





This is to certify that the

dissertation entitled

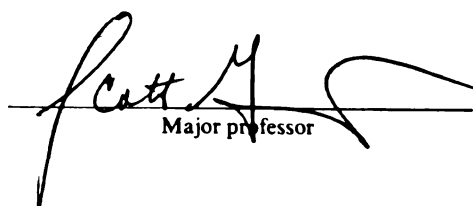
Signaling Commitments by Investing Costs:
The Provision of Extended Deterrence via Alliance

presented by

Christopher Matthew Sprecher

has been accepted towards fulfillment
of the requirements for

Ph.D. degree in Political Science



Major professor

Date June 30, 1999

LIBRARY
Michigan State
University

PLACE IN RETURN BOX to remove this checkout from your record.
TO AVOID FINES return on or before date due.
MAY BE RECALLED with earlier due date if requested.

DATE DUE	DATE DUE	DATE DUE

ABSTRACT

**SIGNALING COMMITMENTS BY INVESTING COSTS: THE PROVISION OF
EXTENDED DETERRENCE VIA ALLIANCE**

By

Christopher Matthew Sprecher

**Signaling Commitments by Investing Costs: The Provision of Extended Deterrence
via Alliance**

By

Christopher Matthew Sprecher

A DISSERTATION

Submitted to
Michigan State University
in partial fulfillment of the requirements
for the degree of

DOCTOR OF PHILOSOPHY

Department of Political Science

1999

ABSTRACT

SIGNALING COMMITMENTS BY INVESTING COSTS: THE PROVISION OF EXTENDED DETERRENCE VIA ALLIANCE

By

Christopher Matthew Sprecher

The existence of alliances between unequal states is a puzzling one. Major powers appear to gain little in terms of security from allying with minor powers, while minor powers live in fear of being abandoned by their major power patrons. However, as Morrow (1991) theorized, major states gain some autonomy benefits from such alliances, while the minor power(s) in the alliance gain security. In this dissertation I conceptualize extended deterrence as a benefit that great power defenders proffer to minor power allies. Major powers are able to receive benefits from their minor power allies that permit the major powers to maintain a global presence. Minor powers gain security from this relationship, with the major power's capabilities enhancing the deterrent aspect of the alliance.

I maintain that the credibility of such a deterrence commitment can be developed if the great power defender uses costly signals as a means of demonstrating their commitment to their ally's defense. These costly signals serve as investments made by the great power into the minor power. These investments provide cues to potential aggressors, and serve as indicators of how committed a defender is to protecting an ally. These investments are conceptualized in this dissertation as security benefits provided by the great power defender. In return, the great power defender must receive some benefit

for its provision of security. I maintain that the autonomy benefits the protégé is willing to sacrifice in return for gaining security also send signals to a potential attacker, and help determine the value that a defender has for its protégé.

Within the general framework of security/autonomy I construct a signaling model of extended deterrence via alliance. I argue that perceptions about the strength of the defender's signal determine whether an aggressor state makes a demand of a great power's protégé. I empirically test hypotheses derived from the signaling model on a set of alliances drawn from the nineteenth and twentieth centuries. Each of these alliances has some deterrence component explicated in the reason for its existence. I utilize a bivariate probit with selection to analyze data pertaining to signal strength, benefits derived for the major power, the balance of forces, domestic costs, and international reputation costs. I analyze both extended general and extended immediate deterrence, both as individual equations and as part of a larger, sequential process. I find that changes in the strategic environment play a role in determining whether extended general deterrence succeeds or fails. This is largely a function of the investment of time and money that the defender has made in the relationship. At the level of extended immediate deterrence I demonstrate that great power defenders are more likely to intervene if major autonomy benefits are threatened. This holds even if the defender is weaker than the challenging state. The findings of the dissertation suggest that alliances are better at deterring aggression than has previously been assumed, and that if enough costs are invested into the alliance, they tend to be more reliable.

To Jill, with love

Copyright by
Christopher Matthew Sprecher
1999

ACKNOWLEDGEMENTS

As I finish the final thoughts that comprise this dissertation, I am struck by all of the support I have received through the years. My first round of thanks must go to my committee members: Scott Gates, Jim Granato, Paul Huth, Mark Jones, and Michael Schooner. All of them contributed in many ways to my education here at Michigan State. All of them have given generously of their time, providing me with feedback and advice on this dissertation, responding to my numerous e-mail messages, and allowing me access to their offices and not forcibly ejecting me when I had overstayed my welcome! Thanks are also due to two professors who are no longer at Michigan State: Gretchen Hoover and Hyeonngil Ahn. Both of them taught me much about international relations and manners in which to model them. I hope that they are able to see their influence throughout this dissertation.

To Jill, with love

Numerous colleagues, both at Michigan State and elsewhere, played a substantial role in the development of the ideas presented here. At Michigan State I would like to thank Renee Agreus, Chris Butler, Erick Duchesene, Ada Firefter, Mark Horowitz, Inwon Kang, Michelle Kuemzi, Sara McLaughlin (now Mitchell), David Laktian, Alan Power, Harriet Posner, Brandon Pritz, and Mark Souva for comments on these and other more important matters. At other institutions I would like to thank John Freeman, Erik Garzke, Brian Humes, Bob Murcaster, Bill Reed, Michael Simon, Dina Zinnes and the other participants at the 1999 Junior Masters Class at the University of Illinois.

I have been fortunate to have had wonderful support from two sets of families. My parents endured this process over thirty years ago; hopefully this dissertation answers the question of what I have been doing for the past six years! To my sister Mara and

ACKNOWLEDGEMENTS

As I finish the final thoughts that comprise this dissertation, I am struck by all of the support I have received through the years. My first round of thanks must go to my all committee members: Scott Gates, Jim Granato, Paul Huth, Mark Jones, and Michael Schechter. All of them contributed in many ways to my education here at Michigan State. All of them have given generously of their time, providing me with feedback and ideas on this dissertation, responding to my numerous e-mail messages, and allowing me access to their offices and not forcibly ejecting me when I had overstayed my welcome! Thanks are also due to two professors who are no longer at Michigan State: Gretchen Hower and Byeonggil Ahn. Both of them taught me much about international relations and manners in which to model them. I hope that they are able to see their influence throughout this dissertation.

Numerous colleagues, both at Michigan State and elsewhere, played a substantial role in the development of the ideas presented here. At Michigan State I would like to thank Renee Agress, Chris Butler, Erick Duchesene, Ada Finifter, Mark Hurwitz, Seonjou Kang, Michelle Kuenzi, Sara McLaughlin (now Mitchell), David Lektzian, Alan Posner, Harriet Posner, Brandon Prins, and Mark Souva for comments on these and other more important matters. At other institutions I would like to thank John Freeman, Erik Gartzke, Brian Humes, Bob Muncaster, Bill Reed, Michael Simon, Dina Zinnes and the other participants at the 1999 Junior Masters Class at the University of Illinois.

I have been fortunate to have had wonderful support from two sets of families. My parents endured this process over thirty years ago; hopefully this dissertation answers the question of what I have been doing for the past six years! To my sister Mara and

2011

2012

2013

2014

2015

2016

2017

2018

2019

2020

2021

2022

2023

2024

2025

2026

2027

2028

2029

2030

2031

2032

2033

2034

2035

brother-in-law Rob, the answer is yes. My "paper" is finally completed. My mother-in-law Judy and late father-in-law Bruce Sheets have also endured this process, and witnessed me marry their daughter as well. I'd like to thank them, as well as Sally, for all of their support through the last six years.

Two sets of acknowledgements remain. The first is to Blackie, Tigger, and Pickles. These three cats have entertained me for the last two years as I have labored on this dissertation. To their utter dismay, they have at times served as actors within my dissertation, as I attempted to explain my theoretical ideas to others. Unfortunately they do not follow game trees very well, but I believe that they have achieved a form of rationality that far transcends that of mere humans.

And finally I must express my love and appreciation to my wife Jill. She has dealt with this process for as long as I have, and at times with considerably more patience. She was there when I became frustrated, and helped me work through my mental blocks. Without her love and support, this dissertation would have never been completed. It is with a great sense of relief that I can finally say, "Honey, the diss is done." It is with the utmost love and respect that I dedicate this work to her.

1.1	Introduction	51
1.2	The Level of Analysis Problem in Deterrence Situations and The Agent-Structure Debate	54
1.3	A Conceptual Framework: Opportunity and Willingness as Ordering Concepts in the Study of Extended Deterrence and Alliances	58
1.4	Willingness and the Pursuit of National Goals	63
1.5	Signaling Commitments, or how to establish a Credible Reputation	76
1.6	Conclusion	80
Chapter 4	Two Formal Models of Extended Deterrence via Alliance	82
4.1	Introduction	82
4.2	The Theoretical Model with Complete Information	83
4.3	Outcomes, Costs, Payoffs and Types	91
4.4	Solving the Model: The Game's Equilibria	113

4.5	Adding Uncertainty to the Model: Perceptions and Signals	117
4.6	Extended Deterrence via Alliance with Incomplete Information And Signaling	120
4.7	Conclusion	133
TABLE OF CONTENTS		
Chapter 3	Propositions, Cases, and Variables	137
List of Tables		x
1.2	Propositions	139
1.3	The Problem of Selection Effects in Analyzing Deterrence Situations	157
List of Figures		xi
1.4	The Set of Cases Measuring Deterrence Failure	166
1.4	Operationalization of the Independent Variables	166
Chapter 1	Introduction	1
1.1	The Puzzle and Research Question	1
1.2	Contributions of This Study	4
1.3	Modeling Strategy	6
1.4	Plan of the Dissertation	11
Chapter 2	Literature and Conceptualizations	18
2.1	Introduction	18
2.2	Conceptualizing Deterrence	19
2.3	Alliances in World Politics	30
2.4	Linking Alliances to Extended Deterrence	38
2.5	The Rational Deterrence Debate	42
2.6	Conclusion	49
Chapter 3	A Theory of Extended Deterrence via Alliance: Signaling Commitments by Investing Costs	51
3.1	Introduction	51
3.2	The Level of Analysis Problem in Deterrence Situations and The Agent-Structure Debate	54
3.3	A Conceptual Framework: Opportunity and Willingness as Ordering Concepts in the Study of Extended Deterrence and Alliances	58
3.4	Willingness and the Pursuit of National Goals	63
3.5	Signaling Commitments, or how to establish a Credible Reputation	76
3.6	Conclusion	80
Chapter 4	Two Formal Models of Extended Deterrence via Alliance	82
4.1	Introduction	82
4.2	The Theoretical Model with Complete Information	83
4.3	Outcomes, Costs, Payoffs and Types	91
4.4	Solving the Model: The Game's Equilibria	113

4.5	Adding Uncertainty to the Model: Perceptions and Signals	117
4.6	Extended Deterrence via Alliance with Incomplete Information And Signaling	120
4.7	Conclusion	133
Chapter 5	Propositions, Cases, and Variables	137
5.1	Introduction	137
5.2	Propositions	139
5.3	The Problem of Selection Effects in Analyzing Deterrence Situations	157
5.4	The Set of Alliances	162
5.5	The Set of Crises: Measuring Deterrence Failure	166
5.6	Operationalization of the Independent Variables: Measuring Influences on Willingness	171
5.7	Descriptive Statistics: A First Cut at Analysis	185
5.8	Conclusion	187
Chapter 6	Empirical Tests	190
6.1	Introduction	190
6.2	The Probit Framework	191
6.3	The Bivariate Probit Model with Selection: Accounting for Selection Bias	208
6.4	Conclusion	218
Chapter 7	Conclusion	221
7.1	Conclusion	221
7.2	Implications from the Formal Analysis: Integrative Cumulation	221
7.3	Implications from the Empirical Analysis: Additive Cumulation	225
7.4	Concluding Remarks and Directions for Future Research	228
Appendix A	Proof of the Equilibria from the Model with Complete Information	234
Appendix B	Derivation of Beliefs via Bayes' Rule	242
Appendix C	Proofs of the Equilibria of the Signaling Model with Incomplete Information	243
Appendix D	Deterrence Alliances, 1870-1984	254
Bibliography	271

LIST OF TABLES

Table 4.1:	Terms in the Model.....	96
Table 4.2:	Payoffs for the Model.....	102
Table 4.3:	Preference Orderings of Each State (Ordinal Outcomes).....	109
Table 4.4:	Defining Actions in the Signaling Model.....	126
Table 4.5:	Equilibria under Complete Information.....	131
Table 4.6:	Equilibria under Incomplete Information.....	131
Table 5.1:	Alliances in Which Extended Deterrence Is Attempted.....	166
Table 5.2:	Frequency Distributions of EGDSUCC.....	169
Table 5.3:	Frequency Distributions of EIDSUCC.....	171
Table 5.4:	Descriptive Statistics.....	186
Table 5.5:	Distribution of the Model's Outcomes.....	188
Table 6.1:	Parameters and Variables Influencing Extended General Deterrence Success.....	195
Table 6.2:	Parameters and Variables Influencing Extended Immediate Deterrence Success.....	196
Table 6.3:	Probit Estimates of Extended General Deterrence Success.....	199
Table 6.4:	Probit Estimates of Extended Immediate Deterrence Success.....	200
Table 6.5:	Substantive Effects of Independent Variables On Extended General Deterrence Success.....	203
Table 6.6:	A Unified Model of Extended General Deterrence And Crisis Escalation Using Bivariate Probit Analysis.....	212
Table 6.7:	Substantive Effects of Independent Variables on Extended Immediate Deterrence Success.....	215

LIST OF FIGURES

INTRODUCTION

Figure 2.1:	Threat Posed by Attacker.....	24
Figure 3.1:	Stages of Crisis Escalation.....	62
Figure 3.2:	The Theoretical Framework of Costly Signaling and the Provision of Extended Deterrence via Alliance.....	80
Figure 4.1:	Extended Deterrence via Alliance with Complete Information.....	135
Figure 4.2:	Extended Deterrence via Alliance with Incomplete Information.....	136

This victory was also seen as a triumph for the theory of deterrence, which was the driving force behind the existence of the NATO alliance. In effect, NATO became the symbol for successful alliance policies. However, such success is not uncontested within the realm of international politics, particularly if one examines the functioning of international alliances. In fact, much evidence suggests that alliances are quite ineffective at deterring aggression and preventing war.

Take, for example, the case of Poland prior to the Second World War. Poland and the United Kingdom were bound together by a common alliance, in which the British pledged to come to Poland's defense in the case of an attack. Of course, as history demonstrated, the deterrent capacity of the British-Polish alliance did not have the desired effect, and Germany invaded Poland, launching the Second World War.

What explains such discrepancies in the impact of existing alliances? In the case of NATO, the United States' presence in the alliance is credited with preventing the occurrence of war. In the British-Polish case, the existence of a defense pact between the

1.1 The puzzle and research question

In the aftermath of the Cold War, there was much euphoria surrounding the North Atlantic Treaty Organization's (NATO) success at "defeating" the Soviet Union. The Cold War ended with, it was maintained, a victory for the West, without the specter of superpower conflagration. This victory emerged in spite of various crises that had erupted between the superpowers during the Cold War era, particularly on the issue of divided Germany.

This victory was also seen as a triumph for the theory of deterrence, which was the driving force behind the existence of the NATO alliance. In effect, NATO became the symbol for successful alliance policies. However, such success is not commonplace within the realm of international politics, particularly if one examines the functioning of international alliances. In fact, much evidence suggests that alliances are quite ineffective at deterring aggression and preventing war.

Take, for example, the case of Poland prior to the Second World War. Poland and the United Kingdom were bound together by a common alliance, in which the British pledged to come to Poland's defense in the case of an attack. Of course, as history demonstrated, the deterrent capacity of the British-Polish alliance did not have the desired effect, and Germany invaded Poland, launching the Second World War.

