of resources among the disputants and third party is such that the involvement of the third party tips the balance of resources in favor of the side whose demand they prefer in the dispute. Recall also that the tests in Chapter IV did not find strong empirical support for the model's predictions, that in fact a substantial amount of intervention occurs when Model 1 says it should not. Because Model 2 loosens the restrictive assumption that the side with greater resources wins in conflict with certainty, employing instead a more probabilistic conception of the relationship between resources and the likelihood of victory in war, neither victory nor defeat can be foreseen with absolute certainty by the parties involved in a dispute, which makes it possible for intervention to occur in any possible distribution of power. That is, Model 2 may be able to account for cases of intervention that Model 1 cannot explain, specifically, cases of intervention when the distribution of resources is such that 1) the third party does not have sufficient resources to tip the balance in favor of the side it prefers, and 2) the side whose demand is preferred by the third party has an advantage in resources on its own. I examine this in detail below.

Consider the first class of these cases: the occurrence of intervention when it is "futile," that is, when the side the third party favors in the dispute is weaker than their adversary and the entrance of the third party into the conflict is not sufficient to tip the military balance in their favor. Recall from Chapter III that the logic underlying Model 1's prediction that intervention cannot occur in this case is the assumption that defeat is certain even if the third party intervenes because the adversary retains an advantage in military resources. Foreseeing certain defeat if he intervenes, the third party remains
neutral and avoids having to pay the cost of fighting. Now, recall from Chapter IV that this prediction is not supported by the empirical evidence. Over the period 1816-1984, there exist 59 occurrences of intervention when it was “futile,” which make up a full third of the 175 cases of intervention in the data. This raises a puzzle which Model 2 may be able to address.

Because of its probabilistic conception of the relationship between resources and the likelihood of victory in conflict, Model 2 posits that, even if the adversary has an advantage in resources so great that the entrance of the third party into the dispute is not sufficient to tip the military balance in favor of the allied disputant, defeat for the side preferred by the third party is not a certainty. That is, even when seriously “outgunned,” there still exists some chance of victory. In such situations, Model 2 predicts that, under certain conditions (specifically, when the third party has positive expected utility for intervention), the addition of the resources of the third party increases the probability of victory of his preferred side enough to make the potential benefits of intervening worth paying the cost of fighting to the third party. At the same time, under certain conditions (specifically, when the allied disputant has positive expected utility for escalation), the increased probability of victory produced by the willingness of the third party to fight on her behalf makes the potential benefits from escalating the dispute to violence worth paying the cost of fighting to the allied disputant. When both of these conditions are fulfilled, Model 2 predicts that intervention will occur, even if it is “futile.” This raises an interesting question about the extent to which the model’s predictions regarding the occurrence of intervention in this case are able to explain the actual cases in the empirical
world (or, at least, the 59 cases in the data). To the degree that it is able to, it produces both an improvement in explanatory power over Model 1 and some novel facts.

Now, consider the second class of cases which Model 1 is unable to account for: cases of intervention in situations when the side preferred by the third party has an advantage in resources over the adversary on her own. Recall from Chapter III that the logic underlying Model 1’s prediction that intervention cannot occur in this case is the assumption that victory is certain even without the aid of the third party because the allied disputant has greater resources than her opponent fighting on her own. Foreseeing certain victory for his ally, regardless of whether or not he intervenes on her behalf, the third party remains neutral and avoids having to pay the cost of fighting. Now, recall from Chapter IV that this prediction is not supported by the empirical evidence. Over the period 1816-1984, there exist 83 occurrences of intervention in this case, which make up almost half of the 175 cases of intervention in the data. This raises another puzzle which Model 2 may be able to address.

Because of its probabilistic conception of the relationship between resources and the likelihood of victory in conflict, Model 2 posits that, even if the allied disputant has an advantage in resources over the adversary disputant, victory in conflict is not an absolute certainty. That is, even when the side preferred by the third party “outguns” their opponent, there still exists some chance of defeat. In such situations, Model 2 predicts that, under certain conditions (specifically, when the third party has positive expected utility for intervention), even if the ally is likely to win in the conflict on her own, the increase in the likelihood that the ally wins produced by the entrance of the third
party is sufficient to make the potential benefits of intervening worth paying the cost of fighting to the third party. At the same time, under certain conditions (specifically, when the allied disputant has positive expected utility for escalation), the additional increase in the probability of victory produced by the willingness of the third party to fight on her behalf adds to her potential benefits for escalating the dispute to violence.

Altogether, when both of these conditions are fulfilled, Model 2 predicts that intervention will occur. This raises a second interesting question about the extent to which the model’s predictions regarding the occurrence of intervention in this case are able to explain the actual cases in the empirical world (or, at least, the 83 cases in the data). Again, to the degree that it is able to, it produces both an improvement in explanatory power over Model 1 and some novel facts.

A final insight that emerges from this discussion is that, if Model 2 is able to account for occurrences of intervention beyond the predictive power of Model 1 in large part due to its probabilistic conception of the relationship between resources and the likelihood of victory in conflict, then the generality of the function employed in Model 2 to capture this relationship (Equation 5.5) suggests a potentially valuable direction for further theoretical development. That is, recall from the discussion laying out the model that, rather than assuming a deterministic relationship between an advantage in resources and victory in conflict (as in Model 1), Model 2 employs a general function mapping the share of resources held by an actor to a particular probability that they will win if the dispute escalates to war. Because of this generality, it becomes possible to vary the shape of the function and examine how alterations in it affect the fulfillment of the above-
discussed conditions required for intervention to occur. Such an exercise is a potentially valuable direction for theoretical development because it allows the researcher to examine the explanatory power of different assumptions about this relationship employed in the IR literature.

For example, one potentially interesting direction for theoretical development regards the “well-known and widely accepted 3:1 rule of thumb” (Mearsheimer 1989), which is a crude rule of thumb that suggests in a military battle the attacker is likely to be successful if they have an overall numerical strength superiority of three-to-one over the defender (Dupuy 1989). The extent to which the 3:1 rule is employed by military decision makers is a subject of debate in recent international relations literature. Some scholars argue that it has become “virtually a military principle, and, indeed, a rudimentary theory of combat” (Dupuy 1987), while others claim there is evidence of its use only in specific, rare situations (Mearsheimer 1989). Given this controversy, it may be theoretically interesting to formalize the relationship between resources and the likelihood of military victory posited by the 3:1 assumption in the model and examine how well it explains the occurrence of third-party intervention in disputes in international politics. This is something I will return to in a later section of this dissertation project.

**Analysis of Partial Derivatives of Player I’s Expected Utility for Intervention and Player T’s Expected Utility for Escalation with Respect to R_d, R_T, and R_C**

At this point in this chapter, I have performed a simple analysis of the conditions that must be fulfilled for intervention to occur, as predicted by Model 2. This examination has revealed that Model 2 may be able to account for a much broader range
of cases of intervention than Model 1, and has suggested avenues for further theoretical development. Having done this, I now employ a second, more sophisticated, but potentially more powerful method to derive implications from Model 2. To do this, I subject the above-derived and discussed conditions required for intervention to occur to careful analysis to yield insights about how components of the theory – in particular the distribution of resources among the actors – relate to the likelihood that intervention occurs in militarized disputes in international politics. This requires a technical exercise in which I calculate the partial derivatives of player I’s expected utility for intervention and player T’s expected utility for escalation with respect to these theoretical factors and perform comparative statics on them. Partial derivatives show the rate of change of a function with respect to one of its several independent variables (Larson, et al. 1994). Comparative statics involve holding all the variables except one constant, and analyzing how changes in that one variable affect the value of the expression. The signs of these partial derivatives show whether an increase in the variable of interest has a positive or negative effect on the expression holding all of the other variables constant – a positive partial derivative implies a positive relationship, and vice versa. Substantively, a positive (negative) relationship between a component of the theory and player I’s expected utility for intervention implies that increases in the explanatory factor make player I more (less) likely to intervene if he gets the opportunity in the game, holding all of the other factors in the theory constant. In similar fashion, a positive (negative) relationship between a component of the theory and player T’s expected utility for escalation implies that increases in the explanatory factor make player T more (less) likely to escalate the
dispute to violence and thus give player I the opportunity to intervene, holding all of the other factors in the theory constant.

The first step in performing this analysis is to select one specific functional form capturing the relationship between resources and the likelihood of military victory to operationalize in the model. Of the range of possible functions, the form most simple to analyze is the standard linear function, according to which the percentage of total resources held by a player in the game translates into an equal probability of victory in conflict. Because of its simplicity, calculating these partial derivatives when the model assumes a linear function allows the relationships between the components of the theory and the players’ values for the intervention and escalation strategies to be deduced in a mathematically simple, tractable and easy to illustrate manner. Furthermore, the directional relationships implied by the derivations from the model using the linear function are generalizable to all possible shapes the function may assume.\(^{87}\) As such, I employ the standard, linear function in the derivative analysis of Model 2.

*Operationalizing the Standard, Linear Function in Model 2*

To do this, I return to the general function shown in Equation 5.5 and set the \(a\) parameter equal to zero, resulting in the very simple functional form, \(f(Share) = Share\).\(^{88}\) With this functional form, the formulae for \(P^T\) and \(P^{THI}\) remain identical to the formulae

\(^{87}\) Technically, the *magnitude* of these relationships may change as the shape of the function changes, but the restrictions placed on the shapes the function may assume (as discussed in the section regarding the assumptions of Model 2) are such that the direction of the relationships remains the same.

\(^{88}\) This function may be seen in graphical form as Example 1 in Figure 5.1.
for $\text{Share}_T$ and $\text{Share}_{\text{Tr}}$ shown in Equations 5.1 and 5.3, respectively. Substituting these terms back into the equilibrium conditions derived and discussed in the above section,

player I is willing to intervene when the following condition is fulfilled

$$
\left( \frac{R_T}{R_T + R_C} \right) - \left( \frac{R_T}{R_T + R_C} \right) \left[ \Delta^I_T \right] + \left( \frac{R_T}{R_T + R_C} \right) - \left( \frac{R_T}{R_T + R_C} \right) \left[ \Delta^C_T \right] - \left( \frac{R_T}{R_T + R_C} \right) - k_I > 0, \tag{5.8}
$$

and player T will escalate when

$$
\left( \frac{R_T}{R_T + R_C} \right) \left[ \Delta^T_T \right] + \left( 1 - \frac{R_T}{R_T + R_C} \right) \left[ \Delta^C_T \right] - k_T - \Delta^C_T > 0. \tag{5.9}
$$

Equations 5.8 and 5.9 show the conditions that must be fulfilled for 1) player I to intervene if given the opportunity in the game and 2) player T to give player I the opportunity to intervene by escalating the dispute to violence according to the standard, linear variant of Model 2. Having specified these conditions, I now proceed with the analysis and calculate their partial derivatives with respect to the resources of the players in the, beginning with the resources of the third party, $R_I$. Then, by examining them

---

\(^{89}\) To review, these formulae are: $\text{Share}_T = \left( \frac{R_T}{R_T + R_C} \right)$, as shown in Equation 5.1, and $\text{Share}_{\text{Tr}} = \left( \frac{R_T}{R_T + R_C} \right)$.
carefully, I am able to produce substantive predictions about how alterations in them affect the likelihood that intervention occurs in militarized disputes in international politics.

*Analysis of Partial Derivatives of Player I's Expected Utility for Intervention and Player T's Expected Utility for Escalation with Respect to the Resources of Player I*

This analysis is comprised of three simple steps: first, I calculate the partial derivative of player I's expected utility for intervention with respect to $R_t$, simplify it algebraically, and prove that it is always positive. Second, I calculate the partial derivative of player T's expected utility for escalation with respect to $R_t$, simplify it algebraically, and prove that it also is always positive. Third, I interpret these derivatives to produce substantive implications about the relationship between the resources of third parties and the likelihood that they intervene in militarized disputes in international politics. By doing so, I am able to produce a testable hypothesis that may be subjected to empirical analysis later in the project.

The first step is as follows: the partial derivative of player I's expected utility for intervention with respect to $R_t$ is

\[
\left(\frac{R_t + R_f}{R_t + R_f + R_c}\right), \text{ as shown in Equation 5.3.}
\]
\[ D_{R_l} \left[ \left( \frac{R_T + R_l}{R_T + R_l + R_C} \right) - \left( \frac{R_T}{R_T + R_C} \right) \right] \Delta^T_r ] + \\
\left[ \left( \frac{R_T}{R_T + R_C} \right) - \left( \frac{R_T + R_l}{R_T + R_l + R_C} \right) \right] \Delta^C_r ] - k_l \]

\[ = \frac{1}{R_C + R_l + R_T} - \frac{R_l + R_T}{(R_C + R_l + R_T)^2} \right] \Delta^T_r ] + \left( \frac{R_l + R_T}{(R_C + R_l + R_T)^2} - \frac{1}{R_C + R_l + R_T} \right) \Delta^C_r ] . \]

which simplifies to

\[ \frac{(\Delta^T_r - \Delta^C_r) R_C}{(R_C + R_l + R_T)^2} . \]

Equation 5.10

Examination of this derivative shows that it is always positive. Looking at the components of the expression and recalling the assumptions of the model, because of the assumption that all actors have at least some resources, the variables \( R_C, R_l \) and \( R_T \) are always positive. Also, because of the assumption that player I prefers the demand of player T to the demand of player C in the game, the expression \((\Delta^T_I - \Delta^C_I)\) is always positive. The denominator is simply the square of the sum of the resource variables and thus must be positive. The numerator is simply the expression \((\Delta^T_I - \Delta^C_I)\) multiplied by \( R_C \) and thus must be positive. Therefore, the entire derivative must be positive, implying a positive relationship between \( R_l \) and player I's expected utility for intervention.

Having done this, recall that, in order for player I to have the opportunity to intervene in the game, player T must choose to escalate the dispute to violence rather than back down to player C. As such, it is also necessary to analyze how this theoretical
factor relates to the likelihood that player T chooses to escalate. This second step in
the analysis is done in similar fashion to the above analysis, as follows: the partial
derivative of player T’s expected utility for escalating (Equation 5.9) with respect to the
resources of player I is

\[
D_{\Delta_T} \left[ \left( \frac{R_T + R_I}{R_T + R_I + R_C} \right) \Delta_T^T + \left( 1 - \left( \frac{R_T + R_I}{R_T + R_I + R_C} \right) \Delta_C^C \right) \right] - k_T - \Delta_T^C
\]

= \left( \frac{1}{R_C + R_I + R_T} - \frac{R_I + R_T}{(R_C + R_I + R_T)^2} \right) \Delta_T^T + \left( \frac{R_T + R_I}{(R_C + R_I + R_T)^2} - \frac{1}{R_C + R_I + R_T} \right) \Delta_C^C
\]

which simplifies to

\[
\frac{(\Delta_T^T - \Delta_C^C)R_C}{(R_C + R_I + R_T)^2}.
\]

Equation 5.11

This derivative is almost identical to the partial derivative of player I’s expected
utility for intervention with respect to R_I shown in Equation 5.10. The two differ only in
that the former includes variables referring to player I’s values for the demands of players
T and C (\Delta_T^T and \Delta_C^C, respectively) while the latter includes variables referring to player
T’s values for her own demand and the demand of her adversary, player C (\Delta_T^T and \Delta_C^C, respectively). Given this, it is not surprising that examination of the derivative shown in
Equation 5.11 reveals that it is always positive. The denominator of the calculation is
identical to the denominator in Equation 5.10, simply the square of the sum of the
resources of the players in the game. As such, because of the assumption that R_C, R_I, R_T
> 0, it is always positive. Moving to the numerator, it is simply the expression (\Delta_T^T -
multiplied by the resources of player C. Because it is assumed that player T always prefers her own demand to that of her adversary ($\Delta_{T}^{T} > \Delta_{C}^{C}$), the expression ($\Delta_{T}^{T} - \Delta_{C}^{C}$) must be positive, resulting in a positive expression multiplied by a positive variable. Clearly, this results in a positive numerator and, therefore, a positive partial derivative, implying a positive relationship between $R_{I}$ and player T's expected utility for escalating the dispute to violence.

Putting all of this together, looking at the direction of these derivatives and the sequence of decisions in the model, as the resources of a third party potential intervener increase, this has the effect of increasing the probability that intervention by the third party will bring about a military victory and thus the likelihood that he achieves his preferred demand in the dispute. This increased probability of victory decreases the degree of risk associated with the intervention lottery, and makes it more likely that the expected value of the gains from fighting will outweigh the costs. At the same time, player T observes that increases in the resources of the third party increase the likelihood that player I will intervene if given the opportunity. She then factors this into her decision making, and the increased probability of victory in conflict fighting alongside player I increases her expected value for the lottery in which she escalates rather than backs down. That is, in similar fashion to player I, increases in $R_{I}$ have a positive effect on the probability that escalating will lead to a military victory and thus the likelihood that she achieves her preferred demand in the dispute. This increased probability of victory decreases the degree of risk associated with the escalation lottery, and makes it more likely that the expected value of the gains from fighting will outweigh the costs.
She thus becomes more likely to escalate and give player I the opportunity to intervene into the dispute. In sum, the joint effects of these two partial derivatives imply a clear positive relationship between the resources of a third party potential and the likelihood that intervention occurs, all other things being equal. This implication leads to the following testable hypothesis:

**Derivative Analysis Hypothesis 1:** The resources of third-party potential interveners are positively related to the likelihood that they intervene in militarized disputes in international politics, *ceteris paribus*.

Having derived and stated this hypothesis, it now becomes possible to think carefully about what this logical implication of the model tells us about the substantive behavior of interest in this dissertation project, the occurrence of third-party intervention in disputes in international politics. The model’s prediction that the resources of third parties are positively related to the likelihood of intervention leads to two specific empirical expectations: first, the model implies that, all other things being equal, stronger third parties, such as major powers, are more likely to intervene into disputes in international politics than weaker third parties, like minor powers. In part, this is because stronger third parties are able to increase the chances of victory of their favored side in the dispute to a greater extent than weaker third parties. But, it is also because the disputants on whose behalf intervention may occur are more likely to escalate a dispute to violence rather than back down when they know a strong third party is willing to come to their aid than when a weak third party is willing to come to their aid.
A second, related empirical expectation suggested by Derivative Hypothesis 1 is that, all other things being equal, as a third-party state grows in power over time, that state becomes more likely to intervene into disputes occurring in their international environment. The logic of this expectation is identical to that discussed above, but its interpretation is different: the above-discussed expectation states that, in a given militarized dispute in international politics, intervention is more likely to occur by a stronger state, like the United States or China, than by a weaker state, like Belgium or Luxembourg. Here, this second empirical expectation is that a given state becomes more likely to intervene into a dispute with similar characteristics as their resources increase over time. For example, the United States is more likely to intervene into a dispute between two regional powers now than in the early 1800s, when the U.S. was much weaker.

At this point, it is clear that both of these expectations are quite intuitive, and do not offer particularly novel insights. But, in the view of this researcher, it is important to remember that good models are able to account for facts that are already known as well as novel facts. So, it is actually a good thing that this simple game yields substantive implications that are consistent with existing theory and evidence about international conflict. In fact, if it did not, then we would have cause for concern about how useful further development of this model would be. Moreover, as will be shown in the remainder of this analysis, not all of the substantive implications derived from the model are intuitive. One such implication will be derived in the following section.
Analysis of Partial Derivatives of Player I’s Expected Utility for Intervention

and Player T’s Expected Utility for Escalation with Respect to the

Resources of Player T

Now, having examined how one aspect of the distribution of resources among the actors in the game (the resources of the third party) relates to the occurrence of intervention in militarized disputes in international politics, I move on to examine how a second aspect of this component of the theory relates to intervention, the resources of the disputant on whose behalf player I considers intervening, player T. To do this, I perform an analysis comprised of three simple steps: first, I calculate the partial derivative of player I’s expected utility for intervention with respect to R_T, simplify it algebraically, and prove that it is always negative. Second, I calculate the partial derivative of player T’s expected utility for escalation with respect to R_T, simplify it algebraically, and prove that it is always positive. Third, I interpret these derivatives to produce substantive implications about the relationship between the resources of the ally of a potential intervener and the likelihood intervention occurs in militarized disputes in international politics. By doing so, I am able to produce a testable hypothesis that may be subjected to empirical analysis later in the project.

The first step is as follows: the partial derivative of player I’s expected utility for
intervention with respect to $R_T$ is

$$D_{R_T} \left[ \left( \frac{R_T + R_I}{R_T + R_I + R_C} \right) - \left( \frac{R_T}{R_T + R_C} \right) \right] \Delta^T_I +$$

$$\left( \frac{R_T}{R_T + R_C} \right) - \left( \frac{R_T + R_I}{R_T + R_I + R_C} \right) \Delta^C_I - k_I \right]$$

$$= \frac{1}{(R_C + R_I + R_T) \left( R_C + R_I + R_T \right)^2} + \frac{R_T}{(R_C + R_T)^2} - \frac{1}{R_C + R_T} \right] \Delta^T_I +$$

$$\left( \frac{1}{(R_C + R_T) \left( R_C + R_T \right)^2} + \frac{R_I + R_T}{(R_C + R_I + R_T)^2} - \frac{1}{R_C + R_I + R_T} \right) \Delta^C_I,$$

which simplifies to

$$\frac{(\Delta^C_I - \Delta^T_I)R_C R_I (2R_C + R_I + 2R_T)}{(R_C + R_T)^2 (R_C + R_I + R_T)^2}.$$

Equation 5.12

Examination of this derivative shows that it is always negative. Looking at the components of the expression and recalling the assumption that $R_T, R_C, R_I > 0$, it is easy to see that the denominator of the derivative is always positive because it is comprised entirely of resource variables. Moving to the numerator of the expression and recalling the assumption that $\Delta^T_I > \Delta^C_I$, it is clear that $(\Delta^C_I - \Delta^T_I)$ must be negative. As such $(\Delta^C_I - \Delta^T_I)$ multiplied by $R_C R_I (2R_C + R_I + 2R_T)$ is a negative expression times a positive expression, resulting in a negative numerator. Therefore, since the numerator is always negative and the denominator is always positive, the entire derivative must always be
negative, implying a negative relationship between $R_T$ and player I’s expected utility for intervention.

Having done this, I now move back up the game tree to player T’s decision over escalating the dispute to violence versus backing down to player C. Here, I perform the second step in this analysis and calculate the partial derivative of her expected utility for escalation with respect to her own resources. The partial derivative of player T’s expected utility for escalating (Equation 5.9) with respect to $R_T$ is

$$D_{R_T} \left[ \left( \frac{R_T + R_I}{R_T + R_I + R_C} \right) \Delta_T^C \right] + \left( 1 - \left( \frac{R_T + R_I}{R_T + R_I + R_C} \right) \right) \Delta_T^C - k_T - \Delta_T^C$$

$$= \left( \frac{1}{R_C + R_I + R_T} - \frac{R_I + R_T}{(R_C + R_I + R_T)^2} \right) \Delta_T^C + \left( \frac{R_I + R_T}{(R_C + R_I + R_T)^2} - \frac{1}{R_C + R_I + R_T} \right) \Delta_T^C$$

which simplifies to

$$\frac{(\Delta_T^I - \Delta_T^C)R_C}{(R_C + R_I + R_T)^2}$$

Equation 5.13

This derivative is identical to that shown in Equation 5.11. As a result, its interpretation is identical as well. That is, because this derivative is always positive, it implies a positive relationship between $R_T$ and player T’s expected utility for escalating the dispute to violence.

Putting all of this together, looking at the direction of these derivatives and the sequence of decisions in the model, as the resources of player T increase, this has the effect of increasing the probability that player T will be victorious in conflict against
player C and thus achieve her desired demand. This increased probability of victory decreases the degree of risk associated with the escalation lottery, and makes it more likely that the expected value of fighting will outweigh the costs, resulting in a higher expected utility for escalating than for backing down and accepting the demand of player C.

At the same time, player I observes that increases in the resources of his ally, player T, improve the likelihood that she will achieve her desired demand (which is also the preferred demand of player I) fighting on her own against player C. He then factors this into his decision making, and it has the somewhat surprising effect of increasing the expected value of the dyadic war lottery more than it increases the expected value of the intervention lottery\(^90\). That is, as \(R_T\) increases, player I’s expected utility for staying neutral increases at a greater rate than his expected utility for intervening because the risk that player T will lose fighting on her own decreases. The result of this is that player I perceives that her need for the addition of his resources into the conflict decreases. He thus becomes less likely to intervene and have to pay the costs of fighting.

Thinking carefully about this, the joint effects of these two partial derivatives imply a somewhat complex relationship between the resources of player T and the likelihood that intervention occurs, an approximately parabolic relationship in which the

\[^90\text{Specifically, the partial derivative of the dyadic war lottery with respect to } R_r \text{ is } \frac{(\Delta T - \Delta C)R_C}{(R_C + R_I + R_r)^2},\]

while the partial derivative of the intervention lottery with respect to \(R_r\) is \(\frac{(\Delta T - \Delta C)R_C}{(R_C + R_r)^2}\). Because numerators of these expressions are identical and the denominator of the former is greater than the denominator of the latter, it is easy to see that the latter derivative is greater than the former.
likelihood of the occurrence of intervention is lowest at the minimum and maximum
of the range of possible values of $R_T$ and highest around the mean of the range of possible
values of $R_T$ (the vertex of the parabola). This relationship may be illustrated with a
simple example: consider a set of hypothetical disputes in international politics in which
all of the variables comprising the equations for player I’s expected utility for
intervention and player T’s expected utility for escalation are equal, with the exception of
$R_T$. In this set of disputes, $R_T$ varies from some minimum, $x$, to some maximum, $z$, with
mean, $y$. Figure 5.4 shows the range of possible values of $R_T$ arranged in ascending order
from left to right on the $x$-axis.

Given the negative relationship between $R_T$ and the likelihood that player I
intervenes when given the opportunity in the game, the probability that player I
intervenes when given the opportunity is highest at point $x$ and lowest at point $z$, as
shown by the $EU(int)$ data series in the graph. Likewise, given the positive relationship
between $R_T$ and the likelihood that player T escalates in the game, the probability that
player T escalates is lowest at point $x$ and highest at point $z$, as shown by the $EU(esc)$
data series in the graph. To see how these different relationships interact, beginning with
the minimum value of $R_T$ at point $x$, if player I intervenes when given the opportunity
with a probability of 80% and player T escalates with a probability of 20%, then the
probability that both events occur is 16% (80% x 20% = 16%). Now, moving from left to
right, as $R_T$ increases, assume that the increase in $R_T$ from point $x$ to point $y$ results in a
decrease in the probability that player I intervenes when given the opportunity from 80%
to 50% and an increase in the probability that player T escalates from 20% to 50%.
Given this, the probability that both events occur when \( R_T \) equals its mean is 25\% (50\% \times 50\% = 25\%). This may be seen by following the \( P(int) \) data series in the figure from point \( x \) to point \( y \). Finally, moving from the mean of \( R_T \) to its maximum in this hypothetical set of cases, assume that the increase in \( R_T \) from point \( y \) to point \( z \) results in a decrease in the probability that player I intervenes when given the opportunity from 50\% to 20\% and an increase in the probability that player T escalates from 50\% to 80\%. This implies that the probability that both events occur when \( R_T \) equals its maximum is 16\% (20\% \times 80\% = 16\%). This may be seen by following the \( P(int) \) data series in the figure from point \( y \) to point \( z \). Overall, the joint effect of the differing directions of these partial derivatives imply an approximately parabolic relationship between \( R_T \) and the likelihood that intervention occurs (monotonically increasing from low levels of \( R_T \) up to some point around the middle range of values of the variable and then monotonically decreasing from that point), all other things being equal. This implication leads to the following testable hypothesis:

**Derivative Analysis Hypothesis 2:** The resources of the side favored by a potential intervener are related in an approximately parabolic fashion to the likelihood that intervention occurs in militarized disputes in international politics, *ceteris paribus*.

Having derived and stated this second hypothesis, I am now able to think carefully about what it tells us substantively about the occurrence of third-party intervention in militarized disputes in international politics. The model’s prediction that the resources of the disputant favored by the third party are parabolically related the likelihood that intervention occurs in the game suggests that, all other things being equal,
third-party intervention is more likely to occur on behalf of disputants with resources that are in the middle-range of actors in international relations than on behalf of very weak or very strong disputants. This prediction is arguably quite counter-intuitive, and runs counter to conventional wisdom ideas about the role this theoretical factor might play. One such conventional wisdom idea is the conjecture that increases in the resources of an allied disputant make intervention more likely because third parties perceive an increased likelihood of victory and opportunity for achieving some of the spoils of the conflict\textsuperscript{91}. A second conventional wisdom idea posits the opposite relationship, that decreases in the resources of an ally make intervention more likely because third parties observe that their favored side has a greater need for their help\textsuperscript{92}. While each of these stories has some intuitive appeal, and may comprise a piece of the causal puzzle under certain conditions, they both overlook the important strategic interaction that goes between the third party and the original parties involved in the dispute. That is, they only consider the decision making of the third party, without examining how expectations of the third party’s behavior can affect the behavior of the disputants. The prediction derived from Model 2 in Derivative Hypothesis 2 shows how capturing this strategic interaction produces an interesting, unexpected relationship between this theoretical factor and the occurrence of intervention.

\textsuperscript{91} This is the essence of the “bandwagoning” argument in the balancing versus bandwagoning debate. The connections of the implications of Model 2 to this substantive debate in the literature will be addressed in detail later in this project.

\textsuperscript{92} This is the essence of the “balancing” argument in the balancing versus bandwagoning debate. Again, the connections of the implications of Model 2 to this substantive debate in the literature will be addressed in detail later in this project.
Analysis of Partial Derivatives of Player I’s Expected Utility for Intervention

and Player T’s Expected Utility for Escalation with Respect to the

Resources of Player C

I now examine how the final element of the distribution of resources among the players in the game, the resources of player C, relates to the occurrence of intervention in militarized disputes in international politics. In similar fashion to the above analyses, this analysis is comprised of three simple steps: first, I calculate the partial derivative of player I’s expected utility for intervention with respect to \( R_C \), simplify it algebraically, and prove that it is negative under some conditions and positive under other conditions. Second, I calculate the partial derivative of player T’s expected utility for escalation with respect to \( R_C \), simplify it algebraically, and prove that it is always negative. Third, I interpret these derivatives to produce substantive implications about the relationship between the resources of the adversary of a potential intervener and the likelihood that intervention occurs in militarized disputes in international politics. By doing so, I am able to produce a testable hypothesis that may be subjected to empirical analysis later in the project.