What explains such discrepancies in the impact of existing alliances? In the case of NATO, the United States' presence in the alliance is credited with preventing the occurrence of war. In the British-Polish case, the existence of a defense pact between the

201
202
203
204
205
206
207
208
209
210
211
212
213
214
215
216
217
218
219
220
221
222
223
224
225
226
227
228
229
230
231
232
233
234
235
236
237
238
239
240
241
242
243
244
245
246
247
248
249
250
251
252
253
254
255
256
257
258
259
260
261
262
263
264
265
266
267
268
269
270
271
272
273
274
275
276
277
278
279
280
281
282
283
284
285
286
287
288
289
290
291
292
293
294
295
296
297
298
299
300
301
302
303
304
305
306
307
308
309
310
311
312
313
314
315
316
317
318
319
320
321
322
323
324
325
326
327
328
329
330
331
332
333
334
335
336
337
338
339
340
341
342
343
344
345
346
347
348
349
350
351
352
353
354
355
356
357
358
359
360
361
362
363
364
365
366
367
368
369
370
371
372
373
374
375
376
377
378
379
380
381
382
383
384
385
386
387
388
389
390
391
392
393
394
395
396
397
398
399
400
401
402
403
404
405
406
407
408
409
410
411
412
413
414
415
416
417
418
419
420
421
422
423
424
425
426
427
428
429
430
431
432
433
434
435
436
437
438
439
440
441
442
443
444
445
446
447
448
449
450
451
452
453
454
455
456
457
458
459
460
461
462
463
464
465
466
467
468
469
470
471
472
473
474
475
476
477
478
479
480
481
482
483
484
485
486
487
488
489
490
491
492
493
494
495
496
497
498
499
500
501
502
503
504
505
506
507
508
509
510
511
512
513
514
515
516
517
518
519
520
521
522
523
524
525
526
527
528
529
530
531
532
533
534
535
536
537
538
539
540
541
542
543
544
545
546
547
548
549
550
551
552
553
554
555
556
557
558
559
560
561
562
563
564
565
566
567
568
569
570
571
572
573
574
575
576
577
578
579
580
581
582
583
584
585
586
587
588
589
590
591
592
593
594
595
596
597
598
599
600
601
602
603
604
605
606
607
608
609
610
611
612
613
614
615
616
617
618
619
620
621
622
623
624
625
626
627
628
629
630
631
632
633
634
635
636
637
638
639
640
641
642
643
644
645
646
647
648
649
650
651
652
653
654
655
656
657
658
659
660
661
662
663
664
665
666
667
668
669
670
671
672
673
674
675
676
677
678
679
680
681
682
683
684
685
686
687
688
689
690
691
692
693
694
695
696
697
698
699
700
701
702
703
704
705
706
707
708
709
710
711
712
713
714
715
716
717
718
719
720
721
722
723
724
725
726
727
728
729
730
731
732
733
734
735
736
737
738
739
740
741
742
743
744
745
746
747
748
749
750
751
752
753
754
755
756
757
758
759
760
761
762
763
764
765
766
767
768
769
770
771
772
773
774
775
776
777
778
779
780
781
782
783
784
785
786
787
788
789
790
791
792
793
794
795
796
797
798
799
800
801
802
803
804
805
806
807
808
809
810
811
812
813
814
815
816
817
818
819
820
821
822
823
824
825
826
827
828
829
830
831
832
833
834
835
836
837
838
839
840
841
842
843
844
845
846
847
848
849
850
851
852
853
854
855
856
857
858
859
860
861
862
863
864
865
866
867
868
869
870
871
872
873
874
875
876
877
878
879
880
881
882
883
884
885
886
887
888
889
890
891
892
893
894
895
896
897
898
899
900
901
902
903
904
905
906
907
908
909
910
911
912
913
914
915
916
917
918
919
920
921
922
923
924
925
926
927
928
929
930
931
932
933
934
935
936
937
938
939
940
941
942
943
944
945
946
947
948
949
950
951
952
953
954
955
956
957
958
959
960
961
962
963
964
965
966
967
968
969
970
971
972
973
974
975
976
977
978
979
980
981
982
983
984
985
986
987
988
989
990
991
992
993
994
995
996
997
998
999
1000

two countries did nothing to deter German aggression. While these are but two cases drawn from great power relations throughout the ages, it is indicative of a larger alliance puzzle. Namely, why do we witness alliances being formed if they are not successful at preventing armed conflict? *considerations may ameliorate such endeavors.*

The answer, I argue in this dissertation, lies in the underlying logic of why alliances form. Rather than merely being tools of capability aggregation, I argue that alliances form to provide specific benefits to their members. The context in which they are established must be examined if we are to understand why and under what conditions they will have an impact on making deterrence effective. I maintain that is through the use of costly signals, which can be viewed as investments made by a major power in a minor power, that ensures successful deterrence. *have on the occurrence of war*

In this vein I focus this study on a set of twenty alliances that were formed in the 1870-1984 period that have the deterrence of an adversary as their common goal. I argue that this specific class of alliances is much more reliable than many earlier studies have ascertained, and that they tend to be successful at deterring aggression. I maintain that this phenomenon, which contradicts many of the other findings within the alliance/war relationship, is a result of an inadequate understanding of why certain alliances form. *even*

However, a twofold problem is often encountered in the conduct and study of international security and conflict issues, and the study of deterrence and alliances is no exception. First of all, information is often at a premium to decision-makers. Potential aggressors do not always know the true strength of the foe they are facing, and may be *political analyses. For example, game-theoretic literature on alliances and deterrence encouraged to run the risk of war based on the perceptions they have about their* *empirical work, the focus on alliances and war has been examined from a more dynamic* *adversary, or their own preferences, regardless of their foe's intentions.*

Secondly, and following from the first, is the notion that costs in both the domestic and international arenas constrain state leaders. The pursuit of international goals may drive leaders to form alliances or to attack states that are joined by a common defense bond, but domestic considerations may ameliorate such endeavors.

In this context, then, I explore the impact that an existing alliance has on the decision by an aggressor to initiate and escalate a militarized crisis. If alliances are formed to deter aggression and increase capabilities, as most power-based theories of international relations contend, and their members are supposed to be reliable, then why do we see allied states attacked by adversaries? This puzzle has not been adequately addressed by either earlier empirical studies of crisis initiation and escalation, or by studies which address the impact which alliances have on the occurrence of war.

Much of the failure of earlier empirical studies lies, I contend, first in their inability to recognize the sequential strategic interplay that is inherent in international interactions. The action or actions that any state takes is conditioned by the potential response of other states in the international system. Interactions tend to be of a more dynamic character, rather than static. To address this dynamic role of an alliance's impact on a crisis, we need to account for the sequence of moves that takes place between two or more states.¹

builds upon and expands earlier work in a variety of ways. First, it focuses on the processes that lead to war. Most empirical studies relating the existence of alliances to war have concentrated merely on the war variable, and paid scant attention to

¹ Of course, not all studies of alliances and their deterrent role are static. Nor are all statistical analyses. For example, game-theoretic literature on alliances and deterrence includes Morrow (1994a); Smith (1995a, 1995b); and Sorokin (1994). In a strictly empirical vein, the focus on alliances and war has been examined from a more dynamic perspective. In particular, see Ostrom and Hoole (1978); Wayman (1990); and Zinnes et al. (1985).

101

102

103

104

105

106

107

108

109

110

111

112

113

114

115

116

117

118

119

120

121

122

Secondly, I argue that the context within which alliances are formed must be considered. If we don't understand why the alliance exists, we cannot hope to understand why it leads to war instead of peace.

A brief note regarding what this dissertation does not concern. While much of the literature on alliances and war focuses on alliance reliability, this is not the central focus of the research being conducted here. While the focus on reliability does inform this study to an extent, the contradictory results found within the literature make the setting ripe for a different focus on the impact of alliances on the initiation and escalation of crises.

1.2 Contributions of this Study

To address these issues, I construct and empirically test two game-theoretic models of crisis initiation and escalation. Through the use of these models I am able to answer four questions of interest:

1. What role do alliances play in ensuring effective extended deterrence?
2. What impact does an existing alliance have on crisis initiation and escalation?
3. What role does limited information play in crisis initiation and escalation?
4. What domestic and international factors influence alliance behavior?

This dissertation builds upon and expands earlier work in a variety of ways. First, it focuses on the processes that lead to war. Most empirical studies relating the existence of alliances to war have concentrated merely on the war variable, and paid scant attention to the events that precede the conflict. Secondly, it emphasizes the costs and limited information that states face in a crisis situation. Third, the dissertation extends the

discussion of the deterrent role which alliances often play. In the context of this third contribution I introduce the concept of a deterrence alliance.

I argue that in order to make their alliance commitments credible, great powers must signal the value they place in the alliance. Great powers are able to indicate, through the transfer of tangible benefits (costly signaling), the strength of commitment they have in their alliance relationship. As developed in chapter 3 in a theoretical manner, and in chapter 4 in two explicated formal models, the investment of costs by a defender in a protégé lends credibility to a state's commitment to its ally.

Given that costs constrain states, both at home and abroad, the theory and subsequent formal models explicitly incorporate the costs that states face in a crisis situation. In particular it focuses on the costs that an alliance imposes upon its members, in relation to the benefits such an alliance provides. I argue that, in alliances formed for deterrence purposes, there is an inherent trade-off in the benefits that each party attains. Following Morrow (1991), I argue that major powers in an alliance receive autonomy benefits, while small powers gain in security. Autonomy, as described by Morrow, is the ability of a state to pursue its goals within the international system. Security, in contrast, is the ability to be free of threats conveyed by an external enemy. By focusing on what Morrow terms asymmetric alliances, those comprised of one major power and one or more minor powers, I argue that we can learn much about the deterrent effects of alliances.

1.3 Modeling Strategy: Combining Game Theory, Quantitative Analysis, and

Illustrative Case Studies

To address the concerns mentioned above, I utilize two distinct methodological techniques to analyze extended deterrence via alliance. I use game-theoretic modeling to rigorously specify conditions under which extended deterrence via alliance will succeed, when it will fail, and the determinants of crisis escalation. From the formal models developed herein I can derive testable propositions that are amenable to quantitative analysis. This allows me to arrive at some measure of generalizability for my theory, and ascertain that it is not merely an artifact of the modeling enterprise. Finally, the use of historical cases as illustrations throughout the dissertation permits abstract theory and statistical coefficients to be grounded in historical reality.

The goal behind this dissertation is to improve our scientific understanding of extended deterrence processes. In order to make scientific progress, we need to be able to explain and predict why certain events will occur. The research strategy being used here provides us with the means of improving our strategy through the use of modeling techniques to build and substantiate theory, and using statistical methods and historical events to determine the validity of the theory and model. Prior to delving into the empirical portion of the dissertation it would be wise to heed the words of Bueno de Mesquita (1985, 128), "To the extent that logical consistency is accepted as an elemental requirement of all research, formal, explicit theorizing takes intellectual, if not temporal precedence over empiricism". While formal theorizing need not necessarily be mathematical in nature, it does need to specify relationships among attributes prior to

empirical testing, lest the endeavor here be accused of being merely positivism with no applicable relevance.

From another perspective, the desire here is to improve both our additive and integrative cumulative knowledge about the impact of alliances on the provision of extended deterrence. Zinnes (1976, 1981) makes the distinction between these two forms of knowledge acquisition by stating that additive cumulation involves the use of new measures of data, new methodological techniques, and a greater awareness in the scholarly community of what results have been discovered. Integrative cumulation involves the development of new theory, or explanations of old theories in a new light.² In this dissertation I address both of these issues surrounding both types of cumulation.

I develop a new dataset especially designed to test when extended deterrence via alliance is effective. In applying these data to statistical methods, I utilize some new econometric techniques, notably binary cross sectional time series techniques along with a second technique, a bivariate probit model, that allows me to control for the selection bias that often occurs in studies of deterrence.

In regards to integrative cumulation, it is the hope that this dissertation will allow us as researchers to understand more clearly the influences that shape deterrence alliances. Through the use of game-theoretic modeling I uncover some interesting insights into the role that information plays in deterrence situations. However, if we are to attain a higher level of knowledge of international conflict, we must take care not to limit our analytical approaches. In this spirit I combine two different forms of analysis,

² The notion of integrative cumulation corresponds loosely with Kuhn's (1962) notion of paradigm shifts, or Lakatos' (1970) concept of progressive research programs. For good discussions of cumulation in international politics, albeit a bit dated, see the selections in Rosenau (1976) and those in Hopmann, Zinnes, and Singer (1981).

and provide historical illustrations to demonstrate the usefulness of the theory. I argue that each technique increases our cumulative knowledge of extended deterrence via alliance.

1.3.1 *Game Theory: the Quest for Theoretical Rigor*

As Snidal (1986) points out, game theory can be used as a metaphor, an analogy, a model, or, in the most ideal sense, as a theory of political events. I specify a theory in chapter 3 that integrates domestic pressures and international ambitions into a theory of extended deterrence via alliance. In this vein, therefore, I use my game-theoretic model as truly that, a model of a verbal theory. The combination of theoretical thinking coupled with rigorous formal modeling meets the above-mentioned criteria of Bueno de Mesquita, that theory must precede empirics. Proceeding in this fashion allows us to develop a more integrative form of cumulation for understanding why alliances often serve as agents of extended deterrence.

Given that the heart of my theory suggests that states behave in a rational manner, I believe that game theoretic modeling is the best approach to the questions being addressed in this dissertation. I first construct two game-theoretic models. The models differ in their informational structures, but both capture the strategic interaction among three states, A, B, and C, in which A is a common threat to both B and C, and B and C are joined in a common alliance.

I conceptualize a crisis as being a set of sequential moves, with the severity of outcomes increasing as the hostilities escalate. Much of the inability of earlier empirical studies to find a direct link between alliance reliability and war, I argue, is that these studies did not envision war as being the outcome of a larger process. War, as Morgan (1989), and Hutchful (1987) as representative pieces in this genre.

(1994) points out, is always the result of some crisis. However, not all crises lead to war. Deterrence, either general or immediate, is often successful. To ignore the interactions that occur between states prior to the outbreak of war is to ignore the sequential processes that shape political behavior in the international arena, be it among adversaries or among friends. It is through a study of these interactions that I feel that the role of alliances on the possible occurrence of war is best understood.

The use of game-theoretic modeling has an additional advantage. It allows me to vary the information available to one or more of the players. Since successful deterrence often hinges upon perceptions of an adversary, it is necessary to model issues of limited information in my models, and demonstrates the effects of uncertainty.³ This uncertainty is especially important when an aggressor is unaware of how committed a defending state is to its ally. While tangible commitments can be observed, such as arms transfers, foreign trade, or military bases abroad, there are issues that are not so easily measured. Notable among such intangibles is the value that each state places on the issue at stake in a crisis. I maintain through the use of these formal models that unique insights can be discovered that cannot be uncovered by a cursory examination of the historical record.

1.3.2 *Quantitative Analysis: The Search for General Patterns*

Of course, abstract theory alone cannot tell us whether alliances are successful at deterring aggression or not. Abstract theory that is not grounded empirically is merely that; abstract theory. Only an examination of a large number of cases can let us know with some confidence if the theory can be falsified. Quantitative analysis helps us in our

³ The use of limited information models in international relations is a relatively new phenomenon. See, for example, Bueno de Mesquita, Morrow and Zorick (1997); Morrow (1989); and Nalebuff (1987) as representative pieces in this genre.

search for greater integrative cumulation, for it provides a means of testing the hypotheses derived from our theoretical models, and ascertain if the theory has any degree of validity.

However, as Bueno de Mesquita's exhortation above notes, we should take care in explicitly theorizing before delving into data analysis. Barefoot empiricism serves no scientific purpose and often causes scorn to be heaped upon those who endeavor to study international politics in a scientific manner. But, in this light, the converse is true as well. Social science is replete with formal models that are elegant theoretically, but have no foundation empirically. Hence, formal models need to be linked to the empirical world if they are to have any relevance and aid us in the scientific quest for understanding in international politics.

The use of quantitative analysis also provides additive cumulation as well. The data compiled for this dissertation represents new measures of alliance commitments, and rethinks some of the logic between domestic and international goals. Additionally, new techniques developed for time-dependent variables that are binary in nature allow us to utilize increasingly sophisticated methods to study issues surrounding deterrence.

1.3.3 *Historical Cases: The Quest for Detail*

Of course, many would argue that mere reliance upon abstract theory and cold statistical coefficients ignores much of the nuance that comprises international interactions. Such charges to an extent are correct, and are even warranted. If we are to advance our discipline in a scientific manner, we need to make certain that we are aware of the issues we study, and the context in which these interactions occur.

It should be noted, however, that this is not an actual comparative case study component of the dissertation. Rather than seeking to test my theory of extended deterrence via alliance with the comparative case study approach, I am using individual cases to illustrate and illustrate many of the theoretical assumptions and empirical findings.

The use of historical cases interwoven throughout the dissertation help provide validity for much of the analysis that emerges from the modeling enterprise.⁴ It allows me to speak to a variety of audiences, particularly to those who neither understand nor tolerate more mathematical endeavors. Theory and statistics allow us to pursue rigor, and allow us to arrive at clear and sometimes novel conclusions. However, we must never forget that our analysis and research goals tend to be driven by events we have witnessed in the empirical world, and it is to these events that our endeavors must speak.

1.4 Plan of the Dissertation

In the remainder of this chapter I discuss the remaining sections of the dissertation. I do not address much of the literature here, but leave it for its relevant place in the specific chapters.

Chapter 2

In the second chapter I outline the conceptualizations and definitions which underlie a theory of extended deterrence via alliance. In particular I concentrate on the two main concepts of importance to my theory: deterrence and alliances. I draw a special distinction between deterrence and defense, and reconceptualize the concept of an alliance commitment.

Many alliances that form for deterrence purposes are between great powers and minor ones. This forces us to clarify what states expect to gain when they do enter into an alliance agreement. It is the thrust of this dissertation to demonstrate that great powers

⁴ It should be noted, however, that this is not an actual comparative case study component of the dissertation. Rather than seeking to test my theory of extended deterrence via alliance with the comparative case study approach, I am using individual cases to illuminate and illustrate many of the theoretical assumptions and empirical findings.

tend to form alliances with smaller powers for a variety of reasons. However, the smaller powers are able to gain security benefits from the relationship.

A second main thrust in this theoretical chapter is to distinguish between defensive alliances and deterrence alliances. I posit that deterrence alliances are a special subset of defensive alliances, and need to be examined within the context of their formation. Many defensive alliances have a deterrent nature, but continue once the threat that drove their existence has disappeared. The continued debate over NATO expansion and even future existence is just one case in which the original threat (the Soviet Union) has disappeared, but the alliance continues to exist. Hence, I denote a new type of alliance; the deterrence alliance, which has as its specific purpose the active attempt to prevent an attack upon a minor power.

I should note that I do acknowledge that many of these alliances serve dual purposes, other than functioning solely as a deterrence entity. Again, NATO provides a telling example. The purpose behind NATO's inception was threefold: keep the United States involved in European affairs; keep Germany under control; and deter Soviet aggression towards Western Europe (Osgood, 1962). Now that the Soviet threat has vanished, NATO still persists. However, its overall deterrent role ended with the collapse of the Soviet Empire in 1991.

Third, I argue that traditional means of examining alliance commitments are problematic in analyzing the linkages between alliances and deterrence. I argue that a commitment can be conceptualized as a tangible item that is transferred between allies to demonstrate their value for each other.

I place this entire conceptual framework within the context of the rational deterrence debate. This debate concerns the status and applicability of rational models in political science in general, and in the study of deterrence in particular. While many would argue that the assumptions of rationality are flawed, and have a tendency to overstate the obvious, I maintain that the assumptions of a rational choice approach to modeling international politics provides us with a great amount of insight into the deterrent role that certain alliances play.

Chapter 3 of the defender's commitment to its ally. I explore the impact of alliance

Having discussed the conceptual underpinnings of deterrence and alliances, I proceed to outline a theoretical framework of extended deterrence via alliance. I place this framework squarely within the agent-structure debate within international relations, and discuss how the two levels of analysis are interrelated. I utilize the conceptual framework of opportunity and willingness (Starr, 1978: see also Most and Starr, 1989; Siverson and Starr, 1991) to theoretically link macro structural attributes of the international system and the micro-decisions that take place within individual states.

I maintain that deterrence is effective if a great power defender is able to transfer enough benefits into its minor power protégé to make its commitment credible. This transfer of benefits, such as the provision of weaponry, the establishment of bases, or tight alliance ties, are all costly endeavors that must be borne by the defender. Such transfers can be viewed as akin to investments that individuals make in the market; one needs to spend money in order to make it.

Within the alliance context, I argue that providing such investments are costly signals, and these signals provide indications of resolve to potential challengers. By

2014
2013
2012
2011
2010
2009
2008
2007
2006
2005
2004
2003
2002
2001
2000
1999
1998
1997
1996
1995
1994
1993
1992
1991
1990
1989
1988
1987
1986
1985
1984
1983
1982
1981
1980
1979
1978
1977
1976
1975
1974
1973
1972
1971
1970
1969
1968
1967
1966
1965
1964
1963
1962
1961
1960
1959
1958
1957
1956
1955
1954
1953
1952
1951
1950
1949
1948
1947
1946
1945
1944
1943
1942
1941
1940
1939
1938
1937
1936
1935
1934
1933
1932
1931
1930
1929
1928
1927
1926
1925
1924
1923
1922
1921
1920
1919
1918
1917
1916
1915
1914
1913
1912
1911
1910
1909
1908
1907
1906
1905
1904
1903
1902
1901
1900

using the concept of costly signaling, I demonstrate that the higher the level of investment that is made on the part of the defender, the more likely extended general deterrence is to succeed. I focus on the benefits that exist between alliance partners and the costs that are faced by all participants in a crisis: aggressor; target; and defender.

Having discussed the benefits that are derived from the alliance relationship, and the costs that are faced in a militarized situation, I then demonstrate how costly signaling from a great power defender to a minor power protégé provides information about the credibility of the defender's commitment to its ally. I explore the impact of alliance commitments within the context of extended general deterrence, and frame the discussion within a framework of autonomy and security. I argue that asymmetric deterrence alliances form to provide security benefits to the smaller powers in the alliance, at the cost of autonomy. The value each state places on these benefits, and the costs that an alliance commitment engenders, explain crisis initiation and escalation, even though an alliance is in existence.

Chapter 4 and introduce the issues of perception and credibility. Credibility, I argue, is

In this chapter I present two formal models of crisis initiation and escalation. I begin with an outline of the basic model, and I then discuss the sequence of moves within it. In the initial model, information is complete and perfect. This allows me to specify clearly the actions and strategies available to each actor in a simplified environment. I discuss the assumptions that underlie the model, and provide examples from nineteenth and twentieth century diplomatic history to illustrate the outcomes of the model in a substantive manner.

Having specified the model, I turn to a description of the costs and benefits that go into each player's utility function, and derive the payoffs that each player holds for each outcome of the game. Moving from the derivation of payoffs, I discuss the types of players that are available in the game. In regards to the aggressor, there exist three types that exist, based upon its capability ratio with the defender and protégé. In regards to the defender, there exist two types based upon the value it holds for its protégé. From this explication of types I then discuss the preference orderings that each player has for each outcome, and any restrictions that are imposed. Following that, I then proceed to solve for its equilibria, and discuss the results.

Having solved the model under conditions of complete and perfect information, I then introduce the concept of limited information. By making the information incomplete for the aggressor, I am able to interject a greater measure of reality into the model. I combine the types of defender that were examined in the first model (strongly committed defender and weakly committed defender) with the different types of aggressors, and introduce the issues of perception and credibility. Credibility, I argue, is a key to understanding deterrence behavior within the context of alliance bonds. The model assumes that the aggressor is uncertain about how committed the defender is to its minor power protégé. I solve for the equilibria using the concept of Perfect Bayesian Equilibrium, and discuss the implications of the model. Notably, I discern that conflict can occur under full information conditions and conditions in which there is limited information. However, extended deterrence succeeds only when conditions that approximate full information conditions under certainty prevail. Otherwise, there is an

incentive for a state to make a challenge and then back down if it witnesses resistance or possible third party intervention. (Rehm and Gates, 1997; Dublin and Rivers, 1989; Reed,

Chapter 5 *helps capture the selection process that is inherent in the quantitative study of*

Having solved for the equilibria, I now turn to an explication of the propositions that can be derived from the model. After outlining and discussing these propositions, I then proceed to identify the population of asymmetric alliances from 1870-1984 that can be considered to have deterrence as their central purpose. I identify a set of twenty alliances that meet these criteria, with a total of 302 alliance year observations. (ed

I utilize a variety of data sources, notably the MID and ICB datasets, to determine a set of cases in which extended general deterrence was attempted, when it failed, and when extended immediate deterrence succeeded or failed. I code the outcome of each crisis, and what action, if any, the defending state took. I then examine whether the crisis escalated or not, and what the final resolution of the crisis was. In this context I discuss the issue of selection bias inherent in such testing, and I provide a means of avoiding such bias their empirical tests, and discuss what has been learned about the role of

After determining the population of cases to be examined, I operationalize variables for costly investment signals (security benefits), autonomy benefits, balance of forces (immediate, short term and long term), domestic political costs, and value of the issue at stake for the defender. Having completed this task, I turn to the empirical testing of the propositions derived from the model. (search

Chapter 6 *empirical tests of my formal models*

In this chapter I provide empirical tests of my formal models. I outline two equations: one for extended general deterrence success/failure, and one for the possibility

of extended immediate deterrence success/failure. In order to test my propositions, I utilize a bivariate probit model (Brehm and Gates, 1997; Dubin and Rivers, 1989; Reed, 1998) that helps capture the selection process that is inherent in the quantitative study of deterrence. Additionally, I utilize binary cross sectional time series techniques (BCSTS), as advocated by Beck, Katz and Tucker (1998) to account for the issues of autocorrelation that often arise when pooled time-series data is used. I then run estimates of my equations, and perform goodness of fit tests. To add validity to the analysis, I return to the cases I have traced throughout the dissertation, and provide a detailed discussion of the factors at work in these crises. The combination of statistical results and historical case study helps to increase the internal and external validity of the theory and formal models I proposed earlier. I close with a discussion of what the theoretical and substantive results mean, and what alternative explanations could be at work.

Chapter 7 (1996), and Githler and Vasquez (1996) have all expressed dissatisfaction

In the final chapter of this dissertation I tie together the findings of the formal models and their empirical tests, and discuss what has been learned about the role of deterrence alliances in the initiation and escalation of militarized international crises. I relate the findings back to the earlier discussions on cumulation, and maintain that the findings of the model, notably the role that certainty plays, has greatly increased our understanding of how and why alliances function as successful agents of deterrence. I close by pointing out directions for further research.

LITERATURE AND CONCEPTUALIZATIONS

2.1 Introduction

Linkages between the formation of military alliances and their deterrent capacities are tenuous at best. While many studies of alliances tend to emphasize their ability to aggregate power and deter aggression, not all alliances perform these functions. While NATO, as I argued in the introduction to this dissertation, was formed with the explicit notion of preventing Soviet aggression toward Western Europe, how does one explain an alliance such as the one typified by the Nazi-Soviet non-aggression pact of 1939? This alliance, as the world was to witness, was offensive in nature, and secretly provided for the dismemberment of Poland, which launched the Second World War.

Such discrepancies are not novel observations on the part of the author. Ward (1982), Gibler (1996), and Gibler and Vasquez (1998) have all expressed dissatisfaction with more established manners of identifying alliances and their specific functions. Throughout this dissertation it is maintained that if we are to understand the conditions under which alliances serve as successful instruments of deterrence, we need to clarify

two issues. First of all, what is meant by deterrence in international politics? How does it differ from defense? Secondly, what makes an alliance a deterrence alliance, rather than a "mere" defensive body?

In the remainder of this chapter I develop the concept of a deterrence alliance. I begin by discussing the concept of deterrence, differentiate it from the concept of defense, and examine the impact it plays in international politics. I move from this discussion of deterrence to an elaboration of the alliance literature. Special emphasis is

[illegible]

placed on two areas: the reason for alliance formation and the impact of alliances on the onset and spread of war. These are the two areas that greatly emphasize the linkages between the role that alliances play in international politics and their deterrent effects. I discuss the concept of a deterrence alliance within the context of extended deterrence, and place this conceptualization squarely within the rational deterrence debate in the literature.

2.2 Conceptualizing Deterrence

As was argued above, alliances often exist for purposes of deterrence. However, what does this exactly mean? Is there a distinction between deterrence and defense? In the following sections I discuss the conceptual underpinnings of deterrence, and distinguish deterrence from defense.

2.2.1 A Typology of Deterrence

Deterrence has been one of the cornerstones of superpower security policies since the end of the Second World War. However, it is not merely an artifact of the nuclear age.⁵ In fact, as Mearsheimer (1983) discusses, it was a feature in both World Wars, as well as the modern day Arab-Israeli conflicts.⁶ And Huth (1988) finds evidence of

⁵ The literature on nuclear strategy and nuclear deterrence is voluminous, especially given its centrality in superpower thinking after 1945. The focus in this dissertation is on conventional deterrence, as defined by Mearsheimer (1983, 15) "is a function of denying an aggressor his battlefield objectives with conventional forces". Conventional forces are, in the simplest sense, non-nuclear forces. For further discussions on nuclear deterrence and its role in superpower (particularly American) foreign policy after the Second World War, see George and Smoke (1974); Huth (1990); Kahn (1965); Kugler (1984); Morgan (1984); Powell (1985, 1990); Schelling (1960, 1966). While this list is surely not comprehensive, it does provide a good overview of the nuclear deterrence literature. The conventional deterrence literature will be discussed in more detail in the body of the text, given that it is the focus of this study.

⁶ See also Shimshoni (1988) for a discussion of deterrence in the context of Israeli security policy.

deterrence commitments going back to the latter portion of the nineteenth century, as does this study. Unfortunately, in spite of the policy implications of this strategy, deterrence is an often-misunderstood concept. In this vein, therefore, I outline a basic typology that accounts for the different formulations of deterrence.

Deterrence at its most basic level refers to a policy of attempting to use threats to persuade an adversary that the political costs of using military force will be greater than the benefits reaped from using the military force (Huth, 1988, 15). Deterrence in this regard is a strategy of attempting to deny an adversary any advantage that may come from initiating some form of crisis. Thus, deterrence is used here as a denial strategy.⁷ A nation keeps forces ready and makes it clear to an adversary that it will respond in kind if threatened.

Nuclear deterrence, in contrast, tends to be regarded as a punishment strategy. The United States pursued such a policy during the Cold War in regards to the Soviet Union. By maintaining nuclear weapons that were able to withstand a Soviet first strike, the United States was able to convince the Soviets that any attempt to launch an attack on the United States would be met in kind, and the retaliation would be extreme, in order to "teach the Soviets a lesson". The focus here is on deterrence as a denial strategy, rather than as a policy pursued to punish an aggressor extensively if a hostile action is undertaken.

Deterrence as a strategy of denial, therefore, assumes two distinct types. The first is general deterrence. Such a scenario implies that an adversarial relationship exists

⁷ Snyder (1961, 14-16) elaborates on the role of deterrence as both a denial and a punishment strategy. See also Mearsheimer (1983, 15).

600
601
602
603
604
605
606
607
608
609
610
611
612
613
614
615
616
617
618
619
620
621
622
623
624
625
626
627
628
629
630
631
632
633
634
635
636
637
638
639
640
641
642
643
644
645
646
647
648
649
650
651
652
653
654
655
656
657
658
659
660
661
662
663
664
665
666
667
668
669
670
671
672
673
674
675
676
677
678
679
680
681
682
683
684
685
686
687
688
689
690
691
692
693
694
695
696
697
698
699
700
701
702
703
704
705
706
707
708
709
710
711
712
713
714
715
716
717
718
719
720
721
722
723
724
725
726
727
728
729
730
731
732
733
734
735
736
737
738
739
740
741
742
743
744
745
746
747
748
749
750
751
752
753
754
755
756
757
758
759
760
761
762
763
764
765
766
767
768
769
770
771
772
773
774
775
776
777
778
779
780
781
782
783
784
785
786
787
788
789
790
791
792
793
794
795
796
797
798
799
800
801
802
803
804
805
806
807
808
809
810
811
812
813
814
815
816
817
818
819
820
821
822
823
824
825
826
827
828
829
830
831
832
833
834
835
836
837
838
839
840
841
842
843
844
845
846
847
848
849
850
851
852
853
854
855
856
857
858
859
860
861
862
863
864
865
866
867
868
869
870
871
872
873
874
875
876
877
878
879
880
881
882
883
884
885
886
887
888
889
890
891
892
893
894
895
896
897
898
899
900
901
902
903
904
905
906
907
908
909
910
911
912
913
914
915
916
917
918
919
920
921
922
923
924
925
926
927
928
929
930
931
932
933
934
935
936
937
938
939
940
941
942
943
944
945
946
947
948
949
950
951
952
953
954
955
956
957
958
959
960
961
962
963
964
965
966
967
968
969
970
971
972
973
974
975
976
977
978
979
980
981
982
983
984
985
986
987
988
989
990
991
992
993
994
995
996
997
998
999
1000

between two states in which 1) leaders in at least one state would consider resorting to force to gain a demand and 2) the opponent would be willing to consider a resort to arms and maintains military forces and utilizes threats of its own in order to prevent such a demand from being made (Huth, 1988, 15-18; Morgan, 1984, 42-43).