The first step is as follows: the partial derivative of player I’s expected utility for intervention with respect to \( R_C \) is

\[
D_{R_C} \left[ \left( \frac{R_T + R_I}{R_T + R_I + R_C} \right) - \left( \frac{R_T}{R_T + R_C} \right) \right] \Delta_T^I + \\
\left( \frac{R_T}{R_T + R_C} \right) - \left( \frac{R_T + R_I}{R_T + R_I + R_C} \right) \Delta_C^I - k_I
\]
\[
\left( \frac{R_T}{(R_C + R_T)^2} - \frac{R_I + R_T}{(R_C + R_I + R_T)^2} \right) [\Delta^C_T] + \left( \frac{R_I + R_T}{(R_C + R_I + R_T)^2} - \frac{R_T}{(R_C + R_T)^2} \right) [\Delta^I_T],
\]

which simplifies to

\[
\frac{(\Delta^C_T - \Delta^I_T)R_I(R_C^2 - R_T(R_I + R_T))}{(R_C + R_T)^2(R_C + R_I + R_T)^2}
\]

Equation 5.14

Examination of this derivative reveals that it is negative under some conditions and positive under other conditions. Looking at the components of the expression and recalling the assumption that \( R_T, R_C, R_I > 0 \), it is easy to see that the denominator of the derivative is always positive because it is comprised entirely of resource variables. Moving to the numerator of the expression and breaking it down into its components, \((\Delta^C_T - \Delta^I_T)\) is always negative because of the assumption that \( \Delta^I_T > \Delta^C_T \), and \( R_I \) is positive by assumption because it is a resource variable. The final component of the numerator, \((R_C^2 - R_T(R_I + R_T))\) can be positive or negative, depending on the distribution of resources among players T, C and I. When the distribution of resources is such that \( R_C > \sqrt{R_T(R_I + R_T)} \), this expression is positive. In this case, the numerator equals a negative expression \((\Delta^C_T - \Delta^I_T)\) multiplied by a positive variable \((R_I)\) multiplied by a positive expression \((R_C^2 - R_T(R_I + R_T))\), resulting in a negative numerator and, therefore, a negative partial derivative. On the other hand, when the distribution of resources is such that \( R_C < \sqrt{R_T(R_I + R_T)} \), this expression is negative. In this case, the numerator equals a negative expression \((\Delta^C_T - \Delta^I_T)\) multiplied by a positive variable \((R_I)\) multiplied
by a negative expression \( \left( R^2_c - R_T (R_I + R_T) \right) \), resulting in a positive numerator and, therefore, a positive partial derivative. This implies a relationship between \( R_c \) and player I’s expected utility for intervention that is negative under certain conditions and positive under other conditions.

Now, moving back up the game tree to player T’s decision over escalation versus acquiescence to player C, I perform the second step in this analysis by calculating the partial derivative of player T’s expected utility for escalation with respect to the resources of player C. The partial derivative of player T’s expected utility for escalating (Equation 5.9) with respect to \( R_c \) is

\[
D_{R_c} \left[ \left( \frac{R_T + R_I}{R_T + R_I + R_C} \right) \Delta^T_T \right] + \left[ 1 - \left( \frac{R_T + R_I}{R_T + R_I + R_C} \right) \right] \left[ \Delta^C_c - k_T - \Delta^T_T \right]
\]

\[
= \left( - \frac{R_I + R_T}{(R_C + R_I + R_T)^2} \right) \Delta^T_T \left[ \Delta^T_T \right] + \left( \frac{R_I + R_T}{(R_C + R_I + R_T)^2} \right) \Delta^C_c \left[ \Delta^T_T \right]
\]

which simplifies to

\[
\frac{\left( \Delta^C_c - \Delta^T_T \right) (R_I + R_T)}{(R_C + R_I + R_T)^2}
\]

Equation 5.15

Examination of this derivative reveals that it is always negative. In similar fashion to the above partial derivatives, the denominator is comprised entirely of resource variables and therefore is always positive because of the assumption that \( R_T, R_C, R_I > 0 \).

Moving to the numerator, breaking it down into its components, the expression \( (\Delta^C_c - \Delta^T_T) \)
is always negative because of the assumption that $\Delta_T^I > \Delta_C^I$ and the expression $(R_I + R_T)$ is always positive because it is comprised entirely of resource variables. So, the numerator is made up of a negative expression multiplied by a positive expression, which clearly results in a negative numerator and, therefore, a negative partial derivative. This implies a negative relationship between $R_C$ and player $T$'s expected utility for escalating the dispute to violence.

Putting all of this together, the analysis of these two partial derivatives reveals a somewhat complex relationship between the resources of the adversary of a potential intervener and the likelihood that intervention occurs in a militarized dispute in international politics. Under certain conditions, specifically when the distribution of resources among the actors in a militarized dispute is such that $R_C > \sqrt{R_T(R_I + R_T)}$, the model posits a negative relationship between the resources of the adversary and the willingness of the third party to intervene if given the opportunity. This effect is intuitive: as the resources of the adversary increase, the probability that she wins in conflict increases, and, likewise, the probability that the side favored by the third party wins decreases. So, as player $C$'s resources increase, the likelihood that player $I$ achieves his preferred demand if he intervenes and fights alongside player $T$ decreases. This makes the intervention lottery more risky and thus less valuable. But, thinking carefully about this, increases in the resources of player $C$ also make the other alternative available to player $I$, staying neutral, more risky because increases in $R_C$ also decrease player $T$'s likelihood of winning in conflict on her own. So, as the resources of player $C$ increase, the likelihood that player $I$ receives his preferred demand if he stays neutral also
decreases, thus reducing the value of the dyadic war lottery. Despite this, while increases in $R_C$ have a negative effect on player I's expected values for both of his choices, they have a greater negative effect on the intervention lottery than on the dyadic war lottery\(^9\). As a result, the overall effect is that player I becomes more likely to stay neutral than to intervene into the dispute.

Moving back to player T’s decision in the game, the partial derivative of her expected utility for escalating the dispute to violence with respect to the resources of her adversary is always negative, regardless of how resources are distributed among the actors in the dispute. This predicted relationship is consistent with the intuitive idea that a disputant becomes less likely to escalate a dispute to violence as the resources of her adversary increase because her chances of winning in the conflict decrease, as mentioned in the above discussion. That is, as $R_C$ increases, the likelihood that player T achieves her demand if she fights player C decreases, which reduces the value of the escalation lottery, and thus makes her less willing to pay the costs of fighting associated with escalating. Instead, she simply backs down to player C, receives the demand of her adversary with certainty and avoids having to pay the costs of fighting. Altogether, the joint effect of these partial derivatives, given that resources are distributed such that

\[^9\] Specifically, the partial derivative of player I’s expected value for the intervention lottery is

\[
\frac{(\Delta^C_i - \Delta^T_i)(R_t + R_T)}{(R_C + R_t + R_T)^2},
\]

while the partial derivative of his expected value for the dyadic war lottery is

\[
\frac{(\Delta^C_i - \Delta^T_i)R_T}{(R_C + R_T)^2}.
\]

Upon examination, the former may be rewritten as

\[
\frac{(\Delta^C_i - \Delta^T_i)R_T}{(R_C + R_T)^2} + \frac{(\Delta^C_i - \Delta^T_i)R_t}{2R_C R_t + R_t^2 + 2R_t R_T},
\]

which clearly indicates a greater negative effect.
\[ R_C > \sqrt{R_T (R_I + R_R)} \], implies a clear negative relationship between the resources of the adversary and the likelihood that intervention occurs, all other things being equal.

This implication leads to the following testable hypothesis:

**Derivative Analysis Hypothesis 3:** When the distribution of resources among the actors in a militarized dispute in international politics is such that \[ R_C > \sqrt{R_T (R_I + R_R)} \], the resources of the adversary of a potential interevner are negatively related to the likelihood that intervention occurs, *ceteris paribus*.

Having derived and stated this third hypothesis, I am now able to think carefully about what it tells us substantively about the occurrence of third-party intervention in militarized disputes in international politics. The above derivation shows that, under certain identifiable conditions, the resources of the adversary disputant are negatively related to the likelihood of intervention, all other things being equal. The condition required for this relationship to exist is \[ R_C > \sqrt{R_T (R_I + R_R)} \], which suggests that the adversary disputant must have significantly greater resources than the coalition of the allied disputant and third party. To be precise, "significantly greater resources" means that the adversary must have greater resources than the allied disputant plus the square root of the resources of the allied disputant multiplied by the resources of the third party\textsuperscript{94}. Substantively, this suggests that, in disputes in which the adversary disputant has a substantial advantage in resources over the allied disputant and third party, intervention
is less likely to occur than in disputes in which the parties are closer in power. It is important to note the logic behind this intuitive relationship, in that alterations in the resources of the adversary have the same effect on both of the strategic actors in the game: as the resources of an already substantially stronger adversary increase, third parties become less willing to intervene and allied disputants become less willing to escalate, resulting in a clear negative relationship.

Having said this, now recall from the above discussion that, under certain other conditions, the partial derivative of player $I$’s expected utility for intervention with respect to $R_C$ is positive, which implies a different substantive relationship than that in the above hypothesis. The above calculations show that, when the distribution of resources among the actors in a militarized dispute is such that $R_C < \sqrt{R_T(R_I + R_T)}$, the model predicts a positive relationship between the resources of the adversary and the willingness of the third party to intervene if given the opportunity. This effect may not be immediately intuitive. But, thinking about it carefully, it makes sense as a corollary to the prediction of the model regarding the relationship between the resources of the ally of a potential intervener and the likelihood of intervention in disputes.

In the analysis of the partial derivatives of player $I$’s expected utility for intervention and player $T$’s expected utility for escalation with respect to the resources of player $T$, it is shown that increases in the resources of the ally of a potential intervener increase the likelihood that the ally escalates the dispute to violence, but decrease the

\[ \sqrt{R_T(R_I + R_T)} \] may be multiplied through to $\sqrt{R_T R_I + R_T^2}$ and rewritten as
likelihood that the third party actually intervenes into the dispute, leading to a joint
effect that is parabolic, monotonically increasing from low levels of $R_T$ up to some point
around the middle range of values of the variable and then monotonically decreasing
from that point. Here, in the analysis of the partial derivatives of player I’s expected
utility for intervention and player T’s expected utility for escalation with respect to the
resources of player C, when the resource distribution is such that $R_C < \sqrt{R_T(R_I + R_T)}$,
the model predicts the inverse effect: increases in the resources of player C decrease the
likelihood that player T escalates the dispute to violence, but actually increase the
willingness of player I to intervene on her behalf. This is because player I observes that
player T needs his help more as she becomes less likely to win in conflict on her own. As
such, in similar fashion to the predicted relationship between $R_T$ and the likelihood that
intervention occurs, the implied joint effect of these derivatives, given that resources are
distributed such that $R_C < \sqrt{R_T(R_I + R_T)}$, is that alterations in $R_C$ are related to the
likelihood that intervention occurs in an approximately parabolic manner, monotonically
increasing from low levels of $R_C$ up to some point around the middle range of values of
the variable and then monotonically decreasing from that point.

$$R_T^2 + \sqrt{R_T R_I}.$$
This implication leads to the following testable hypothesis:

**Derivative Analysis Hypothesis 4:** When the distribution of resources among the actors in a militarized dispute in international politics is such that $R_C < \sqrt{R_T(R_I + R_F)}$, the resources of the adversary of a potential intervener are related in an approximately parabolic fashion to the likelihood that intervention occurs, *ceteris paribus*.

Having derived and stated this fourth hypothesis, I am now able to one last time think carefully about what it tells us substantively about the occurrence of third-party intervention in militarized disputes in international politics. The above derivation shows that, under certain identifiable conditions (that is, when $R_C < \sqrt{R_T(R_I + R_F)}$), third-party intervention is more likely to occur against disputants with resources that are in the middle-range of actors in international relations than against very weak or very strong disputants.

**Conclusion**

In this chapter, the theory of intervention is further developed and formalized into a second game-theoretic model. This model builds upon the simple game by featuring a more complex, but potentially more powerful conception of the relationship between the share of resources held by an actor in a dispute and their likelihood of victory in conflict if the dispute escalates to war. Here, rather than assuming the militarily stronger side always wins in war with certainty, the model assumes that an actor's likelihood of victory in conflict is some function of the share of total resources they hold in the dispute. To capture this, Model 2 incorporates a general function mapping the share of resources held by an actor to a particular probability that they will win if the dispute escalates to war.
According to this more complex conception of the role of the distribution of power in the game, the players make risky choices about intervention and escalation in which they have some chance of winning and some chance of losing in conflict. This requires the additional assumptions of utility theory to capture the players’ decision making under risk, but allows the researcher to examine in careful detail the strategic interaction between the decisions of third parties and disputants.

After laying out the model with these developments, I solve for its subgame perfect equilibrium conditions and examine what they tell us in substantive terms about the occurrence of intervention in militarized disputes in international politics. From this simple analysis, I am able to posit necessary and sufficient conditions for intervention to occur that account for a much broader range of predictions than in Model 1. That is, because of its probabilistic conception of the relationship between resources and the likelihood of victory in conflict, Model 2 is able to account for cases of intervention beyond those in which the addition of the resources of the third party tips the military balance in favor of the allied disputant, namely cases of intervention when the distribution of resources is such that 1) the third party does not have sufficient resources to tip the balance in favor of the side it prefers, and 2) the side whose demand is preferred by the third party has an advantage in resources on its own. In addition, the model suggests additional avenues for further theoretical development that take advantage of the generality of the function relating resources to the likelihood of military victory, such as the examination of the notion that military planners employ the “three-to-one” rule in their decision making regarding third-party intervention.
I then employ a second method to examine these conditions in a different way, looking at how alterations in the individual components of the theory – specifically, elements of the distribution of resources among the disputants and third party – affect the decisions of the actors in the game and thus impact the likelihood that third party intervention occurs. To do this, I calculate the partial derivatives of player I’s expected utility for intervention and player T’s expected utility for escalation with respect to the resources of each actor, analyze their direction, and interpret them to produce substantive implications about how changes in the components of the theory affect the likelihood that third-party intervention occurs in militarized disputes in international politics. Some of the implications that emerge are intuitive, such as the hypothesis that the resources of third parties are positively related to the likelihood that intervention occurs (all other things being equal). Others, however, are more interesting and potentially counter-intuitive products of the sequence of the interdependent decisions of the third party and the side whose demand they favor in the dispute.

One such prediction regards the effect of alterations in the resources of the side favored by the third party on the likelihood that intervention occurs. Intuitively, one might expect that decreases in the resources of an ally involved in a dispute would make it more likely that intervention occurs on her behalf (because the disputant needs the aid of the third party more) and increases in the resources of an ally to make it less likely that intervention occurs on her behalf (because the disputant needs the aid of the third party less). According to Model 2, however, the relationship that exists between the resources of the side favored by the third party and the likelihood that intervention occurs is
somewhat more complex. The model predicts that, as the resources of the allied disputant decrease, the third party does become more willing to intervene on her behalf, but the disputant becomes less likely to escalate the dispute to violence and give the third party the opportunity to fight on her side. That is, as her resources decrease, she becomes more likely to simply back down to her opponent rather than fight, even if she knows the third party will come to her aid. Looking at the inverse effect, as the resources of the allied disputant increase, she becomes more willing to escalate the dispute to violence, but the third party becomes less willing to fight on her behalf because she needs the help less. Altogether, the joint effect of these different relationships implies an approximately parabolic relationship in which the likelihood of the occurrence of intervention is lowest at the minimum and maximum of the range of possible values of the resources of the allied disputant and highest around the mean of the range of possible values of the factor.

A second interesting, potentially counter-intuitive implication that emerges from the derivative analysis regards the relationship between the resources of the adversary and the likelihood that intervention occurs. Intuitively, one might expect that increases in the resources of the enemy of the side favored by the third party in a militarized dispute would make it more likely that intervention occurs (because the side favored by the third party needs the aid of the third party more). According to Model 2, however, this is not the case. Rather, the model predicts that, under certain conditions, as the resources of the adversary increase, the third party does become more willing to intervene on behalf of his ally, but the ally becomes less willing to escalate the dispute to violence and give the third party the opportunity to fight on her behalf (a corollary to the above predicted
relationship between the resources of the allied disputant and the likelihood of
intervention). Under other conditions, however, increases in the resources of the
adversary make the third party less willing to intervene and the allied disputant less
willing to escalate (because their chances of emerging victorious from the conflict
decrease), implying a clear negative relationship. Altogether, this leads to two
hypotheses: first, under some conditions, there exists a parabolic relationship between
the resources of enemy of the side favored by the third party and the likelihood that
intervention occurs, all other things being equal; second, under other conditions, there
exists a negative relationship between the resources of enemy of the side favored by the
third party and the likelihood that intervention occurs, all other things being equal.

In the next chapter of this dissertation, I subject these hypotheses to empirical
tests. By doing so, it is possible to evaluate the theory under construction and assess
what progress has been made in this project. If these tests reveal encouraging results,
then further theoretical development may proceed, such as applying the model to inform
on ongoing debate in the international relations literature.
Chapter VI
Empirical Tests of Model 2

Introduction: Continuing Evaluation of the Theory

In the previous chapter, the theory of intervention under development in this project is formalized into a second game-theoretic model. This model builds upon the first game (Model 1) by loosening the restrictive assumption that the militarily stronger side always wins in war. Instead, Model 2 assumes that an actor’s likelihood of victory in conflict is some function of the share of total resources they hold in the dispute. By incorporating this probabilistic conception of the relationship between resources and military victory (and the additional assumptions of utility theory), the model is able to produce a range of observable implications about how alterations in the components of the theory – specifically, elements of the distribution of resources among the disputants and third party – affect the decisions of the actors in the game and thus impact the likelihood that third party intervention occurs.

In this chapter, these hypotheses are subjected to empirical testing. The point of this exercise is to evaluate the explanatory power of the model by examining the degree to which its observable implications are borne out in the empirical world. By doing so, it is hoped that we will both learn something about the world and illuminate potentially fruitful directions for further theoretical development. At this point, it is important to note that, while the model itself is a very simple theoretical structure (a basic two-player, complete and perfect information game), the implications derived from it include both the intuitive and the arguably quite counter-intuitive. That is, while Model 2 produces some
substantive implications that are consistent with the thinking of many scholars in the social scientific study of international conflict, such as the prediction that stronger third parties are more likely to be interveners than weaker third parties (Derivative Hypothesis 1), it also suggests several insights that run contrary to the thinking of many researchers of this topic, such as the predictions that 1) there exists a parabolic relationship between the resources of the allied disputant and the occurrence of intervention (Derivative Hypothesis 2) and 2) the conditional relationship between the resources of the adversary disputant and the occurrence of intervention (Derivative Hypotheses 3 and 4). In the view of this researcher, the fact that the model produces both intuitive and counter-intuitive implications is a good thing, because it implies that the model may be able to explain some facts we already know, as well as some new facts. If the hypotheses are borne out by the empirical evidence, then this suggests that the development of the theory of intervention in this project is on the right track. In the following section, I lay out the research design that will be employed in these tests.

Research Design

General Approach to Testing Hypotheses Derived from Model 2

In general, the approach to testing the hypotheses derived from Model 2 is the same as that employed in the empirical tests of Model 1 in Chapter IV. While this approach is discussed in detail in the above chapter, its importance is such that it merits a brief review here: at the most essential level, it is important to remember that the goal of this project is the development of a general, causal explanation for third-party intervention in militarized disputes in international politics. The standard chosen for the construction of this theory is the Lakatosian criterion that a theory must supersede what is
already known in order to advance knowledge – that is, it must account for both 
previously explained facts and some novel facts. Because Model 2 yields a range of 
predictions about intervention that are directly observable, and because some of these 
predictions regard previously explained facts and some regard novel facts, empirical tests 
of these hypotheses may be conducted in a manner that is both clear and likely to yield 
dependable inferences about the explanatory power of the theory.

To perform these tests, in similar fashion to the analysis in Chapter IV, I examine 
many cases of disputes in international politics, in which intervention occurs some of the 
time and does not occur some of the time. This approach is one of several that could be 
employed here, but it has a number of advantages that make it the strongest choice. One 
important advantage is that its allows variance in the dependent variable. That is, while a 
design in which a number of occurrences of intervention are selected for analysis does 
allow the researcher to examine the behavior under study in exacting detail (and is the 
most commonly employed approach in the existing literature studying intervention), it is 
faulty from a research design perspective because it is dangerous to draw inferences 
about the conditions under which intervention does and does not occur from a sample of 
cases that only includes cases in which intervention does occur. A more appropriate 
approach is to include a sample of cases, preferably a randomly selected sample, that 
includes cases of both intervention and non-intervention.

A second advantage of the approach employed here is that, by examining many 
cases of disputes in international politics, the analysis is less susceptible to biased 
conclusions resulting from measurement error. That is, when only a few cases of 
disputes into which intervention may occur are examined, this sample may not be
indicative of the full population of militarized disputes in international politics. The many cases approach significantly reduces the danger of this because it allows (relatively) controlled comparison across a larger sample of the population of disputes. The many cases approach also allows the researcher to make broader generalizations about classes of events while the few cases approach places limits on the extent to which the conclusions reached may be generalized. In sum, using many cases of disputes in international politics in which intervention occurs some of the time and does not occur some of the time offers the strongest research design for these tests.

**Hypothesis Testing Using Regression Analysis**

While the general approach to evaluating Model 2 may be the same as that employed in the analysis of Model 1 in Chapter IV, the specific methods employed here differ from those in the previous analysis in that they are more sophisticated, but potentially more powerful. Recall that the hypotheses derived from Model 1 in Chapter III and tested in Chapter IV are deterministic statements relating the occurrence of intervention (as well as acquiescence and dyadic war) to the three possible distributions of resources that may exist between the players in the game, 1) \( R_t + R_i < R_c \), 2) \( R_t < R_c \) AND \( R_t + R_i > R_c \), and 3) \( R_t > R_c \). To test these hypotheses, I first performed a very simple analysis, examining cross-tabulations of the dichotomous measures of the distribution of resources against dichotomous measures of the outcomes in the game. For example, to test the hypothesis that intervention cannot occur when the distribution of resources is \( R_t + R_i < R_c \), I constructed a cross-tab table showing the relationship between the dichotomous independent variable measuring this distribution of resources and the dichotomous dependent variable measuring the occurrence of intervention. Naturally, in
these tests, the occurrence of outcomes in distributions of resources predicted by the model offered supportive evidence, while the occurrence of outcomes in distributions of resources precluded by the model offered unsupportive evidence.

I then employed a second method to test a less stringent, more probabilistic interpretation of these hypotheses. Returning to the above-mentioned prediction that intervention cannot occur when the distribution of resources is such that $R_r + R_i < R_c$, a more probabilistic interpretation would suggest that there exists a general tendency for intervention to occur less in this distribution of resources than in the other possible distributions of resources in which intervention is not precluded by the model. To test this hypothesis, I performed an independent sample $t$-test examining whether there exists a statistically significant difference between the mean of the distribution of the intervention dependent variable in the set of cases in which resources are distributed such that $R_r + R_i < R_c$ and the mean of the distribution of the intervention dependent variable in the set of cases including distributions of resources in which intervention is not precluded by the model. The existence of a statistically significant mean difference is then directly interpreted to describe the direction and magnitude of the relationship between the independent and dependent variable.

In the present analysis, the empirical expectations implied by the theory are different in form from those examined in Chapter IV. Here, the hypotheses derived from Model 2 are products of analyzing the partial derivatives of the expressions representing player I's expected utility for intervening and player T's expected utility for escalating the dispute to violence with respect to the resources of players I, T and C. By examining the direction of these partial derivatives, and paying particular attention to the sequence
of decisions of the players in the game, four testable hypotheses are produced about how alterations in the individual components of the theory — specifically, elements of the distribution of resources among the disputants and third party — affect the decisions of the actors in the game and thus impact the likelihood that third party intervention occurs.

To test these hypotheses, I employ large-\(n\) statistical methods more sophisticated than the difference of means tests in Chapter IV. Specifically, I employ regression analysis, which “is concerned with the study of the dependence of one variable, the dependent variable, on one or more other variables, the explanatory variables, with a view to estimating and/or predicting the (population) mean or average value of the former in terms of the known or fixed (in repeated sampling) values of the latter” (Gujarati 1995). My rationale for this is as follows: first, in the hypotheses derived from Model 2 in Chapter V (Derivative Hypotheses 1-4), the independent variables are continuous measures of the resources of the disputants and third party, as opposed to the dichotomous measures of the presence or absence of a particular distribution of resources in the hypotheses derived from Model 1 in Chapter III\(^5\). While difference of means tests are appropriate methods for assessing the statistical significance, direction and magnitude of relationships between dichotomous dependent and independent variables (as in Chapter IV), they are not appropriate for the analysis of relationships in which one or more of the variables are continuous. This is because difference of means tests allow the researcher only to examine the difference between two samples of the population, while continuous variables require the researcher to be able to examine the difference between

\(^{55}\) To be as clear as possible here, the dependent variable in the analysis — the occurrence of third party intervention — is dichotomous, while the independent variables — \(R_1\), \(R_2\), and \(R_3\) — are continuous. Regression analysis with a dichotomous dependent variable will be addressed in a later section of this chapter.
many samples (that is, each value that a continuous variable takes on is its own sample). Regression analysis allows the researcher to estimate the statistical significance, direction and magnitude of relationships between continuous variables, and therefore yield informative insights about the precise quantitative relationship between the elements of the theory and the occurrence of intervention.

A second reason I employ regression analysis in this chapter regards the issue of control. Recall from Chapter V that the hypotheses derived from Model 2 are specific statements about how alterations in one theoretical factor impact the likelihood that third-party intervention occurs, holding all other factors constant. For example, recall that Derivative Analysis Hypothesis 1 states that the resources of third-party potential interveners are positively related to the likelihood that they intervene in militarized disputes in international politics, ceteris paribus. Thinking carefully about this, it implies that an appropriate test of this prediction must be powerful enough to analyze the impact of alterations in the resources of player I (Rᵢ) on the likelihood that intervention occurs while holding the other factors in the theory – specifically, the resources of players T and C (Rᵣ and Rᵦ), as well as the values that player I has for the demands of players T and C (Δᵣ and Δᵦ), and the values that player T has for her own demand and the demand of player C (Δᵣ and Δᵦ) – constant. Fortunately, regression analysis allows precisely this sort of control: according to Gujarati (1992), by including all of these variables in one regression model (a multiple regression model), the coefficients become partial coefficients, which “reflect the (partial) effect of one explanatory variable on the mean value of the dependent variable when the values of other explanatory variables included in the model are held constant. This unique feature of multiple regression enables us not
only to include more than one explanatory variable in the model but also to ‘isolate’
or ‘disentangle’ the effect of each \( X \) variable on \( Y \) from the other \( X \) variables included in
the model.” As such, to perform tests of Derivative Hypotheses 1-4 derived from Model
2 in Chapter V, I employ multiple regression. In the following sections of this chapter, I
discuss in detail the structure of the regression model(s) and the estimation strategy, as
follows.

**Model Specification**

The most important consideration in specifying an empirical model (or set of
models) to test Derivative Hypotheses 1-4, derived from Model 2 in the previous chapter,
regards the link between the observable implications of the theory and the data employed
to test these implications. Recall from Chapter IV the excellent quote by King, Keohane
and Verba (1994), stressing the importance of theory and data in strong connection with
one another, which clearly states that “no empirical investigation can be successful
without theory to guide its choice of questions.” Given this, the first step in specifying an
appropriate empirical model (or set of models) must be to think very carefully about what
each of the four observable implications produced by the theory are saying, and to allow
this to guide the choice of model(s).

Returning to Chapter V, recall that the first hypothesis derived from Model 2 for
empirical testing is a product of calculating the partial derivative of player I’s expected
utility for intervention and player T’s expected utility for escalation with respect to the
resources of player I. Because both of these partial derivatives are shown to be positive,
they are interpreted to imply a clear positive relationship between the resources of the
third party and the likelihood that intervention occurs, *ceteris paribus*. That is, thinking
in terms of an empirical model, this hypothesis leads to the specific expectation that increases (decreases) in the resources of the third party increase (decrease) the likelihood that intervention occurs, holding all other factors in the theory (the resources of players T and C, as well as player I’s values for the demands of players T and C, and player T’s values for her own demand and the demand of player C) constant. So, the appropriate model with which to test this hypothesis has the occurrence of intervention as the dependent variable (of course), the resources of player I, $R_i$, as the principal independent variable of interest, and the resources of players T and C ($R_T$ and $R_C$), player I’s values for the demands of players T and C ($\Delta_T^i$ and $\Delta_C^i$), and player T’s value for the demand of player C ($\Delta_C^T$) as control variables. This specification may be shown clearly for purposes of illustration in the form of an equation, as follows:

$$\text{Intervention} = b_0 + b_1(R_i) + b_2(R_T) + b_3(R_C) + b_4(\Delta_T^i) + b_5(\Delta_C^i) + b_6(\Delta_C^T)$$

Equation 6.1

Now, moving on to the second hypothesis derived from Model 2 for empirical testing, recall that this prediction is a product of calculating the partial derivative of player I’s expected utility for intervention and player T’s expected utility for escalation with respect to the resources of player T. Here, the partial derivative of player I’s expected utility for intervention with respect to the resources of player T is shown to be negative, and the partial derivative of player T’s expected utility for escalation with

\footnote{While the variable for player T’s value for her own demand is included in the partial derivatives of her expected utility for escalation, in the empirical analysis it is assumed that player T always attaches a value of 1 to her own demand. Therefore, because it does not vary, this variable is not included in the regression model. This is a product of the operational measure of the variable, and will be explained later.}

\footnote{In this model, if the coefficient for the $R_T$ variable is positive and statistically significant, then the hypothesis is borne out. The test of significance approach to hypothesis testing is discussed in greater detail in the following section.}
respect to her own resources is shown to be *positive*. The joint effect of these two partial derivatives imply a somewhat complex relationship between the resources of player T and the likelihood that intervention occurs: as the resources of player T increase, she becomes *more* likely to escalate the dispute to violence because she has an increased chance of victory in the conflict. But, because player I observes this increase in player T’s chances of winning in conflict on her own, he becomes *less* willing to intervene on her behalf. Inversely, as the resources of player T decrease, the third party becomes *more* willing to intervene on her behalf, but the disputant becomes *less* willing to escalate the dispute to violence and give the third party the opportunity to do so. The interaction of these different effects implies an approximately parabolic relationship between $R_T$ and the likelihood that intervention occurs (*ceteris paribus*), in which the likelihood that intervention occurs is lowest at the minimum and maximum of the range of possible values of $R_T$ and highest around the mean of the range of possible values of $R_T$ (the vertex of the parabola).

Thinking about this in terms of an empirical model, this hypothesis leads to the specific expectation that alterations in the resources of the side favored by the third party are roughly parabolically related to the likelihood that intervention occurs, holding all other factors in the theory (the resources of players I and C, as well as player I’s values for the demands of players T and C, and player T’s values for her own demand and the demand of player C) constant. This roughly parabolic relationship may be captured with a second-order polynomial regression model, commonly employed in econometric research relating to cost and production functions (Gujarati 1995). In such models, the variable of interest is expressed as a quadratic function, $x + x^2$, which captures the
predicted parabolic shape between the dependent variable and variable of interest implied by the theory\textsuperscript{98}. So, the appropriate model with which to test this hypothesis has the occurrence of intervention as the dependent variable (of course), the resources of player T, $R_T$ plus $R_T^2$, squared as the principal independent variables of interest, and the resources of players I and C ($R_I$ and $R_C$), player I's values for the demands of players T and C ($\Delta_{T_I}^T$ and $\Delta_{C_I}^C$), and player T's value for the demand of player C ($\Delta_{C_T}^C$) as control variables. This specification may be illustrated in equation form by adding the $R_T^2$ variable to the statistical model shown above in Equation 6.1, as follows:

$$\text{Intervention} = b_0 + b_1(R_I) + b_2(R_T) + b_3(R_T^2) + b_4(R_C) + b_5(\Delta_{T_I}^T) + b_6(\Delta_{C_I}^C) + b_7(\Delta_{C_T}^C)$$

Equation 6.2

In this model, the appropriate empirical expectation is that 1) the $R_T$ variable will be positive and statistically significant, capturing the prediction that increases in $R_T$ from low levels of the variable to the middle range of the variable increase the likelihood that intervention occurs, and 2) the $R_T^2$ variable will be negative and statistically significant, capturing the prediction that increases in $R_T$ from the middle range of the variable to high levels decrease the likelihood that intervention occurs.

At this point, having specified the appropriate empirical model for the tests of Derivative Hypotheses 1 and 2, I now move on to do the same for Derivative Hypotheses 3 and 4. Returning to Chapter V, recall that these hypotheses are products of calculating the partial derivatives of player I's expected utility and player T's expected utility for escalation with respect to the resources of player C. Recall also that these calculations

\textsuperscript{98} Because $x^2$ is a nonlinear function of $x$, this model does not violate the no multicollinearity assumption of the CLRM. For a detailed discussion of this, see Gujarati (1995).
reveal a somewhat complex, conditional relationship between the resources of the adversary disputant and the likelihood that intervention occurs, ceteris paribus. This conditional relationship is a logical implication of the fact that the partial derivative of player I’s expected utility for intervention with respect to the resources of player C is negative under some conditions (specifically, when the condition $R_c > \sqrt{R_t (R_i + R_T)}$ is fulfilled) and positive under other conditions (specifically, when the above condition is not fulfilled), while the partial derivative of player T’s expected utility for escalation with respect to the resources of player C is negative (under all conditions).

Beginning with the former case (when the condition $R_c > \sqrt{R_t (R_i + R_T)}$ is fulfilled), the joint effects of a negative partial derivative of player I’s expected utility for intervention with respect to the resources of player C and a negative partial derivative of player T’s expected utility for escalation with respect to the resources of player C imply a clear negative relationship between the variable and the occurrence of intervention, because increases in $R_C$ both make player I less willing to intervene and player T less willing to escalate. This leads to Derivative Hypothesis 3, which predicts that, when the distribution of resources among the actors in a militarized dispute in international politics is such that $R_C > \sqrt{R_t (R_i + R_T)}$, the resources of the adversary of a potential intervener are negatively related to the likelihood that intervention occurs, ceteris paribus.

Now, moving on to the latter case (when the condition $R_c > \sqrt{R_t (R_i + R_T)}$ is not fulfilled), the joint effects of a positive partial derivative of player I’s expected utility for intervention with respect to the resources of player C and a negative partial derivative of player T’s expected utility for escalation with respect to the resources of player C imply a
roughly parabolic relationship between the variable and the occurrence of
intervention, because increases in $R_C$ make player I more willing to intervene but player
T less willing to escalate. As discussed in Chapter V, while this predicted relationship
may not be immediately intuitive, thinking about it carefully, it makes sense as a
corollary to the prediction of the model regarding the relationship between the resources
of the ally of a potential intervener and the likelihood of intervention in disputes. This
leads to Derivative Hypothesis 4, which predicts that, when the distribution of resources
among the actors in a militarized dispute in international politics is such that
$R_C < \sqrt{R_T (R_I + R_T)}$, the resources of the adversary of a potential intervener are
approximately parabolically related to the likelihood that intervention occurs, *ceteris
paribus*.

Thinking about these hypotheses in terms of an empirical model, a commonly
employed method of testing hypotheses with conditional relationships is to include a
multiplicative variable in the statistical model, which is “a term that is the product of the
two independent variables thought to interact in their effects on the dependent variable.”
(Friedrich 1982). To employ this method to test Derivative Hypotheses 3 and 4, I do the
following: first, I construct a dummy variable, *Dummy*, that is coded 1 when the
condition $R_C > \sqrt{R_T (R_I + R_T)}$ is fulfilled and coded 0 when this condition is not fulfilled
(that is, when $R_C < \sqrt{R_T (R_I + R_T)}$). Second, I construct an interaction variable,
*Interaction*, by multiplying the $R_C$ variable with the dummy. Third, I construct a second-
order polynomial term for the interaction variable by squaring it, $Interaction^2$. Adding
the dummy variable, interaction variable, and the interaction variable squared to the
statistical model in Equation 6.2 results in the following specification:

\[ \text{Intervention} = b_0 + b_1(R_I) + b_2(R_T) + b_3(R_T^2) + b_4(R_C) + b_5(\text{Dummy}) + b_6(\text{Interaction}) + b_7(\text{Interaction}^2) + b_8(\Delta_I^2) + b_9(\Delta_C^2) + b_{10}(\Delta_T^2) \]

Equation 6.3

In this model, the \( R_C \) variable tests Derivative Hypothesis 3 and the \( \text{Interaction} \) and \( \text{Interaction}^2 \) variables test Derivative Hypothesis 4. To be as clear as possible here, the \( R_C \) variable captures the relationship between the variable and the likelihood of intervention, \textit{ceteris paribus}, when the above-discussed condition is not fulfilled. When this is the case, the theory predicts a clear negative relationship between \( R_C \) and the likelihood that intervention occurs, holding all else constant. As such, the appropriate expectation is that this variable will be negative and statistically significant. The \( \text{Interaction} \) and \( \text{Interaction}^2 \) variables capture the relationship between \( R_C \) and the likelihood of intervention, \textit{ceteris paribus}, when the above-discussed condition is fulfilled, in the same fashion as in the test of Derivative Hypothesis 2. As such, the appropriate expectation is that the \( \text{Interaction} \) variable will be positive and statistically significant, while the \( \text{Interaction}^2 \) variable will be negative and statistically significant, holding all else constant.

While this approach is relatively straightforward, it must be noted that the coefficients and standard errors of a statistical model employing a multiplicative term must be interpreted with particular care. According to Friedrich (1982), “while multiplicative terms are widely identified as a way to assess interaction in data, the extant literature is short on advice about how to interpret the results and long on caveats and disclaimers regarding their use... The key to understanding regression coefficients in
models with multiplicative terms lies in seeing that the inclusion of a multiplicative term converts a general statement of relationship into a conditional statement of relationship. That is, whereas the coefficients in an additive model describe the effects of each independent variable on the dependent variable, the coefficients in an interactive model describe the effects of each independent variable on the dependent variable as varying, according to the level of the other independent variable.”

Thinking about this in terms of the above-specified model, the inclusion of the dummy variable captures the change in the intercept between the baseline category (in which the condition \( R_C > \sqrt{R_T(R_I + R_T)} \) is not fulfilled) and the category in which the dummy is coded 1 (in which the condition is fulfilled). The inclusion of the interaction variables captures the change in the slope of the \( R_C \) coefficient between the baseline category and the category in which the dummy is 1. It is important to note the precise meaning of this, in that the interaction term cannot be interpreted directly as the relationship between the \( R_C \) variable and the likelihood of intervention when the condition is fulfilled. Rather, it must be interpreted as the change in the slope coefficient of the \( R_C \) variable from the category in which the dummy is 0 to the category in which the dummy is 1.\(^9\)

In addition, the correct interpretation of the significance level of the interaction

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\(^9\) Excellent discussions of this may be found in Gujarati (1992, pp. 265-272) and Friedrich (1982, pp. 804-809). For example, according to Gujarati (1992), “In general, the differential slope coefficient tells by how much the slope coefficient of the category that receives the value of 1 differs from the base category.” Because the interaction variable captures the change in the slope of the \( R_C \) variable when the condition is fulfilled, the estimated slope coefficient for the \( R_C \) variable when the condition is fulfilled can be interpreted directly as \( (b_3 + b_5) \) in the above-specified model.
term is as follows:

While the standard errors for an additive model describe the variability of their associated regression coefficients as constant across all levels of the independent variables, the standard errors in an interactive model describe the variability of their associated coefficients at particular levels of the independent variables. That is, the standard errors for $b_1$ [in the above model, coefficient for the $R_a$ variable] and $b_2$ [in the above model, the coefficient for the dummy variable] in an interactive model describe the variability in the coefficients at particular places where $X_2$ and $X_1$, respectively, equal zero. The standard error for $b_3$ [in the above model, the coefficient for the interactive term] describes the variability in the change of the effect of $X_1$ on $Y$ with a one-unit change in $X_2$, or, alternatively, of the effect of $X_2$ on $Y$ with a one-unit change in $X_1$.

Because determining the effect of $X_1$ on $Y$ at a particular level of $X_2$ or the effect of $X_2$ on $Y$ at a particular level of $X_1$ requires combining the coefficients for $b_1$ and $b_3$ or for $b_2$ and $b_3$, determining the standard errors of these effects requires combining the standard errors of $b_1$ and $b_3$ and of $b_2$ and $b_3$. Because, where $X$ and $Y$ are random variables and $a$ is a constant,

1. $\text{var}(aX) = a^2 \text{var}(X)$,

2. $\text{var}(X + Y) = \text{var}(X) + \text{var}(Y) + 2 \text{cov}(X,Y)$, and

3. $\text{cov}(X,aY) = a \text{cov}(X,Y)$,

the standard error of the sum $(b_1 + b_3X_2)$ is

$$S_{(b_1 + b_3X_2)} = \sqrt{\text{var}(b_1) + X_2^2 \text{var}(b_3) + 2X_2 \text{cov}(b_1, b_3)}.$$ 

Similarly, the standard error of $(b_2 + b_3X_1)$ is

$$S_{(b_2 + b_3X_1)} = \sqrt{\text{var}(b_2) + X_1^2 \text{var}(b_3) + 2X_1 \text{cov}(b_2, b_3)}.$$ 

These expressions show that, rather than being constant (as they are in the additive model), the standard errors of the conditional coefficients vary according to the level of the other independent variable. (Friedrich 1982)

Having specified this statistical model, before moving on to discuss the estimation strategy, one final issue regards the inclusion of additional control variables in the analysis. In general, the inclusion of control variables in an empirical analysis is a good thing because they isolate the independent effects of the variables being estimated from other factors and therefore strengthen the research design of the test(s). But, in the present analysis, because of the ceteris paribus clauses in each of Derivative Hypotheses
1-4, I am already controlling for all of the other variables my theory says are important. While one might argue that there exist other factors, beyond those in my theory, that affect the occurrence of intervention (domestic political institutions, for example), in the view of this researcher, the essential point of this exercise is not to explain all of the variance in intervention by isolating the independent effects of every variable that has an effect on its occurrence, but rather to examine whether the logical implications of the theory of intervention developed here are borne out in as clear and simple a manner as possible. As such, rather than include a host of additional variables in the model and add substantial complexity to the analysis, I simply test the theory by including only those variables it says are important. Finally, with this discussion of the model specification complete, in the next section, I lay out the estimation strategy that will be employed in the analysis.

Statistical Modeling with a Binary Dependent Variable: the Logit Model. The above-discussed statistical model is estimated using logit. While ordinary least squares (OLS)\(^{100}\) is the simplest estimation routine available for use in regression models, as well as the most commonly employed in empirical data analysis in the social sciences, it is well-documented in the basic statistical literature that this method is inappropriate for regression models with a binary dependent variable. Although detailed discussions of the reasons for this are available from a number of excellent sources (Gujarati 1992, 1995; Greene 1997; Aldrich and Nelson 1984), I present a brief review here for illustrative purposes: first, in statistical models with a binary dependent variable, this variable takes

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\(^{100}\) In very simple terms, the principle of ordinary least squares means that the sum of the squared differences between the values predicted by the regression model and the observed values is a minimum sum compared to any other straight line (Knoke and Bohrnstedt 1991).
on a value of 1 when the behavior of interest is observed (in this case, when intervention occurs) and 0 when the behavior of interest does not occur. As such, the point estimates produced by the estimation of such models are generally interpreted in terms of probabilities that the event of interest occurs. When OLS is employed to estimate a statistical model with a binary dependent variable, because of the assumption that the dependent variable is a linear function of the explanatory variables, the resulting predicted values are not limited to values between 0 and 1. This makes interpretation of the output in terms of probabilities quite problematic, because the predicted probabilities can be negative and/or greater than 1. A second reason OLS is inappropriate for statistical models with a binary dependent variable is that the method results in point estimates that may be inefficient, because the residuals are 1) not normally distributed and 2) heteroscedastic, both of which violate the assumptions of the classical linear regression model\textsuperscript{101}.

The logit model addresses these issues by incorporating the assumption that the relationship between the probability of an event occurring and the explanatory variables is not linear, but rather follows the cumulative logistic distribution function. That is, in the form of an equation, the binary dependent variable, $Y_i$ ($i = 1, ..., n$) takes on the value 1 (in this case, for intervention) according to the following functional form (Gujarati 1995):

$$\Pr(Y_i = 1 | \beta) = \frac{1}{1 + e^{-(\beta_0 + \beta_1 X_{1i})}}$$

Equation 6.4

\textsuperscript{101} Proof of these violations of the assumptions of the CLRM may be seen in Gujarati 1995, pp. 542-544.
According to this function, the relationship between the dependent and independent variables is such that, as \( X_i \) increases, \( \Pr(Y_i = 1|\beta) \) increases but stays within the 0-1 bounds of probability. Furthermore, because this functional form is nonlinear, it captures the idea that this relationship is "one which approaches zero at slower and slower rates as \( X_i \) gets small and approaches one at slower and slower rates as \( X_i \) gets very large" (Aldrich and Nelson 1984). But, as a result of this, \( \beta \) is nonlinear in the parameters (and the variables as well, but this is of no concern), which creates an estimation problem (Gujarati 1995). To solve this problem, the probability of occurrence of the event of interest is not estimated directly, but rather indirectly through a functional form that is intrinsically linear. To see this, assume \( P_i \) is the probability of intervention, which implies by definition that the probability of non-intervention is \( 1 - P_i \). Now, \( P_i / (1 - P_i) \) is the odds ratio in favor of intervention (simply the ratio of the probability of intervention to the probability of non-intervention). The natural logarithm of the odds ratio, commonly called the logit, is linear in the parameters\(^{102}\), and can be estimated using the method of maximum likelihood\(^{103}\). In the logit model, the slope coefficient of an independent variable gives the change in the log of the odds ratio per unit change in the variable of interest. These coefficients may be transformed back into directly interpretable probabilities by taking the antilog of the logit (Gujarati 1992). That is, in

\(^{102}\) This proof may be seen in Gujarati (1995, pp. 555-556).

\(^{103}\) In very simple terms, maximum likelihood estimation gives the values that maximize the likelihood of getting the data we actually observe. For excellent discussions of this method, see King (1989) and King and Zeng (2000).
equation form:
\[ P_i = \frac{e^{\beta}}{1 + e^{\beta}} \]

Equation 6.5

Logit Estimation with Rare Events Data. One issue that complicates the logit estimation of the above-discussed statistical model regards the heavily skewed distribution of the dependent variable employed in the analysis. Recall from the tests of the hypotheses derived from Model 1 in Chapter IV that intervention is a relatively rare event in international politics. This is reflected in the MID Intervention data set constructed for the analyses in this dissertation project, discussed in detail in Chapter IV (and reviewed below), which contains 7,520 third party-disputant dyads across 326 MIDs over the period 1816-1984. Of these 7,520 cases, intervention occurs in 175, implying that the dependent variable in the analysis contains 175 cases of 1s and 7,345 cases of 0s. Because the mean of a binary dependent variable is simply the frequency of events (1s) in the data, logit estimation when the dependent variable has many more 0s than 1s negatively biases the mean and results in predicted probabilities that are too small (King and Zeng 2000).

Fortunately, a number of corrections for this problem exist in the statistical literature\textsuperscript{104}. The simplest and most commonly employed approach to correct for underestimation of event probabilities in an analysis with a rare event binary dependent variable is to employ a case-control design supplemented with the method of prior correction. Case-control designs are commonly employed in biostatistics (See Breslow

\textsuperscript{104} For an excellent treatment, see King and Zeng (2000).
1996), and involve constructing a sample for analysis that includes all cases of 1s (the
cases) in the data and a random sample of 0s (the controls). With such a design, the
method of prior correction "involves computing the usual logistic regression MLE and
correcting the estimates based on prior information about the fraction of ones in the
population, $\tau$, and the observed fraction of ones in the sample (or sampling probability),
$\bar{y}$" (King and Zeng 2000). Using this sampling design, according to King and Zeng
(2000), the MLE $\hat{\beta}_1$ is a statistically consistent estimate of $\beta_1$, and the following
corrected estimate is consistent for $\beta_0$:

$$\hat{\beta}_0 = \ln \left( \frac{1 - \tau}{\tau} \right) \left( \frac{\bar{y}}{1 - \bar{y}} \right)$$

Equation 6.6

Putting all of this together, the strategy I employ for estimating the above-
discussed set of statistical models is based on the idea that the simplest possible method
of analysis that appropriately tests Derivative Hypotheses 1-4 is the best choice.
Beginning with the simpler of these methods, then, I first estimate Equation 6.3 using
standard logit on the full population of cases ($n = 7,520$) in the data, and carefully
examine the results to determine if the probability of intervention is systematically
underestimated. If the rare occurrence of intervention in the dependent variable creates a
problem in the model, I rerun it employing a case-control sampling design that includes
all 175 cases of intervention and a random sample of cases of non-intervention, and
correct the intercepts using the prior correction method discussed above. In the following
section, I review the set of cases that will be employed to do this.
Set of Cases in the Analysis: Revisiting the MID Intervention Data Set

Now, moving on to the set of cases employed in the analysis, recall that a data set focusing on disputes in international politics in which intervention occurs some of the time and does not occur some of the time has been constructed using cases from the Militarized Interstate Dispute (MID) data set (Jones, Bremer and Singer 1996)\(^{105}\). The unit of analysis in this data set focuses on the strategically interdependent decisions made by the players in the game model of intervention developed in Chapters III and V. As such, the unit of analysis in the data is dyadic, capturing the decision of the third party (player I) over intervention versus neutrality and the decision of the allied disputant (player T) over escalation versus acquiescence to her adversary (player C). Thinking carefully about this unit of analysis, because multiple third parties may intervene into a single dispute, there may exist several games relevant to each dispute in the data\(^{106}\). In addition, because proper research design requires that the analysis include not only a sample of third parties that do intervene into disputes, but also a sample of those that consider intervention but decide against it, additional observations are included in the data for those third parties that are non-interveners (so that there is variance in the dependent variable)\(^{107}\). Because of the difficulties in operationalizing the set of third

\(^{105}\) In this data set, militarized disputes are defined as historical cases of conflict in which the threat, display or use of military force by one member state is explicitly directed toward the government, official representatives, official forces, property or territory of another state. The rationale for basing the intervention data set on MIDs is discussed in detail in Chapter IV.

\(^{106}\) To illustrate this, recall the example discussed in Chapter IV: consider a hypothetical dispute between Israel and Syria. In this dispute, consider the three distinct games that would exist if the United States, Great Britain, and Iraq all intervene, the U.S. and Britain joining on the side of Israel and Iraq joining on the side of Syria. The first game regards the strategic interaction between the United States and the side they favor in the dispute, Israel. The second game regards the interaction between Great Britain and the side they favor in the dispute, also Israel. The third game regards the interaction between Iraq and the side they favor in the dispute, Syria. So, with regard to this one dispute, the level of analysis in the intervention game implies three distinct observations.
parties who considered intervention but chose to remain neutral, I employ a systematic decision rule based on the idea that third parties consider intervening into disputes that take place in their "politically relevant international environment" Maoz (1996).

Constructed using these decision rules, as mentioned above, the data contain 7,520 third party-disputant dyads across 326 MIDs over the period 1816-1984, in which there exist 175 cases of intervention. Discussed in detail below in the section of this chapter regarding the operationalization of the dependent variable in the analysis, cases of intervention in the data are defined as "joiners" into MIDs who achieve a hostility level of use of military force or full-scale war. The remaining 7,345 observations regard third party-disputant dyads in which disputes end in acquiescence or dyadic war. Of these, the data contain 76 militarized interstate disputes that end in acquiescence by the side favored by the third party, which translates into 1,546 third party-disputant dyads, and 174 disputes that end in dyadic war, which translates into 5,799 third party-disputant dyads. For the purposes of the following analysis, because the principal object of study in the evaluation of Model 2 regards the occurrence of third-party intervention, the acquiescence and dyadic war outcomes are simply coded as non-intervention.

\[107\] To illustrate this, return to the above example: in this hypothetical dispute, there may exist a number of third parties that consider intervention but decide against it, such as China, Jordan, and Egypt (among many possible others). This implies (at least) three additional observations that must be included in the analysis: 1) the game between China and the side they favor in the dispute, 2) the game between Jordan and the side they favor in the dispute, and 3) the game between Egypt and the side they favor in the dispute. In sum, for this one hypothetical dispute, an appropriate research design includes (at least) six observations, one for each third party-disputant dyad. That is, in essence, the design must include one observation for each third party who makes a decision regarding intervention.

\[108\] The operational definitions of the acquiescence and dyadic war outcomes are specified in detail in Chapter IV.
**Operationalizing the Dependent Variable: Intervention in Militarized Disputes**

In the terms of the game, intervention occurs when 1) player T chooses to escalate the dispute to war rather than back down to player C and 2) player I intervenes on her behalf. I operationalize this outcome in the data as follows: to capture the former criterion, I require that player T fight against player C with a hostility level of either use of force or full-scale war. To capture the latter, I require that player I joins into the MID after the starting date and achieves a hostility level of use of force or full-scale war. As discussed at length in Chapter IV, this operational definition has both strengths and weaknesses: one strength is that, by relying on the MID coding of joiners, third-party participants in militarized disputes are identified using explicit, systematic coding rules that 1) focus on evidence of coordinated activity with one side in the MID and 2) are designed to be consistent with the interpretations of diplomatic historians. Because of this, the researcher can be reasonably confident that those states identified as joiners were actually engaged in a militarized incident (or series of incidents) with an originator in the dispute and that this interaction occurs in the context of an ongoing MID\textsuperscript{109}. At the same time, as discussed in Chapter IV, because the MID coding is based singularly on participation, it is not possible to tell whether joiners became involved in an ongoing

\textsuperscript{109} The MID researchers pay particular attention to this issue. The specific coding rule is: to be a part of a unified militarized interstate dispute, each militarized incident must involve the same issue or set of issues, and occur within the same geographic area – unless there was information provided by diplomatic historians that led them to believe that seemingly unconnected issues and locations were linked to one another. Incidents were aggregated into disputes when diplomatic historians suggested that a sequence of actions led to a direct response to such actions, even if the militarized events encompassed more than one distinct issue or geographic area. It is occasionally possible for two nations to be engaged in two different disputes at the same time, if the militarized incidents along one front are not countered along the other front and the respective governments clearly kept their diplomatic behavior regarding the disputes separate before, during, and after the conflicts. The existence of two simultaneous militarized disputes can often be determined by the presence of separate negotiations or separate treaties, the text of speeches of official representatives, and by the interpretation of the historian (Jones, Bremer and Singer 1996).
militarized dispute voluntarily (and thus intervened into the conflict) or were targeted by another state at a subsequent stage of a dispute (and thus were forced into the conflict).

Regarding the second component of the operationalization, by requiring third parties to engage in the use of military force or full-scale war in order to be coded as interveners, the definition focuses on the ultimate level of intervention, fighting on behalf of an ally. By doing so, a range of behaviors in which third parties provide some form of aid to their allies involved in militarized disputes but do not actively employ military force on their behalf are omitted. So, for example, while behaviors like the provision of economic or military aid, intelligence or even covert operations may be considered to be intervention at some level (as discussed in the literature review), here they are important only to the extent that they represent threats to fight on behalf of an ally if the dispute escalates to violence. While this coding rule limits the scope of the study of intervention to some extent, it does not require the researcher to make tenuous judgments about questionable or clandestine involvements in the data. In the view of this researcher, and in the view of the researchers of the COW Project, who employ a consistent definition of intervention\(^\text{110}\), this loss of scope is a worthwhile tradeoff for the concreteness of the coding rule.

\(^{110}\) In fact, in disputes in which a third party joins an ongoing war, the MID Intervention data set is identical to the Correlates of War Project definition of intervention: "direct military participation of such a magnitude that either 1,000 troops are committed to the combat zone or, if the force is smaller or the size unknown, 100 deaths are sustained." (Singer and Small 1982)
Operationalizing the Independent Variables: the Resources and Demands of the Players in the Game

The Resources of the Players in the Game: \( R_p, R_r, \) and \( R_c \). Regarding the first set of independent variables in the analysis, measures for the resources of the disputants and third party are taken from Correlates of War Composite Indicator of National Capabilities (CINC) (Singer, Bremer and Stuckey 1972). The rationale for employing the CINC, as opposed to some other measure of national resources, is discussed in detail in the empirical analysis of Model 1. To briefly review how the measure is constructed, recall that the CINC is an index measuring the share of resources held by a state in the international system along three dimensions thought to be fundamentally important in international conflict: population size, industrial resources, and military capabilities. To capture the first of these dimensions, the CINC includes measures of a state’s total population and urban population. Regarding the second dimension, it includes measures of a state’s energy consumption and iron/steel production. Finally, regarding the third dimension, it includes measures of a state’s military personnel and military spending. Using these six indicators, a composite index is created by calculating each state’s system share (simply the percentage held by that state of the total amount in the international system) and then taking the average of the six system shares for each state by year. The CINC score is available from Bennett and Stam’s (1999) Eugene data program for most of the states in the international system for the period 1816-1984.

In the present analysis, rather than using this measure to construct three dichotomous variables capturing the distribution of power among the disputants and third party, as in Chapter IV, the CINC score is employed as a proxy for the resources of the
individual players in the game. So, the operational measure of \( R_i \) is simply the \( CINC \) score for the third party state in the year in which the relevant dispute begins. In similar fashion, the operational measures for \( R_T \) and \( R_C \) are simply the respective \( CINC \) scores of the allied and adversary disputants in the year in which the relevant dispute begins. For disputes in which the MID researchers designate multiple states as originators on one or both sides, \( R_T \) and \( R_C \) regard the sum of resources of all states on that side in the dispute.

*The Players' Values for the Demands in the Game:* \( \Delta^T_T, \Delta^C_T, \Delta^T_C, \text{ and } \Delta^C_T \). The second set of independent variables in the analysis regards the values that player I attaches to the demands of players T and C (\( \Delta^T_t \) and \( \Delta^C_t \)), and the values that player T attaches to her own demand and the demand of her adversary (\( \Delta^T_T \) and \( \Delta^C_T \)). Thinking carefully about these theoretical constructs, there exist a few key difficulties in obtaining valid measures of them for use in the analysis: first and foremost, the values held by one actor for the preferences of another actor are not directly *observable*, and therefore cannot be directly measured. As such, any operationalization of these variables must be based on an observable *proxy*, such as *behavior* that can reasonably be thought to reflect how the players in game value the issues under contention. This, however, leads to a second problem: it is difficult to specify what behavior can reasonably be thought to reflect the preferences of an actor involved in a dispute, particularly behavior that is not *post hoc* and situation specific.

Without readily available *ex ante*, systematically-defined, measures of the demands of the actors involved in militarized disputes, social scientific researchers of international relations have taken to employing less specific, but more concrete proxies for the purposes of empirical analysis. To do this, these scholars have made the
assumption that the general similarity of the behavior of international actors across a variety of dimensions is a reasonably proxy for how similar or dissimilar their preferences are when involved in a militarized dispute. Put succinctly by Bueno de Mesquita and Lalman (1992), “We assume that the more similar the patterns of revealed foreign policy choices of two states, the smaller the utility of any demand that one such state makes on the other... Conversely, the more dissimilar the revealed foreign policy commitments of two states, the greater the assumed utility for achieving the conditions contained in a demand between them.” If one is willing to make this assumption, then there exist a number of possible operational measures that may be employed in the analysis, such as measures of 1) similarity in United Nations voting records, 2) similarity in intergovernmental organization memberships, 3) the degree to which states interact with each other economically, and 4) similarity in national alliance portfolios (Bueno de Mesquita 1981).

In selecting among these measures, there are a few key criteria that the best choice must fulfill: first, the measure should reflect as closely as possible the preferences of states in the international system in the making of foreign policy, particularly policymaking regarding international conflict. As a part of this, the measure should be responsive to changes in the foreign policies of states over time. Second, the measure must be constructed according to explicitly-stated, systematic, coding rules. As part of this, it must be comparable across all states and across time for all actors in the data set. Finally, the measure must be available for a substantial number of cases in the MID Intervention data set, preferably for the full range of disputants and third parties over the period 1816-1984 that make up the set of cases for analysis.
Evaluating the above-mentioned alternatives according to these criteria, while all have some strengths and some weaknesses, the choice offering the greatest strengths with the least weaknesses is to base the operationalization on the similarity in national alliance portfolios among states. My rationale for this is as follows: first, while alliance commitments certainly cannot be claimed to be perfect measures of the similarity in foreign policy preferences among states, they are “explicit statements about the contingent behavior of one nation toward the other in the event of war. As such, they should be particularly reflective of those factors that influence a nation’s war-related utility for another nation” (Bueno de Mesquita 1981). In addition, because the making and breaking of alliances are observable behaviors, the measure is responsive to changes in foreign policy over time. On the other hand, measures such as similarity in intergovernmental organization memberships, or the degree to which states interact with each other economically, tend to regard areas of policymaking farther away from important national security considerations, like fishing rights or trade policy, and are not necessarily responsive to changes in policy over time.

Second, regarding the above-stated criterion than a measure of broad foreign policy preferences among international actors should be constructed according to explicitly-stated, systematic, coding rules, military alliances fulfill this requirement because they are formally codified agreements among international actors that specify joint behavior in the event of war. Drawing upon this, Bueno de Mesquita (1981; with Lalman 1992) has created a clever system for ranking alliance commitments according to “the implied reduction of autonomy of a decision maker in choosing policy. Defense pacts are treated as the most costly of alliances because they require one nation to
promise to wage war in defense of another in the event of an attack. Defense pacts are followed in presumed costliness by nonaggression or neutrality pacts, in which a nation agrees not to aid anyone who attacks the ally. Ententes require merely that if attacked, the signatories consult with one another before deciding on a course of action. A signatory does not promise to join its attacked ally or not to attack it once it has been attacked. The least commitment of all occurs when no alliance exists, in which case no promise of any sort has been made.” Using this classification system, a measure of similarity in broad foreign policy preferences based on national alliance portfolios is comparable across all states and across time. This is not the case for measures based on similarity in intergovernmental organization memberships or the degree to which states interact with each other economically: regarding the former, few intergovernmental organizations have existed long enough to cover the full temporal range of the data (most came into being in the post-WWII era), which makes it impossible to evaluate similarity in membership across a consistent set of organizations. Regarding the latter, because a state’s international economic policy is determined by a mixture of governmental policy and the policies and interests of actors in the private sector, and because this mixture varies across states and even within states over time, it is very difficult to evaluate the economic relationships among states in a consistent fashion.