The second type of deterrence scenario that involves a pair of states is that of immediate deterrence. In such a case three conditions must be met: 1) officials in at least one state are actively considering an attack on the other; 2) the leaders of the second state are aware of this threat; 3) the leaders in the second state issue threats to retaliate if the first state goes through with its intentions (Morgan, 1984, 38).

What happens, however, if a third state is involved? In particular, what if a state values its relationship with a third state and desires to protect it? This concept is referred to as extended deterrence. This simply implies to a situation in which one state threatens military retaliation against another state to prevent the second state from using military force against an ally of the first state (Huth, 1988, 16). Following from the earlier discussion of general and immediate deterrence, one can have cases in which extended general deterrence is proffered, and cases in which extended general deterrence falters and a case of extended immediate deterrence emerges.

In order to understand the circumstances under which extended deterrence will be successful, two concepts need to be defined. The first is deterrence credibility, and the second is deterrence stability. Both are important to understanding the influence that a defender's actions have on shaping the perceptions of an aggressor. Deterrence credibility, on the one hand, refers to the ability of a defender to communicate their desire to protect an embattled protégé. Huth (1988, 4-10) discusses this problem within the

context of resolve. According to Huth, credibility is largely a function of the military capabilities a state possesses, and its willingness (resolve) to actually use them in a crisis situation. States that are willing to incur costs demonstrate more resolve, and therefore appear to be more willing to become involved in conflict to protect their "vital" interests.

I argue below, in chapter 3, states are able to demonstrate their credibility through the use of costly signals. This is accomplished by investing tangible benefits into their proteges. Such a focus on costly signaling shifts the discussion regarding credibility away from a pure dependence upon capability ratios, and maintains that states can make their resolve known through other methods. This is not, however, meant to slight the role that military force plays in international politics and in the success of deterrence in particular. As noted above, deterrence, as a punishment strategy requires the ability to carry out threats that a defender has made. Military might is the means to such an end.

Deterrence stability, on the other hand, refers to the defender taking such actions that the potential attacker does not fear an offensive strike (Huth, 1988, 11). Most states would prefer to resolve their conflicts peacefully. The purpose behind making a deterrence commitment stable is to convince potential attackers that the commitment is credible, but that it will not be utilized in an offensive manner, nor will force be used arbitrarily.

A brief aside before continuing. There exists a basic distinction between deterrence, as defined above, and compellence. Deterrence is an attempt to prevent an attack or hostile action *before* it begins. American troops stationed overseas in West Germany during the Cold War, and American behavior in this region of the world attempted to prevent the Soviet Union from launching an attack against the West.

Compellence, on the other hand, is an attempt to make an adversary stop doing something that he has already begun, by committing to some course of action (Schelling 1966, 69-70). Thus, once an enemy has made some sort of attack, the target must decide if it should respond in kind in an attempt to force the aggressor to back down. If one examines the current (1999) events taking place in the former Yugoslavia, one witnesses a textbook case of compellence. NATO demanded that Serb President Slobodan Milosevic halt in his persecution of ethnic Albanians in the Kosovo province of Serbia. Milosevic refused to any of the demands made upon him by NATO. In an attempt to force Serbia to comply, NATO, under the direction of the United States, began an air war against the Serbs, in an attempt to halt, or compel, their persecution of the Albanian citizens of Kosovo.

I take great pain in this dissertation to ensure that cases of extended general deterrence at both the general and immediate levels are discussed and analyzed (both cases that were attempted and those that failed) were actually cases of deterrence, and not of compellence. More on the coding rules regarding cases of extended general deterrence can be found in chapter 5.

Based upon this discussion, a typology of deterrence can be constructed. This typology borrows from the work of Huth (1988, 17), and helps clarify the different combinations of actors and immediacy of threat that exist in deterrence situations. I then discuss in substantive terms what each cell of the following table means. Figure 2.1 depicts the different combinations of deterrence that exist, given an adversary, a defender, and a target.

12

13

14

15

16

17

18

19

20

21

22

23

24

25

26

27

FIGURE 2.1

Threat Posed by Attacker

Actual Potential

Target of Attack

Defender

Direct Immediate Deterrence	1	Direct General Deterrence	2
Extended Immediate Deterrence	3	Extended General Deterrence	4

Protégé

A discussion of these four scenarios will help clarify the concepts of deterrence, and set the stage for chapters 5 and 6, where operational indicators of extended deterrence at both the general and immediate levels are discussed and analyzed.

In the first cell above, we have a case of direct immediate deterrence. A good example of direct immediate deterrence can be found in the conflict involving China and India in 1962. India and China have both levied a variety of claims to disputed territory on their borders. In 1962 China responded to Indian provocation in the region by making threats of its own to prevent Indian acquisition of the disputed areas. China responded with a threat of military action of its own if India continued to pursue a policy of attempted territorial acquisition. Through the use of these threats China attempted (successfully, as it turned out) to deny India any advantages it may have incurred on the battlefield.⁸

⁸ Further discussions of the India-China conflict can be found in Whiting (1975).

[illegible]

In the second cell, we have a case of direct general deterrence, which is best exemplified by US-Soviet behavior towards one another during the Cold War. Once the United States and the Soviet Union each obtained nuclear weapons, a stalemate occurred in which neither side had an advantage to strike first at each in a nuclear capacity. Hence, while each side was distrustful of each other, and publicly claimed that the other side was a mortal rival, nuclear weapons led to peace, albeit uneasy at times, between the two superpowers.⁹

In the third cell, we have a case of extended immediate deterrence, in a case drawn from the late nineteenth century. In this case, the deterrence commitment is explicitly that of an alliance. Austria-Hungary was allied with Serbia, and promised aid via intervention in the case of an attack (real or threatened) upon Serbian territory. In 1885, Serbia found herself at war with Bulgaria, and soon found herself being threatened by Bulgarian troops. Austria threatened to intervene militarily, and was able to prevent any further hostile actions on the behalf of the Bulgarians against its Serbian protégé.¹⁰

In the fourth cell, we have extended general deterrence operating. It involves yet another case of extended deterrence via alliance, and involves the case of American troops maintaining a presence in West Germany after 1961. In the aftermath of the Second World War, the division of Germany signified the ideological divide that separated East attempts to dislodge the American presence from West Germany, and West Berlin in particular, the Soviet Union and the United States settled into a state of

⁹ See, among others, Hyland (1989) on the rivalry between the United States and the Soviet Union.

¹⁰ Blainey (1988); Jelavich (1973); and Langer (1950) all present excellent depictions of the Serbian-Bulgarian War of 1885, and the Austrian response.

peaceful coexistence, in which both sides maintained troops and other military means within Germany's borders. The military might was there to deter hostile actions from the opposing sides, but deterrence remained at the general level.¹¹

As I noted above, the analysis of deterrence in the academic literature has tended to focus on two distinct threads: the strategic (nuclear) level and the conventional level. Since the focus here is on extending deterrence in an alliance context, both of the levels need to be examined, since nuclear capabilities lie at the core of much of the post-1945 alliance scene. In this vein, therefore, I discuss the findings that emerge from quantitative studies of extended deterrence in the following paragraphs. I focus on the role that conventional forces play, but also acknowledge that nuclear weapons also play a role. I conclude the section with a brief discussion of the role of alliances in extended deterrence strategies, and establish the groundwork for a discussion of alliances in world politics.¹²

One final distinction should be drawn, however, before proceeding further. What is the difference between deterrence and defense? These terms are often bandied about with reckless abandon by academics and policy-makers alike, with little regard for the distinction between the two. Defense, according to Snyder (1961, 3), "means reducing in our own prospective costs and risks in the event that deterrence fails". The distinction, then, implies that defense occurs after deterrence has failed. It is an attempt to prevent

¹¹ Hanrieder (1989) places American relations with West Germany in a context of extended deterrence.

¹² I am not attempting to ignore the vast literature in deterrence theory that utilizes game-theoretic techniques. Many of these references will be addressed below, when our attention turns to the rational deterrence debate. Because most of the extended deterrence discussion and debate emanates from the quantitative study of these phenomena, this section limits itself to the empirical domain.

any further damage, either through the use of compellence techniques or, in the nuclear case, by using some form of punishment strategy. The focus of this dissertation on deterrence, therefore, restricts our attention to cases in which potential threats are confronted with counter-threats.¹³ In the case that deterrence breaks down totally, and conflict erupts, the focus would shift to defensive tactics. Although interesting, they are beyond the scope of the work here.

2.2.3 *Existing Findings Regarding Extended Deterrence*

Quantitative studies of extended deterrence can largely be traced back to Russett (1963), and his seminal treatment of the “calculus” of deterrence.¹⁴ Such studies tend to find themselves largely grounded in the framework of realism, with a focus on the role that military capabilities play in deterring hostile actions. Additional realist variables that matter include alliance ties, level of trade, and strategic importance of the protégé to the defender. Huth and Russett (1984, 1988) and Huth (1988) focus on crises at the level of extended immediate deterrence, with specific focus on realist factors.¹⁵

Studies in general deterrence are not as common as studies in extended immediate deterrence. Much of this dearth of rigorous study can be attributed to the difficulty in identifying cases of extended general deterrence. As the discussion of selection effects in chapters 4 and 5 demonstrate, it is difficult to identify if deterrence was operating, or if

¹³ However, it should be noted that having a strong defensive posture, especially in regards to capabilities, plays a great role in determining extended deterrence success.

¹⁴ Of course, many have noted that the article could more properly be called the “algebra” of deterrence.

¹⁵ Reviews of the empirical literature on extended deterrence can be found in Levy (1988, 1989). See also the edited volume by Stern et. al. (1989) for a number of perspectives on deterrence, both nuclear and conventional.

some other factor was an issue in preventing an outbreak of hostilities. For example, why do we witness such a long period of peace between Bulgaria and Romania in the latter part of the nineteenth century? We know that Romania is allied with Austria-Hungary for the explicit purpose of deterring Bulgarian designs for a greater role in the Balkans. This presumes that Bulgaria has hostile intentions regarding the Romanian state; however, no hostility, with the minor exception of the Second Balkan War, erupts between the two minor powers during the almost thirty-five years that the Austro-Romanian alliance exists. Is the threat of Austrian intervention enough to deter the Bulgarians, or are they in truth satisfied with the status quo situation during this time period? Such issues plague studies of general deterrence, either direct or extended.

Most of the empirical studies regarding deterrence have focused on the immediate level. Much of this is due to the fact that cases of immediate deterrence are easier to identify. Two major exceptions to the paucity of studies in general deterrence are Huth and Russett (1993) and Sorokin (1994). Both studies examine general deterrence within the context of enduring rivalries. In the case of Huth and Russett, the study is conducted regarding direct general deterrence, and does not address issues of strategic interaction. Sorokin uses a game-theoretic interpretation to demonstrate that a defender will intervene when it is in the defender's interest, and discusses the role that alliance formation plays in enforcing stable deterrence situations in the Middle East.

Since extended deterrence, as evidenced from the above discussion, is meant to project a defender's power onto a minor power, it seems natural that alliances would be the means that great powers would use to extend their military capabilities for the protection of their protégé. However, in the 58 cases of extended immediate deterrence

that Huth (1988) identifies during the period 1885-1984, only 24 of the cases involve an alliance. Hence, there seems to be something that distinguishes extended deterrence relationships that function via alliance mechanisms from those that do not formally cement their relationship with an alliance treaty. In this vein, therefore, I turn the discussion from one of extended deterrence to one regarding the role of alliances in international politics.

What is of importance here is that in many instances, states undertake specific deterrence commitments to protect protégés, and in some of these cases, the commitment comes in the explicit form of a security alliance. This area of inquiry, unfortunately, is understudied in the deterrence literature, and evidence regarding the effectiveness of deterrence via alliance is mixed at best.

For example, the impact of alliances on extended immediate deterrence have been studied to some extent, albeit not great. Within this context, Huth and Russett (1984, 1988), Huth (1988) investigate the impact that a defender has on 1) deterring aggression against a protégé and 2) what ensures that the defender will intervene if deterrence fails. They find that the existence of a formal alliance between the protégé and defender is one of the best predictors that the defender will intervene on its protégé's behalf. However, as Huth (1988) notes, the existence of an alliance has a negative, statistically insignificant relationship with the prospect of deterrence success. An alliance relationship, therefore, appears to increase the possibility of intervention in a conflict if deterrence breaks down, but does not necessarily prevent a demand from being made in the first place¹⁶

¹⁶Others, notably Morrow (1994a) and Smith (1995), examine the deterrence impact of alliances in their formal models of alliance behavior, but their focus is on alliances more generally, rather than on deterrence per se.

Alternatively, in a formal exposition and empirical corroboration, Sorokin (1994) demonstrates that alliances can and do play a deterrent role, and that they can be effective at ensuring stability among adversarial states. These tenuous findings suggest that further study regarding the linkages between alliances and deterrence is warranted. Since alliances play such a major role in the discourse surrounding international affairs, I now turn to a discussion of the alliance literature, and the implications an alliance has for providing mechanisms of extended deterrence between great and minor powers.

2.3 Alliances in World Politics

In this section I discuss the role that alliances play in relations among states. In particular I address the type of alliance that is most readily classified as a deterrent structure; namely, the asymmetric alliance. I review two strands of international relations literature that have implications for extended deterrence via alliance: alliance formation and the alliance and war linkage. This allows me to present my conceptualization of deterrence alliances as a distinctive class of alliance, and link deterrence policies more tightly to a number of military alliances throughout the years.

2.3.1 The Role of Alliances in International Politics: Issues of Conceptualization and Definition

That alliances are central actors in the conduct of international relations is neither a novel nor unique assertion. Indeed, the literature is replete with discussions about the purposes and actions of such organizations, particularly as elucidated in the prominent realist and neorealist paradigms (Morgenthau, 1985; Walt, 1987; Waltz, 1979).

Since the focus of this work is on an existing alliance's impact on the occurrence of conflict, it is imperative that we understand what an alliance is, and is not. There

exists some confusion in the literature about the exact nature of alliances, so definitional clarity is an absolute necessity. Ward (1982, 5-10) makes a good first cut in distinguishing between alliances, alignment and coalitions. Alignment differs from alliance in that it is not signified by formal treaties, and is not focused only on a military dimension. Coalitions tend to be short-term alliances, established in the face of a specific threat. Once the threat passes, the coalition ceases to exist.

More recent work by Walt provides an expanded definition of alliances.

According to his study, "an alliance is a formal or informal arrangement for security cooperation between two or more sovereign states" (Walt, 1987, 12). Unfortunately, this classification blurs the distinction between alliances and alignments. To prevent such a problem, the definition of alliance used in this paper is one adopted from Kegley and Raymond (1990, 52). An alliance is a formal agreement between sovereign states for the putative purpose of coordinating their behavior in the event of specified contingencies of a military nature. Although it was mentioned above that alliances oftentimes form for reasons other than security, a majority of alliances also entail some security component within their agreement. The existence of a formalized treaty is what makes the distinction between an alliance and other forms of security cooperation.

Within the empirical literature, alliances tend to be categorized into three distinct categories, depending upon the strength of their commitment. The point of departure for discussions of alliance commitment is the pioneering work of Singer and Small (1966a, 1966b, 1968). In these studies, they categorized alliances as defense pacts, non-aggression pacts, or ententes. In descending order of commitment level are defense pacts, which require a signatory to come to the aid of a beleaguered ally; non-aggression

pacts, which stipulate that the signatories will not assist a third party who may attack any member of the alliance; and ententes, which merely state that the nations involved will consult each other about possible coordinated action if any of them are attacked by an external party.

While this classification scheme for alliances provides some distinction between the different levels of commitment that exist, it is problematic in that it does not account for why alliances form in the first place. The following section addresses this central issue in the alliance literature.