Third and finally, regarding the criterion that the selected measure should be available for a substantial number of cases in the MID Intervention data set, preferably all of the cases, data on military alliances is available for most states in the international system over the full temporal range of the data set, 1816-1984. For each of the other measures mentioned above – similarity in United Nations voting records, similarity in
intergovernmental organization memberships, and degree of economic interaction – data is available for a smaller number of states (generally Western, industrialized states) for a shorter period of time (generally the post-WWII era).

Having settled on basing the operational measures of $\Delta^T_1$, $\Delta^C_1$, $\Delta^T_T$, and $\Delta^C_T$ on the similarity in national alliance portfolios among states, specific measures for these variables are constructed using the Kendall tau $B$ correlation coefficient. First constructed by Bueno de Mesquita (1975, 1981) and now commonly employed in social scientific research on international conflict, the tau $B$ is a rank order correlation for two states' alliance portfolios ranging from -1 to +1, with -1 representing totally opposite alliance agreements and +1 representing complete agreement in alliances formed. Using this calculation, beginning with the third party's values for the demands of players T and C, the operational measure for $\Delta^T_1$ is the tau $B$ between the third party state (player I) and the allied disputant (player T); likewise, the operational measure for $\Delta^C_1$ is the tau $B$ between the third party state and the adversary disputant (player C). Now, moving on to player T’s values for her own demand and the demand of player C, the operational measure for $\Delta^T_T$ is simply 1, because it is reasonable to assume that she attaches the highest possible value to her own demand. Finally, the operational measure for $\Delta^C_T$ is the tau $B$ between the allied disputant (player T) and the adversary disputant (player C).

For disputes in which the MID researchers designate multiple states as originators on one or both sides, measures for $\Delta^T_1$, $\Delta^C_1$ and $\Delta^C_T$ are constructed using an average weighted by the resources of each disputant on the same side in the conflict. For example, to construct a measure for $\Delta^T_1$ in a dispute in which there are two actors on the
side preferred by the third party, \( j \) and \( k \), I employ the following formula:

\[
\Delta_f^T = \frac{R_j \Delta_i^j + R_k \Delta_i^k}{R_j + R_k}
\]

Equation 6.7

My rationale for employing this average weighted by resources to measure the value player I attaches to the demand of a side in the dispute made up of a coalition of actors, and the value player T attaches to the demand of an adversary made up of a coalition of actors, is as follows: I assume that the demand of a group of disputants is produced by a process in which the preferences of the individual actors are aggregated into one social choice. While this is certainly a simplification, it is widely assumed in the social choice literature that one of the main factors affecting the process by which such preferences are aggregated regards the resources of the individual actors (See Morrow 1986; Bueno de Mesquita 1997). Here, because the resources of the disputants represent their ability to impose their will on each other through military, economic or political control (Morrow 1986), incorporating this assumption in the weighted average captures the idea that more powerful members of a coalition will have their individual preferences better represented in the group demand\(^\text{111}\). Data for this measure is available from Bennett and Stam’s (1999) *Eugene* data program for most of the states in the international system for the period 1816-1984. Finally, putting all of this together, having specified the operational dependent and independent variables employed in the above-discussed statistical models, I am able to perform the analysis, as follows. Descriptive statistics for

\(^{111}\) For an excellent treatment of how resources and preferences interact in decision-making in international relations, see Bueno de Mesquita (1997).
these variables may be seen in Table 6.1.

Analysis

Estimation

In this section, I perform the analysis laid out in the above research design. As stated above, the approach employed here is to estimate the statistical model shown in Equation 6.3 using logit on the full population of cases. Then, if the results indicate that the model systematically underestimates the probability of intervention, I re-estimate it using a case-control sample supplemented with the method of prior correction of the intercept. The results of the first estimation may be seen in Table 6.2. Examining the table, the results of this estimation show moderately strong support for the predictions of the model. Each of the variables of interest are in the predicted direction and those regarding two of the three predicted relationships are statistically significant at the .05 level (those regarding R₁ and R₇). Examining the chi-square statistic of the model indicates that the “goodness of fit” of the regression is adequate (the calculated statistic is 160.942, which is significant at the .0000 level). However, looking carefully at the predicted versus observed 2x2 in the table, the model predicts the occurrence of intervention in zero cases, which indicates that it does systematically underestimate the probability of intervention. As such, I re-estimate the model using a case control sample

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112 Two diagnostics were run on this statistical model: first, to account for the possibility of non-independence of observations in the data, I re-run the model using the cluster option in Stata that produces robust estimates of the standard errors when observations are independent across groups, but not necessarily independent within groups. Second, because recent research by King and Zeng (2000) shows that rare events can result in biased estimates and suboptimally computed probabilities in statistical models with a binary dependent variable, I re-estimate the model using their RELOGIT software (Tomz, King, and Zeng 1999) that corrects for these problems. The results of each of these re-estimations are substantively identical to those estimated with standard logit, so I present those produced by the simpler method.
Table 6.1
Descriptive Statistics of Variables in Tests of Derivative Hypotheses 1-4

<table>
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<th>N</th>
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<th>Mean</th>
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<td>2E-06</td>
<td>.38</td>
<td>1.722E-02</td>
<td>4.374E-02</td>
</tr>
<tr>
<td>RT</td>
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<td>1E-05</td>
<td>.66</td>
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<tr>
<td>ΔT</td>
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<td>-.73</td>
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</tr>
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<td>ΔC</td>
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<tr>
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<td>-.79</td>
<td>1.00</td>
<td>-4.446E-02</td>
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Table 6.2
Logit Analysis of Derivative Hypotheses 1-4
Population of Cases, \( n = 7,520 \)

Dependent Variable: Intervention
(Logit Estimation)

<table>
<thead>
<tr>
<th>Predicted</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Observed</td>
<td></td>
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<td>0</td>
</tr>
<tr>
<td>1</td>
<td>175</td>
<td>0</td>
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Overall 97.67%

<table>
<thead>
<tr>
<th>Model Chi-Square</th>
<th>Significance</th>
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<tr>
<td>160.942</td>
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<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Standard Error</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
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<td>.2064</td>
<td>.0000</td>
</tr>
<tr>
<td>( R_I )</td>
<td>6.9845</td>
<td>1.1307</td>
<td>.0000</td>
</tr>
<tr>
<td>( R_T )</td>
<td>9.3723</td>
<td>4.2145</td>
<td>.0262</td>
</tr>
<tr>
<td>( R_T^2 )</td>
<td>-59.1654</td>
<td>22.3788</td>
<td>.0082</td>
</tr>
<tr>
<td>( R_C )</td>
<td>-4.9273</td>
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<td>.1543</td>
</tr>
<tr>
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<td>.3318</td>
<td>.8449</td>
</tr>
<tr>
<td>Interaction</td>
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<td>.3917</td>
</tr>
<tr>
<td>Interaction(^2)</td>
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<td>.2722</td>
</tr>
<tr>
<td>( \Delta^T_I )</td>
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<td>.0002</td>
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<td>.2542</td>
<td>.9941</td>
</tr>
</tbody>
</table>
containing 175 cases in which intervention does occur and 350 cases in which
intervention does not occur and correct the intercept using the method of prior correction.

The results of this estimation may be seen in Table 6.3. In the table, the
coefficients of the variables of interest are again all in the predicted direction. One of the
variables that is statistically significant at the .05 level in the estimation using the full
population of cases becomes non-significant at the .05 level in the re-estimation (the
significance level of the coefficient for the R1 variable is .1296, while the coefficient for
the R1^2 variable remains statistically significant at the .05 level, .0362 to be specific).
The chi-square statistic of the model again indicates that the “goodness of fit” of the
regression is adequate (the calculated statistic is 112.905, which is significant at the .0000
level). Overall, the model predicts 72.57% of cases correctly, which is approximately a
9% reduction in error over the null model. Having performed this technical interpretation
of the results of the estimation, I now discuss its substantive implications for the tests of
each of the hypotheses derived from Model 2.

Test of Derivative Hypothesis 1

Model 2’s hypothesis that the resources of third-party potential interveners are
positively related to the likelihood that they intervene in militarized disputes in
international politics, ceteris paribus, is strongly borne out by the empirical evidence.
The coefficient for the R1 variable is positive as predicted and statistically significant at
the .05 level in both estimations, with a value of 6.9845 and a significance level of .0000
in the full population of cases and a value of 9.3949 and a significance level of .0000 in
the case-control sample. Performing comparative statics on the latter coefficient, this
Table 6.3
Logit Analysis of Derivative Hypotheses 1-4
Case-Control Sample, $n = 525$

Dependent Variable: Intervention
(Logit Estimation)

<table>
<thead>
<tr>
<th>Observed</th>
<th>Predicted</th>
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<tbody>
<tr>
<td>0</td>
<td>312</td>
<td>38</td>
</tr>
<tr>
<td>1</td>
<td>106</td>
<td>69</td>
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</table>

Overall 72.57%

<table>
<thead>
<tr>
<th>Model Chi-Square</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>112.905</td>
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<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Standard Error</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
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<td>.0361</td>
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<td>$R_I$</td>
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</tr>
<tr>
<td>$R_T$</td>
<td>8.2297</td>
<td>5.4302</td>
<td>.1296</td>
</tr>
<tr>
<td>$R_T^2$</td>
<td>-57.3292</td>
<td>27.3678</td>
<td>.0362</td>
</tr>
<tr>
<td>$R_C$</td>
<td>-5.5877</td>
<td>4.1158</td>
<td>.1746</td>
</tr>
<tr>
<td>Dummy</td>
<td>.1759</td>
<td>.4782</td>
<td>.7130</td>
</tr>
<tr>
<td>Interaction</td>
<td>.9148</td>
<td>7.9907</td>
<td>.9089</td>
</tr>
<tr>
<td>Interaction$^2$</td>
<td>-12.2023</td>
<td>27.0123</td>
<td>.6515</td>
</tr>
<tr>
<td>$\Delta^T_I$</td>
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<td>.2740</td>
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<tr>
<td>$\Delta^C_I$</td>
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<td>.4882</td>
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</tr>
<tr>
<td>$\Delta^C_T$</td>
<td>.1025</td>
<td>.3605</td>
<td>.7762</td>
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</table>
implies that, holding all of the other variables in the statistical model at their mean, increases in $R_t$ from the variable's minimum in the data to its mean result in an increase in the likelihood that third party intervention occurs from approximately 14% to 17%, while increases from it mean to its maximum increase the likelihood of intervention from 17% to 73%.

This empirical evidence confirms two specific empirical expectations discussed in Chapter V: first, this finding implies that, all other things being equal, stronger third parties, such as major powers, are more likely to intervene into disputes in international politics than weaker third parties, like minor powers. In part, this is because stronger third parties are able to increase the chances of victory of their favored side in the dispute to a greater extent than weaker third parties. But, it is also because the disputants on whose behalf intervention may occur are more likely to escalate a dispute to violence rather than back down when they know a strong third party is willing to come to their aid than when a weak third party is willing to come to their aid.

A second, related implication of this finding is that, all other things being equal, as a third-party state grows in power over time, that state becomes more likely to intervene into disputes occurring in their international environment. The logic of this implication is identical to that discussed above, but its interpretation is different: the above-discussed expectation states that, in a given militarized dispute in international politics, intervention is more likely to occur by a stronger state, like the United States or China, than by a weaker state, like Belgium or Luxembourg. Here, this second empirical expectation is that a given state becomes more likely to intervene into a dispute with similar characteristics as their resources increase over time. For example, the United
States is more likely to intervene into a dispute between two regional powers now than in the early 1800s, when the U.S. was much weaker.

At this point, one might argue that this finding is intuitive and does not offer much in the way of novel insight. But, as discussed above in Chapter V, in the view of this researcher, it is important to remember that good models are able to account for facts that are already known as well as novel facts. So, it is actually a good thing that the model yields an empirically-supported implication that is consistent with existing theory and evidence about international conflict. In fact, if it did not, then we would have cause for concern about how useful further development of this model would be. Moreover, as will be shown in the remainder of this analysis, the model yields additional implications that are not intuitive and are also supported by the empirical evidence. These findings do offer some novel insight about intervention. The first of these, regarding the test of Derivative Hypothesis 2, is discussed below.

*Test of Derivative Hypothesis 2*

Model 2’s hypothesis that the resources of the side favored by a potential intervener are parabolically related to the likelihood that intervention occurs in militarized disputes in international politics, *ceteris paribus*, is borne out by the empirical evidence. Recall from the research design that the relationship predicted by the theory implies the coefficient for the $R_T$ variable should be positive and statistically significant, while the coefficient for the $R_T^2$ variable should be negative and statistically significant, capturing the idea that the likelihood that intervention occurs is lowest at the minimum and maximum of the range of possible values of $R_T$ and highest around the mean of the range of possible values of $R_T$ (the vertex of the parabola). Examining Tables 6.2 and
6.3, the coefficient for the \( R_T \) variable is in the predicted positive direction in both tables and statistically significant at the .05 level in the estimation of the full population of cases, with a value of 9.3723 and significance level of .0262 in the full population and a value of 8.2297 and significance level of .1296 in the case-control sample. Also as predicted, the coefficient for the \( R_T^2 \) variable is negative and statistically significant at the .05 level in both estimations, with a value of -59.1654 and a significance level of .0082 in the full population of cases and a value of -57.3292 and a significance level of .0362 in the case-control sample. Performing comparative statics on the latter coefficients, this implies that, holding all of the other variables in the statistical model at their mean, increases in \( R_T \) from the variable’s minimum in the data to its mean result in an increase in the likelihood that third party intervention occurs from approximately 17% to 22%, while increases from its mean to its maximum decrease the likelihood of intervention from 22% to approximately 0%.

In the view of this researcher, this is a very interesting finding because it is at odds with the thinking of a number of international relations scholars involved in the study of intervention. In particular, this finding raises interesting questions about the ongoing debate in the literature over whether interveners tend to balance or bandwagon when they intervene in militarized disputes in international politics. While the specific arguments of the scholars involved in this debate need to be thought about very carefully, in essence both sides of the debate posit clear, simple relationships between the resources of the allied disputant and the occurrence of intervention. For example, the essence of the argument for balancing is the idea that third parties are more likely to intervene on behalf of weaker disputants, which implies that increases in the resources of allied
disputants should decrease the likelihood that third party intervention occurs (and vice versa). The essence of the bandwagoning argument is the opposite idea, that third parties are more likely to intervene on behalf of stronger disputants, which implies that increases in the resources of allied disputants should increase the likelihood that third party intervention occurs (and vice versa). The finding produced by this analysis provides empirical support for the implication of the theory of intervention developed in this dissertation that the relationship between this theoretical factor and the occurrence of intervention is actually more complex, with increases in the resources of the allied disputant leading to increases in the likelihood of the occurrence of intervention under some conditions and decreases in the likelihood of the occurrence of intervention under others.

Test of Derivative Hypothesis 3

Moving on to the test of the third hypothesis derived from Model 2, its prediction that, when the distribution of resources among the actors in a militarized dispute in international politics is such that $R_C > \sqrt{R_I(R_I + R_T)}$, the resources of the adversary of a potential intervener are negatively related to the likelihood that intervention occurs, ceteris paribus, is partially borne out by the empirical evidence. Recall from the research design that the relationship predicted by the theory implies the coefficient for the $R_C$ variable should be negative and statistically significant. Examining Tables 6.2 and 6.3, the variable is negative as predicted in both estimations, but is not statistically significant at the .05 level. In the full population of cases, the $R_C$ coefficient is $-4.9273$ and the significance level is .1543, and, in the case-control sample, the coefficient is $-5.5877$ and the significance level is .1746.
Although these results do not reach the required standard of statistical significance to claim that the hypothesis is fully borne out, the fact that the variable is in the predicted negative direction in both estimations is nevertheless encouraging, particularly when these results are considered in the concert with those regarding the interaction and interaction squared variables (as will be discussed below). The finding suggests that, under certain identifiable conditions, namely when the adversary disponent has significantly greater resources than the coalition of the allied disponent and third party, the resources of the former are negatively related to the likelihood of intervention, all other things being equal. Substantively, this suggests that, in disputes in which the adversary disponent has a substantial advantage in resources over the allied disponent and third party, intervention is less likely to occur than in disputes in which the parties are closer in power.

Test of Derivative Hypothesis 4

The final hypothesis derived from Model 2, which states that, when the distribution of resources among the actors in a militarized dispute in international politics is such that \( R_C < \sqrt{R_T (R_I + R_T)} \), the resources of the adversary of a potential intervenor are parabolically related to the likelihood that intervention occurs, ceteris paribus, is also partially borne out. Recall from the research design that this hypothesis implies the coefficient for the Interaction variable should be positive and statistically significant, while the coefficient for the Interaction\(^2\) variable should be negative and statistically significant, capturing the idea that, when the distribution of resources is such that \( R_C < \sqrt{R_T (R_I + R_T)} \), the likelihood that intervention occurs is lowest at the minimum
and maximum of the range of possible values of \( R_C \) and highest around the mean of the range of possible values of \( R_C \) (the vertex of the parabola).

In similar fashion to the above test of Derivative Hypothesis 3, in both estimations the variables are in the predicted directions but are not statistically significant at the .05 level. Examining Tables 6.2 and 6.3, the coefficient for the \( Interaction \) variable is in the predicted positive direction in both tables, with a value of 5.7017 and a significance level of .3917 in the full population of cases and a value of .9148 and a significance level of .9089 in the case-control sample. The coefficient for the \( Interaction^2 \) variable is in the predicted negative direction in both tables, with a value of –28.3985 and a significance level of .2722 in the full population of cases and a value of –12.2023 and a significance level of .6515 in the case-control sample. Altogether, while the tests of the hypotheses regarding the relationship between the resources of the adversary disputant and the likelihood that intervention occurs do not produce results that are statistically significant at the .05 level, the fact that the \( R_C \), \( Interaction \), and \( Interaction^2 \) variables are all in the direction predicted by the theory suggests that further development of the theory may yield more specific insights about these relationships that may receive greater empirical support.

**Conclusion**

In this chapter, I subject the hypotheses derived from Model 2 to empirical testing. By examining the degree to which the observable implications of the model are borne out in the empirical world, I am able to assess the explanatory power of the theory of intervention under construction in this project, as well as illuminate areas for further theoretical development. In performing these tests, I pay particular attention to research
design issues, employing a carefully designed logit model to examine the precise logical implications of Derivative Hypotheses 1-4. The analysis produces moderately supportive evidence for the theory's predictions. These findings suggest that the theory of intervention under development in this dissertation project may be on the right track. This is particularly exciting because the model is a very simple theoretical structure (a basic two-player, complete and perfect information game) that nevertheless produces a set of empirically-supported implications, several of which run counter to the thinking of many scholars involved in the study of this topic. One area of the literature that exemplifies how some of the model's predictions are at odds with the conventional wisdom about intervention regards the ongoing debate in the literature over whether third parties tend to balance or bandwagon. According to the theory developed in this project, this entire debate may be misspecified. In the following chapter, I apply the model developed in Chapter V and tested here to inform the debate, and assess how well the theory fares when compared to these competing explanations in the literature.
Chapter VII
Applying the Theory of Intervention to Inform an Ongoing Controversy in the IR Literature: The Debate Over Balancing versus Bandwagoning

Introduction

At this point in this dissertation project, a theory of intervention has been developed (in Chapters III and V) and subjected to empirical testing (in Chapters IV and VI). The tests of the hypotheses derived from the theory in the previous chapter provide moderately strong support for the model’s predictions about the relationships between the components of the theory and the occurrence of intervention in militarized disputes in international politics. In this chapter, I take this project one step further, employing the theory to inform an ongoing controversy in the IR literature that is directly relevant to the principal object of study in this dissertation project. My rationale for this undertaking is as follows.

Recall from the introduction of this dissertation (Chapter I) the excellent quote by King, Keohane and Verba (1994) regarding the purpose of a research project in the social sciences. According to these scholars, a good social scientific research project must satisfy two criteria: first, it must “pose a question that is ‘important’ in the real world” and, second, it must “make a specific contribution to an identifiable scholarly literature by increasing our collective ability to construct verified scientific explanations of some aspect of the world.” While it is hoped that this dissertation project has already fulfilled these criteria to a reasonable extent by contributing a systematic study to this area (and offering a theory of intervention that is strongly supported by the empirical evidence), the following application provides an opportunity to make a further contribution, in the
words of King, Keohane and Verba (1994), by attempting “to resolve or provide further evidence of one side of a controversy in the literature – perhaps demonstrate that the controversy was unfounded from the start.”

The controversy in the literature that I will address in this chapter regards the ongoing debate over whether third parties tend to “balance,” by intervening on behalf of the weaker side in militarized disputes in international politics, or “bandwagon,” by joining the stronger side. The question of which view, if any, in the debate is correct has interesting and important implications, some of which are listed colorfully by Schweller (1994, p. 72):

Do states ally more with the weaker or with the stronger side in a conflict? In the parlance of international relations theory: do states tend to balance against or bandwagon with a rising state or coalition. The answer to this question is critical to the formulation of grand strategy and the definition of vital interests. If states resist the gains of their neighbors by drawing together to redress the balance, then conquest does not pay and interventions to defend far-flung commitments are not only unnecessary, but often counterproductive in causing local states to unite against the meddling great power and its protégé. Conversely, if states gravitate to expanding power, then bandwagons will roll, dominoes will fall, and great powers will find it wise, even at the cost of blood and treasure, to defend remote areas of little or no intrinsic value to their national interests.

While Schweller’s view of the implications of this research question may be a bit extreme, the subject has generated a substantial amount of theoretical attention (Walt 1987; Kaufman 1992; David 1991; Larson 1991; and, of course, Schweller 1994), as well as some attempts at empirical testing of these ideas (Cusack & Stoll 1991; Jones 1994). Unfortunately, despite the substantial amount of theorizing on this topic, these tests have yielded a “mixed bag” of empirical results: while a few analyses have found evidence of a general tendency toward balancing (Cusack & Stoll 1991; Jones 1994), others have found evidence suggesting that there are clear instances when bandwagoning predominates, such as when a dispute involves a major power on only one side
(Gochman & Maoz 1984; Jones 1994). Altogether, the rich theoretical arguments of the scholars involved in the debate combined with the lack of any clear empirically-supported answer to this question present an interesting puzzle that merits explanation. Because the theory of intervention developed in this project has been shown to have reasonable explanatory power, it is hoped that the application of the theory to this puzzle may help resolve the debate (or even show that it is misspecified).

To do this, I employ the following research design: first, I examine the balancing versus balancing literature, summarize the arguments of a number of scholars who have contributed to this body of work, and attempt to derive operational hypotheses from these arguments that may be subjected to empirical analysis. Second, I perform empirical tests of these hypotheses in order to determine the extent to which the theoretical ideas of the scholars involved in this debate are borne out in cases of intervention in militarized disputes in international politics. Third, having evaluated the explanatory power of these alternative hypotheses, I then employ the formal model developed in Chapters III and V to inform the debate by deriving its implications about the conditions under which intervention as balancing and intervention as bandwagoning occur in militarized disputes in international politics, and subject them to rigorous empirical tests. Finally, comparing the results of these tests to the those of the analysis of the alternative hypotheses derived from the balancing versus bandwagoning literature may illuminate which of these competing theoretical ideas, if any, have significant explanatory power. In the following section, I begin the analysis with a critical introduction to the balancing versus bandwagoning debate.
A Critical Introduction to the Balancing versus Bandwagoning Debate

A critical introductory examination of the balancing versus bandwagoning literature reveals a number of insights that are important to understand in order to reconcile this body of research with that being conducted in this dissertation project. One issue has to do with the specific research question being addressed, which, for most of the scholars involved in the debate, regards whether the general tendency in the behavior of actors in international relations is balancing or bandwagoning. On the surface, this question seems quite straightforward. But, thinking about it carefully, it has a few important features that must be recognized:

First, while the concepts of balancing as joining the weaker side in a conflict of interest and bandwagoning as joining the stronger are quite intuitive, the specific dependent variable(s) that these terms refer to are not the same for all of the scholars involved in the debate. That is, while the majority of these scholars view balancing and bandwagoning in terms of intervening on behalf of the weaker or stronger side in an ongoing militarized dispute, in some of this research the stated dependent variable is “alignment” or “alliance formation.” Moreover, in some of the literature in which this is the case, these terms are used interchangeably for intervention. But, in others, they refer to behaviors that are analytically distinct from intervention, particularly in the case of alliance formation.

Thinking carefully about this, in the view of this researcher, the essential distinction among these terms is whether the behavior under study regards the actual act of fighting on behalf of one side in an ongoing militarized dispute or the commitment to do so before any dispute exists, either with or without formal alliance arrangements (the
former being alliance formation and the latter being alignment). That behaviors in these two different classes are analytically distinct from each other is evidenced by the finding in the alliance reliability literature that third-party commitments to fight on behalf of an ally are not always honored (see Sabrosky 1980; Smith 1996). Despite this difference, in the balancing versus bandwagoning literature, there is an underlying assumption that the theoretical factors guiding the choices of third parties are the same for both making a commitment to fight on behalf of an ally and for actually intervening on their behalf into a militarized dispute. As such, for the purposes of the present analysis, the theoretical arguments of these scholars will be interpreted with specific regard to the principal behavior of interest in this dissertation project, third-party intervention in militarized disputes in international politics.

Second, it is important to realize that this research question is closely related to, but different from that addressed in this dissertation project. The principal concern of most scholars involved in the balancing versus bandwagoning debate is, in cases of militarized disputes in which intervention occurs, whether third parties tend to enter into these disputes on behalf of the weaker or the stronger side. While this question is certainly related to the occurrence of intervention, it is different than the principal research question addressed here, which seeks to specify the conditions under which intervention does and does not occur. This implies that, while the theoretical ideas of the scholars involved in this debate may be useful in the construction of a theory of intervention (if they are borne out empirically), they cannot be considered to constitute such a theory on their own because they do not specify the conditions under which third
parties balance or bandwagon from those in which they do not intervene at all, but instead choose to remain neutral.

A third, related issue that emerges when one thinks carefully about this research question is that the empirical expectations of the scholars studying it do not regard the behavior of individual third party actors, but rather the product of the behavior of these individual actors at an aggregate level. That is, while the theoretical ideas posited to account for whether third parties balance or bandwagon may exist at the unit level (for example, the idea that third parties may bandwagon to receive a share of the spoils of war) or at the system level (for example, the idea that the anarchic nature of the international system and the distribution of power compel third parties to balance), the observable implications these scholars derive from these ideas regard patterns of behavior that exist at the system level, specifically whether there are significantly more cases of balancing than bandwagoning in the international system, or vice versa. In comparison, the theory of intervention developed in this project posits an explanation for third-party intervention at the unit level (examining the strategic interaction between the decisions of the third party and the allied disputant), with observable implications that also exist at the unit level. In applying the theory to the balancing versus bandwagoning debate, these unit level observable implications may be aggregated (for example, by comparing the number of predicted cases of balancing and bandwagoning that occur across space and time) to produce system level implications that are comparable to those in the debate.

At this point, having thought carefully about the principal research question in the balancing versus bandwagoning literature, a second insight that emerges from a critical introductory review of this body of work regards the range of theoretical arguments of the
scholars involved in the controversy. Broadly examining the literature, it may be broken down into three main veins of argument: the first stems from the general proposition that states tend toward the creation of "balances of power," which lies at the heart of the realist paradigm (Gulick 1955; Waltz 1979; Morgenthau and Thompson 1985). While many scholars believe the general balancing proposition to be fundamental to world politics, not all international relations researchers agree (not even all realists) that balancing behavior always dominates: in a second and third vein of the literature, different arguments are made about the conditions under which third parties do not balance, but rather bandwagon with the stronger side in conflicts. One class of these arguments (the second vein of the balancing versus bandwagoning literature) regards the work of scholars claiming to "refine" balance-of-power theory in realpolitik terms by suggesting external motivations for bandwagoning, such as 1) the desire to appease a stronger state and divert an attack elsewhere, or 2) the desire to share in the gains of victory in conflict (Walt 1987; Schweller 1994). Another (the third vein of the balancing versus bandwagoning literature) regards the work of scholars who go beyond the realpolitik model of the world, and argue that domestic political factors can have important effects on the conditions under which third parties balance or bandwagon, by providing the leaders of some third parties with incentives to bandwagon in exchange for assistance in fending off internal challengers to their position of leadership in their regimes (Larson 1991; David 1991). Now, having given this body of literature a critical introduction, I review each of these theoretical arguments in greater detail and attempt to derive from them operational hypotheses for empirical testing, as follows.
The Argument for Balancing

My analysis of the balancing versus bandwagoning literature begins with a discussion of one of the central tenets of the realist paradigm, the "law-like regularity" (Waltz 1979, p. 116) that states behave in ways that tend toward the creation of "balances of power" (Gulick 1955; Waltz 1979; Cusack and Stoll 1990; Vasquez 1997). While the realist paradigm is an area of the international relations literature in which there is substantial disagreement, even among scholars who claim to be realists, one area in which there is general consensus among the paradigm's proponents regards the extent to which the balance of power governs the international system and the behavior of the actors who exist within it\textsuperscript{113}. Although a detailed treatment of balance-of-power theory is far beyond the scope of this dissertation project\textsuperscript{114}, a brief review of the essential logic of the theory will help elucidate the general argument for balancing behavior in cases in intervention in militarized disputes in international politics, as follows.

According to the theory, balances of power arise as a product of two assumed characteristics of the international system: first, that the system is anarchic, meaning that there is no central authority or government; second, that the units in the system wish to survive (Cusack and Stoll 1990). In such a system, members believe that power ought to be distributed in such a way that no single state ever becomes powerful enough to dominate all of the rest. To ensure that this does not occur, each member cautiously monitors the power of the others. If one state becomes so powerful that it becomes a

\textsuperscript{113} This point of the importance of the balance of power in realist thought is made nicely by one of the paradigm's foremost spokespersons, Kenneth Waltz (1979), who writes: "If there is any distinctively political theory of international politics, balance-of-power theory is it."

\textsuperscript{114} For excellent critical reviews of the realist paradigm, see Cusack and Stoll (1990) and Vasquez (1997).
threat, then the other states in the system will align against it. When this occurs, it is called balancing behavior (Vasquez 1997).

While it is a matter of considerable debate whether balancing behavior prevents the outbreak of war, most proponents of balance-of-power theory would agree that in the event of military conflict there should be a general tendency for states to come to the aid of the weaker side. Cusack & Stoll (1991, p. 257) make this point succinctly: “Despite differing views about the ultimate outcome of a realist system, realist writers assume that balancing behavior is a part of any realist world. In fact, balancing is arguably one of the hallmarks of a realist system. That is, in a realist world there is a tendency for the weaker or threatened states to attract enough support to avoid destruction, either by preventing the outbreak of conflict, or, should conflict occur, by the appearance of sufficient aid to prevent a successful attack.” Altogether, this implies that, in cases in which third parties intervene into militarized disputes in international politics, they should tend to do so on the side of the weaker party.

Thinking carefully about this argument, a few implications emerge that are important to consider for the present analysis: first, while this is not agreed upon by all realists (in particular, “classical” realists like Gulick (1955) might disagree), according to “neorealists” like Waltz, the fundamental causal agent of balancing behavior has nothing to do with the decision-making of disputants or third parties, but rather is driven entirely by the structure of the international system. In Waltz’s (1979, p. 119) own words, “Balance-of-power theory claims to explain a result (the recurrent formation of balances of power), which may not accord with the intentions of any of the units whose actions
combine to produce that result. To contrive and maintain a balance may be the aim of one or more states, but then again it may not be. According to the theory, balances of power tend to form whether some or all states consciously aim to establish them and maintain a balance, or whether some or all states aim for universal domination.”

Comparing this theoretical argument to that advanced in the theory of intervention developed in this dissertation project, the two are quite different: while the former states explicitly that the foreign policy decisions of disputants and third parties play no role whatsoever in the occurrence of intervention\textsuperscript{116}, the latter focuses exclusively on the strategically interdependent foreign policy decisions of third parties (over intervening) and allied disputants (over escalating the dispute to violence and thus giving the third party the opportunity to intervene).

A second implication that emerges from a careful analysis of the theoretical argument for balancing behavior regards the scope of the prediction, that is, which states in the international system it applies to. While there certainly is not a consensus among all realists on this point\textsuperscript{117}, the prevalent view among neorealists like Waltz is that the balancing proposition applies to \textit{all} states in the system. This includes both relatively strong states, like major powers, and relatively weak states, like minor powers.

\textsuperscript{115} Some scholars, such as Gulick (1955) and Waltz (1979), argue that war is how adjustments are made in the balance.

\textsuperscript{116} Bueno de Mesquita (2000, p. 70) sums up Waltz’s view on this nicely: [According to Waltz,] “Foreign policy decisions do not create anarchy, a balance of power, or bipolarity. Rather, anarchy, the distribution of power, and polarity create foreign policy decisions.”

\textsuperscript{117} Some realists, particularly those in the classical bent like Gulick (1955), believe balance-of-power theory only applies within a relatively closed geopolitical environment in which there exists a degree of interdependence among the actors, such as in the concert of Europe. For an excellent discussion of this, see Cusack and Stoll (1990, pp. 21-26).
Regarding strong states, Waltz’s argument is:

We do not expect the strong to combine with the strong in order to increase the extent of their power over others, but rather to square off and look for allies who might help them. In anarchy, security is the highest end. Only if survival is assured can states safely seek such other goals as tranquillity, profit, and power. Because power is a means and not an end, states prefer to join the weaker of two coalitions. They cannot let power, a possibly useful means, become the end they pursue. The goal the system encourages them to seek is security. Increased power may or may not serve that end. Given two coalitions, for example, the greater success of one in drawing members to it may tempt the other to risk preventive war, hoping for victory through surprise before disparities widen. If states wished to maximize power, they would join the stronger side, and we would see not balances forming but a world hegemony forged. This does not happen because balancing, not bandwagoning is the behavior induced by the system.

Regarding weak states, his argument is: “Secondary States, if they are free to choose, flock to the weaker side; for it is the stronger side that threatens them. On the weaker side they are both more appreciated and safer, provided, of course, that the coalition they form achieves enough defensive or deterrent strength to dissuade adversaries from attacking” (1979, p. 126-127). Putting all of this together, this argument leads to a clear empirical expectation that, for all third-party interveners, balancing is more common than bandwagoning. This expectation may be stated as an alternative hypothesis for empirical testing as follows:

**Alternative Hypothesis 1:** For all third-party interveners, balancing is more common than bandwagoning.

**The Argument(s) for Bandwagoning**

On the other side of the debate are a number of scholars who take issue with the general balancing proposition, and argue that there exist clearly identifiable conditions when third parties may not balance, but rather bandwagon with the stronger side in international conflicts (Walt 1987; Schweller 1994; David 1991; Larson 1991). While the specific conditions under which bandwagoning occurs are a matter of debate among
these researchers, the literature seems to break down into two main veins of argument: the first of these regards an avenue of theorizing in which researchers claim to offer "refinements"\textsuperscript{118} to balance-of-power theory with attempts to explain bandwagoning in \textit{realpolitik} terms. One such scholar is Stephen Walt (1987), who "amends" balance-of-power theory with what he calls "balance of threat" theory, according to which "states do not align solely or even primarily in response to the distribution of capabilities," but rather in response to "imbalance of threat, when one state or coalition of states is especially dangerous. The level of threat that a state poses to others is the product of its aggregate power, geographic proximity, offensive capability, and the perceived aggressiveness of its intentions" (Schweller 1994).

While balance of threat theory has been soundly criticized for incrementally altering balance-of-power theory with a change that makes it non-falsifiable\textsuperscript{119}, in his discussion of the theory's implications, Walt does make an explicit argument stating the reasons why third parties may be motivated to bandwagon in disputes in international

\textsuperscript{118} For example Walt (1987, p. 263) argues that his "balance of threat" theory "improves on traditional balance of power theory by providing greater explanatory power with equal parsimony."

\textsuperscript{119} To briefly summarize this criticism, Vasquez (1997) correctly points out that, by incrementally altering the argument that third parties balance against \textit{power} to the argument that they balance against \textit{threat}, the principal independent variable in the theory shifts from the distribution of capabilities among the actors in a dispute, which is \textit{directly observable}, to an assessment of which side in the dispute poses the more serious threat, which is \textit{not}. That is, because Walt (1987) defines threat to include factors like the perceived aggressiveness of the intentions of the parties involved in a dispute, which side the third party views as the greater threat cannot be directly observed, which makes it impossible to falsify the theory's predictions. Furthermore, because Walt makes this change while retaining much of the language of balance-of-power theory, what he offers as a "refinement" to the theory is actually an \textit{ad hoc} explanation for evidence that third parties do not always balance power, which begs questions about the explanatory power of the realist paradigm in general. Vasquez (1997, ) makes this point succinctly: "'Balance of Threat' is a felicitous phrase. The very phraseology makes states' behavior appear much more consistent with the larger paradigm than it actually is. It rhetorically captures all the connotations and emotive force of balance of power while changing it only incrementally. It appears as a refinement – insightful and supportive of the paradigm. In doing so, it strips away the anomalous nature and devastating potential of the findings for Waltz's explanation [the general balancing proposition]."
politics, as follows (1987, pp. 20-21): 

States are attracted to strength. The more powerful the state and the more clearly this power is demonstrated, the more likely others are to ally with it. By contrast, a decline in a state’s relative position will lead its allies to opt for neutrality at best or to defect to the other side at worst... What is the logic behind this hypothesis? Two distinct motives can be identified. First, bandwagoning may be a form of appeasement. By aligning with an ascendant state or coalition, the bandwagoner may hope to avoid an attack by diverting it elsewhere. Second, a state may align with the dominant side in wartime in order to share the spoils of victory. Mussolini’s declaration of war on France in 1940 and Russia’s entry into the war against Japan in 1945 illustrate this type of bandwagoning, as do Italian and Rumanian alliance choices in World War I. By joining the side that they believed would triumph, each hoped to make territorial gains at the end of the fighting. Stalin’s decision to align with Hitler in 1939 illustrates both motives nicely. The Nazi-Soviet Non-Aggression Treaty led to the dismemberment of Poland and may have deflected Hitler’s ambitions westward temporarily. Stalin was thus able to gain both time and territory by bandwagoning with Germany. In general, however, these two motives for bandwagoning are quite different. In the first, bandwagoning is chosen for defensive reasons, as a means of preserving one’s independence in the face of a potential threat. In the second, a bandwagoning state chooses the leading side for offensive reasons, in order to share the fruits of victory. In either case, however, such behavior stands in sharp contrast to the predictions of the balancing hypothesis.

Of these two motivations, Walt focuses on the former, and makes a specific argument that weak states behave differently in their decision making over intervention than strong states. Specifically, he argues that weaker states are more likely to bandwagon than stronger states (1987, p. 29): “In general, the weaker the state, the more likely it is to bandwagon rather than balance. This situation occurs because weak states add little to the strength of a defensive coalition but incur the wrath of the more threatening states nonetheless. Because weak states can do little to affect the outcome (and may suffer grievously in the process), they must choose the winning side. Only when their decision can affect the outcome is it rational for them to join the weaker alliance. By contrast, stronger states can turn a losing coalition into a winning one.”

From this discussion, Walt derives a number of predictions about the “conditions favoring balancing or bandwagoning,” two of which two are directly relevant to the
present analysis\textsuperscript{120}: first, he states (in agreement with most balance-of-power theorists like Waltz) that balancing is more common than bandwagoning. Second, he states that "The stronger the state, the greater its tendency to balance. Weak states will balance against other weak states but may bandwagon when threatened by great powers" Walt (1987, p. 33). The first of these hypotheses is identical to the general balancing proposition stated above in Alternative Hypothesis 1, and may be tested along with it. But, thinking carefully about Walt's second hypothesis, this statement actually encompasses three analytically distinct empirical expectations: a) strong third parties tend to balance rather than bandwagon; b) weak third parties tend to balance in disputes between weak states; and c) weak states tend to bandwagon in disputes involving strong states. As such, to test the implications Walt derives from his theory as rigorously as possible, I state each of these ideas as an independent alternative hypothesis for empirical analysis, as follows:

**Alternative Hypothesis 2:** For strong third-party interveners, balancing is more common than bandwagoning.

**Alternative Hypothesis 3:** For weak third-party interveners into militarized disputes between weak powers, balancing is more common than bandwagoning.

**Alternative Hypothesis 4:** For weak third-party interveners into militarized disputes involving strong powers, bandwagoning is more common than balancing.

\textsuperscript{120} All five of Walt's (1987, p. 33) hypotheses regarding balancing versus bandwagoning are as follows: 1) Balancing is more common than bandwagoning. 2) The stronger the state, the greater its tendency to balance. Weak states will balance against other weak states but may bandwagon when threatened by great powers. 3) The greater the probability of allied support, the greater the tendency to balance. When adequate allied support is certain, however, the tendency for free-riding or buck-passing increases. 4) The more unalterably aggressive a state is perceived to be, the greater the tendency for others to balance against it. 5) In wartime, the closer one side is to victory, the greater the tendency for others to bandwagon with it.
A second researcher claiming to offer a “refinement” of balance-of-power theory is Schweller (1994), who focuses on the second motivation for bandwagoning mentioned above, the desire to attain the “spoils of victory” in conflict. Schweller argues that researchers involved in the balancing versus bandwagoning debate tend to underestimate the amount of bandwagoning that occurs in disputes in international politics for two reasons: first, they overemphasize the degree to which most states are satisfied with the international status quo and, second, they underemphasize the willingness of third parties to seek rewards like territory by joining with the stronger side in conflicts. Focusing on this desire to reap the gains of victory in conflict, Schweller writes (1994, p. 74): “I argue that all sides in the debate have mistakenly assumed that bandwagoning and balancing are opposite behaviors motivated by the same goal: to achieve greater security. As a result, the concept of bandwagoning has been defined too narrowly – as giving in to threats – as if it were simply the opposite of balancing. In practice, however, states have very different reasons to choose balancing or bandwagoning. The aim of balancing is self-preservation and the protection of values already possessed, while the goal of bandwagoning is usually self-extension: to obtain values coveted. Simply put, balancing is driven by the desire to avoid losses; bandwagoning, by the opportunity for gain.”

Based on this, Schweller takes issue with Walt’s “balance of threat” theory, arguing that it “is designed to consider only cases in which the goal of alignment is security, and so it systematically excludes alliances driven by profit... When profit rather than security drives alliance choices, there is no reason to expect that states will be threatened or cajoled to climb aboard the bandwagon; they will do so willingly”
(Schweller 1994, p. 79). In this, he makes the specific argument that revisionist third parties are more likely to bandwagon than balance because it is such states that have more to gain by altering the international status quo: "Preventing relative losses in power and prestige is sound advice for satisfied states that seek, above all, to keep what they have. But staying in place is not the primary goal of revisionist states. They want to increase, not just preserve, their core values and to improve their position in the system. These goals cannot be achieved simply by ensuring that everyone else does not gain relative to them. They must gain relative to others" (Schweller 1994, p. 87). This expectation may be stated as an alternative hypothesis for empirical testing, as follows:

**Alternative Hypothesis 5:** For "revisionist" third-party interveners, bandwagoning is more common than balancing.

Looking back over the arguments for bandwagoning behavior that have been discussed so far, while the specific predictions of the conditions under which balancing and bandwagoning occur may differ among these scholars, their arguments are unified by the idea that state decision-making over intervention follows a realpolitik model of the world in which domestic political factors do not play a significant role in the making of foreign policy. A second group of scholars involved in this debate take issue with this, and posit that domestic political factors can have important effects on the conditions under which third parties balance or bandwagon in militarized disputes in international politics (David 1991; Larson 1991; Levy and Barnett 1991; Kaufman 1992). In this vein of the bandwagoning literature, domestic political factors have been theorized to play a role in decision making over intervention by focusing on the assumption that the desires of national leaders to retain their positions of leadership in their regimes can provide
incentives for foreign policy behavior beyond the realpolitik model. In particular, it has been argued that some national leaders may have incentives to bandwagon with the stronger side in disputes because by doing so they receive external help in dealing with internal threats to their leadership.\textsuperscript{121}

Larson (1991) makes this argument for states with “weak” domestic political institutions. According to her theory, the presence of weak political institutions can enhance a national leader’s incentives to bandwagon in disputes because such institutions do not adequately represent the “identity” of society, are not perceived as “legitimate” by citizens, and are not “adaptable” to needed reforms. To lay out her theory as clearly as possible, I restate her argument with regard to each of these theoretical components. Her first point regards the extent to which states with weak political institutions represent the identity of their society, and the effects this can have on foreign policymaking:

\begin{quote}
The state embodies the collective identity of society. It is the state’s representation of society that allows it to claim that its actions are in pursuit of the “national” interest rather than regional, ethnic or class interests... Not all states, however, adequately represent the identity of society. When institutions have been imposed on a society by an external power or minority group wielding the levers of coercion, it is unlikely that the fit between society and institutions will be very good... When domestic institutions are incongruent with the national identity, individuals do not identify with the state, but with their ethnic group, class or political party. With no higher loyalty to restrain self-interest and the desire for aggrandizement, officials pursue particularistic goals at the expense of state autonomy... Lack of cultural self-identification with the state can affect diplomatic strategy in several ways. First, competing groups within society may use ties with external powers as a weapon in their domestic struggles. Second, lacking any noninstrumental attachment to the state, elites feel no scruples about making a deal with a more powerful state who will help them to retain their privileges and prerogatives. An obvious danger to the elites’ rule is external subversion by an aggressive power. To bolster their domestic position, the state’s elites try to align with the hostile power to induce it to refrain from subverting their authority. Thus, officials bandwagon in order to appease a hostile power, but the source of threat is internal and not external as in more traditional balance of power (Larson 1991, pp. 88-89).
\end{quote}

\textsuperscript{121} It is important to note the important difference between this argument and that posited by Walt (1987). Walt argues that weak third parties may bandwagon as a form of appeasement to a strong external power in order to divert an attack elsewhere. In his view, the threat that the third party balances against in this case is external, the stronger power. In the following theoretical argument, third parties may bandwagon with stronger disputants not in order to divert an external threat, but rather to receive aid in fending off internal challengers. In this argument, the primary motivation for bandwagoning is thus internal.
Her second point regards the "legitimacy" of the leadership in states with weak political institutions:

Legitimate institutions can more easily enforce rules and property rights, because most individuals comply voluntarily without external coercion or supervision... States that do not represent the collective identity of society have more difficulty establishing their legitimacy. Thus, elites are drawn to alternative means of securing public consent—providing "bread and circuses," or stirring up jingoistic sentiments. Alignment with a more powerful, expansionist state can serve these purposes in various ways. An expansionist power, for example may offer economic capital and trade on favorable terms in return for political subordination. Weak regimes may also try to bolster their domestic position by wrapping themselves in the cloak of an expanding ideological movement. The elite may mobilize nationalist sentiment for the return of lost territories. To satisfy popular irredentist demands, the small state may then be forced to ally with a stronger revisionist power who will assist in reconquest of former territories Larson (1991, pp. 92-93).

The third and final component of Larson’s argument regards the degree to which leaders have incentives to adapt their political institutions in ways that benefit their society in the long term:

Institutions do not change easily. The shared values that lead to homogeneity also lead to rigid ways of thinking and nonreceptivity to evidence indicating changes in the environment. Because their identity is bound up with the organization, officials develop a vested interest in existing rules and patterns of authority. But when organizations have become institutionalized, officials place its survival and health ahead of their own personal or group interests. Because officials derive part of their identity and self-worth from their role in the organization, destruction of the institution would cause them to feel that they had lost part of themselves. Thus, officials feel a need to accommodate internal interests and adapt to external pressures in order to preserve the institution. In contrast, when a state’s institutions lack identity and legitimacy, elites are not motivated to preserve the long-term interests of their state by restructuring its institutions. Instead, they despoil the state to maximize selfish group interests. National officials’ concern for maintaining their positions blocks essential changes in the way institutions are structured and relate to society. Weak states are unable either to conciliate domestic foes or to overcome social resistance because they cannot reform themselves.

Putting all of this together, while Larson’s theory encompasses a range of notions about how domestic political institutions can affect the incentives national leaders have to bandwagon in disputes in international politics, at the most essential level her argument
focuses on the idea that weak political institutions are the predominant causal mechanism affecting these incentives. This allows an operational hypothesis positing a relationship between weak domestic political institutions and bandwagoning behavior to be derived for empirical testing in the present analysis:

**Alternative Hypothesis 6:** For third-party interveners with “weak” domestic political institutions, bandwagoning is more common than balancing.

A similar theory is laid out by David (1991), who argues that there exist distinctive characteristics of states in the “Third World” that provide incentives for leaders to bandwagon. Like many of these scholars claiming to “refine” balance-of-power theory, David agrees with the general proposition that balancing is more common than bandwagoning for most states in the system. But, he argues that it is inapplicable to developing states because of the “unstable, dangerous, and often fatal nature of the international and domestic political environment that characterizes the Third World” (p. 235). His theory, labeled “omnibalancing,” is based on the idea that internal threats to power are more common than external threats for leaders of Third World states, and that these internal threats – in similar fashion to the above argument made by Larson – can
lead the leaders of these states to bandwagon. His rationale for this is as follows:

The essence of balance of power theory is correct: leaders of Third World states as well as leaders of other states align in ways that help them better resist the threats they face. But conditions in the Third World require, in addition, a theory of alignment that applies primarily to the Third World. To that end, three separate and distinct repairs of balance of power theory are offered. First, rather than just balance against threats or power, leaders of states will appease — that is, align with — secondary adversaries so that they can focus their resources on prime adversaries. Other states may be less threatening than the secondary threat, but it may be that they cannot be harnessed for the alignment either because they do not care about the dispute or because they are unable to resolve it. So the threatened leadership has no choice: it must align with one threat to address the other... As with the leaders of great powers, Third World leaders, too, seek to appease secondary threats in order to counter those that are more pressing. But, in the Third World, this often means appeasing other states (which often pose less pressing threats) in order to counter the more immediate and dangerous domestic threats. They seek to split the alignment against them and focus their energies on their most dangerous (domestic) opponents... Finally, since the dominant goal of Third World leaders is to stay in power, they will sometimes protect themselves at the expense of the interests of the state (David 1991, pp. 235-236).

David’s rationale for why his theory applies primarily to the Third World is as follows: because most Third World states were created from former colonies of foreign powers, they have borders that were imposed on them by foreign powers and are therefore somewhat arbitrary. As a result of this, “many Third World states began and remain more as an artificial construct than a coherent unit” (David 1991, p. 239). Due to this “artificiality,” subnational groups often do not identify with the state, but rather with their ethnic, religious or regional affiliations. This implies that the leadership of the state lacks legitimacy because it only represents a small sample of the citizenry. Given this artificial nature and lack of legitimacy, the leaders of states in the Third World are likely to face a greater number of internal challenges to their leadership than other states. Furthermore, “since the consequence of loss of power in the Third World is often loss of life, Third World leaders are understandably more aggressive than other leaders in their efforts to maintain their positions” (David 1991, p. 240). David argues that these factors
combine to imply that the leaders of third world states tend to be more willing to align
with stronger states in exchange for assistance in retaining their offices.

Putting all of this together, though these scholars may be speaking past one
another, David's theory of “omnibalancing” has much in common with Larson’s
argument about the relationship between weak political institutions and bandwagoning
behavior, in that both theories focus on how the characteristics of politically unstable
states can provide national leaders with incentives to bandwagon in order to fend off
internal challengers. While there is likely a substantial degree of overlap between the set
of third parties having weak domestic political institutions and the set of states
comprising the Third World, whether or not the two are exactly alike is an open question.
Regardless, because the purpose of this exercise is to test the hypotheses of these
researchers in as rigorous a manner as possible, Larson’s specific focus on states with
weak domestic political institutions and David’s specific focus on the third world merit
analytically distinct hypotheses for the testing of each theory$^{122}$. As such, the following
operational hypothesis regards the prediction of David’s theory:

Alternative Hypothesis 7: For third-party interveners with in the Third World,
bandwagoning is more common than balancing.

At this point, having summarized the theoretical arguments of a number of
scholars involved in the balancing versus bandwagoning debate and derived observable
implications from them, the explanatory power of these alternative hypotheses may now
be empirically evaluated. By doing so, it is hoped that this analysis may yield some

$^{122}$ Another point that supports testing these theories with different hypotheses is that the empirical
measures for weak domestic political institutions and membership in the Third World show some overlap,
but the relationship between them is not one-to-one. This will be discussed in greater detail in the
following section in which these hypotheses are empirically tested.
insight about how much these theoretical ideas contribute to our understanding of third-party intervention in disputes in international politics. This analysis is the subject of the following section.

**Empirical Analysis of the Balancing versus Bandwagoning Literature:**

**Tests of Alternative Hypotheses 1-7**

**Test of Alternative Hypothesis 1**

Recall from the above discussion that the first hypothesis derived from the balancing versus bandwagoning literature regards the general balancing proposition, which states that, for all third-party interveners, balancing is more common than bandwagoning. Thinking about this hypothesis, it leads to the empirical expectation that, across space and time, more cases of intervention on behalf of the weaker side in militarized disputes in international politics should be observed than cases of intervention on behalf of the stronger side. This hypothesis may be tested in a very straightforward manner by simply examining the number of cases of intervention as balancing and bandwagoning in the MID Intervention data set constructed as part of this dissertation project (discussed in detail in Chapter IV). Recall that this data set contains 175 cases of third-party intervention over the period 1816-1984. In this set of cases, I operationalize balancing as intervention on behalf of the weaker side in the dispute, measured using the CINC score discussed in detail in Chapter IV, and bandwagoning as intervention on behalf of the stronger side. A simple frequency analysis of these data reveals that they

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123 The rationale for using the CINC as a measure of national resources is discussed in detail later in this chapter and in Chapter IV.
contain 91 cases of balancing and 83 cases of bandwagoning\textsuperscript{124}, which suggests that balancing is slightly more common than bandwagoning, by not by a substantial margin (by strict standards, the hypothesis predicts approximately 52% of cases correctly).

Thinking about this at a slightly deeper level, a second way the hypothesis may be tested is by examining if, on a year-by-year basis, balancing tends to be more common than bandwagoning. To evaluate this possibility, I graph the number of cases of balancing and bandwagoning that occur per year over the period 1816-1984, shown in Figure 7.1. Looking at the chart, it may be seen that, of the 54 years over the period 1816-1984 in which intervention occurs, balancing is more common than bandwagoning in 25, the inverse is true in 22, and an equal number of cases of balancing and bandwagoning occur in 7. Again, this indicates that balancing is more common than bandwagoning, but not by a substantial margin. Moreover, in the chart, whether balancing or bandwagoning is more common varies from year to year in what appears to be a non-systematic manner (which is an interesting point that will be discussed in greater detail later). Altogether, these data do not seem to indicate a clear pattern that bears out the hypothesis predicted by most balance-of-power theorists\textsuperscript{125}.

\textit{Test of Alternative Hypothesis 2}

Moving on to the second alternative hypothesis derived from the balancing versus bandwagoning literature, recall that this prediction regards the first of the three analytically distinct operational hypotheses derived from Stephen Walt’s (1987, p. 33)

\textsuperscript{124} In one case, the resources of both sides in the dispute are equal. This case is coded as neither balancing nor bandwagoning.

\textsuperscript{125} The implications of this test are consistent with those in other empirical examinations of balancing behavior (Cusack & Stoll 1991; Jones 1994), and call into question the explanatory power of balance-of-power theory and the realist paradigm in general. For an excellent discussion of this, see Vasquez (1997).
statement that, "The stronger the state, the greater its tendency to balance. Weak states will balance against other weak states but may bandwagon when threatened by great powers." This hypothesis states the specific prediction that, for strong third-party interveners, balancing is more common than bandwagoning. Thinking about this, it leads to the empirical expectation that, for strong third parties, across space and time, more cases of intervention on behalf of the weaker side in militarized disputes in international politics should be observed than cases of intervention on behalf of the stronger side.

To test this prediction, I construct a cross-tab table in which the independent variable regards whether the third party is classified as strong or weak and the dependent variable regards whether the third party balanced or bandwagoned into a conflict. By examining the row of the table regarding the behavior of strong third parties, it may be seen whether the number of cases of balancing is substantially greater than the number of cases of bandwagoning. To measure whether third parties are strong or weak, I classify major powers as strong and minor powers as weak. While certainly not the only way to operationalize this distinction, this is the most commonly employed method in the IR literature. The cross-tabulation table may be seen in Table 7.1. Looking at the second row of the table, regarding the behavior of strong third parties, of the 60 cases of major power intervention in the data, there are 28 cases of balancing and 32 cases of bandwagoning, which suggests that strong third parties tend to balance slightly less often than they bandwagon when they intervene into militarized disputes in international politics (by strict standards, the hypothesis predicts approximately 47% of cases

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126 The set of major powers is as follows: United States from 1899 to the present, Great Britain from 1816 to the present, France from 1816 to 1941 and 1945 to the present, Germany from 1867 to 1918 and 1923 to 1945, and Russia/Soviet Union from 1922 to 1991.
Table 7.1
Cross-Tabulation Test of Alternative Hypothesis 2

<table>
<thead>
<tr>
<th></th>
<th>Balancing</th>
<th>Bandwagoning</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weak Third-Party Interveners</td>
<td>63</td>
<td>51</td>
<td>114</td>
</tr>
<tr>
<td>Strong Third-Party Interveners</td>
<td>28</td>
<td>32</td>
<td>60</td>
</tr>
<tr>
<td>Total</td>
<td>91</td>
<td>83</td>
<td>174</td>
</tr>
</tbody>
</table>
correctly). But, in order to again examine this at a slightly deeper level, I look at these numbers on a year-by-year basis by constructing a graph of the number of cases of major power balancing and bandwagoning that occur per year over the period 1816-1984, shown in Figure 7.2.

Looking at the chart, it may be seen that, of the 29 years over the period 1816-1984 in which major power intervention occurs, balancing is more common than bandwagoning in 15, the inverse is true in 13, and an equal number of cases of balancing and bandwagoning occur in 1. This suggests that, on a year-by-year basis, balancing is more common than bandwagoning, but not by a substantial margin. Moreover, in the chart, whether balancing or bandwagoning is more common again varies from year to year in what appears to be a non-systematic manner. Altogether, these data seem to suggest that strong third parties tend to balance about as often as they bandwagon, which does not bear out the first prediction derived from Walt’s theory.

\textit{Test of Alternative Hypothesis 3}

Moving on to the third alternative hypothesis derived from the balancing versus bandwagoning literature, recall that this prediction regards the second of the three analytically distinct operational hypotheses derived from Stephen Walt’s (1987, p. 33) statement that, “The stronger the state, the greater its tendency to balance. Weak states will balance against other weak states but may bandwagon when threatened by great powers.” This hypothesis states the specific prediction that, for weak third-party interveners into militarized disputes between weak powers, balancing is more common than bandwagoning. Thinking about this, it leads to the empirical expectation that, within
Figure 7.2
Balancing versus Bandwagoning by Year, 1816-1984
Major Power Interveners
the set of cases of intervention in which minor power third parties enter into disputes in which both sides are comprised of minor powers, even though both sides are relatively weak, more cases of intervention on behalf of the weaker side should be observed than cases of intervention on behalf of the stronger side.

To test this prediction, I first select the sample of cases of intervention in the data in which both sides in the dispute are comprised of minor powers, which results in 51 cases. Using these cases, I then construct a cross-tab table in which the independent variable regards whether the third party is classified as strong or weak and the dependent variable regards whether the third party balanced or bandwagoned into a conflict. By examining the row of the table regarding the behavior of weak third parties, it may be seen whether the number of cases of balancing is substantially greater than the number of cases of bandwagoning. This cross-tabulation table may be seen in Table 7.2. Looking at the first row of the table, of the 30 cases in which minor power third parties intervened into militarized disputes between minor powers, there exist 14 cases of balancing and 16 cases of bandwagoning, which suggests that weak third parties tend to balance *slightly less* often than they bandwagon in this sample of cases (by strict standards, the hypothesis predicts approximately 47% of cases correctly). But, in order to again examine this at a slightly deeper level, I look at these numbers on a year-by-year basis by constructing a graph of the number of cases of minor power balancing and bandwagoning that occur in militarized disputes between minor powers per year over the period 1816-1984, shown in Figure 7.3.
Table 7.2
Cross-Tabulation Test of Alternative Hypothesis 3

<table>
<thead>
<tr>
<th></th>
<th>Balancing</th>
<th>Bandwagoning</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Weak Third-Party Interveners</strong></td>
<td>14</td>
<td>16</td>
<td>30</td>
</tr>
<tr>
<td><strong>Strong Third-Party Interveners</strong></td>
<td>13</td>
<td>8</td>
<td>21</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>27</td>
<td>24</td>
<td>51</td>
</tr>
</tbody>
</table>
Figure 7.3
Balancing versus Bandwagoning by Year, 1816-1984
Minor Power Interveners in Disputes between Minor Powers

[Diagram showing the comparison of bandwagoning and balancing by year from 1863 to 1977.]
Looking at the chart, it may be seen that, of the 19 years over the period 1816-1984 in which minor power intervention occurs into militarized disputes between minor powers, balancing is more common than bandwagoning in 9, the inverse is true in 9, and an equal number of cases of balancing and bandwagoning occur in 1. This suggests that, on a year-by-year basis, balancing is as common than bandwagoning, but not more common. Altogether, these data seem to suggest that weak third parties who intervene into militarized disputes between weak powers tend to balance about as often as they bandwagon, which does not bear out the second prediction derived from Walt’s theory.