2.3.2 *Why Alliances Form*

Traditional realist (and neorealist) interpretations of alliance formation view them as forming in order to balance against power inequalities in the international system. In more recent work, Walt (1987, chapter 5) has reformulated balance of power theory somewhat. According to his view, states ally in order to counter a threat to their sovereignty (this is known as balance of threat theory). Instead of forming to balance power capabilities, he argues that states ally in order to counter states which they view as threats. Threat, in Walt's conceptualization, is represented by four factors: aggregate power, geographic proximity, offensive power, and aggressive intentions (Walt, 1987, 21-26).

In a world characterized by an anarchic international system, states are responsible for their own survival. Thus, as the discussion above makes clear, security is an important component of why alliances form. However, is this the only reason? Why would a state such as the United States, with an overwhelming abundance of power capabilities, ally with a smaller state with limited capabilities? Such an arrangement

would, in traditional views of alliances, only serve to entangle the United States, without providing any extra security for the more powerful state.

The existence of alliances between unequal powers is puzzling to students of international politics, since minor powers have very little to offer to major powers in regards to security. However, such alliances persist and continue to be formed. For example, Midlarsky's (1988, 1989) work on internal alliance structure determined that these alliances between unequal powers are more likely to endure. According to his studies, two forms of alliance structures predominate: hierarchical and non-hierarchical. According to his definitions, hierarchical alliances are those that have one major power and at least one other smaller power (Midlarsky, 1989, 56). A good example would be the United States' alliance relationship with South Korea from 1954 onwards. In contrast, a nonhierarchical alliance is one composed of two or members possessing relatively equal strength. The Triple Alliance of the latter portion joining of the nineteenth century, Austria-Hungary, Germany and Italy is an archetypal type of this alliance structure.

As an attempt to explain why such alliances exist, I build upon the pioneering work of Morrow. In a hierarchical alliance, the power is distributed unequally, and corresponds to what Morrow (1991, 914) terms an asymmetric alliance. In such a structure, the major power is generally assumed to be able to set the agenda for the alliance as a whole. In a non-hierarchical alliance (or symmetric one, to use Morrow's distinction), power is distributed relatively equally among all the members. It stands to reason from this that if power is equally dispersed, then all members will have an equal share in making alliance decisions.

24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60
61
62
63
64
65
66
67
68
69
70
71
72
73
74
75
76
77
78
79
80
81
82
83
84
85
86
87
88
89
90
91
92
93
94
95
96
97
98
99
100
101
102
103
104
105
106
107
108
109
110
111
112
113
114
115
116
117
118
119
120
121
122
123
124
125
126
127
128
129
130
131
132
133
134
135
136
137
138
139
140
141
142
143
144
145
146
147
148
149
150
151
152
153
154
155
156
157
158
159
160
161
162
163
164
165
166
167
168
169
170
171
172
173
174
175
176
177
178
179
180
181
182
183
184
185
186
187
188
189
190
191
192
193
194
195
196
197
198
199
200
201
202
203
204
205
206
207
208
209
210
211
212
213
214
215
216
217
218
219
220
221
222
223
224
225
226
227
228
229
230
231
232
233
234
235
236
237
238
239
240
241
242
243
244
245
246
247
248
249
250
251
252
253
254
255
256
257
258
259
260
261
262
263
264
265
266
267
268
269
270
271
272
273
274
275
276
277
278
279
280
281
282
283
284
285
286
287
288
289
290
291
292
293
294
295
296
297
298
299
300
301
302
303
304
305
306
307
308
309
310
311
312
313
314
315
316
317
318
319
320
321
322
323
324
325
326
327
328
329
330
331
332
333
334
335
336
337
338
339
340
341
342
343
344
345
346
347
348
349
350
351
352
353
354
355
356
357
358
359
360
361
362
363
364
365
366
367
368
369
370
371
372
373
374
375
376
377
378
379
380
381
382
383
384
385
386
387
388
389
390
391
392
393
394
395
396
397
398
399
400
401
402
403
404
405
406
407
408
409
410
411
412
413
414
415
416
417
418
419
420
421
422
423
424
425
426
427
428
429
430
431
432
433
434
435
436
437
438
439
440
441
442
443
444
445
446
447
448
449
450
451
452
453
454
455
456
457
458
459
460
461
462
463
464
465
466
467
468
469
470
471
472
473
474
475
476
477
478
479
480
481
482
483
484
485
486
487
488
489
490
491
492
493
494
495
496
497
498
499
500
501
502
503
504
505
506
507
508
509
510
511
512
513
514
515
516
517
518
519
520
521
522
523
524
525
526
527
528
529
530
531
532
533
534
535
536
537
538
539
540
541
542
543
544
545
546
547
548
549
550
551
552
553
554
555
556
557
558
559
560
561
562
563
564
565
566
567
568
569
570
571
572
573
574
575
576
577
578
579
580
581
582
583
584
585
586
587
588
589
590
591
592
593
594
595
596
597
598
599
600
601
602
603
604
605
606
607
608
609
610
611
612
613
614
615
616
617
618
619
620
621
622
623
624
625
626
627
628
629
630
631
632
633
634
635
636
637
638
639
640
641
642
643
644
645
646
647
648
649
650
651
652
653
654
655
656
657
658
659
660
661
662
663
664
665
666
667
668
669
670
671
672
673
674
675
676
677
678
679
680
681
682
683
684
685
686
687
688
689
690
691
692
693
694
695
696
697
698
699
700
701
702
703
704
705
706
707
708
709
710
711
712
713
714
715
716
717
718
719
720
721
722
723
724
725
726
727
728
729
730
731
732
733
734
735
736
737
738
739
740
741
742
743
744
745
746
747
748
749
750
751
752
753
754
755
756
757
758
759
760
761
762
763
764
765
766
767
768
769
770
771
772
773
774
775
776
777
778
779
780
781
782
783
784
785
786
787
788
789
790
791
792
793
794
795
796
797
798
799
800
801
802
803
804
805
806
807
808
809
810
811
812
813
814
815
816
817
818
819
820
821
822
823
824
825
826
827
828
829
830
831
832
833
834
835
836
837
838
839
840
841
842
843
844
845
846
847
848
849
850
851
852
853
854
855
856
857
858
859
860
861
862
863
864
865
866
867
868
869
870
871
872
873
874
875
876
877
878
879
880
881
882
883
884
885
886
887
888
889
890
891
892
893
894
895
896
897
898
899
900
901
902
903
904
905
906
907
908
909
910
911
912
913
914
915
916
917
918
919
920
921
922
923
924
925
926
927
928
929
930
931
932
933
934
935
936
937
938
939
940
941
942
943
944
945
946
947
948
949
950
951
952
953
954
955
956
957
958
959
960
961
962
963
964
965
966
967
968
969
970
971
972
973
974
975
976
977
978
979
980
981
982
983
984
985
986
987
988
989
990
991
992
993
994
995
996
997
998
999
1000

As Altfeld (1984) and Morrow (1991, 1993) describe it, a trade-off exists between forming an alliance and building up arms as a means of ameliorating security concerns of a state. However, these are not the only concerns that a state has when it determines its alliance policies. Larger states do not necessarily acquire security benefits from smaller states. Smaller allies receive benefits in the form of increased security (through the policy of extended deterrence), while the larger ally receives autonomy benefits, in terms of military bases, or increased advantages in terms of trade.

If one looks at alliances from this angle, then one can surmise that they form for security purposes, as Lalman and Newman (1991) argue, or for benefits of trade (Gowa, 1994).¹⁷ Either way, I conceptualize states as forming alliances for the purpose of advancing national policy goals, which may be ideological, security related, or related to trade.

When nations enter into an alliance, they tend to sacrifice either autonomy or security. According to Morrow (1991, 908-9), autonomy is the degree to which a nation pursues desired changes in the status quo. In contrast, security is its ability to maintain the current resolution of the issues that it wishes to preserve. A dominant power within an alliance has the ability to constrain both the autonomy and security of its other partners. The question that remains is the extent to which it will act in such a manner.

Of course, there are inherent dangers to both members of such an alliance treaty. Minor powers, as Christensen and Snyder (1990), and Snyder (1984), fear being abandoned by their major power allies in times of crisis. Such fears are borne out in the findings of Saborsky (1980), who notes that 76% of all alliances are unreliable in times of

war. On the other hand, major powers can be fearful that their minor power partners, reveling in the knowledge that their alliance partner will intervene on their behalf if threatened, may undertake precarious foreign policy ventures. This "moral hazard" (Snyder, 1984), is often attributed to the onset of war, and the major power defender will be dragged into conflict to protect its interests in its protégé.

In determining how to act, an alliance member must determine if it is more important to have greater security, or greater autonomy. In this sense, it develops an ideal point. This is defined as its preferred resolution of various issues (Morrow, 1991, 908). Rational actors will seek out an ideal point that will maximize the benefits of both security and autonomy. If a situation arises which disrupts the actor's equilibrium, it must determine its best strategy in order to resolve the crisis.

Such an approach is not an uncommon one in the alliance literature. Many additional studies address the relationship between small powers and great ones in alliance relationships. Most of these, in fact, tend to shift the focus from "balance of power" or "balance of threat" issues to ones in which the great power defender trades some security benefit for something other than capability aggregation. Over thirty years ago Rothstein (1968) noted those small powers are not merely great powers writ small. Rather, they play a unique role in the international system, and should be analyzed differently than their major power counterparts.¹⁸ More recently, Morgan and Palmer

¹⁷ Gowa (1994) and Mansfield and Bronson (1997) argue that alliances that form for trade purposes tend to provide security externalities, which are unintended security benefits of the trading relationship.

¹⁸ Similar arguments are put forth by Keohane (1971), in his discussion of the large influence of small allies.

[illegible]

(1997) utilize the terminology preservation and proaction to demonstrate the trade-offs that exist between unequal allies.

In a more recent research project, Reiter (1994, 1996) discusses learning among small powers. He finds that they tend to acquire knowledge from formative events (the World Wars in his study), and apply this knowledge to their decisions on when to ally and with whom. These studies, while not exhaustive, are indicative of the fact that various benefits are traded between small powers and their defenders. As I shall demonstrate in chapter 3 when a full theory is developed, small powers play a distinct role in the deterrence alliance, largely due to the fact that they provide their great power partners with benefits that differ from security.

2.3.3 *Alliances and War: Random Chance or Reliability?*

Secondly I turn to an examination in which the evidence is mixed. Specifically, what is the relationship between alliances and the occurrence of international war? If alliances are supposed to be organizations which are formed to deter aggression against one or member states, then the incidence of conflict between nations is quite puzzling.¹⁹ Why form alliances if they are ineffective in deterring attackers? An interesting quote concerning alliances and war is indicative of the puzzle surrounding this question:

First, alliances do not prevent war or promote peace; instead they are associated with war, although they are probably not a cause of war. Second, the major consequence of alliances is to expand war once it has started; in the war alliances are important in accounting for the magnitude and severity of war. (Vasquez, 1987, 119)

¹⁹ It should be noted that while many (but not all) alliances are formed with some deterrent component in mind (NATO in the post World War II era is the best example), not all deterrence relationships are alliance relationships (the United States and Israel being a case in point).

17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60
61
62
63
64
65
66
67
68
69
70
71
72
73
74
75
76
77
78
79
80
81
82
83
84
85
86
87
88
89
90
91
92
93
94
95
96
97
98
99
100
101
102
103
104
105
106
107
108
109
110
111
112
113
114
115
116
117
118
119
120
121
122
123
124
125
126
127
128
129
130
131
132
133
134
135
136
137
138
139
140
141
142
143
144
145
146
147
148
149
150
151
152
153
154
155
156
157
158
159
160
161
162
163
164
165
166
167
168
169
170
171
172
173
174
175
176
177
178
179
180
181
182
183
184
185
186
187
188
189
190
191
192
193
194
195
196
197
198
199
200
201
202
203
204
205
206
207
208
209
210
211
212
213
214
215
216
217
218
219
220
221
222
223
224
225
226
227
228
229
230
231
232
233
234
235
236
237
238
239
240
241
242
243
244
245
246
247
248
249
250
251
252
253
254
255
256
257
258
259
260
261
262
263
264
265
266
267
268
269
270
271
272
273
274
275
276
277
278
279
280
281
282
283
284
285
286
287
288
289
290
291
292
293
294
295
296
297
298
299
300
301
302
303
304
305
306
307
308
309
310
311
312
313
314
315
316
317
318
319
320
321
322
323
324
325
326
327
328
329
330
331
332
333
334
335
336
337
338
339
340
341
342
343
344
345
346
347
348
349
350
351
352
353
354
355
356
357
358
359
360
361
362
363
364
365
366
367
368
369
370
371
372
373
374
375
376
377
378
379
380
381
382
383
384
385
386
387
388
389
390
391
392
393
394
395
396
397
398
399
400
401
402
403
404
405
406
407
408
409
410
411
412
413
414
415
416
417
418
419
420
421
422
423
424
425
426
427
428
429
430
431
432
433
434
435
436
437
438
439
440
441
442
443
444
445
446
447
448
449
450
451
452
453
454
455
456
457
458
459
460
461
462
463
464
465
466
467
468
469
470
471
472
473
474
475
476
477
478
479
480
481
482
483
484
485
486
487
488
489
490
491
492
493
494
495
496
497
498
499
500
501
502
503
504
505
506
507
508
509
510
511
512
513
514
515
516
517
518
519
520
521
522
523
524
525
526
527
528
529
530
531
532
533
534
535
536
537
538
539
540
541
542
543
544
545
546
547
548
549
550
551
552
553
554
555
556
557
558
559
560
561
562
563
564
565
566
567
568
569
570
571
572
573
574
575
576
577
578
579
580
581
582
583
584
585
586
587
588
589
590
591
592
593
594
595
596
597
598
599
600
601
602
603
604
605
606
607
608
609
610
611
612
613
614
615
616
617
618
619
620
621
622
623
624
625
626
627
628
629
630
631
632
633
634
635
636
637
638
639
640
641
642
643
644
645
646
647
648
649
650
651
652
653
654
655
656
657
658
659
660
661
662
663
664
665
666
667
668
669
670
671
672
673
674
675
676
677
678
679
680
681
682
683
684
685
686
687
688
689
690
691
692
693
694
695
696
697
698
699
700
701
702
703
704
705
706
707
708
709
710
711
712
713
714
715
716
717
718
719
720
721
722
723
724
725
726
727
728
729
730
731
732
733
734
735
736
737
738
739
740
741
742
743
744
745
746
747
748
749
750
751
752
753
754
755
756
757
758
759
760
761
762
763
764
765
766
767
768
769
770
771
772
773
774
775
776
777
778
779
780
781
782
783
784
785
786
787
788
789
790
791
792
793
794
795
796
797
798
799
800
801
802
803
804
805
806
807
808
809
810
811
812
813
814
815
816
817
818
819
820
821
822
823
824
825
826
827
828
829
830
831
832
833
834
835
836
837
838
839
840
841
842
843
844
845
846
847
848
849
850
851
852
853
854
855
856
857
858
859
860
861
862
863
864
865
866
867
868
869
870
871
872
873
874
875
876
877
878
879
880
881
882
883
884
885
886
887
888
889
890
891
892
893
894
895
896
897
898
899
900
901
902
903
904
905
906
907
908
909
910
911
912
913
914
915
916
917
918
919
920
921
922
923
924
925
926
927
928
929
930
931
932
933
934
935
936
937
938
939
940
941
942
943
944
945
946
947
948
949
950
951
952
953
954
955
956
957
958
959
960
961
962
963
964
965
966
967
968
969
970
971
972
973
974
975
976
977
978
979
980
981
982
983
984
985
986
987
988
989
990
991
992
993
994
995
996
997
998
999
1000
1001
1002
1003
1004
1005
1006
1007
1008
1009
1010
1011
1012
1013
1014
1015
1016
1017
1018
1019
1020
1021
1022
1023
1024
1025
1026
1027
1028
1029
1030
1031
1032
1033
1034
1035
1036
1037
1038
1039
1040
1041
1042
1043
1044
1045
1046
1047
1048
1049
1050
1051
1052
1053
1054
1055
1056
1057
1058
1059
1060
1061
1062
1063
1064
1065
1066
1067
1068
1069
1070
1071
1072
1073
1074
1075
1076
1077
1078
1079
1080
1081
1082
1083
1084
1085
1086
1087
1088
1089
1090
1091
1092
1093
1094
1095
1096
1097
1098
1099
1100
1101
1102
1103
1104
1105
1106
1107
1108
1109
1110
1111
1112
1113
1114
1115
1116
1117
1118
1119
1120
1121
1122
1123
1124
1125
1126
1127
1128
1129
1130
1131
1132
1133
1134
1135
1136
1137
1138
1139
1140
1141
1142
1143
1144
1145
1146
1147
1148
1149
1150
1151
1152
1153
1154
1155
1156
1157
1158
1159
1160
1161
1162
1163
1164
1165
1166
1167
1168
1169
1170
1171
1172
1173
1174
1175
1176
1177
1178
1179
1180
1181
1182
1183
1184
1185
1186
1187
1188
1189
1190
1191
1192
1193
1194
1195
1196
1197
1198
1199
1200
1201
1202
1203
1204
1205
1206
1207
1208
1209
1210
1211
1212
1213
1214
1215
1216
1217
1218
1219
1220
1221
1222
1223
1224
1225
1226
1227
1228
1229
1230
1231
1232
1233
1234
1235
1236
1237
1238
1239
1240
1241
1242
1243
1244
1245
1246
1247
1248
1249
1250
1251
1252
1253
1254
1255
1256
1257
1258
1259
1260
1261
1262
1263
1264
1265
1266
1267
1268
1269
1270
1271
1272
1273
1274
1275
1276
1277
1278
1279
1280
1281
1282
1283
1284
1285
1286
1287
1288
1289
1290
1291
1292
1293
1294
1295
1296
1297
1298
1299
1300
1301
1302
1303
1304
1305
1306
1307
1308
1309
1310
1311
1312
1313
1314
1315
1316
1317
1318
1319
1320
1321
1322
1323
1324
1325
1326
1327
1328
1329
1330
1331
1332
1333
1334
1335
1336
1337
1338
1339
1340
1341
1342
1343
1344
1345
1346
1347
1348
1349
1350
1351
1352
1353
1354
1355
1356
1357
1358
1359
1360
1361
1362
1363
1364
1365
1366
1367
1368
1369
1370
1371
1372
1373
1374
1375
1376
1377
1378
1379
1380
1381
1382
1383
1384
1385
1386
1387
1388
1389
1390
1391
1392
1393
1394
1395
1396
1397
1398
1399
1400
1401
1402
1403
1404
1405
1406
1407
1408
1409
1410
1411
1412
1413
1414
1415
1416
1417
1418
1419
1420
1421
1422
1423
1424
1425
1426
1427
1428
1429
1430
1431
1432
1433
1434
1435
1436
1437
1438
1439
1440
1441
1442
1443
1444
1445
1446
1447
1448
1449
1450
1451
1452
1453
1454
1455
1456
1457
1458
1459
1460
1461
1462
1463
1464
1465
1466
1467
1468
1469
1470
1471
1472
1473
1474
1475
1476
1477
1478
1479
1480
1481
1482
1483
1484
1485
1486
1487
1488
1489
1490
1491
1492
1493
1494
1495
1496
1497
1498
1499
1500
1501
1502
1503
1504
1505
1506
1507
1508
1509
1510
1511
1512
1513
1514
1515
1516
1517
1518
1519
1520
1521
1522
1523
1524
1525
1526
1527
1528
1529
1530
1531
1532
1533
1534
1535
1536
1537
1538
1539
1540
1541
1542
1543
1544
1545
1546
1547
1548
1549
1550
1551
1552
1553
1554
1555
1556
1557
1558
1559
1560
1561
1562
1563
1564
1565
1566
1567
1568
1569
1570
1571
1572
1573
1574
1575
1576
1577
1578
1579
1580
1581
1582
1583
1584
1585
1586
1587
1588
1589
1590
1591
1592
1593
1594
1595
1596
1597
1598
1599
1600
1601
1602
1603
1604
1605
1606
1607
1608
1609
1610
1611
1612
1613
1614
1615
1616
1617
1618
1619
1620
1621
1622
1623
1624
1625
1626
1627
1628
1629
1630
1631
1632
1633
1634
1635
1636
1637
1638
1639
1640
1641
1642
1643
1644
1645
1646
1647
1648
1649
1650
1651
1652
1653
1654
1655
1656
1657
1658
1659
1660
1661
1662
1663
1664
1665
1666
1667
1668
1669
1670
1671
1672
1673
1674
1675
1676
1677
1678
1679
1680
1681
1682
1683
1684
1685
1686
1687
1688
1689
1690
1691
1692
1693
1694
1695
1696
1697
1698
1699
1700
1701
1702
1703
1704
1705
1706
1707
1708
1709
1710
1711
1712
1713
1714
1715
1716
1717
1718
1719
1720
1721
1722
1723
1724
1725
1726
1727
1728
1729
1730
1731
1732
1733
1734
1735
1736
1737
1738
1739
1740
1741
1742
1743
1744
1745
1746
1747
1748
1749
1750
1751
1752
1753
1754
1755
1756
1757
1758
1759
1760
1761
1762
1763
1764
1765
1766
1767
1768
1769
1770
1771
1772
1773
1774
1775
1776
1777
1778
1779
1780
1781
1782
1783
1784
1785
1786
1787
1788
1789
1790
1791
1792
1793
1794
1795
1796
1797
1798
1799
1800
1801
1802
1803
1804
1805
1806
1807
1808
1809
1810
1811
1812
1813
1814
1815
1816
1817
1818
1819
1820
1821
1822
1823
1824
1825
1826
1827
1828
1829
1830
1831
1832
1833
1834
1835
1836
1837
1838
1839
1840
1841
1842
1843
1844
1845
1846
1847
1848
1849
1850
1851
1852
1853
1854
1855
1856
1857
1858
1859
1860
1861
1862
1863
1864
1865
1866
1867
1868
1869
1870
1871
1872
1873
1874
1875
1876
1877
1878
1879
1880
1881
1882
1883
1884
1885
1886
1887
1888
1889
1890
1891
1892
1893
1894
1895
1896
1897
1898
1899
1900
1901
1902
1903
1904
1905
1906
1907
1908
1909
1910
1911
1912
1913
1914
1915
1916
1917
1918
1919
1920
1921
1922
1923
1924
1925
1926
1927
1928
1929
1930
1931
1932
1933
1934
1935
1936
1937
1938
1939
1940
1941
1942
1943
1944
1945
1946
1947
1948
1949
1950
1951
1952
1953
1954
1955
1956
1957
1958
1959
1960
1961
1962
1963
1964
1965
1966
1967
1968
1969
1970
1971
1972
1973
1974
1975
1976
1977
1978
1979
1980
1981
1982
1983
1984
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
2025
2026
2027
2028
2029
2030
2031
2032
2033
2034
2035
2036
2037
2038
2039
2040
2041
2042
2043
2044
2045
2046
2047
2048
2049
2050
2051
2052
2053
2054
2055
2056
2057
2058
2059
2060
2061
2062
2063
2064
2065
2066
2067
2068
2069
2070
2071
2072
2073
2074
2075
2076
2077
2078
2079
2080
2081
2082
2083
2084
2085
2086
2087
2088
2089
2090
2091
2092
2093
2094
2095
2096
2097
2098
2099
2100
2101
2102
2103
2104
2105
2106
2107
2108
2109
2110
2111
2112
2113
2114
2115
2116
2117
2118
2119
2120
2121
2122
2123
2124
2125
2126
2127
2128
2129
2130
2131
2132
2133
2134
2135
2136
2137
2138
2139
2140
2141
2142
2143
2144
2145
2146
2147
2148
2149
2150
2151
2152
2153
2154
2155
2156
2157
2158
2159
2160
2161
2162
2163
2164
2165
2166
2167
2168
2169
2170
2171
2172
2173
2174
2175
2176
2177
2178
2179
2180
2181
2182
2183
2184
2185
2186
2187
2188
2189
2190
2191
2192
2193
2194
2195
2196
2197
2198
2199
2200
2201
2202
2203
2204
2205
2206
2207
2208
2209
2210
2211
2212
2213
2214
2215
2216
2217
2218
2219
2220
2221
2222
2223
2224
2225
2226
2227
2228
2229
2230
2231
2232
2233
2234
2235
2236
2237
2238
2239
2240
2241
2242
2243
2244
2245
2246
2247
2248
2249
2250
2251
2252
2253

A majority of the work that examines the relationship between alliances and the occurrence of war emanates out of the Correlates of War (COW) project. It is their findings that Vasquez is discussing above. It is in an early work conducted by members of the project (Singer and Small, 1966), that the relationship between alliance membership and the occurrence of war is first empirically examined. Their initial findings suggested that alliances are particularly correlated with certain factors pertaining to war, including number of wars a state is involved in and the number of years of war a state is involved in.

After this initial study, a number of other writings sought to clarify this relationship. In particular, much of the focus changed to an examination of alliance reliability; namely, under what conditions would states actually honor the pledges they had made to other states. However, different studies produce dramatically different results, depending upon how they conceptualize and treat alliance reliability.²⁰ For example, Holsti, Hopmann and Sullivan (1973), Singer and Small (1966a, 1966b, 1968) found that alliances tend to be honored, especially if their *casus foederis* is invoked. In contrast, Sabrosky (1980) finds that 73 percent of all alliances are unreliable, and Bueno de Mesquita (1981) finds that allies are as likely to attack each other as they are to come to each other's aid. In addition, Siverson and King (1979, 1980) examined the effects that an existing alliance had on the expansion of war. They find that a state is five times more likely to become involved in a war if it is allied with one of the disputants than if

²⁰ Reliability is never explicitly defined in either of these works, but it is inherently linked with the notion of commitment. For purposes being outlined in this dissertation, I use the terms honor commitment and reliability interchangeably. I define reliability as a situation in which a state honors a pledge to an ally. This is similar to Smith's (1996, 17) definition of alliance reliability.

111
112
113
114
115
116
117
118
119
120
121
122
123
124
125
126
127
128
129
130
131
132
133
134
135
136
137
138
139
140
141
142
143
144
145
146
147
148
149
150
151
152
153
154
155
156
157
158
159
160
161
162
163
164
165
166
167
168
169
170
171
172
173
174
175
176
177
178
179
180
181
182
183
184
185
186
187
188
189
190
191
192
193
194
195
196
197
198
199
200
201
202
203
204
205
206
207
208
209
210
211
212
213
214
215
216
217
218
219
220
221
222
223
224
225
226
227
228
229
230
231
232
233
234
235
236
237
238
239
240
241
242
243
244
245
246
247
248
249
250
251
252
253
254
255
256
257
258
259
260
261
262
263
264
265
266
267
268
269
270
271
272
273
274
275
276
277
278
279
280
281
282
283
284
285
286
287
288
289
290
291
292
293
294
295
296
297
298
299
300
301
302
303
304
305
306
307
308
309
310
311
312
313
314
315
316
317
318
319
320
321
322
323
324
325
326
327
328
329
330
331
332
333
334
335
336
337
338
339
340
341
342
343
344
345
346
347
348
349
350
351
352
353
354
355
356
357
358
359
360
361
362
363
364
365
366
367
368
369
370
371
372
373
374
375
376
377
378
379
380
381
382
383
384
385
386
387
388
389
390
391
392
393
394
395
396
397
398
399
400
401
402
403
404
405
406
407
408
409
410
411
412
413
414
415
416
417
418
419
420
421
422
423
424
425
426
427
428
429
430
431
432
433
434
435
436
437
438
439
440
441
442
443
444
445
446
447
448
449
450
451
452
453
454
455
456
457
458
459
460
461
462
463
464
465
466
467
468
469
470
471
472
473
474
475
476
477
478
479
480
481
482
483
484
485
486
487
488
489
490
491
492
493
494
495
496
497
498
499
500
501
502
503
504
505
506
507
508
509
510
511
512
513
514
515
516
517
518
519
520
521
522
523
524
525
526
527
528
529
530
531
532
533
534
535
536
537
538
539
540
541
542
543
544
545
546
547
548
549
550
551
552
553
554
555
556
557
558
559
560
561
562
563
564
565
566
567
568
569
570
571
572
573
574
575
576
577
578
579
580
581
582
583
584
585
586
587
588
589
590
591
592
593
594
595
596
597
598
599
600
601
602
603
604
605
606
607
608
609
610
611
612
613
614
615
616
617
618
619
620
621
622
623
624
625
626
627
628
629
630
631
632
633
634
635
636
637
638
639
640
641
642
643
644
645
646
647
648
649
650
651
652
653
654
655
656
657
658
659
660
661
662
663
664
665
666
667
668
669
670
671
672
673
674
675
676
677
678
679
680
681
682
683
684
685
686
687
688
689
690
691
692
693
694
695
696
697
698
699
700
701
702
703
704
705
706
707
708
709
710
711
712
713
714
715
716
717
718
719
720
721
722
723
724
725
726
727
728
729
730
731
732
733
734
735
736
737
738
739
740
741
742
743
744
745
746
747
748
749
750
751
752
753
754
755
756
757
758
759
760
761
762
763
764
765
766
767
768
769
770
771
772
773
774
775
776
777
778
779
780
781
782
783
784
785
786
787
788
789
790
791
792
793
794
795
796
797
798
799
800
801
802
803
804
805
806
807
808
809
810
811
812
813
814
815
816
817
818
819
820
821
822
823
824
825
826
827
828
829
830
831
832
833
834
835
836
837
838
839
840
841
842
843
844
845
846
847
848
849
850
851
852
853
854
855
856
857
858
859
860
861
862
863
864
865
866
867
868
869
870
871
872
873
874
875
876
877
878
879
880
881
882
883
884
885
886
887
888
889
890
891
892
893
894
895
896
897
898
899
900
901
902
903
904
905
906
907
908
909
910
911
912
913
914
915
916
917
918
919
920
921
922
923
924
925
926
927
928
929
930
931
932
933
934
935
936
937
938
939
940
941
942
943
944
945
946
947
948
949
950
951
952
953
954
955
956
957
958
959
960
961
962
963
964
965
966
967
968
969
970
971
972
973
974
975
976
977
978
979
980
981
982
983
984
985
986
987
988
989
990
991
992
993
994
995
996
997
998
999
1000

the war involves states with which it has no alliance ties. And, within a context of extended immediate deterrence, Huth (1988, 1994, 1998) discerns that defenders who are allied with beleaguered states are more likely to militarily intervene when a crisis erupts.

These contradictory findings are quite disconcerting when it comes to determining when an ally will honor its commitments and the causal link between alliances and war is never fully established. I argue that much of the problem surrounding this question is that the reason for alliance formation has never been adequately addressed in these studies. If we are to understand how and why alliances have an impact on the occurrence of war in some way, then we need to theoretically specify why they exist in the first place. I argue that it is in the realm of deterrence that we can understand, at least partially, why some alliances exist, and what benefits they provide to their member states. It is now to an examination of deterrence via alliance that this discussion now turns.

2.4 Linking Alliances to Extended Deterrence: Conceptualizing Deterrence Alliances

Having seen that great powers pursue alliances with minor powers for purposes other than capability aggregation, I think it imperative to move beyond some of the earlier conceptualizations of alliances that have driven empirical research in the past. It appears that many asymmetric alliances form for reasons other than balancing power, as many studies, recent and otherwise, have demonstrated. Gibler (1996), for example, defines certain alliances as territorial settlement alliances, while Gibler and Vasquez (1998) focus on the determinants of what types of alliances will lead to war. And Schroeder (1976) argues that alliances serve as mechanisms for managing the internal

politics of member states. From these attempts to reconceptualize the alliance variable then, I posit a new type of alliance: the deterrence alliance.

I define a deterrence alliance along three dimensions. The first dimension stipulates that the alliance must be formed for (potentially) some defensive purpose, should deterrence fail. Therefore, the treaty that is signed must make some stipulation for military support in the event that deterrence fails. This rules out alliances such as the Nazi-Soviet non-aggression pact and the alliances formed in 1866 by Prussia with a number of the smaller German states. All of these alliances were formed to aggregate capabilities in order to wage offensive war.

Secondly, the identification of a threatening state must be evident. This helps distinguish a deterrence alliance from one that is purely defensive in nature. An alliance can form with purely defensive intentions, such as the American relationship with Australia and New Zealand after the Second World War (the ANZUS alliance). However, there is not a state that is actively threatening the vital interests or national security of these smaller states. In contrast, we see American relations with Taiwan and South Korea being cemented by formal alliances after hostilities involving both of these smaller states erupts in the post 1945 era.