*Test of Alternative Hypothesis 4*

I now test the third and final operational hypothesis derived from Walt’s “balance of threat” theory. This hypothesis states the specific prediction that, for weak third-party interveners into militarized disputes involving strong powers, bandwagoning is more common than balancing. Thinking about this, it leads to the empirical expectation that, within the set of cases of intervention in which minor power third parties enter into disputes involving major powers, more cases of intervention on behalf of the stronger side should be observed than cases of intervention on behalf of the weaker side.

To test this prediction, I first select the sample of cases of intervention in the data in which the relevant dispute involves at least one major power, which results in 123 cases. Using these cases, I then construct a cross-tab table in which the independent variable regards whether the third party is classified as strong or weak and the dependent variable regards whether the third party balanced or bandwagoned into a conflict. By examining the row of the table regarding the behavior of weak third parties, it may be
seen whether the number of cases of bandwagoning is substantially greater than the number of cases of balancing. This cross-tabulation table may be seen in Table 7.3.

Looking at the first row of the table, of the 84 cases in which minor power third parties intervened into militarized disputes involving major powers, there exist 35 cases of bandwagoning and 49 cases of balancing, which suggests that weak third parties tend to bandwagon less often than they balance in this sample of cases (by strict standards, the hypothesis predicts approximately 42% of cases correctly). In order to again examine this at a slightly deeper level, I now look at these numbers on a year-by-year basis by constructing a graph of the number of cases of minor power balancing and bandwagoning that occur in militarized disputes involving major powers per year over the period 1816-1984, shown in Figure 7.4.

Looking at the chart, it may be seen that, of the 26 years over the period 1816-1984 in which minor power intervention occurs into militarized disputes involving major powers, bandwagoning is more common than balancing in 10, the inverse is true in 13, and an equal number of cases of balancing and bandwagoning occur in 3. This suggests that, on a year-by-year basis, minor power bandwagoning is actually less common than balancing in militarized disputes involving major powers. Altogether, these data seem to suggest that weak third parties who intervene into militarized disputes involving strong powers tend to bandwagon less often than they balance, which is at odds with the third prediction derived from Walt’s theory.

At this point, having found no support for any of the three predictions about the occurrence of balancing and bandwagoning behavior derived from Walt’s theory with a
<table>
<thead>
<tr>
<th></th>
<th>Balancing</th>
<th>Bandwagoning</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weak Third-Party Interveners</td>
<td>49</td>
<td>35</td>
<td>84</td>
</tr>
<tr>
<td>Strong Third-Party Interveners</td>
<td>16</td>
<td>24</td>
<td>39</td>
</tr>
<tr>
<td>Total</td>
<td>64</td>
<td>59</td>
<td>123</td>
</tr>
</tbody>
</table>
Figure 7.4
Balancing versus Bandwagoning by Year, 1816-1984
Minor Power Interveners in Disputes involving Major Powers
straightforward cross-tabulation analysis, I now perform a second test employing a more probabilistic interpretation of these hypotheses, in similar fashion to the analysis conducted in Chapter IV. Thinking carefully about the three hypotheses discussed above (Alternative hypotheses 2–4), Walt's main prediction is that weak third-parties who intervene into conflicts involving strong powers will bandwagon, while all other interveners (strong third-party interveners in all disputes and weak third-party interveners in disputes between weak powers) will balance. Employing a difference of means test\textsuperscript{127}, it becomes possible to test a more probabilistic interpretation of this hypothesis, examining whether bandwagoning is more likely to occur in the former set of cases than in the latter. The results of this test may be seen in Table 7.4.

Table 7.4 does not provide supportive evidence for even this more probabilistic interpretation of Walt's hypothesis. According to the independent samples $t$-test, there exists no statistically significant\textsuperscript{128} mean difference between the two groups of cases. That is, in substantive terms, bandwagoning is no more or less likely to occur when weak third parties intervene into militarized disputes involving strong powers than in other cases (namely, when weak third parties intervene into disputes between weak powers or when strong third parties intervene). So, putting all of this together, it seems reasonable to conclude that the analysis so far has not found any support for the theoretical ideas of the scholars involving in this debate, neither for the general balancing proposition advanced by most balance-of-power theorists nor for the theoretical arguments of

\textsuperscript{127} For a detailed discussion of this method, see Chapter IV.

\textsuperscript{128} For a two-tailed test, $\alpha = .05$. 
Table 7.4
Difference of Means Test of Alternative Hypotheses 2,3 and 4

<table>
<thead>
<tr>
<th>Group Statistics</th>
<th>Weak Third-Party Intervener into Militarized Dispute involving Strong Power</th>
<th>N</th>
<th>Mean</th>
<th>Std. Dev</th>
<th>Std. Error Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>0</td>
<td>.5333</td>
<td>.5017</td>
<td>5.288E-02</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1</td>
<td>.4167</td>
<td>.4960</td>
<td>5.411E-02</td>
</tr>
</tbody>
</table>

Independent Samples t-test

<table>
<thead>
<tr>
<th></th>
<th>Levene’s Test for Equality of Variances</th>
<th>t-test for Equality of Means</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>F</td>
<td>Sig.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bandwagoning</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Equal variances assumed</td>
<td>1.526</td>
<td>.218</td>
</tr>
<tr>
<td>Equal variances - assumed</td>
<td>1.542</td>
<td>171.424</td>
</tr>
</tbody>
</table>
scholars claiming to "refine" it, like Stephen Walt (1987). In the following sections, I continue this analysis, by performing tests of the remaining scholars contributing to this debate.

**Test of Alternative Hypothesis 5**

The fifth alternative hypothesis derived from the balancing versus bandwagoning literature regards Schweller's (1994) prediction that, for "revisionist" third-party interveners, bandwagoning is more common than balancing. Thinking about this hypothesis, it leads to the empirical expectation that, for revisionist third parties, across space and time, more cases of intervention on behalf of the stronger side in militarized disputes in international politics should be observed than cases of intervention on behalf of the weaker side. To test it, I construct a cross-tab table in which the independent variable regards whether or not the third party is classified as revisionist and the dependent variable regards whether the third party balanced or bandwagoned into a conflict. By examining the row of the table regarding the behavior of revisionist third parties, it may be seen whether the number of cases of bandwagoning is substantially greater than the number of cases of balancing.

To measure whether third parties are revisionist or not, I employ an indicator of this included in the MID data set (from which the set of cases in this analysis are constructed, as discussed in Chapter IV): the MID researchers base their indicator of what constitutes a revisionist state on the prevailing status quo of the issues in dispute prior to the onset of any militarized action and record as revisionist the state or states that sought to overturn the status quo ante. Specifically, an actor involved in a MID is coded as revisionist if they openly challenge the pre-dispute status quo by 1) making claims to
territory, 2) attempting to overthrow a regime, or 3) declaring the intention not to
abide by another state's policy (Jones, et al. 1996). Employing this measure, the cross-
tabulation table may be seen in Table 7.5.

Looking at the second row of the table, regarding the behavior of revisionist third
parties, of the 43 cases of revisionist third-party intervention in the data, there are 18
cases of bandwagoning and 25 cases of balancing, which suggests that revisionist third
parties tend to bandwagon less often than they balance when they intervene into
militarized disputes in international politics (by strict standards, the hypothesis predicts
approximately 42% of cases correctly). But, in order to again examine this at a slightly
deeper level, I look at these numbers on a year-by-year basis by constructing a graph of
the number of cases of revisionist third-party balancing and bandwagoning that occur per
year over the period 1816-1984, shown in Figure 7.5.

Looking at the chart, it may be seen that, of the 21 years over the period 1816-
1984 in which revisionist third-party intervention occurs, bandwagoning is more common
than balancing in 5, the inverse is true in 15, and an equal number of cases of balancing
and bandwagoning occur in 1. This suggests that, on a year-by-year basis, bandwagoning
is substantially less common than balancing. Altogether, these cross-tabulations do not
provide any support for Schweller’s contention that revisionist third parties tend to
bandwagon more than they balance. But, in order to test a more probabilistic
interpretation of this hypothesis, as above, I perform a difference of means test examining
whether bandwagoning is more likely to occur by revisionist third parties than by other
third parties (that is, status quo third parties). The results of this test may be seen in
Table 7.5
Cross-Tabulation Test of Alternative Hypothesis 5

<table>
<thead>
<tr>
<th></th>
<th>Balancing</th>
<th>Bandwagoning</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Status Quo Third-Party Interveners</td>
<td>66</td>
<td>65</td>
<td>131</td>
</tr>
<tr>
<td>Revisionist Third-Party Interveners</td>
<td>25</td>
<td>18</td>
<td>43</td>
</tr>
<tr>
<td>Total</td>
<td>91</td>
<td>83</td>
<td>174</td>
</tr>
</tbody>
</table>
Table 7.6.

Table 7.6 does not provide supportive evidence for even this more probabilistic interpretation of Schweller’s hypothesis. According to the independent samples $t$-test, there exists no statistically significant\textsuperscript{129} mean difference between the two groups of cases. That is, in substantive terms, bandwagoning is no more or less likely to occur when revisionist third parties intervene into militarized disputes than in other cases (namely, when status quo third parties intervene). All in all, it seems reasonable to conclude that Schweller’s ideas are not borne out in this analysis.

\textit{Test of Alternative Hypothesis 6}

Moving on to a test of the sixth hypothesis derived from the balancing versus bandwagoning literature, recall that this prediction (along with the seventh alternative hypothesis) regards the vein of argument that domestic political factors can affect the occurrence of intervention because they provide the leaders of particular kinds of states with incentives to bandwagon in exchange for assistance in retaining their positions of leadership in their regimes. Specifically, the test of Alternative Hypothesis 6 regards Larson’s (1991) argument that, for third-party interveners with “weak” domestic political institutions, bandwagoning is more common than balancing. Thinking about this, it leads to the empirical expectation that, for third parties with weak domestic political institutions, across space and time, more cases of intervention on behalf of the stronger side in militarized disputes in international politics should be observed than cases of intervention on behalf of the weaker side.

\textsuperscript{129} For a two-tailed test, $\alpha = .05$. 
Table 7.6
Difference of Means Test of Alternative Hypothesis 5

**Group Statistics**

<table>
<thead>
<tr>
<th>Bandwagoning</th>
<th><strong>Revisionist Third-Party Intervener</strong></th>
<th>N</th>
<th>Mean</th>
<th>Std. Dev</th>
<th>Std. Error Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>131</td>
<td>.4962</td>
<td>.5019</td>
<td>4.385E-02</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>43</td>
<td>.4186</td>
<td>.4992</td>
<td>7.612E-02</td>
<td></td>
</tr>
</tbody>
</table>

**Independent Samples t-test**

<table>
<thead>
<tr>
<th>Bandwagoning</th>
<th>Levene's Test for Equality of Variances</th>
<th>t-test for Equality of Means</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>F</td>
<td>Sig.</td>
</tr>
<tr>
<td>Equal variances - assumed</td>
<td>.883</td>
<td>71.941</td>
</tr>
</tbody>
</table>
To test this prediction, I construct a cross-tab table in which the independent variable regards whether or not the third party is classified as having weak domestic political institutions and the dependent variable regards whether the third party balanced or bandwagoned into a conflict. By examining the row of the table regarding the behavior of third parties with weak domestic political institutions, it may be seen whether the number of cases of bandwagoning is substantially greater than the number of cases of balancing. To measure whether or not third parties have weak domestic political institutions, I construct a dummy variable based on the following logic: in essence, Larson’s argument about how weak domestic political institutions provide incentives for national leaders to bandwagon focuses on how these leaders are less able to fend off internal challengers and retain their positions of leadership than the leaders of other states. As such, states with weak domestic political institutions are those in which regime changes take place more often than other states. Using the measure of major, abrupt regime change in the Polity II data set (Gurr, Jaggers and Moore 1989), I calculate the number of regime changes that occur in the preceding decade for each third-party intervenor in the MID Intervention data set, and then calculate the mean of the distribution. Third-party interveners with greater than the mean number of regime changes occurring in the preceding decade are classified as having weak domestic political institutions. The cross-tabulation table may be seen in Table 7.7.

Looking at the second row of the table, of the 65 cases in which third parties with weak domestic political institutions intervened into militarized disputes, there exist 33 cases of bandwagoning and 32 cases of balancing, which suggests that weak third parties

---

130 Polity II data is available for 160 of the 175 interveners in the data.
<table>
<thead>
<tr>
<th></th>
<th>Balancing</th>
<th>Bandwagoning</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Third-Party Interveners with Strong Domestic</td>
<td>47</td>
<td>48</td>
<td>95</td>
</tr>
<tr>
<td>Political Institutions</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Third-Party Interveners with Weak Domestic</td>
<td>32</td>
<td>33</td>
<td>65</td>
</tr>
<tr>
<td>Political Institutions</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>79</td>
<td>81</td>
<td>160</td>
</tr>
</tbody>
</table>
tend to bandwagon *slightly more* often than they balance in this sample of cases (by strict standards, the hypothesis predicts approximately 51% of cases correctly). In order to again examine this at a slightly deeper level, I now look at these numbers on a year-by-year basis by constructing a graph of the number of cases balancing and bandwagoning in militarized disputes over the period 1816-1984 by third parties with weak domestic political institutions, shown in Figure 7.6.

Looking at the chart, it may be seen that, of the 33 years over the period 1816-1984 in which intervention occurs by third parties with weak domestic political institutions, bandwagoning is more common than balancing in 13, the inverse is true in 15, and an equal number of cases of balancing and bandwagoning occur in 5. This suggests that, on a year-by-year basis, bandwagoning is *slightly less* common than balancing. Altogether, these cross-tabulations do not provide strong support for Larson’s contention that third parties with weak domestic political institutions tend to bandwagon more than they balance. But, in order to test this hypothesis as rigorously as possible, I now perform a second test of a more probabilistic interpretation of it, in similar fashion to that conducted above. To do this, I perform a difference of means test examining whether bandwagoning is more likely to occur by third parties with weak domestic political institutions than by other third parties. The results of this test may be seen in Table 7.8.

Table 7.8 does not provide supportive evidence for even this more probabilistic interpretation of Larson’s hypothesis. According to the independent samples *t*-test, there exists no statistically significant\textsuperscript{131} mean difference between the two groups of cases.

\textsuperscript{131} For a two-tailed test, $\alpha = .05$. 
Figure 7.6
Balancing versus Bandwagoning by Year
Interveners with Weak Domestic Political Institutions, 1816-1984
Table 7.8
Difference of Means Test of Alternative Hypothesis 6

Group Statistics

<table>
<thead>
<tr>
<th>Bandwagoning</th>
<th>Third-Party Intervener with Weak Domestic Political Institutions</th>
<th>N</th>
<th>Mean</th>
<th>Std. Dev</th>
<th>Std. Error Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td></td>
<td>95</td>
<td>.5053</td>
<td>.5026</td>
<td>5.157E-02</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td>65</td>
<td>.5077</td>
<td>.5038</td>
<td>6.249E-02</td>
</tr>
</tbody>
</table>

Independent Samples t-test

<table>
<thead>
<tr>
<th>Bandwagoning</th>
<th>Levene’s Test for Equality of Variances</th>
<th>t-test for Equality of Means</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>F</td>
<td>Sig.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Equal</td>
<td>.004</td>
<td>.951</td>
</tr>
<tr>
<td>variances</td>
<td>assumed</td>
<td></td>
</tr>
<tr>
<td>Equal</td>
<td>-.030</td>
<td>137.445</td>
</tr>
<tr>
<td>variances</td>
<td>~assumed</td>
<td></td>
</tr>
</tbody>
</table>

320
That is, in substantive terms, bandwagoning is no more or less likely to occur when third parties with weak domestic political institutions intervene into militarized disputes than in other cases. Given this, to sum up this test, it seems reasonable to conclude that Larson's theoretical ideas are not borne out.

**Test of Alternative Hypothesis 7**

The final test conducted in this analysis of the balancing versus bandwagoning literature regards the second theoretical argument reviewed above about how domestic political factors can affect the occurrence of intervention, David's (1991) contention the nature of the domestic political environment in Third World states provides them with incentives to bandwagon rather than balance. Thinking about this argument, it leads to the empirical expectation that, for third parties in the Third World, across space and time, more cases of intervention on behalf of the stronger side in militarized disputes in international politics should be observed than cases of intervention on behalf of the weaker side.

To test this prediction, I construct a cross-tab table in which the independent variable regards whether or not the third party is classified as being in the Third World and the dependent variable regards whether the third party balanced or bandwagoned into a conflict. By examining the row of the table regarding the behavior of third parties in the Third World, it may be seen whether the number of cases of bandwagoning is substantially greater than the number of cases of balancing. To measure whether or not third parties are in the Third World, I construct a dummy variable based on the following logic: although there is no one universally accepted definition of what constitutes membership in the Third World, one often cited characteristic that seems to capture the
essence of the concept regards the presence of an underdeveloped economy. Given this, one observable indicator that strongly suggests a state has an underdeveloped economy is the receipt of foreign aid through the Development Assistance Committee of the Organisation for Economic Cooperation and Development (OECD). According to the OECD (1997), the recipients of such aid are restricted to poor states or states in rapid transition, with applicability determined by specific thresholds established for income, economic diversification and social development. As such, using the list of aid recipients in the OECD’s (1997) “Geographical Distribution of Financial Flows to Aid Recipients,” I classify interveners as being in the Third World if they have at any time over the period 1960-1995 received development assistance from the OECD. The cross-tabulation table may be seen in Table 7.9.

Looking at the second row of the table, of the 42 cases in which Third World states intervened into militarized disputes, there exist 19 cases of bandwagoning and 23 cases of balancing, which suggests that Third World interveners tend to bandwagon slightly less often than they balance in this sample of cases (by strict standards, the hypothesis predicts approximately 45% of cases correctly). In order to again examine this at a slightly deeper level, I now look at these numbers on a year-by-year basis by constructing a graph of the number of cases balancing and bandwagoning in militarized disputes over the period 1816-1984 by Third World interveners, shown in Figure 7.7.

132 To be as clear as possible here, the decision rule employed here states that appearance on the list of aid recipients classifies a third party as being the Third World regardless of the date of intervention. So, a third party who intervenes into a militarized dispute in 1950 and appears on the list of OECD development assistance recipients over the period 1960-1995 is classified as being in the Third World. In addition, to examine the degree of overlap between the measure of weak domestic political institutions employed in Alternative Hypothesis 6 and the measure of membership in the Third World employed here, I construct a cross-tabulation table. While there is some degree of overlap between the two measures, the relationship is by no means one to one. In fact, the correlation between the two variables is only .331.
Table 7.9
Cross-Tabulation Test of Alternative Hypothesis 7

<table>
<thead>
<tr>
<th></th>
<th>Balancing</th>
<th>Bandwagoning</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>~Third World Third-Party Interveners</td>
<td>68</td>
<td>64</td>
<td>132</td>
</tr>
<tr>
<td>Third World Third-Party Interveners</td>
<td>23</td>
<td>19</td>
<td>42</td>
</tr>
<tr>
<td>Total</td>
<td>91</td>
<td>83</td>
<td>174</td>
</tr>
</tbody>
</table>
Figure 7.7
Balancing versus Bandwagoning by Year, 1816-1984
Third World Interveners
Looking at the chart, it may be seen that, of the 24 years over the period 1816-1984 in which intervention occurs by third parties in the Third World, bandwagoning is more common than balancing in 12, the inverse is true in 10, and an equal number of cases of balancing and bandwagoning occur in 2. This suggests that, on a year-by-year basis, bandwagoning is *slightly more* common than balancing, but not by a substantial margin. Altogether, these cross-tabulations do not provide strong support for David's contention that Third World interveners tend to bandwagon more than they balance. In order to once last time test this hypothesis as rigorously as possible, I perform a second test of a more probabilistic interpretation of it, a difference of means test examining whether bandwagoning is more likely to occur by Third World interveners than by other third parties. The results of this test may be seen in Table 7.10.

Table 7.10 does not provide supportive evidence for even this more probabilistic interpretation of David's hypothesis. According to the independent samples $t$-test, there exists no statistically significant\(^\text{133}\) mean difference between the two groups of cases. That is, in substantive terms, bandwagoning is *no more or less likely* to occur when Third World states intervene into militarized disputes than in other cases. Given this, it seems reasonable to conclude that David's theoretical ideas are not borne out in this test.

*Summary of Findings*

Putting all of this together, the present empirical examination of a number of theoretical ideas in the balancing versus bandwagoning literature has not produced definitive evidence in support of either side in the debate. Examining the number of cases of balancing and bandwagoning across space and time (for 175 third-party

\(^{133}\) For a two-tailed test, $\alpha = .05$.\)
Table 7.10
Difference of Means Test of Alternative Hypothesis 7

Group Statistics

<table>
<thead>
<tr>
<th></th>
<th>Third World Intervener</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>Mean</td>
<td>Std. Dev</td>
<td>Std. Error Mean</td>
</tr>
<tr>
<td>Bandwagoning</td>
<td>0</td>
<td>132</td>
<td>.4848</td>
<td>.5017</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>42</td>
<td>.4524</td>
<td>.5038</td>
</tr>
</tbody>
</table>

Independent Samples t-test

<table>
<thead>
<tr>
<th></th>
<th>Levene’s Test for Equality of Variances</th>
<th>t-test for Equality of Means</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>F</td>
<td>Sig.</td>
</tr>
<tr>
<td>Bandwagoning</td>
<td>Equal variances assumed</td>
<td>.730</td>
</tr>
<tr>
<td></td>
<td>Equal variances ~assumed</td>
<td>.364</td>
</tr>
</tbody>
</table>

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interveners over the period 1816-1984), the amount of balancing occurring in the international system is roughly equal to the amount of bandwagoning, which is at odds with the general balancing proposition thought to be fundamental to world politics by realists like Waltz (1979). Nor has empirical support been found for the theoretical ideas of the scholars on the other side of the debate, who argue that there exist specific conditions when third parties will bandwagon with the stronger side in international conflicts. The predictions of these scholars include: 1) weak third parties tend to bandwagon in militarized disputes involving strong powers in order to divert an attack elsewhere (Walt 1987), 2) revisionist third parties tend to bandwagon in order to gain a share of the spoils of conflict (Schweller 1994), 3) weak domestic political institutions incite national leaders to bandwagon in exchange for assistance in fending off internal challengers (Larson 1991), and the similar argument that 4) the distinctive characteristics of the Third World motivate the leaders of these states to bandwagon as part of an attempt to retain their positions of leadership in their regimes (David 1991). In both cross-tabulation and difference of means tests of these ideas, these predictions have been shown to have very little explanatory power.

Given this, and given that the analysis of the predictions of the theory of intervention developed in this dissertation project have produced strong empirical support (in Chapter VI), a fruitful exercise may be to apply the theory to inform this ongoing debate in the IR literature. To do this, in the following sections of this chapter, I operationalize the formal model developed in Chapters III and V (using a theoretically interesting assumption about the relationship between resources and the likelihood of victory in conflict), derive its logical implications about the occurrence of balancing and
bandwagoning behavior, and then subject these predictions to rigorous empirical tests. Having assessed the explanatory power of the model's predictions, these results may then be compared to those in the present analysis of the ideas of the scholars involved in the balancing versus bandwagoning debate, yielding implications about which, if any, teaches us more about the occurrence of intervention in militarized disputes in international politics.

**Employing the Theory of Intervention to Inform the Balancing versus Bandwagoning Debate**

The theory of intervention developed in this dissertation project posits a substantially different explanation for the occurrence of balancing and bandwagoning than those reviewed and empirically tested in the previous sections of this chapter. As a first step in applying the theory to inform this debate, I offer a brief review of its important features here: recall from Chapters III and V that the theory is based on a straightforward story about how a third party and the side in the dispute whose demand they favor make strategically interdependent decisions over intervention and escalation (respectively) in the context of an ongoing militarized dispute. Formalizing this sequence of decisions into a very simple game-theoretic model (two players, complete and perfect information), the theory specifies how the occurrence of intervention is a product of the decision by third parties to fight on behalf of the side in the dispute whose demand they prefer and the decision by allied disputants to escalate the dispute to violence rather than back down to their adversary.

In making their decisions, the players in the game are assumed to be unitary, rational actors who compare the costs and benefits of the outcomes associated with each
strategy choice and choose the one that maximizes their expected utility. The theory states that these costs and benefits are comprised of three fundamental explanatory factors: the distribution of resources among the third party and disputants, their values for the issues at stake in the dispute, and the costs of fighting in conflict. In Chapter V, the model is developed to incorporate an interesting assumption about how these theoretical factors interact: rather than assuming that the side with greater resources always wins in war with certainty (the conventional wisdom), the model assumes that an actor’s likelihood of victory in conflict is some function of the share of total resources they hold in the dispute. What makes this assumption interesting is that in it the function mapping the share of resources held by an actor to their probability of victory in conflict is \textit{general}, which allows the researcher vary its shape and derive implications about the occurrence of intervention based on different specific assumptions about this relationship\textsuperscript{134}. By selecting a particular functional form and operationalizing it in the formulae for the outcomes of the model, the game may be solved for its subgame perfect equilibria using backward induction, yielding substantive implications about the conditions under which intervention occurs in militarized disputes in international politics. Thinking about these implications in terms of the balancing versus bandwagoning debate, the predictions of the model about the occurrence of intervention on behalf of the weaker side in militarized disputes yields insight about the conditions

\textsuperscript{134} As discussed in detail in Chapter V (Equation 5.5), the general form of this function is:

\[
\begin{align*}
    f(\text{Share}) &= \begin{cases} 
        \text{Share} + a(\text{Share} - 2\text{Share}^2) & \text{if Share} \leq .5 \\
        \text{Share} + a(2\text{Share}^2 - 3\text{Share} + 1) & \text{if Share} > .5
    \end{cases}
\end{align*}
\]

where: \(f(\text{Share})\) = probability of winning in war; \(\text{Share}\) = share of total resources held; and
under which balancing occurs, and the predictions of the model about the occurrence of intervention on behalf of the stronger side yields insight about the conditions under which bandwagoning occurs.

*Selecting a Functional Form to Operationalize in the Model*

With this in mind, the second step in employing the theory of intervention to inform the balancing versus bandwagoning debate is to select a specific functional form regarding the relationship between resources and the likelihood of victory in conflict to operationalize in the model. Broadly speaking, there are a wide range of functional forms that may be employed here, from a simple linear function in which the share of resources held by an actor maps to an identical probability of victory in war to more complex functions that capture the idea that alterations in resources can have different effects at particular points in a conflict, such as when they "tip the military balance" or give one side a "3:1 advantage". Of these, one possible relationship between resources and the likelihood of victory in conflict that is particularly interesting regards "the well-known and widely accepted 3:1 rule of thumb" (Mearsheimer 1989), which is a guideline that suggests in a military battle the attacker is likely to be successful if they have an overall numerical strength superiority of three-to-one over the defender (Dupuy 1989). While it is certainly not universally accepted that all decision makers employ the 3:1 rule in their choices about the use of military force, it is commonly accepted by many international relations scholars and policymakers that the guideline plays at least some role in the decision over whether or not to initiate a military conflict. As such, it may be

\[ a = \text{shape parameter.} \]

135 Much evidence for this belief stems from quotations by statesmen and political leaders about its use. For example, Mark S. Watson, a Chief of Staff of the U.S. Army in the 1950s, writes: "The efficient
theoretically interesting to formalize this assumption for use in the model and examine the extent to which it is able to contribute to the balancing versus bandwagoning.

Thinking carefully about how to operationalize this function, the 3:1 rule of thumb suggests that the relationship between the share of resources held by an actor and their likelihood of victory in conflict is not linear, but rather curves to reflect the idea that a preponderance of resources is required to be assured a good chance of victory. Rather than rising in a linear fashion (or even more steeply) at the point where one side has a simple majority of resources, the shape of this function should level off around the 50% mark to reflect that the likelihood of victory remains a “toss-up” when both parties have approximately the same share of total resources. Only when one side has a dominant amount of resources – enough to give them a 3:1 advantage – should the function rise steeply. One shape that fits these criteria may be seen in Figure 7.8.

This figure shows how the shape of the general function relating resources to likelihood of military victory changes from its linear form when the $a$ parameter equals zero to the 3:1 shape when the $a$ parameter is altered to one, as follows:

$$f(Share) = \begin{cases} 
Share + 1(Share - 2Share^2) & \text{if } Share \leq .5 \\
Share + 1(2Share^2 - 3Share + 1) & \text{if } Share > .5 
\end{cases}$$

where:

$f(Share)$ = probability of winning in war; and

$Share$ = share of total resources held.

Equation 7.1

commander does not seek to use just enough means, but an excess of means. A military force that is just strong enough to take a position will suffer heavy casualties in doing so; a force vastly superior to the enemy’s will do the job without serious loss of men” (Shafritz 1990).
This specific functional form approximates the relationship posited by the 3:1 rule of thumb by increasing the influence of the quadratic component in the function, bowing it upward and outward below the 50% mark and downward and outward above the 50% mark. The result is a functional form that reflects the essential idea of the 3:1 rule, that a dominant advantage in resources is required to be assured a high probability of victory in conflict, while the absence of such an advantage leaves both sides with a roughly equal chance of victory.

*Operationalizing the 3:1 Rule of Thumb in the Model of Intervention*

Having settled on this specific functional form, the third step in employing the model of intervention in this application is to operationalize the function in the formulae for the outcomes to the game. In Chapter V, these outcomes are shown in general form in Figure 5.3. In the present exercise, I replace the $P^T$ and $P^{TH}$ variables in this table with formulae corresponding to the 3:1 functional form. In doing this, because the function is conditional upon whether the share of total resources held by an actor is greater than or less than 50%, these formulae will differ according to the three possible distributions of resources that may exist among the players\textsuperscript{136}. Beginning with the first of these, in which the adversary disputant has greater resources than the coalition of the allied disputant and third party ($R_T + R_I < R_C$ in the terms of the game), it is true by definition that the share of total resources held by the allied disputant is less than 50%, which implies that the

\textsuperscript{136} To be as clear as possible here, this is because, if the share of resources held by the coalition of players I and T is less than 50%, then the appropriate formula for $P^{TH}$ is $Share_{TU} + 1(Share_{TU} - 2Share_{TU}^2)$, whereas if their share is greater than 50%, the appropriate formula is $Share_{TU} + 1(2Share_{TU}^2 - 3Share_{TU} + 1)$. Likewise, if the share of resources held by player T is less
appropriate formula for $P^T$ in the model outcomes is $\text{Share}_T + 1(\text{Share}_T - 2\text{Share}_T^2)$.