Third, the great power defender must be able to make its commitment to its ally known. "Commitment is the adhesive of human interaction...Of great importance for the stability of the international system are the processes by which alliance commitments are terminated" (Kegley and Raymond, 1990, 1). As indicated by this statement, the failure to honor a pledge to an ally can lead to a restructuring of the international order, as nations break their old alliance bonds and forge others anew. Unfortunately, the concept

of alliance commitment is not overly clear. In order to comprehend why states in an alliance will adhere to their promises or break them; one needs to know precisely what these commitments are. Hence, the decision to proffer security within a context of extended general deterrence indicates that deterrence is a benefit that can be provided by the defender, in exchange for some other good.

Other than the work emanating out of the COW project, very little research has been conducted that discusses the honoring of alliance commitments in any rigorous fashion. Two more promising avenues of explaining commitment among allies have been witnessed in recent years, but they are a distinct minority. A first branch has focused on members honoring their commitments based upon tangible resources promised to the alliance's other members from a public goods perspective (the basic point of departure is Olson and Zeckhauser, 1966). The second strand emerges specifically from the literature on deterrence, as exemplified in Huth (1988); Huth and Russett (1988); and Huth (1994).

Recent work by Gates and Terasawa (1992, 104) has extended the discussion of the public goods problem among defensive alliances. They make a distinction between resources (viewed as troops) fully committed to an alliance (which are public benefits), partially committed to an alliance (which are both public and private benefits), and those which are used for out of alliance purposes (strictly private benefits). While this is not the place for a discussion of the entire public goods literature, one thing emanates from this

1. The first part of the document is a title page. It contains the title "THE HISTORY OF THE UNITED STATES OF AMERICA" and the author "BY JAMES MADISON".

2. The second part of the document is a preface. It discusses the importance of history and the role of the government in preserving it.

3. The third part of the document is the main body of the text. It is divided into several chapters, each covering a different aspect of the history of the United States.

4. The fourth part of the document is a conclusion. It summarizes the main points of the text and offers some final thoughts on the future of the United States.

5. The fifth part of the document is a list of references. It includes a list of books and documents that were used in the writing of the text.

work. Commitments can be measured as tangible resources, rather than as vague promises or alliance configurations.²¹

Operating from a perspective on deterrence, Huth (1994) discusses instances in which states will assume extended deterrence commitments. He finds, in keeping within the realist framework, that states will undertake such commitments when the benefits to their national security are served. The notion of commitment implicit in such a framework is that of a promise to aid an ally. This keeps the focus within our discussion of defense pacts, and extends the notion of commitment as resources.

Based upon the above discussion of commitment, I feel that it is necessary to move beyond the notion under which Sabrosky (1980) operated in his study of alliance reliability. Commitment implies constraints on the actions of an individual state, as witnessed by the discussion of security versus autonomy above. We therefore need to focus our attention on individual states, rather than on the alliance as a whole. Thus, I conceptualize commitment here as a promise, backed up by resources, to the other members of the alliance. As will be outlined in the following chapter, the great power must provide some tangible security benefit to its protégé in an attempt to prevent

²¹ Olson and Zeckhauser's (1966) article on deterrence as a non-excludable good among allies generated a spate of work in the realm of the economic theory of alliances. Sandler (1993) provides an excellent overview of this literature.

Palmer (1992) extends the purely theoretical work done in this tradition by statistically testing hypotheses derived from the original theory of Olson and Zeckhauser. Coneybeare and Sandler (1991) apply their public goods model to the Triple Alliance and Triple Entente of the late nineteenth and early twentieth centuries. Much of this literature, however, is rooted in the discussion of burden sharing within NATO. Although an interesting literature, I maintain that deterrence benefits can be withheld by a great power in an alliance. Unfortunately such an analysis is beyond the purview of this dissertation.

[illegible]

aggression on the part of a hostile adversary. These commitments are revealed through the use of costly signals sent by the defender to the protégé.

2.5 The Rational Deterrence Debate

Having provided linkages between a policy of extended deterrence and alliances, it would be appropriate to outline a complete theory of extended deterrence via alliance at this juncture. However, there does exist a debate, both within the international relations community and the political science discipline as a whole, which must be addressed prior to continuing on this quest towards theory.

This debate is the one that surrounds the use of rational choice methodologies in analyzing political phenomenon. This debate is currently quite central in the discipline, and is exceptionally critical of the work that is done within international politics. In regards to analyses conducted of deterrence, it is especially critical of what constitutes a deterrence encounter, and how they are measured. In many cases these critics call into question the efficacy of deterrence as both a social-science theory and a policy prescription for statesmen to adopt. In the following two sections I present the criticisms of rational deterrence theory, at both the formal and the quantitative levels, and discuss why these criticisms are flawed.²²

2.5.1 Criticisms based on Formal Modeling

Those that challenge rational choice models tend to fall into two distinct factions. The first, as exemplified by the writings of Green and Shapiro (1994), maintains that rational theories of politics have led to no interesting conclusions. Such critics argue that

²² The recent review by Harvey (1998) reexamines the rational deterrence debate within the broader methodological concerns of necessity and sufficiency. Many of Harvey's critiques of critics of rational deterrence theory are echoed below.

[The page contains faint, illegible markings.]

rational choice approaches are dependent upon arcane jargon, understood by few, and that empirical tests of rational choice models are poorly conducted (if conducted at all).²³ Others, notably Lebow and Stein (1989), Lowi (1992) and Walt (1991) have decried the use of rational choice modeling techniques, both in political science as a discipline and in international politics in particular. As most of them argue, the political world is too rich, too complex to be distilled into a mere mathematical formula.²⁴

The second group of critics approaches rational choice modeling from a psychological perspective, and argues that individuals do not necessarily attempt to maximize gains. Rather, in many instances they attempt to minimize losses.²⁵ Such adherents to this method of explanation tend to assert the inadequacy of rational choice in determining actors' preferences.

While I could attempt to refute all of these charges levied at the rational choice enterprise, I allow more able hands (Lalman et. al., 1993; O'Neill, 1995) to defend the virtues of rational choice modeling at all levels of the discipline. In the following

²³ O'Neill (1995) presents a thoughtful review and critique of Green and Shapiro's work. In it he takes special issue with how Green and Shapiro advocate testing of formal rational choice models, and the philosophy of science underpinnings that they use to strengthen their claims. See also the edited volume by Friedman (1996) for additional responses to Green and Shapiro's commentary.

²⁴ For an early defense of rational models that addresses many of these criticisms, see Moe (1979).

²⁵ Critics that exemplify the psychological approach to deterrence more generally include Lebow (1981, 1987), Lebow and Stein (1989, 1990), Lebow, Stein and Jervis (1985). Levy (1997) presents a more thoughtful and constructive approach to using psychological approaches to studying international politics generally.

[illegible]

paragraphs I address these charges as they pertain to the modeling of international politics in general, and the modeling of deterrence in particular.²⁶

I begin with the charges that rational choice models are arcane, jargon-laden and merely skeletal representations of actual events. The rationale behind using mathematical techniques for modeling is to ensure that results can be replicated, and that all assumptions are laid bare and easily identified. The assumption of rationality is just that, an assumption. In many instances assuming rationality may be appropriate. In others, it may not.

The formal rational choice literature, contrary to many popular conceptions, has advanced our understanding of international politics in general, and has additionally influenced our understanding of deterrence processes. Bueno de Mesquita (1981), for example, utilizes a straightforward expected utility framework to explain international conflict on a general level. The early work of Schelling (1960, 1966) is largely based upon rational choice assumptions, and can be said to serve as the basis for much of American strategic nuclear policy during the Cold War.

Additional work by Fearon (1994a, 1994b), Kilgour and Zagare (1991), Powell (1987, 1990), and Zagare (1987, 1990), to mention just a few, has taken the study of deterrence, formalized it, and provided us with insights into how states behave under different conditions. Keeping in mind that these are just a few examples from a vast literature that applies game-theoretic rational models to the study of deterrence, I think it

²⁶ Nicholson (1992) also does this, and in a much more eloquent style. Suffice it to say my defenses are not wholly original, and I do stand on the shoulders of those who have gone before me in defense of rational deterrence theory.

premature to assert that rational choice has contributed little substantively to the study of international politics and deterrence.

Psychological critiques of rational choice models, on the other hand, tend to focus on the specification of the utility function. Specifically, many of these criticisms (Lebow and Stein, 1989) maintain that leaders do not all act as risk-acceptant utility maximizers. Rather, they argue that leaders have a tendency towards risk aversion, at least when it comes to terms of losses. Additionally, psychological opponents to rational choice theorizing argue that controlled experiments belie the assumptions that rationality makes.

The charge that rationality must assume risk-acceptance is a quite simple one to counter. While many models do assume risk-acceptance on the part of the actors, there is no hard and fast rule that states that this assumption must be an integral component of rational models. One can assume differing attitudes towards risk in constructing rational models; as long as the assumptions are made explicit this is not problematic.²⁷ One can subsume a variety of behaviors under the rubric of rational thinking. All that is necessary is that preferences for actors be clearly specified, and that these preferences be sensible.

To demonstrate this point, I point to two contributions to the study of rationality that are outside of the international politics field. The work of the Nobel laureate Amartya Sen (1970), for example, demonstrates that social welfare can be advanced in a rational manner, even if it does not necessarily maximize profits for those providing this benefit. And Monroe (1994) demonstrates in her analysis of German behavior during the Holocaust that altruism can be a rational response to events. In both instances rationality

²⁷ This argument is made by Kahneman and Tversky (1979), and Levy (1997), in regards to prospect theory.

prevails, but the preferences are not necessarily risk-acceptant, or strict maximization of benefits.

The charge that rational choice models perform poorly in controlled laboratory experiments is a bit more serious. Levy (1997), in his discussion of prospect theory in international relations, notes that this is one of the shortcomings of the rational choice approach.²⁸ Alternatively, Zinnes and Muncaster (1997) determine that in a simulation study, a rational expected utility model performs better as a predictor of behavior than does a psychological model based on prospect theory.

Once again, the evidence is mixed on which approach performs better. The moral of the story can best be expressed by stating that modeling is admittedly an attempt to distill a set of interactions in political life down to its simplest components. These models help us understand a variety of dynamics that occur in political life, albeit at the expense of the richness found in much work that is done on a case by case basis. As long as we properly specify our theories, clearly articulate our theoretical assumptions, and use our models to illuminate evidence, then the use of rational choice modeling techniques is no worse than alternative approaches.

2.5.2 *Criticisms based on Quantitative Studies*

Moving from the abstractions of theory and model building, I now turn my attention to the portion of the rational deterrence debate that is concerned with the empirical identification and testing of deterrence theory. The concerns advanced by those who critique rational deterrence theory from an empirical standpoint also tend to

²⁸ O'Neill (1995, 735-6) addresses some of the issues that plague psychological experimental studies of rational choice in the laboratory.

[illegible]

focus on two distinct areas. The first camp, typified by the writings of Lebow and Stein (1989, 1990), calls into question how cases of deterrence are initially identified.

In a series of exchanges with Huth and Russett,²⁹ Lebow and Stein (1989, 1990) call into question the coding rules used by the first pair of authors, and the overall relevance of the rational deterrence model in the social sciences. Much of their criticism focuses on the fact that psychological pathologies of leaders cannot be accounted for by rational deterrence theory. This was noted above, so our attention turns to their other major criticism of rational deterrence theory; namely, that deterrence doesn't work, and that deterrence encounters have tended to be conflated with attempts at compellence.

The majority of this criticism is aimed at the level of extended immediate deterrence. The concern, as elucidated by Lebow and Stein (1990, 481) is that both pairs of authors agree on a basic definition of extended immediate deterrence. The disagreement is in how the definition is to be applied. Huth and Russett rely largely upon behavioral indicators. They examine instances in which threats were verbally communicated from an aggressor towards a target, when troops were mobilized, when counter-threats were issued on the part of the defender. Lebow and Stein, keeping with their psychological orientation, maintain that in order to understand and identify deterrence encounters, one must look at the psychological pathologies of the leaders involved. By doing so, they dismiss 41 of the 51 cases that Huth and Russett code as being extended immediate deterrence encounters.

Much of the issue being debated here surrounds intentions. Under what conditions do we witness challenges to proteges, and how do we ascertain with clarity

²⁹ When I refer to the Huth and Russett studies, I am focusing on the following works: Huth and Russett (1984, 1988); Huth (1988).

12-11-73
12-12-73
12-13-73
12-14-73
12-15-73
12-16-73
12-17-73
12-18-73
12-19-73
12-20-73
12-21-73
12-22-73
12-23-73
12-24-73
12-25-73
12-26-73
12-27-73
12-28-73
12-29-73
12-30-73
12-31-73

that a challenge was truly a threat? Lebow and Stein tend to be vague on their codings, remarking that they relied upon a vast array of historical evidence, and expert advice from distinguished diplomatic historians. Huth and Russett (1990) respond to these charges by clearly explicating their coding decisions, and noting that attempting to determine actual intentions is plagued with methodological difficulties, and that attempting to ascertain how serious an attacker was about using force is not consistent with good social science (Huth and Russett, 1990, 482).

The second group, exemplified by the writings of Alexander George and his colleagues (George, 1979; George and Smoke, 1974; 1989; see also Lebow, 1981), calls into question the use of statistical methodologies to study cases of deterrence. These arguments assert that statistical models that deal in large numbers of cases tend to gloss over the inherent richness of detail that exist within individual crises.

As part of a larger forum on the study of rational deterrence, Achen and Snidal (1989, 143-4) point out that the case study literature has provided tremendous insight into the dynamics of various historical cases of deterrence. Such studies are needed in order to place deterrence within a proper historical context. However, case studies are plagued with a variety of problems, as are formal models and statistical techniques. As Lijphart (1971, 684) notes, "The comparative method resembles the statistical method in all respects except one. The crucial difference is that the number of cases it deals with is too small to permit systematic control by means of partial correlations".

This comparative method is what George (1979) advocates in his assertion that studies of deterrence should rely upon a method of structured, focused comparison of a small number of studies. He maintains that tracing common threads through a number of

[illegible]

cases will provide researchers with the richness of a single case study, with an increased ability to generalize across a number of cases.³⁰

Such a method may appear to be of some interest to researchers, but it is still lacking. It is difficult to derive hypotheses and full theories from analyses of only a few cases. A quote from Achen and Snidal (1989, 147) summarizes this quite nicely; “Only when yoked clearly to deductive theory and to statistical inference, and made to serve this end, can case studies provide genuine theoretical contributions”.

2.6 Conclusion

In this chapter I have surveyed the literature on deterrence, and linked it to the study of alliances. I have argued that a certain class of alliances, the deterrence alliance, exists for the sole purpose of deterring hostile aggression. A definition of a deterrence alliance, therefore, is one in which the major power forms an alliance with the minor power with the express intention of deterring aggression against the smaller state, and the major power defender is able to undertake some action to demonstrate the value it places in protecting its protégé.

Following from this discussion, I turn in the next chapter to a formal explication of a theory of extended deterrence via alliance. I link the twin concepts of security and autonomy with the rationale behind asymmetric alliance formation. I then discuss how great powers are able to represent, through the process of costly signaling, the value they hold for their minor power allies. These costly signals can be viewed as investments in a protégé. I argue that such an alliance arrangement will deter aggression and, if that fails, be much more reliable than prior research on alliance commitments has suggested.

³⁰ Dion (1998) discusses the comparative case study method in some detail, and ascertains that the flaws often associated with the method are not as grave as are often

2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60
61
62
63
64
65
66
67
68
69
70
71
72
73
74
75
76
77
78
79
80
81
82
83
84
85
86
87
88
89
90
91
92
93
94
95
96
97
98
99
100
101
102
103
104
105
106
107
108
109
110
111
112
113
114
115
116
117
118
119
120
121
122
123
124
125
126
127
128
129
130
131
132
133
134
135
136
137
138
139
140
141
142
143
144
145
146
147
148
149
150
151
152
153
154
155
156
157
158
159
160
161
162
163
164
165
166
167
168
169
170
171
172
173
174
175
176
177
178
179
180
181
182
183
184
185
186
187
188
189
190
191
192
193
194
195
196
197
198
199
200
201
202
203
204
205
206
207
208
209
210
211
212
213
214
215
216
217
218
219
220
221
222
223
224
225
226
227
228
229
230
231
232
233
234
235
236
237
238
239
240
241
242
243
244
245
246
247
248
249
250
251
252
253
254
255
256
257
258
259
260
261
262
263
264
265
266
267
268
269
270
271
272
273
274
275
276
277
278
279
280
281
282
283
284
285
286
287
288
289
290
291
292
293
294
295
296
297
298
299
300
301
302
303
304
305
306
307
308
309
310
311
312
313
314
315
316
317
318
319
320
321
322
323
324
325
326
327
328
329
330
331
332
333
334
335
336
337
338
339
340
341
342
343
344
345
346
347
348
349
350
351
352
353
354
355
356
357
358
359
360
361
362
363
364
365
366
367
368
369
370
371
372
373
374
375
376
377
378
379
380
381
382
383
384
385
386
387
388
389
390
391
392
393
394
395
396
397
398
399
400
401
402
403
404
405
406
407
408
409
410
411
412
413
414
415
416
417
418
419
420
421
422
423
424
425
426
427
428
429
430
431
432
433
434
435
436
437
438
439
440
441
442
443
444
445
446
447
448
449
450
451
452
453
454
455
456
457
458
459
460
461
462
463
464
465
466
467
468
469
470
471
472
473
474
475
476
477
478
479
480
481
482
483
484
485
486
487
488
489
490
491
492
493
494
495
496
497
498
499
500
501
502
503
504
505
506
507
508
509
510
511
512
513
514
515
516
517
518
519
520
521
522
523
524
525
526
527
528
529
530
531
532
533
534
535
536
537
538
539
540
541
542
543
544
545
546
547
548
549
550
551
552
553
554
555
556
557
558
559
560
561
562
563
564
565
566
567
568
569
570
571
572
573
574
575
576
577
578
579
580
581
582
583
584
585
586
587
588
589
590
591
592
593
594
595
596
597
598
599
600
601
602
603
604
605
606
607
608
609
610
611
612
613
614
615
616
617
618
619
620
621
622
623
624
625
626
627
628
629
630
631
632
633
634
635
636
637
638
639
640
641
642
643
644
645
646
647
648
649
650
651
652
653
654
655
656
657
658
659
660
661
662
663
664
665
666
667
668
669
670
671
672
673
674
675
676
677
678
679
680
681
682
683
684
685
686
687
688
689
690
691
692
693
694
695
696
697
698
699
700
701
702
703
704
705
706
707
708
709
710
711
712
713
714
715
716
717
718
719
720
721
722
723
724
725
726
727
728
729
730
731
732
733
734
735
736
737
738
739
740
741
742
743
744
745
746
747
748
749
750
751
752
753
754
755
756
757
758
759
760
761
762
763
764
765
766
767
768
769
770
771
772
773
774
775
776
777
778
779
780
781
782
783
784
785
786
787
788
789
790
791
792
793
794
795
796
797
798
799
800
801
802
803
804
805
806
807
808
809
810
811
812
813
814
815
816
817
818
819
820
821
822
823
824
825
826
827
828
829
830
831
832
833
834
835
836
837
838
839
840
841
842
843
844
845
846
847
848
849
850
851
852
853
854
855
856
857
858
859
860
861
862
863
864
865
866
867
868
869
870
871
872
873
874
875
876
877
878
879
880
881
882
883
884
885
886
887
888
889
890
891
892
893
894
895
896
897
898
899
900
901
902
903
904
905
906
907
908
909
910
911
912
913
914
915
916
917
918
919
920
921
922
923
924
925
926
927
928
929
930
931
932
933
934
935
936
937
938
939
940
941
942
943
944
945
946
947
948
949
950
951
952
953
954
955
956
957
958
959
960
961
962
963
964
965
966
967
968
969
970
971
972
973
974
975
976
977
978
979
980
981
982
983
984
985
986
987
988
989
990
991
992
993
994
995
996
997
998
999
1000

The theory and formalizations set forth in the next two chapters pay close attention to the issues of conceptualization and theory construction that have been addressed in this chapter. I am cognizant of the debates surrounding much of these modeling debates, and recognize the inherent limitations of relying merely on individual cases. I also acknowledge that formal mathematical models and statistical significance tests also mean nothing without relevant empirical evidence to flesh out the theory. I concur with both the statements of Schrodtt (1982) and Zinnes (1991), who maintain that mathematical modeling for the sake of math is merely an exercise in esoteric modeling. Models, formal and statistical, must be able to tell us something about the empirical world that surrounds us. It is in this vein that I proceed into the remaining chapters of this dissertation.

assumed.

CHAPTER 3

A THEORY OF EXTENDED DETERRENCE VIA ALLIANCE: SIGNALING COMMITMENTS BY INVESTING COSTS

3.1 Introduction

In this chapter I develop a theory of extended deterrence via alliance. The theory developed herein expands upon Morrow's (1991) conceptual framework of autonomy and security within the context of extended deterrence. I argue that great powers utilize deterrence alliances, as defined in the previous chapter, as a means to pursue international goals and protect those issues that they hold vital to national security. In the case of alliances with minor powers, the focus of this dissertation, the great power gains concessions from its smaller ally, and in return provides deterrence benefits to its partner. NATO can be construed as a good example of this type of security arrangement. The United States was able to utilize its alliance with the states of Western Europe to maintain a presence on the European continent and confront and contain the Soviet Union. The smaller European partners to this alliance were able to gain security from the American nuclear umbrella.³¹

³¹ While this dissertation is not specifically about NATO, the North Atlantic alliance demonstrates the concept of a great power/minor power alliance quite well. Discussions regarding NATO's formation, and the American role within, can be found in Osgood (1968). Chernoff (1995) also discusses the functioning of NATO and its changing role after the Cold War. On a more theoretical level, Olson and Zeckhauser (1966) use NATO as their example of alliances as collective goods.

This propensity within the literature to focus on NATO has its roots in the difficulty of how to exactly analyze alliances. As Liska (1962, 3) has written, "It is impossible to speak of international relations without referring to alliances: the two often merge in all but name. For the same reason, it has always been difficult to say much that is peculiar to alliances on the plane of general analysis". In responding to the above citation from Liska, Glenn Snyder (1991, 121) notes that "would-be alliance theorists,

10
 11
 12
 13
 14
 15
 16
 17
 18
 19
 20
 21
 22
 23
 24
 25
 26
 27
 28
 29
 30
 31
 32
 33
 34
 35
 36
 37
 38
 39
 40
 41
 42
 43
 44
 45
 46
 47
 48
 49
 50
 51
 52
 53
 54
 55
 56
 57
 58
 59
 60
 61
 62
 63
 64
 65
 66
 67
 68
 69
 70
 71
 72
 73
 74
 75
 76
 77
 78
 79
 80
 81
 82
 83
 84
 85
 86
 87
 88
 89
 90
 91
 92
 93
 94
 95
 96
 97
 98
 99
 100
 101
 102
 103
 104
 105
 106
 107
 108
 109
 110
 111
 112
 113
 114
 115
 116
 117
 118
 119
 120
 121
 122
 123
 124
 125
 126
 127
 128
 129
 130
 131
 132
 133
 134
 135
 136
 137
 138
 139
 140
 141
 142
 143
 144
 145
 146
 147
 148
 149
 150
 151
 152
 153
 154
 155
 156
 157
 158
 159
 160
 161
 162
 163
 164
 165
 166
 167
 168
 169
 170
 171
 172
 173
 174
 175
 176
 177
 178
 179
 180
 181
 182
 183
 184
 185
 186
 187
 188
 189
 190
 191
 192
 193
 194
 195
 196
 197
 198
 199
 200
 201
 202
 203
 204
 205
 206
 207
 208
 209
 210
 211
 212
 213
 214
 215
 216
 217
 218
 219
 220
 221
 222
 223
 224
 225
 226
 227
 228
 229
 230
 231
 232
 233
 234
 235
 236
 237
 238
 239
 240
 241
 242
 243
 244
 245
 246
 247
 248
 249
 250
 251
 252
 253
 254
 255
 256
 257
 258
 259
 260
 261
 262
 263
 264
 265
 266
 267
 268
 269
 270
 271
 272
 273
 274
 275
 276
 277
 278
 279
 280
 281
 282
 283
 284
 285
 286
 287
 288
 289
 290
 291
 292
 293
 294
 295
 296
 297
 298
 299
 300
 301
 302
 303
 304
 305
 306
 307
 308
 309
 310
 311
 312
 313
 314
 315
 316
 317
 318
 319
 320
 321
 322
 323
 324
 325
 326
 327
 328
 329
 330
 331
 332
 333
 334
 335
 336
 337
 338
 339
 340
 341
 342
 343
 344
 345
 346
 347
 348
 349
 350
 351
 352
 353
 354
 355
 356
 357
 358
 359
 360
 361
 362
 363
 364
 365
 366
 367
 368
 369
 370
 371
 372
 373
 374
 375
 376
 377
 378
 379
 380
 381
 382
 383
 384
 385
 386
 387
 388
 389
 390
 391
 392
 393
 394
 395
 396
 397
 398
 399
 400
 401
 402
 403
 404
 405
 406
 407
 408
 409
 410
 411
 412
 413
 414
 415
 416
 417
 418
 419
 420
 421
 422
 423
 424
 425
 426
 427
 428
 429
 430
 431
 432
 433
 434
 435
 436
 437
 438
 439
 440
 441
 442
 443
 444
 445
 446
 447
 448
 449
 450
 451
 452
 453
 454
 455
 456
 457
 458
 459
 460
 461
 462
 463
 464
 465
 466
 467
 468
 469
 470
 471
 472
 473
 474
 475
 476
 477
 478
 479
 480
 481
 482
 483
 484
 485
 486
 487
 488
 489
 490
 491
 492
 493
 494
 495
 496
 497
 498
 499
 500
 501
 502
 503
 504
 505
 506
 507
 508
 509
 510
 511
 512
 513
 514
 515
 516
 517
 518
 519
 520
 521
 522
 523
 524
 525
 526
 527
 528
 529
 530
 531
 532

The existence of such alliances, I maintain, shapes the perceptions of a potential adversary. How will an adversary know if a defending state will intervene? Under what conditions can it expect that a crisis could escalate to a three party war? The actions a great power defender undertakes on behalf of its protégé shape the actions that a potential aggressor will take, and is essential to understanding conditions under which extended deterrence via alliance will be successful.

What emerges, then, is the issue of credibility. How does the larger state make its commitment to its smaller ally known? To phrase it another way, if “alliances can prevent war through deterrence, or, if deterrence fails, help nations win whatever war comes along” (Wayman 1990, 94), then how and when do alliances function as credible deterrents? While, as I argued in the last chapter, there is some problem with this assertion of Wayman’s, the issue of ensuring credibility and deterrence effectiveness still exists. I argue that great powers use signals to indicate their value for the alliance, and that through investing costs in the alliance, they are able to make their alliance commitments credible. Thus, alliance ties function as signals to adversaries. I argue that the greater the costs incurred on the part of a defender, the greater the certainty that exists concerning the likelihood that it will defend its protégé in times of conflict.

Studies of deterrence regularly use the presence of an alliance as a signal of common interests among states (Huth 1988; Huth and Russett, 1993; Jervis, 1970; Sorokin, 1994). These studies, however, tend to focus on the existence of an alliance as the signal, rather than in any specific transfer of tangible benefits as the signal of commitment. The theory developed herein expands upon these earlier ideas, and argues

realizing that they do not really want to write a general theory of international relations, retreat to something more manageable-another analysis of NATO, perhaps.”

100
 101
 102
 103
 104
 105
 106
 107
 108
 109
 110
 111
 112
 113
 114
 115
 116
 117
 118
 119
 120
 121
 122
 123
 124
 125
 126
 127
 128
 129
 130
 131
 132
 133
 134
 135
 136
 137
 138
 139
 140
 141
 142
 143
 144
 145
 146
 147
 148
 149
 150
 151
 152
 153
 154
 155
 156
 157
 158
 159
 160
 161
 162
 163
 164
 165
 166
 167
 168
 169
 170
 171
 172
 173
 174
 175
 176
 177
 178
 179
 180
 181
 182
 183
 184
 185
 186
 187
 188
 189
 190
 191
 192
 193
 194
 195
 196
 197
 198
 199
 200
 201
 202
 203
 204
 205
 206
 207
 208
 209
 210
 211
 212
 213
 214
 215
 216
 217
 218
 219
 220
 221
 222
 223
 224
 225
 226
 227
 228
 229
 230
 231
 232
 233
 234
 235
 236
 237
 238
 239
 240
 241
 242
 243
 244
 245
 246
 247
 248
 249
 250
 251
 252
 253
 254
 255
 256
 257
 258
 259
 260
 261
 262
 263
 264
 265
 266
 267
 268
 269
 270
 271
 272
 273
 274
 275
 276
 277
 278
 279
 280
 281
 282
 283
 284
 285
 286
 287
 288
 289
 290
 291
 292
 293
 294
 295
 296
 297
 298
 299
 300
 301
 302
 303
 304
 305
 306
 307
 308
 309
 310
 311
 312
 313
 314
 315
 316
 317
 318
 319
 320
 321
 322
 323
 324
 325
 326
 327
 328
 329
 330
 331
 332
 333
 334
 335
 336
 337
 338
 339
 340
 341
 342
 343
 344
 345
 346
 347
 348
 349
 350
 351
 352
 353
 354
 355
 356
 357
 358
 359
 360
 361
 362
 363
 364
 365
 366
 367
 368
 369
 370
 371
 372
 373
 374
 375
 376
 377
 378
 379
 380
 381
 382
 383
 384
 385
 386
 387
 388
 389
 390
 391
 392
 393
 394
 395
 396
 397
 398
 399
 400
 401
 402
 403
 404
 405
 406
 407
 408
 409
 410
 411
 412
 413
 414
 415
 416
 417
 418
 419
 420
 421
 422
 423
 424
 425
 426
 427
 428
 429
 430
 431
 432
 433
 434
 435
 436
 437
 438
 439
 440
 441
 442
 443
 444
 445
 446
 447
 448
 449
 450
 451
 452
 453
 454
 455
 456
 457
 458
 459
 460
 461
 462
 463
 464
 465
 466
 467
 468
 469
 470
 471
 472
 473
 474
 475
 476
 477
 478
 479
 480
 481
 482
 483
 484
 485
 486
 487
 488
 489
 490
 491
 492
 493
 494
 495
 496
 497
 498
 499
 500
 501
 502
 503
 504
 505
 506
 507
 508
 509
 510
 511
 512
 513
 514
 515
 516
 517
 518
 519
 520
 521
 522
 523
 524
 525
 526
 527
 528
 529
 530
 531
 532
 533
 534
 535
 536
 537
 538
 539
 540
 541
 542
 543
 544
 545
 546
 547
 548
 549
 550
 551
 552
 553
 554
 555
 556
 557
 558
 559
 560
 561
 562
 563
 564
 565
 566
 567
 568
 569
 570
 571
 572
 573
 574
 575
 576
 577
 578
 579
 580
 581
 582
 583
 584
 585
 586
 587
 588
 589
 590
 591
 592
 593
 594
 595
 596
 597
 598
 599
 600
 601
 602
 603
 604
 605
 606
 607
 608
 609
 610
 611

that in order to maintain credibility, great powers must use tangible benefits as signals of their commitment to their minor power allies. This public exchange of benefits can be witnessed by potential aggressors, who must then ascertain whether the benefits indicate that a defender has a willingness to intervene on behalf of a protégé in a crisis.

In the remainder of this chapter I develop a theory of extended deterrence via alliance, with a focus on the costly signaling actions of a defending state. In the preceding two chapters I surveyed the current state of the literature on alliances and deterrence, and placed this research project squarely within the camp of the rational deterrence theorists. I now turn to a full explication of my theory. The theory developed below examines and specifies the linkages that exist between structural conditions and national level attributes. Particular focus is placed on the impact that the existing alliance and its actions has on shaping the perceptions of a potential aggressor. In this vein, therefore, I begin with a discussion of the level of analysis issues that emerge in my theory, and then turn to a conceptual framework that helps focus and guide my theoretical concerns.

One final note before proceeding. Because I conceptualized deterrence in the previous chapter as a policy that is extended by a defender to a protégé, the focus in the theory developed below is on the actions of a great power defender in its relationship with its minor power protégé. However, it should be noted that the actions taken by the defender influence greatly the actions that an aggressor will take. Therefore, while my discussion below is often couched in regards to the actions a great power defender takes in regards to its protégé, the impact of its actions are of great importance to the potential aggressor as it considers making a demand of the minor power target.

2. The following information is being furnished to you for your information:

3.2 The Levels of Analysis Problem in Deterrence Situations and the