Using this formula, $P^T$ becomes

$$\left(\frac{R_T}{R_T + R_C}\right) + 1\left(\frac{R_T}{R_T + R_C} - 2\left(\frac{R_T}{R_T + R_C}\right)^2\right),$$

which simplifies to

$$\frac{2R_C R_T}{(R_T + R_C)^2}.$$

Equation 7.2

It is also true by definition that in this distribution of resources the share of total resources held by the coalition of the allied disputant and the third party is less than 50%. This implies that the appropriate formula for $P^{TN}$ in the outcomes to the model, given this distribution of resources, is $\text{Share}_{TN} + 1(\text{Share}_{TN} - 2\text{Share}_{TN}^2)$. Using this formula, $P^{TN}$ becomes

$$\left(\frac{R_T + R_I}{R_T + R_C + R_I}\right) + 1\left(\frac{R_T + R_I}{R_T + R_C + R_I} - 2\left(\frac{R_T + R_I}{R_T + R_C + R_I}\right)^2\right),$$

which simplifies to

$$\frac{2R_C (R_T + R_I)}{(R_T + R_C + R_I)^2}.$$

Equation 7.3

Substituting these formulae for $P^T$ and $P^{TN}$ into the general form outcomes for the game

than 50%, then the appropriate formula for $P^T$ is $\text{Share}_T + 1(\text{Share}_T - 2\text{Share}_T^2)$, whereas if her share is greater than 50%, the appropriate formula is $\text{Share}_T + 1(2\text{Share}_T^2 - 3\text{Share}_T + 1).$
model results in the following revised outcomes, shown in Table 7.11.

Now, moving on to the second possible distribution of resources among the players in game, in which the adversary disputant has greater resources than the allied disputant but fewer resources than the coalition of the allied disputant and third party (\(R_T < R_C \text{ AND } R_T + R_I > R_C\) in the terms of the game), in this class of cases it remains true that the share of total resources held by the allied disputant is less than 50%. This implies that the appropriate formula for \(P^T\) remains that shown in Equation 7.2. But, in this case, the share of total resources held by the coalition of the allied disputant and the third party is greater than 50%, which implies that the appropriate formula for \(P^{III}\) in the outcomes to the model, given this distribution of resources, is \(Share_{II} + 1(2Share_{II}^2 - 3Share_{II} + 1)\).

Using this formula, \(P^{III}\) becomes

\[
\left( \frac{R_T + R_I}{R_T + R_C + R_I} \right) + 1 \left( 2 \left( \frac{R_T + R_I}{R_T + R_C + R_I} \right)^2 - 3 \left( \frac{R_T + R_I}{R_T + R_C + R_I} \right) + 1 \right),
\]

which simplifies to

\[
\frac{R_C^2 + (R_I + R_T)^2}{(R_T + R_C + R_I)^2}.
\]

Equation 7.4

Substituting these formulae for \(P^T\) and \(P^{III}\) into the outcomes for the general form outcomes for the game model results in the following revised outcomes, shown in Table 7.12.

Finally, regarding the third and last possible distribution of resources in the game, in which the allied disputant has greater resources than the adversary disputant on her
### Table 7.11
Outcomes and Associated Payoffs in Model 2
Given Distribution of Resources \( R_T + R_I < R_C \)

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Utility for T</th>
<th>Utility for I</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intervention</td>
<td>( \left( \frac{2R_C (R_T + R_I)}{(R_T + R_C + R_I)^2} \right) [\Delta_T^T] + \left( 1 - \frac{2R_C (R_T + R_I)}{(R_T + R_C + R_I)^2} \right) [\Delta_C^C] - k_T )</td>
<td>( \left( \frac{2R_C (R_T + R_I)}{(R_T + R_C + R_I)^2} \right) [\Delta_T^T] + \left( 1 - \frac{2R_C (R_T + R_I)}{(R_T + R_C + R_I)^2} \right) [\Delta_C^C] - k_I )</td>
</tr>
<tr>
<td>Dyadic War</td>
<td>( \left( \frac{2R_C R_T}{(R_T + R_C)^2} \right) [\Delta_T^C] + \left( 1 - \frac{2R_C R_T}{(R_T + R_C)^2} \right) [\Delta_C^T] - k_T )</td>
<td>( \left( \frac{2R_C R_T}{(R_T + R_C)^2} \right) [\Delta_T^C] + \left( 1 - \frac{2R_C R_T}{(R_T + R_C)^2} \right) [\Delta_C^T] )</td>
</tr>
<tr>
<td>Acquiescence</td>
<td>( \Delta_C^C )</td>
<td>( \Delta_C^C )</td>
</tr>
</tbody>
</table>

where:

- \( R_I \) regards the resources of a given player, \( i \);
- \( \Delta_T^T \) is the demand of player T for a given player, \( i \);
- \( \Delta_C^C \) is the demand of player C for a given player, \( i \); and
- \( k_I \) is the cost of fighting in war for a given player, \( i \).
Table 7.12  
Outcomes and Associated Payoffs in Model 2  
Given Distribution of Resources $R_T < R_C$ AND $R_T + R_I > R_C$  

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Utility for T</th>
<th>Utility for I</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intervention</td>
<td>$\left( \frac{R_C^2 + (R_I + R_T)^2}{(R_T + R_C + R_I)^2} \right) \left[ \Delta^T_T \right] + \left( 1 - \frac{R_C^2 + (R_I + R_T)^2}{(R_T + R_C + R_I)^2} \right) \left[ \Delta^C_T \right] \cdot k_T$</td>
<td>$\left( \frac{R_C^2 + (R_I + R_T)^2}{(R_T + R_C + R_I)^2} \right) \left[ \Delta^T_I \right] + \left( 1 - \frac{R_C^2 + (R_I + R_T)^2}{(R_T + R_C + R_I)^2} \right) \left[ \Delta^C_I \right] \cdot k_I$</td>
</tr>
<tr>
<td>Dyadic War</td>
<td>$\left( \frac{2R_C R_T}{(R_T + R_C)^2} \right) \left[ \Delta^C_T \right] + \left( 1 - \frac{2R_C R_T}{(R_T + R_C)^2} \right) \left[ \Delta^C_I \right] \cdot k_T$</td>
<td>$\left( \frac{R_C^2 + R_T^2}{(R_T + R_C)^2} \right) \left[ \Delta^C_T \right] + \left( 1 - \frac{R_C^2 + R_T^2}{(R_T + R_C)^2} \right) \left[ \Delta^C_I \right]$</td>
</tr>
<tr>
<td>Acquiescence</td>
<td>$\Delta^C_T$</td>
<td>$\Delta^C_I$</td>
</tr>
</tbody>
</table>

where:
- $R_i$ regards the resources of a given player, $i$;
- $\Delta^T_i$ is the demand of player $T$ for a given player, $i$;
- $\Delta^C_i$ is the demand of player $C$ for a given player, $i$; and
- $k_i$ is the cost of fighting in war for a given player, $i$.  

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own (R_T > R_C in the terms of the game), in this class of cases it is true by definition that the share of total resources held by the allied disputant is greater than 50%, which implies that the appropriate formula for P^T in the outcomes to the model is

$$Share_T \times 1(2Share_T^2 - 3Share_T + 1)$$.

Using this formula, P^T becomes

$$\left( \frac{R_T}{R_T + R_C} \right) + 1 \left( 2 \left( \frac{R_T}{R_T + R_C} \right)^2 - 3 \left( \frac{R_T}{R_T + R_C} \right) + 1 \right)$$,

which simplifies to

$$\frac{R_C^2 + R_T^2}{(R_T + R_C)^2}$$.

Equation 7.5

It is also true by definition that in this distribution of resources the share of total resources held by the coalition of the allied disputant and the third party remains greater than 50%.

This implies that the appropriate formula for P^TH remains that shown in Equation 7.4.

Substituting these formulae for P^T and P^TH into the outcomes for the game model shown in Table 7.11 results in the following revised outcomes, shown in Table 7.13.

Having specified the model outcomes for each of these three possible distributions of resources, it now becomes possible to solve the game for its subgame perfect equilibria using backward induction, yielding substantivte implications about the conditions under which intervention as balancing and bandwagoning occur in militarized disputes in international politics. I do this in the following sections, beginning with the former behavior, as follows.
Table 7.13
Outcomes and Associated Payoffs in Model 2
Given Distribution of Resources $R_T > R_C$

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Utility for T</th>
<th>Utility for I</th>
</tr>
</thead>
</table>
| Intervention| \[
\left( \frac{R_C^2 + (R_I + R_T)^2}{(R_T + R_C + R_I)^2} \right) \Delta_{T}^T + \left( 1 - \frac{R_C^2 + (R_I + R_T)^2}{(R_T + R_C + R_I)^2} \right) \Delta_{T}^C - k_T \] | \[
\left( \frac{R_C^2 + (R_I + R_T)^2}{(R_T + R_C + R_I)^2} \right) \Delta_{I}^T + \left( 1 - \frac{R_C^2 + (R_I + R_T)^2}{(R_T + R_C + R_I)^2} \right) \Delta_{I}^C - k_I \] |
| Dyadic War  | \[
\left( \frac{R_C^2 + R_T^2}{(R_T + R_C)^2} \right) \Delta_{T}^T + \left( 1 - \frac{R_C^2 + R_T^2}{(R_T + R_C)^2} \right) \Delta_{T}^C - k_T \] | \[
\left( \frac{R_C^2 + R_T^2}{(R_T + R_C)^2} \right) \Delta_{I}^T + \left( 1 - \frac{R_C^2 + R_T^2}{(R_T + R_C)^2} \right) \Delta_{I}^C \] |
| Acquiescence| $\Delta_{T}^C$ | $\Delta_{I}^C$ |

where:
- $R_i$ regards the resources of a given player, $i$;
- $\Delta_{T}^T$ is the demand of player T for a given player, $i$;
- $\Delta_{T}^C$ is the demand of player C for a given player, $i$; and
- $k_i$ is the cost of fighting in war for a given player, $i$.
Implications of the Model about Balancing

Thinking carefully about the model in terms of the balancing versus bandwagoning debate, substantive implications about the occurrence of balancing behavior may be derived by examining the model's predictions about the occurrence of intervention in the first two possible distributions of power discussed above. That is, given the operational definition of balancing as intervention on behalf of the weaker side in a militarized dispute, the model's predictions about the occurrence of intervention 1) in the class of cases when the adversary disputant has greater resources than the coalition of the allied disputant and third party ($R_T + R_1 < R_C$), and 2) in the class of cases when the adversary disputant has greater resources than the allied disputant but fewer resources than the coalition of the allied disputant and third party ($R_T < R_C$ AND $R_T + R_1 > R_C$) may both be interpreted as balancing. To derive these predictions from the model, I solve it for its subgame perfect equilibria using backward induction in each of these distributions of resources.

Beginning with the first of these cases, return to the model structure shown in Figure 5.3 and the appropriate outcomes when the distribution of resources is $R_T + R_1 < R_C$ shown in Table 7.11. Now, recall from the solutions to the model derived in Chapter V that the intervention outcome to the game can occur as a product of one strategy combination, in which player I chooses the intervention strategy and player T chooses the escalation strategy; that is, (int; esc). To observe this here, begin at player I's decision node, at which he faces a choice between intervening and staying neutral. If he chooses the intervention strategy, the game ends with the intervention outcome and he receives
the payoff

\[
\left( \frac{2R_C (R_T + R_I)}{(R_T + R_C + R_I)^2} \right) \Delta_T^I + \left( 1 - \frac{2R_C (R_T + R_I)}{(R_T + R_C + R_I)^2} \right) \Delta^C_I - k_I.
\]

Equation 7.6

If player I chooses the non-intervention strategy, then the game ends with the dyadic war outcome and he receives the payoff

\[
\left( \frac{2R_C R_T}{(R_T + R_C)^2} \right) \Delta_T^I + \left( 1 - \frac{2R_C R_T}{(R_T + R_C)^2} \right) \Delta^C_I.
\]

Equation 7.7

Given this choice, player I compares the payoffs associated with each outcome, and if his payoff for the intervention outcome is greater than his payoff for the dyadic war outcome, then he chooses the intervention strategy. This condition may be represented mathematically as

\[
\left( \frac{2R_C (R_T + R_I)}{(R_T + R_C + R_I)^2} \right) \Delta_T^I + \left( 1 - \frac{2R_C (R_T + R_I)}{(R_T + R_C + R_I)^2} \right) \Delta^C_I - k_I
\]

\[
> \left( \frac{2R_C R_T}{(R_T + R_C)^2} \right) \Delta_T^I + \left( 1 - \frac{2R_C R_T}{(R_T + R_C)^2} \right) \Delta^C_I
\]

which, with some algebraic simplification, reduces to

\[
\left( \frac{2R_C R_I (R_C^2 - R_T (R_I + R_T))}{(R_T + R_C + R_I)^2 (R_T + R_C)^2} \right) \Delta_T^I + \left( \frac{2R_C R_I (R_T (R_I + R_T) - R_C^2)}{(R_T + R_C + R_I)^2 (R_T + R_C)^2} \right) \Delta^C_I - k_I > 0.
\]

Equation 7.8
Now, recall that, in order for player I to be given the opportunity to intervene in the game, player T must also choose to escalate the dispute to violence. To observe this, move back up the game tree to player T’s decision. Here, because she observes player I’s decision and thus knows that he is willing to intervene on her behalf, she faces a choice between escalating, which leads to the intervention outcome, or backing down to player C, which leads to the acquiescence outcome. Player T’s payoff associated with the intervention outcome is

\[
\left( \frac{2R_C(R_T + R_I)}{(R_T + R_C + R_I)^2} \right) \Delta_T^T \left( 1 - \frac{2R_C(R_T + R_I)}{(R_T + R_C + R_I)^2} \right) \Delta_T^C - k_T
\]

Equation 7.9

and her payoff associated with the acquiescence outcome is simply her value for the demand of player C (\(\Delta_T^C\)). Given this choice, player T compares the payoffs associated with each outcome, and if her payoff for the intervention outcome is greater than her payoff for the acquiescence outcome, then she chooses the escalation strategy. This condition may be represented mathematically as

\[
\left( \frac{2R_C(R_T + R_I)}{(R_T + R_C + R_I)^2} \right) \Delta_T^T \left( 1 - \frac{2R_C(R_T + R_I)}{(R_T + R_C + R_I)^2} \right) \Delta_T^C - k_T > \Delta_T^C
\]

which easily simplifies to

\[
\left( \frac{2R_C(R_T + R_I)}{(R_T + R_C + R_I)^2} \right) \Delta_T^T \left( 1 - \frac{2R_C(R_T + R_I)}{(R_T + R_C + R_I)^2} \right) \Delta_T^C - k_T - \Delta_T^C > 0.
\]

Equation 7.10

Equations 7.8 and 7.10 specify the precise conditions under which the model predicts the occurrence of balancing behavior in militarized disputes in international
politics in which the distribution of resources among the actors is such that $R_T + R_I < R_C$. Thinking about this prediction in substantive terms, it implies that balancing behavior can occur even when the entrance of the third party into the conflict is not sufficient to create a balance between the disputants. The logic behind this, as discussed in detail in the section regarding the substantive implications of the model in Chapter V, is that the assumed probabilistic relationship between resources and military victory (here based on the 3:1 rule of thumb) makes it possible for the increase in the probability of victory created by the entrance of the third party to be great enough to justify his paying the costs of fighting and intervening, even though his doing so is not sufficient to give the allied disputant an advantage in resources. At the same time, the increase in the allied disputant's probability of victory brought about by the willingness of the third party to fight on her behalf justifies her paying the costs of fighting and choosing to escalate the dispute to violence rather than backing down to the adversary disputant.

With this in mind, I now move on to solve the model for the occurrence of balancing behavior in the second possible distribution of resources, in which the adversary disputant has greater resources than the allied disputant but fewer resources than the coalition of the allied disputant and third party ($R_T < R_C$ AND $R_T + R_I > R_C$). In doing this, I employ the same process of backward induction as above, but in this distribution of resources the formulae for the players' values for the intervention outcome differ from those in the previous case (as shown in Table 7.12). So, returning to player I's choice over intervention versus staying neutral, if in this case he chooses the
intervention strategy, then the game ends with the intervention outcome and he receives the payoff\footnote{Note that this payoff differs from that in the above discussion in because, in this case, the coalition of players T and I have greater than 50% of total resources.}

\[
\left( \frac{R_c^2 + (R_i + R_T)^2}{(R_T + R_c + R_I)^2} \right) [\Delta_I^T] + \left( 1 - \frac{R_c^2 + (R_i + R_T)^2}{(R_T + R_c + R_I)^2} \right) [\Delta_I^C] - k_i
\]

Equation 7.11

whereas, if he chooses the non-intervention strategy, then the game ends with the dyadic war outcome and he receives the payoff\footnote{This payoff is the same as in the above discussion because, in both cases, player T has less than 50% of total resources fighting on her own against player C.}

\[
\left( \frac{2R_c R_T}{(R_T + R_c)^2} \right) [\Delta_I^T] + \left( 1 - \frac{2R_c R_T}{(R_T + R_c)^2} \right) [\Delta_I^C].
\]

Equation 7.12

Given this choice, player I compares the payoffs associated with each outcome, and if his payoff for the intervention outcome is greater than his payoff for the dyadic war outcome, then he chooses the intervention strategy. This condition may be represented mathematically as

\[
\left( \frac{R_c^2 + (R_i + R_T)^2}{(R_T + R_c + R_I)^2} \right) [\Delta_I^T] + \left( 1 - \frac{R_c^2 + (R_i + R_T)^2}{(R_T + R_c + R_I)^2} \right) [\Delta_I^C] - k_i
\]

> \[
\left( \frac{2R_c R_T}{(R_T + R_c)^2} \right) [\Delta_I^T] + \left( 1 - \frac{2R_c R_T}{(R_T + R_c)^2} \right) [\Delta_I^C].
\]
which, with some algebraic simplification, reduces to

\[
\left[ \left( \frac{R_C^2 + (R_i + R_T)^2}{(R_T + R_C + R_i)^2} \right) (R_T + R_C)^2 - 2R_cR_T(R_T + R_C + R_i)^2 \right] \Delta_T^T + \\
\left[ \frac{2R_cR_T(R_T + R_C + R_i)^2 - \left( \frac{R_C^2 + (R_i + R_T)^2}{(R_T + R_C + R_i)^2} \right) (R_T + R_C)^2}{(R_T + R_C + R_i)^2} \right] \Delta_T^C - k_T > 0.
\]

Equation 7.13

Now, moving back up the game tree to player T’s decision node, having observed player I’s choice to intervene, she faces a choice between escalating, which leads to the intervention outcome, or backing down to player C, which leads to the acquiescence outcome. Player T’s payoff associated with the intervention outcome is

\[
\left[ \frac{R_C^2 + (R_i + R_T)^2}{(R_T + R_C + R_i)^2} \right] \Delta_T^T + \left[ 1 - \frac{R_C^2 + (R_i + R_T)^2}{(R_T + R_C + R_i)^2} \right] \Delta_T^C - k_T
\]

Equation 7.14

and her payoff associated with the acquiescence outcome is simply her value for the demand of player C (\(\Delta_T^C\)). Given this choice, player T compares the payoffs associated with each outcome, and if her payoff for the intervention outcome is greater than her payoff for the acquiescence outcome, then she chooses the escalation strategy. This condition may be represented mathematically as

\[
\left[ \frac{R_C^2 + (R_i + R_T)^2}{(R_T + R_C + R_i)^2} \right] \Delta_T^T + \left[ 1 - \frac{R_C^2 + (R_i + R_T)^2}{(R_T + R_C + R_i)^2} \right] \Delta_T^C - k_T > \Delta_C^C
\]
which easily simplifies to

$$\left( \frac{R_C^2 + (R_I + R_T)^2}{(R_T + R_C + R_I)^2} \right) [\Delta_T^C] + \left( 1 - \frac{R_C^2 + (R_I + R_T)^2}{(R_T + R_C + R_I)^2} \right) [\Delta_T^C] - k_T - \Delta_T^C > 0.$$  

Equation 7.15

Equations 7.13 and 7.15 specify the precise conditions under which the model predicts the occurrence of balancing behavior in militarized disputes in international politics in which the distribution of resources among the actors is such that $R_T < R_C$ AND $R_T + R_I > R_C$. Thinking about this prediction in substantive terms, it provides a logical basis for the occurrence of the most common conception of balancing behavior, in which the entrance of the third party on behalf of the weaker side tips the military balance in favor of the coalition, thus removing the advantage of the initially stronger combatant. It is interesting to note that, even though the 3:1 functional form levels off around the 50% mark, the model predicts that it is still possible for the entrance of a third party to increase the probability of victory of their preferred side enough to justify paying the costs of fighting in the dispute. In similar fashion, the model predicts that this increase in the probability of victory of the coalition, observed by the allied disputant, can justify her paying the cost of fighting involved in escalating the dispute to violence.

**Implications of the Model about Bandwagoning**

At this point, having solved the model for its implications about balancing behavior, I now derive substantive implications about bandwagoning by examining the model’s predictions about the occurrence of intervention in the third possible distribution of resources discussed above, in which the allied disputant has greater resources on her own than the adversary disputant. To do this, I repeat the above process of solving the
model for its backward induction solutions, but here employ the appropriate formulae for the outcomes in the distribution of resources $R_T > R_C$ (as shown in Table 7.13). So, returning to the game tree and beginning again with player I's choice over intervention versus staying neutral, if in this case he chooses the intervention strategy, then the game ends with the intervention outcome and he receives the payoff\(^{139}\)

$$\left( \frac{R_C^2 + (R_I + R_T)^2}{(R_T + R_C + R_I)^2} \right) \Delta_T^{I} + \left( 1 - \frac{R_C^2 + (R_I + R_T)^2}{(R_T + R_C + R_I)^2} \right) \Delta_C^{I} - k_I$$

Equation 7.16

whereas, if he chooses the non-intervention strategy, then the game ends with the dyadic war outcome and he receives the payoff\(^{140}\)

$$\left( \frac{R_C^2 + R_T^2}{(R_T + R_C)^2} \right) \Delta_T^{I} + \left( 1 - \frac{R_C^2 + R_T^2}{(R_T + R_C)^2} \right) \Delta_C^{I}.$$

Equation 7.17

Given this choice, player I compares the payoffs associated with each outcome, and if his payoff for the intervention outcome is greater than his payoff for the dyadic war outcome, then he chooses the intervention strategy. This condition may be represented

---

\(^{139}\) This payoff is identical to that in the above model solutions when the distribution of resources is such that $R_T < R_C$ AND $R_T + R_I > R_C$ because in both cases the coalition of players T and I have greater than 50% of total resources.

\(^{140}\) This payoff differs from those in the above discussion because, in this case, player T has greater 50% of total resources on her own.
mathematically as

\[
\left( \frac{R_C^2 + (R_L + R_T)^2}{(R_T + R_C + R_L)^2} \right) [\Delta_T^I] + \left( 1 - \frac{R_C^2 + (R_L + R_T)^2}{(R_T + R_C + R_L)^2} \right) [\Delta_T^C] - k_T < 0
\]


\[
\left( \frac{R_C^2 + R_T^2}{(R_T + R_C)^2} \right) [\Delta_T^I] + \left( 1 - \frac{R_C^2 + R_T^2}{(R_T + R_C)^2} \right) [\Delta_T^C] \]

which, with some algebraic simplification, reduces to

\[
\left( \frac{2R_C R_L (R_T - R_C)}{(R_T + R_C + R_L)^2(R_T + R_C)^2} \right) [\Delta_T^I] + \left( \frac{2R_C R_T (R_C - R_T) (R_L + R_T)}{(R_T + R_C + R_L)^2(R_T + R_C)^2} \right) [\Delta_T^C] - k_T > 0.
\]

Equation 7.18

Now, moving back up the game tree one last time to player T’s decision node, having observed player I’s choice to intervene, she faces a choice between escalating, which leads to the intervention outcome, or backing down to player C, which leads to the acquiescence outcome. Player T’s payoff associated with the intervention outcome is\textsuperscript{141}

\[
\left( \frac{R_C^2 + (R_L + R_T)^2}{(R_T + R_C + R_L)^2} \right) [\Delta_T^I] + \left( 1 - \frac{R_C^2 + (R_L + R_T)^2}{(R_T + R_C + R_L)^2} \right) [\Delta_T^C] - k_T
\]

Equation 7.19

and her payoff associated with the acquiescence outcome is simply her value for the demand of player C (\(\Delta_C^T\)). Given this choice, player T compares the payoffs associated with each outcome, and if her payoff for the intervention outcome is greater than her

\textsuperscript{141} This payoff is identical to that in the above model solutions when the distribution of resources is such that \(R_T < R_C\) AND \(R_T + R_L > R_C\) because in both cases the coalition of players T and I have greater than 50% of total resources.
payoff for the acquiescence outcome, then she chooses the escalation strategy. This condition may be represented mathematically as

$$\left(\frac{R_C^2 + (R_i + R_T)^2}{(R_T + R_C + R_i)^2}\right)\Delta_T^I + \left(1 - \frac{R_C^2 + (R_i + R_T)^2}{(R_T + R_C + R_i)^2}\right)\Delta_T^C - k_T - \Delta_T^C > 0.$$  

Equation 7.20

Equations 7.18 and 7.20 specify the precise conditions under which the model predicts the occurrence of intervention in militarized disputes in international politics in which the distribution of resources among the actors is such that \(R_T > R_C\). Thinking about this prediction in substantive terms, it provides a logical basis for the occurrence of bandwagoning behavior, in which third parties join into conflicts in which their preferred side already has an advantage in resources fighting on their own. Interestingly, this prediction does not require the researcher to attribute the motivation for bandwagoning to one specific goal, such as appeasing a stronger state or fending off an internal challenger. Instead, any of these are possible motivations for bandwagoning in the model because they are reflected in the players’ values for the outcomes in the game.

Putting all of this together, this discussion has shown that the theory of intervention developed in this dissertation project predicts balancing and as bandwagoning can both occur under certain identifiable circumstances. In the next section of this chapter, I subject these predictions to rigorous empirical tests. By doing so, these results may then be compared to those in the previous analysis of the ideas of the scholars involved in the balancing versus bandwagoning debate, yielding implications about which, if any, teaches us more about the occurrence of intervention in militarized disputes in international politics.
Empirical Tests of the Model's Predictions about Balancing and Bandwagoning

Research Design

To test the predictions about the occurrence of balancing and bandwagoning derived in the above section, I employ a similar research design to that in the analysis of Model 2 in Chapter VI. The general approach is identical: large-n statistical analysis of a sample of cases of militarized disputes in which intervention occurs some of the time and does not occur some of the time (specifically, logit analysis of a case-control sample containing an equal number of cases of intervention and non-intervention, as will be discussed below). My rationale for this, to briefly restate from previous discussions, is that this design allows variation in the dependent variable, which is a necessary but often overlooked element of proper research design if the goal is to derive causal inferences about the occurrence of the dependent variable.

While the general approach to empirical testing is the same, the appropriate statistical model in this analysis is different from that employed in Chapter VI: recall that the previous analysis regards an examination of how alterations in the individual components of the theory (specifically, elements of the distribution of resources among the disputants and third party) affect the decisions of the players in the game and thus impact the likelihood that third party intervention occurs. To derive these predictions from the model, I calculate and interpret the partial derivatives of the expressions for player I's expected utility for intervention and player T's expected utility for escalation with respect to the variables for the resources of the players in the game. Altogether, the analysis yields a number of testable implications that are theoretically interesting, such as the predictions that 1) there is a parabolic relationship between the resources of the allied
disputant and the likelihood that intervention occurs, *ceteris paribus*, and 2) there is a conditional relationship between the resources of the adversary disputant and the likelihood that intervention occurs, *ceteris paribus*. To test them in a manner that is appropriate and rigorous, I employ a multivariate logit model that examines the independent effect of each of the variables of interest (holding all the others constant) and capture the predicted conditional relationship in different ways (one by physically splitting the sample and estimating the statistical model on each sample, and the other by including separate variables in one statistical model).

The present analysis differs from this in that it regards the extent to which variation in player I's expected utility for intervention and player T's expected utility for escalation explains the occurrence of intervention. As such, rather than examining how the individual components of the theory affect the likelihood that intervention occurs, in this analysis I examine how well the theory's predictions about how these theoretical components interact explain the occurrence of intervention. That is, in this analysis, I employ the expressions for player I's expected utility for intervention and player T's expected utility for escalation as independent variables themselves in one statistical model. The former of these may be seen in the left-hand side of Equations 7.8, 7.13, and 7.18, depending on the distribution of resources among the disputants and third party. In similar fashion, the latter may be seen in the left-hand side of Equations 7.10, 7.15, and 7.20, depending on the distribution of resources among the disputants and third party.
This model specification may be seen in equation form as follows:

\[
\text{Intervention} = b_0 + b_1(\text{Player I's Expected Utility for Intervention}) \\
+ b_2(\text{Player T's Expected Utility for Escalation})
\]

Equation 7.21

While this statistical model is quite simple (with only two independent variables), I include no additional control variables in this analysis. My rationale for this, as discussed in detail in Chapter VI, is that, although there likely exist other factors beyond those in my theory that affect the occurrence of intervention (domestic political institutions, for example), the essential point of this exercise is not to explain all of the variance in intervention by isolating the independent effects of every variable that has an effect on its occurrence, but rather to examine whether the logical implications of the theory of intervention developed here are borne out in as clear and simple a manner as possible. As such, rather than include a host of additional variables in the model and add substantial complexity to the analysis, I test the theory by including only those variables it says are important. Here, these variables are simply player I’s expected utility for intervention and player T’s expected utility for escalation.

Having specified this statistical model, the estimation strategy, sampling design (to account for the statistical effects of intervention being a rare event in international relations), and set of cases employed in the analysis remain identical to those in the examination of Model 2 in Chapter VI. To briefly review these design issues, because the dependent variable in the analysis is dichotomous, I estimate the above-stated statistical model using logit\textsuperscript{142}. Because intervention is a relatively rare event in

\textsuperscript{142} This method is discussed in detail in Chapter VI.
international politics, the distribution of the dependent variable is heavily skewed (many 0s, few 1s), which results in predicted probabilities that are too small (as shown explicitly in Chapter VI). To correct for this, I employ a case-control sampling design supplemented with the method of prior correction of the intercept. As discussed in detail in Chapter VI (pp. 34-36), a case-control sampling design involves constructing a sample of cases containing all occurrences of 1s (intervention) and a randomly-selected equal number of cases of 0s (non-intervention). Using this sampling design, the method of prior correction involves "computing the usual logistic regression MLE and correcting the estimates based on prior information about the fraction of ones in the population, \( \tau \), and the observed fraction of ones in the sample (or sampling probability), \( \bar{y} \)" (King and Zeng 2000). With it, according to King and Zeng (2000), the MLE \( \hat{\beta}_1 \) is a statistically consistent estimate of \( \beta_1 \) and the following corrected estimate is consistent for \( \beta_0 \) (stated in Chapter VI as Equation 6.13, restated here as Equation 7.22)\(^{143}\):

\[
\hat{\beta}_0 - \ln \left[ \frac{1-\tau}{\tau} \left( \frac{\bar{y}}{1-\bar{y}} \right) \right]
\]

Equation 7.22

For the set of cases in the analysis, using the same procedure as in the analysis of Model 2 in Chapter VI, I construct a case-control sample of cases from the MID Intervention data set containing 350 observations of militarized disputes in international politics in which there are 175 cases of intervention and 175 randomly-selected cases of

\(^{143}\) In similar fashion to the analysis in Chapter VI, I also re-estimate this statistical model using Tomz, King, and Zeng's (1999) RELOGIT software that corrects for biased estimates and suboptimally computed probabilities in statistical models with binary dependent variables. Again, the results of this re-estimation are substantively identical to those produced by standard logit.
non-intervention. While these data are discussed in detail in Chapters IV and VI, a very brief review of their important features is merited here: first, recall that the unit of analysis in these data is dyadic, focusing on the strategically interdependent decisions of third parties over intervention and allied disputants over escalation in the game model, which implies that there may exist multiple observations for each dispute in the data. Second, recall that the decision rule used to construct the set of potential interveners in the data is based on the idea that third parties consider intervening into disputes that take place in their “politically relevant international environment,” which is a concept created by Zeev Maoz (1996) meant to capture the environment that an international actor considers relevant when formulating its foreign policy, in particular its security policy. Operationally, I define the set of potential interveners into a particular militarized dispute as the set of third parties who are in the PRIE of at least one of the original disputants.\footnote{The rationale, strengths and weaknesses of basing the operational definition of the set of potential interveners on the PRIE decision rule is discussed in detail in Chapter IV.}

The dependent variable in the analysis regards the occurrence of intervention, operationalized in the data as follows: third-party interveners are “joiners” into militarized interstate disputes who achieve a hostility level of use of military force or full-scale war.\footnote{In similar fashion to the above analysis of the hypotheses derived from the balancing versus bandwagoning literature, intervention on behalf of the initially weaker side in a MID is interpreted as balancing, and intervention on behalf of the stronger side in a MID is interpreted as bandwagoning. The independent variables in the analysis are operationalized using the above-discussed formulae (Equations 7.8, 7.13, and 7.18 for player I’s expected utility for intervention and Equations 7.10, 7.15, and 7.20 for player}
T’s expected utility for escalation). In similar fashion to the analysis of Model 2, data for the variables in these formulae are obtained from two sources:

Measures for the resources of third parties and disputants (R₁, R₄, and R₅) are obtained using the Correlates of War Composite Indicator of National Capabilities (CINC) (Singer, Bremer and Stuckey 1972). Measures for the players’ values for the demands in the game (Δ₁ and Δ₄, for player I’s values for the demands of players T and C, respectively; Δ₅ and Δ₆ for player T’s value for her own demand and the demand of player C, respectively) are constructed using the Kendall tau B correlation of alliance portfolios (Bueno de Mesquita 1981; with Lalman 1922). Finally, although the

145 The rationale, strengths, and weaknesses of this operational definition are discussed in detail in Chapter IV.
146 The rationale, strengths, and weaknesses of using the CINC are discussed in detail in Chapter IV. To briefly review how the measure is constructed, recall that the CINC is an index measuring the share of resources held by a state in the international system along three dimensions thought to be fundamentally important in international conflict: population size, industrial resources, and military capabilities. To capture the first of these dimensions, the CINC includes measures of a state’s total population and urban population. Regarding the second dimension, it includes measures of a state’s energy consumption and iron/steel production. Finally, regarding the third dimension, it includes measures of a state’s military personnel and military spending. Using these six indicators, a composite index is created by calculating each state’s share (simply the percentage held by that state of the total amount in the international system) and then taking the average of the six system shares for each state by year. The CINC score is available from Bennett and Stam’s (1999) Eugene data program for most of the states in the international system for the period 1816–1984. Using it, the operational measure of R₁ is simply the CINC score for the third party state in the year in which the relevant dispute begins. In similar fashion, the operational measures for R₄ and R₅ are simply the respective CINC scores of the allied and adversary disputants in the year in which the relevant dispute begins. For disputes in which the MID researchers designate multiple states as originators on one or both sides, R₁ and R₅ regard the sum of resources of all states on that side in the dispute.
147 The rationale, strengths and weaknesses of this measure are discussed in detail in Chapter VI. To briefly review how the measure is constructed, recall that the tau B is a rank order correlation for two states’ alliance portfolios ranging from -1 to +1, with -1 representing totally opposite alliance agreements and +1 representing complete agreement in alliances formed. Using it, beginning with the third party’s values for the demands of players T and C, the operational measure for Δ₁ is the tau B between the third party state (player I) and the allied disputant (player T); likewise, the operational measure for Δ₄ is the tau B between the third party state and the adversary disputant (player C). Regarding player T’s values for her own demand and the demand of player C, the operational measure for Δ₅ is simply 1, because it is reasonable to assume that she attaches the highest possible value to her own demand. Finally, the operational measure for Δ₆ is the tau B between the allied disputant (player T) and the adversary disputant (player C). For disputes in which the MID researchers designate multiple states as originators on one or both sides,
expressions for player I's expected utility for intervention and player T's expected utility for escalation contain variables for each player's cost of fighting in conflict, unfortunately, there currently exist no acceptable proxy measures for these variables in social scientific research in international relations. Because no measure is available for \( k_i \) (the final component of the expression capturing player I's expected utility for intervention) or \( k_T \) (the expression capturing player T's expected utility for escalation), the operational measures of these independent variables do not fully capture the theoretical variables of interest, and may therefore result in a less accurate fit between the statistical model and the data than that predicted by the theory. While this is certainly a weakness in this test, it is hoped that, as the field continues to develop new concrete, observable measures for theoretical factors thought to be important in international relations, it may be possible to incorporate measures for these variables in future analyses. In the meantime, while certainly not ideal, I proceed with the analysis using the existing (though not exactly accurate) operational measures of the independent variables, as follows. Descriptive statistics for the independent variables in the analysis may be seen in Table 7.14.

**Analysis**

The results of the analysis may be seen in Table 7.15. Examining the table, the empirical model predicts the occurrence of third-party intervention in militarized disputes in international politics reasonably well. The variables for player I's expected utility for intervention and player T's expected utility for escalation are both positive and

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measures for \( \Delta^T_i, \Delta^C_i \) and \( \Delta^C_T \) are constructed using an average weighted by the resources of each disputant on the same side in the conflict.
Table 7.14
Descriptive Statistics of Variables in Test of Theory of Intervention (Model 2)

<table>
<thead>
<tr>
<th>Player I's Expected Utility for Intervention</th>
<th>N</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>350</td>
<td>.00</td>
<td>.56</td>
<td>1.511E-02</td>
<td>4.97E-02</td>
</tr>
<tr>
<td>Player T's Expected Utility for Escalation</td>
<td>350</td>
<td>.00</td>
<td>1.49</td>
<td>.4956</td>
<td>.3710</td>
</tr>
</tbody>
</table>

Table 7.15
Logit Analysis of Theory of Intervention (Model 2)

Dependent Variable: Intervention
(Logit Estimation)

<table>
<thead>
<tr>
<th>Observed</th>
<th>Predicted</th>
<th>Predicted Correctly</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>0</td>
<td>132</td>
<td>43</td>
</tr>
<tr>
<td>1</td>
<td>77</td>
<td>98</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Overall</td>
</tr>
</tbody>
</table>

Model Chi-Square | Significance
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>40.517</td>
<td>.0000</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Standard Error</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>-7.894</td>
<td>.1949</td>
<td>.0001</td>
</tr>
<tr>
<td>Player I's Expected Utility for Intervention</td>
<td>24.6077</td>
<td>7.7360</td>
<td>.0015</td>
</tr>
<tr>
<td>Player T's Expected Utility for Escalation</td>
<td>1.1365</td>
<td>.3095</td>
<td>.0002</td>
</tr>
</tbody>
</table>
statistically significant (at the .05 level for a two-tailed test), as predicted by the
theory\textsuperscript{148}. The chi-square statistic of the model indicates that the "goodness of fit" of the
regression is adequate (the calculated statistic is 40.517, which is significant at the .0000
level). Examining the predicted versus observed 2x2, overall, the model predicts 65.71% of
cases correctly. Of these, it predicts 75.43% of cases of non-intervention correctly, and 56.00%
of cases of intervention correctly, resulting in a proportional reduction in error of 31.4%, which is quite respectable for empirical research in the social sciences.

Thinking carefully about this issue of model fit at a slightly deeper level, additional insights may be gleaned from examining these empirical results with a focus on the specific functional form employed in the model: recall that in this exercise the
assumed function relating the share of resources held by the players in the game to their respective probabilities of victory in conflict is based on the three-to-one rule of thumb, a guideline for military decision making capturing the idea that a dominant advantage in resources is required to be assured a high probability of victory in conflict, while the absence of such an advantage leaves both sides with a roughly equal chance of victory\textsuperscript{149}. Although the main purpose of this chapter is to assess how the predictive power of the theory of intervention developed in this dissertation project compares to that of the theoretical ideas advanced by some of the scholars involved in the balancing versus bandwagoning debate, before getting to this, a secondary question of theoretical interest that may be briefly addressed here regards how well the specific functional form

\textsuperscript{148} These results also hold up when controlling for temporal effects. To test for temporal effects, I construct decade dummy variables and include them in this statistical model. In it, the variables for player I's expected utility for intervention and player T's expected utility for escalation remain in the predicted positive direction and statistically significant.

\textsuperscript{149} Recall that this function is shown in Equation 7.1.
operationalized in the model fits the data in each of the three possible distributions of resources discussed above. My rationale for this is that, if the assumed functional form captures reasonably accurately how disputants and third parties think about the relationship between resources and military victory, then the percentage of cases predicted correctly should be consistently good across each of the three possible distributions of resources among the actors. On the other hand, if at some points the shape of the function does not capture very well how disputants and third parties think about this relationship (for example, where the function levels off around the 50% mark), then this should be reflected in a lower percentage of cases predicted correctly.

To examine this, I construct a cross-tabulation table showing the number of correctly and incorrectly predicted cases in each of the three possible distributions of resources in the game, shown in Table 7.16. Interestingly, the table indicates that the model predicts the occurrence of intervention about equally well in each of the three distributions of resources: approximately 70% of cases predicted correctly when the distribution of resources is $R_T + R_I < R_C$ or $R_T < R_C$ AND $R_T + R_I > R_C$, and approximately 60% of cases predicted correctly when the distribution of resources is $R_T > R_C$. Substantively, this reasonably good fit between the model and the data suggests moderate support for the idea that military decision makers employ the 3:1 rule of thumb in their decisions over intervention, and justifies the additional complexity of employing this functional form in the application of the model in this chapter. Furthermore, and perhaps most importantly, the encouraging results produced by the operationalization of the 3:1 functional form in this application suggest potentially fruitful directions for future
Table 7.16
Cross-Tabulation Examination of Predictive Power of Model of Intervention based on 3:1 Rule of Thumb

<table>
<thead>
<tr>
<th></th>
<th>Incorrectly Predicted</th>
<th>Correctly Predicted</th>
<th>Total</th>
<th>% Predicted Correctly</th>
</tr>
</thead>
<tbody>
<tr>
<td>$R_T + R_I &lt; R_C$</td>
<td>50</td>
<td>114</td>
<td>164</td>
<td>.695</td>
</tr>
<tr>
<td>$R_T &lt; R_C$</td>
<td>14</td>
<td>32</td>
<td>46</td>
<td>.696</td>
</tr>
<tr>
<td>AND</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$R_T + R_I &gt; R_C$</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$R_T &gt; R_C$</td>
<td>56</td>
<td>84</td>
<td>140</td>
<td>.600</td>
</tr>
</tbody>
</table>
research: for example, one direction for future research that takes full advantage of
the generality of the function relating resources to likelihood of victory in conflict regards
operationalizing the model based on several different functional forms, subjecting their
different implications to empirical tests, and comparing the results to determine which
has the greatest explanatory power. While such an exercise is beyond the scope of this
project, the analysis conducted here is a nice first step.

**Substantive Implications about Balancing and Bandwagoning**

Now, having performed this technical interpretation of the results of the empirical
analysis, the substantive implications of the model of intervention may be interpreted to
inform the debate over balancing versus bandwagoning in the IR literature. To begin, let
us review what the analyses in this chapter have shown thus far: recall that in previous
sections of this chapter, I examine the theoretical arguments of a number of scholars
involved in the debate, derive operational hypotheses from them about whether third
parties tend to balance or bandwagon when they intervene in militarized disputes in
international politics, and subject these hypotheses to rigorous empirical testing. Recall
also that these tests do not provide strong support for either the proposition that third
parties tend to balance when they intervene in militarized disputes in international
politics, or for the arguments of scholars claiming to amend this proposition with ideas
that third parties tend to bandwagon under certain, identifiable conditions. On average,
the hypotheses advanced by the scholars involved in this debate predict approximately
46% of cases correctly\textsuperscript{150}, with no clear pattern emerging about the conditions under which balancing or bandwagoning is more common in international politics.

I then operationalize the model of intervention developed in this dissertation project using a commonly theorized about assumption mapping the share of resources held by disputants and third parties to their respective probabilities of victory in conflict (the three-to-one rule of thumb), derive its predictions about the occurrence of intervention and non-intervention in militarized disputes in international politics, and subject these implications to empirical testing. As mentioned above, overall, the model predicts approximately 66% of cases correctly, which is a 31% reduction in error over the null model. To interpret the substantive implications of these results in the terms of the balancing versus bandwagoning debate, using the operational definitions of these behaviors discussed above, I graph the number of predicted and observed cases of balancing and bandwagoning occurring per year over the period 1816-1984, shown in Figures 7.9 and 7.10 below.

Beginning with Figure 7.9, this chart shows visually that the model’s predictions about the occurrence of intervention as balancing match up reasonably well with the observed cases of the behavior in the data. In fact, the model predicts approximately 70% of cases correctly in which third parties considered balancing (146 of 210 cases in the data in which the side preferred by the third party has fewer resources than their adversary). Thinking about this in comparison to the hypotheses derived from the existing literature about the occurrence of balancing, recall that the general balancing

\textsuperscript{150} This summary statistic is the mean of the percentage of cases predicted correctly by Alternative Hypotheses 1-7.
Figure 7.9
Predicted and Observed Cases of Balancing, 1816-1984
proposition advocated by scholars like Waltz (1979) predicts only around 52% of cases correctly, while Walt's (1987) hypotheses about the occurrence of balancing behavior predict 47% of cases correctly. Comparing these results, it seems reasonable to conclude that the model of intervention predicts the occurrence of balancing substantially more accurately than these theoretical ideas derived from the existing literature.

Moving on to Figure 7.10, this chart shows visually that the model's predictions about the occurrence of intervention as bandwagoning also match up reasonably well with the observed cases of the behavior in the data. In fact, the model predicts approximately 60% of cases correctly in which third parties considered bandwagoning (84 of 140 cases in the data in which the side preferred by the third party has greater resources than their adversary). Thinking about this in comparison to the hypotheses derived from the existing literature about the occurrence of bandwagoning, recall that the hypotheses derived from the theoretical ideas of Walt (1987), Schweller (1994), Larson (1991), and David (1991) predict 42%, 42%, 51% and 45% of cases correctly, respectively. Comparing these results, it seems reasonable to conclude that the model of intervention predicts the occurrence of bandwagoning substantially more accurately than these theoretical ideas derived from the existing literature.

Thinking carefully about this, several important conclusions come to light: the first is that the theory of intervention developed in this dissertation project addresses a much broader research question than the arguments of most of the scholars involved in the balancing versus bandwagoning debate, and as such has the potential to make a larger contribution to our knowledge about the topic. As mentioned in the critical introduction
to the balancing versus bandwagoning literature earlier in this chapter, the principal concern of most scholars involved in this debate is, in cases of militarized disputes in which intervention occurs, whether third parties tend to enter into these disputes on behalf of the weaker or the stronger side. The research question addressed by the theory of intervention developed here specifies not only whether third parties join the weaker or stronger side when they intervene, but also whether they choose to balance or bandwagon rather than stay neutral. This is a very important point, because the latter theory subsumes the former and therefore makes a substantially greater contribution to our knowledge of this topic (if its implications are borne out in the empirical world, which they are, as discussed in my next point).

Second, in addition to positing a more powerful explanation, the theory of intervention developed in this project receives greater empirical support than any of the theoretical ideas derived from the balancing versus bandwagoning literature. That is, to make this important point as clear as possible, the theory does a better job of specifying whether a third party will balance, bandwagon or stay neutral than any of the theoretical ideas derived from the existing literature do at specifying whether third parties who have already chosen not to stay neutral balance or bandwagon. While the model's overall rate of 66% of cases predicted correctly certainly leaves some room for further theoretical development, the fact that this rate of return is higher than any in the tests of Alternative Hypotheses 1-7 strongly suggests that the theory makes a greater contribution to our understanding of the third-party intervention in general.

This leads to the third, and most important, conclusion reached as a result of this application: recall from the introduction to this chapter the excellent quote by King,
Keohane and Verba (1994) stating that the purpose of this exercise has been to attempt "to resolve or provide further evidence of one side of a controversy in the literature – perhaps demonstrate that the controversy was unfounded from the start."

Thinking carefully about the meaning of this, in the view of this researcher, there exists a reasonable argument that the application of the theory of intervention to the balancing versus bandwagoning literature makes clear that the controversy over which is more common in international relations has been "unfounded from the start." My rationale for this is as follows:

First, thinking carefully about the previous analysis of the hypotheses derived from the balancing versus bandwagoning literature, it becomes clear that there exists a "level of analysis" problem of sorts in much of this literature, in that many of the scholars involved in the debate attempt to derive and test system-level implications from theories that exist at the unit-level without thinking carefully about whether these implications logically follow from their theories. To understand this, it may be useful to look at how this debate has developed in the literature: in essence, the balancing versus bandwagoning debate regards the system-level question of which behavior is more common in international politics. The focus on this research question is in large part a product of the development of the literature around the general balancing proposition derived from balance-of-power theory by realist scholars like Waltz (1979). Because balance-of-power is a system-level theory, it is not surprising that the observable implications derived from it also exist at the system-level.\(^{151}\) But, as a response to the

\(^{151}\) Recall Waltz's (1979) argument that the formation of balances of power is a logical implication of the nature of the international system, evidenced nicely by his statement that "Balance-of-power theory claims to explain a result (the recurrent formation of balances of power), which may not accord with the intentions
general balancing proposition (or to the lack of empirical findings in support of it, as argued convincingly by Vasquez (1997)), scholars like Walt (1987), Schweller (1994), Larson (1991), and David (1991) have proposed a number of motivations for bandwagoning behavior with theories that mainly exist at the unit-level\textsuperscript{152}. While these theoretical ideas have observable implications that are clearly testable at the unit-level, as in Alternative Hypotheses 3-7, the scholars involved in this debate in the literature tend to claim the implications of their arguments should be observed at the system-level\textsuperscript{153}. Unfortunately, these claims do not necessarily logically follow from their arguments:

Thinking carefully about this, even if the state-level motivations these scholars attribute to bandwagoning behavior do have some explanatory power, this in and of itself does not imply a greater amount of bandwagoning at the system-level. For example, let us assume for a moment that Schweller’s (1994) unit-level prediction that revisionist third-parties tend to bandwagon is borne out empirically. By itself, this does not tell us very much about how much bandwagoning we should expect to observe at the system-level. Rather, even if it is true that revisionist third parties tend to bandwagon, the amount of bandwagoning observed in the international system still depends on other system-level factors, such as the number of disputes that occur across space and time in which revisionist third parties have the opportunity to intervene. Moreover, if the

\textsuperscript{152} This may be seen clearly in the arguments from which Alternative Hypotheses 3-7 are derived, which relate state-level characteristics of third-party states (such as being “revisionist,” having weak domestic political institutions, or being in the Third World) to bandwagoning behavior.

\textsuperscript{153} This also may be seen clearly in the above-discussed arguments of the scholars involved in the debate. For example, Walt’s (1987) first hypothesis restates the claim that balancing is more common than
dependent variable of interest regards whether balancing or bandwagoning is more common, then this also depends on the amount of balancing that occurs in the international system, which is a product of the number of disputes across space and time in which status quo third parties have the opportunity to intervene (following the logic of Schweller's argument).

At least partly as a result of this level of analysis problem, the scholars involved in the debate have not been able to produce a definitive answer to this research question. This is confirmed in the above empirical analysis of the hypotheses derived from this literature, in which it is shown that whether balancing or bandwagoning is more common varies over time in a manner that seems non-systematic. This leads to the second reason I argue that this debate has been unfounded from the start: while the theoretical ideas derived and tested from the balancing versus bandwagoning literature have little explanatory power in accounting for the amount of balancing and bandwagoning that occur in the international system, the application of the theory of intervention developed in this dissertation project – which addresses a different, more general research question (as discussed above) – has been shown to have considerable explanatory power in accounting for the occurrence of balancing and bandwagoning.

According to this theory, the choices of third parties over balancing versus bandwagoning are not driven by "laws" arising from the structure of the international system, but rather are the products of the interdependent choices of third parties over intervening or staying neutral and disputants over escalating to violence or acquiescing to their enemy in a militarized dispute. Based on a few simple assumptions about the world bandwagoning, and Schweller (1994) states explicitly that his theory is based in the belief that most
and focusing on the strategic interaction between third parties and disputants, the theory produces unit-level observable predictions about balancing and bandwagoning that imply that both behaviors can occur under specific, identifiable conditions. Carefully interpreting what these unit-level implications mean at the system-level, the theory predicts that the amount of balancing and bandwagoning that occur in the international system varies over time according to the characteristics of third parties and disputants (specifically, their resources, values for the issues at stake in the dispute, and costs of fighting in conflict), as well as characteristics of the distribution of militarized disputes in the international system across space and time, such as how many disputes occur, which parties are involved as disputants, and which third parties are potential interveners. So, while in some years the number of cases of balancing may be greater than the number of cases of bandwagoning, in other years the inverse may be true (as may be seen in Figures 7.9 and 7.10). Moreover, while this variation may appear to be non-systematic, it is in fact quite systematic, only not in the way theorized about by the scholars involved in the balancing versus bandwagoning debate. In sum, by addressing a more general research question, and producing precise predictions about the conditions under which intervention as balancing and bandwagoning occur that have been shown to have considerable explanatory power, the theory of intervention developed in this dissertation project subsumes the theoretical ideas in the existing literature about the occurrence of balancing and bandwagoning, and shows that the debate over which is more common in international relations is unfounded.

scholars tend to underestimate the amount of bandwagoning that occurs in the international system.
Chapter VIII
Conclusion

What Has Been Done in this Dissertation?

As stated in the introduction, the purpose of this dissertation project has been the development of a general, causal explanation for third-party intervention in militarized disputes in international politics. After critically reviewing the existing social scientific research relevant to the topic and assessing our current state of knowledge about it (in Chapter II), I develop a theory of intervention that specifies the precise conditions under which it does and does not occur. In the first stage of theoretical development, I lay out a story of intervention decision making in the context of an ongoing militarized dispute and formalize this story into a simple game-theoretic model (in Chapter III). This model formalizes an important, commonly-accepted element of the conventional wisdom about international conflict – that the side with greater military resources always wins – and allows the derivation of its logical implications about the occurrence of third-party intervention. The principal conclusion of the model is that intervention can only occur when the distribution of resources among the disputants and third party is such that third party tips the balance of resources in favor of the side whose demand they prefer in the dispute.

After subjecting this model’s predictions to rigorous tests and finding weak empirical support (in Chapter IV), I then further develop the theory, loosening this restrictive assumption in favor of a more general conception of the relationship between the share of resources held by the actors in a dispute and their respective chances of victory in conflict (in Chapter V). To do this, I incorporate a general function between
resources and the likelihood of victory in conflict that allows its shape to be varied and implications derived about the occurrence of intervention based on different assumptions, for example, the idea that alterations in resources can matter more or less at particular points in a conflict, such as when they “tip the military balance” or give one side a “3:1 advantage.” Solving the game using backwards induction, it yields necessary and sufficient conditions for intervention to occur that are substantively much broader than those derived from Model 1. According to Model 2, intervention can occur under certain identifiable conditions in any of the three possible distributions of resources among the actors in a militarized dispute, such as when 1) the third party does not have sufficient resources to tip the balance in favor of the side they prefer, and 2) the side whose demand is preferred by the third party has an advantage in resources on its own.

I then employ a second method to examine these conditions in a different way, looking at how alterations in the individual components of the theory – specifically, elements of the distribution of resources among the disputants and third party – affect the decisions of the actors in the game and thus impact the likelihood that third party intervention occurs. Calculating the partial derivatives of player I’s expected utility for intervention and player T’ s expected utility for escalation with respect to the resources of each actor, I derive substantive implications about how changes in the resources of the third party, the allied disputant, and the adversary disputant affect the likelihood that third-party intervention occurs in militarized disputes in international politics. Some of these implications are intuitive, such as the hypothesis that the resources of third parties are positively related to the likelihood that intervention occurs (all other things being equal). Others, however, are more interesting and potentially counter-intuitive products
of the sequence of the interdependent decisions of the third party and the side whose
demand they favor in the dispute, such as the more complex, parabolic relationship
predicted between the resources of the allied disputant and the occurrence of intervention
(all other things being equal).

After subjecting these hypotheses to rigorous empirical tests and finding
substantial empirical support (in Chapter VI), I employ the theory to inform the ongoing
debate in the international relations literature over whether third parties tend to balance or
bandwagon when they intervene in disputes in international politics (in Chapter VII). To
do this, I first derive operational hypotheses from the theoretical arguments of a number
of scholars involved in this debate and subject them to rigorous empirical tests. These
tests do not find strong support for any of the theory in the existing literature. I then
apply the theory of intervention developed in this project to the research question by
operationalizing the model using a commonly-accepted assumption about the relationship
between resources and the likelihood of victory in conflict (the 3:1 rule of thumb) and
deriving its implications about the occurrence of intervention as balancing and
bandwagoning. Empirical tests of these predictions show that the theory has substantially
greater explanatory power, and suggest that the entire debate in the literature is
misspecified.

**What Have We learned from this Dissertation?**

Overall, this dissertation project has produced a number of interesting insights:
first, it has shown how the development of a systematic theory comprised of a few
fundamental explanatory factors – the distribution of resources among disputants and
third parties, their values for the issues at stake, and the costs of fighting in conflict – can
produce a reasonably powerful explanation for an important phenomenon in international relations. By adopting a deductive, logically rigorous approach to theory construction that focuses on the strategic interaction among disputants and third parties in the context of an ongoing militarized dispute, this theory produces a wide range of clear, falsifiable, observable implications. Because these observable implications find strong support when subjected to rigorous empirical tests, one may conclude that this dissertation project produces important insights about the necessary and sufficient conditions for intervention to occur in international conflict.

Moreover, and second, this dissertation project has produced novel and theoretically interesting insights about the relationships between important theoretical factors, such as the resources of actors in international politics, and the occurrence of intervention. Some of the theory's predictions about these relationships are consistent with what we already know about international conflict, such as the hypothesis that stronger third parties are more likely to intervene into militarized disputes than weaker third parties. This is not surprising, given that stronger actors are the most common participants in international conflict in general. But, other predictions derived from the theory are counter-intuitive and more theoretically interesting, such as 1) the somewhat complex, parabolic relationship predicted between the resources of allied disputants and the likelihood that intervention occurs and 2) the conditional, sometimes negative, sometimes parabolic relationship predicted between the resources of adversary disputants and the likelihood that intervention occurs. These relationships run counter to the conventional wisdom about the role that the balance of resources between disputants plays in the occurrence of intervention, and likely could not be discovered without a
theory that allows such a precise focus on how these theoretical factors influence the
decisions of the different actors at different stages of the evolution of international
conflicts. That is, by focusing on the strategic interaction between third parties and
disputants and the sequence of decisions they make in the context of ongoing militarized
disputes, the theory of intervention developed in this project produces insights about how
different theoretical components can have different effects on the decisions of different
actors at different stages of the conflict process to have somewhat complex overall effects
on the occurrence of intervention.

Third, this dissertation project produces insights that inform an existing debate in the
international relations literature, and even suggest that it is unfounded from the start.
Applying the theory to the ongoing debate over whether balancing or bandwagoning is
more common in international relations, the theory predicts that neither is more common
all of the time. That is, by positing a unit-level explanation for the occurrence of each
form of intervention, the theory developed in this dissertation project predicts that both
forms can occur under certain identifiable circumstances and that which is more common
varies depending on the circumstances. Subjecting this prediction to empirical tests, it is
shown that the theory does a better job of specifying whether a third party will balance,
bandwagon or stay neutral than any of the theoretical ideas derived from the existing
literature do at specifying whether third parties who have already chosen not to stay
neutral balance or bandwagon. Comparing these findings to those of the tests of the
theoretical arguments derived from the balancing versus bandwagoning literature brings
to light a levels of analysis problem in the debate, in that many of the scholars involved in
it attempt to derive and test system-level implications from theories that exist at the unit-
level without thinking carefully about whether these implications logically follow from their theories. In the end, the debate in the existing literature over whether balancing or bandwagoning is more common in international relations is shown to be misspecified, because the variation in which is more common at any given point in space and time is better explained by carefully interpreting the system-level implications of the theory developed in this dissertation project than by any of the ideas in the existing literature.

**Directions for Future Research**

At the same time, the theory of intervention is by no means fully developed. While the simple model formalized in this dissertation project has been shown to have reasonable explanatory power, accounting for roughly two-thirds of the interventions in the sample of cases against which it is tested, there remains substantial room for further theoretical development in future research. One potentially fruitful direction for future research illuminated by this project regards further development of the model to include strategic interaction not only between the third party and the side on whose behalf they consider fighting, but also among these actors and the adversary in the dispute. By incorporating the interdependence of the decisions of these three actors into the model, it may lead to additional insights about how the components of the theory, like the distribution of resources and their values for the issues at stake in the dispute, affect the decisions of each actor at different stages of the conflict. Furthermore, by loosening the restrictive assumption that the players in the game have complete and perfect information, the theory may yield richer insights about how the actors in a dispute make decisions under conditions of risk that affect the occurrence of intervention.
Another direction for further theoretical development in future research regards the incorporation of additional causal factors in the story of intervention decision-making that may then be formalized in the game model. For example, a rich body of theoretical and empirical evidence has been produced over the last decade exploring the linkages between domestic political institutions and foreign policy behavior, leading to a number of promising research programs and the discovery of important findings like the “democratic peace” (Maoz and Russett 1993; Morgan and Campbell 1991; Bueno de Mesquita and Lalman 1992; among many others). Given the important role domestic political factors have taken on throughout modern international relations research, careful thinking about how these agents affect the decisions of the actors in the context of an ongoing dispute may reveal novel insights about the occurrence of intervention. Given the insights the present project has produced, such insights may lead to greater steps toward a theory that fully explains the behavior.
Bibliography


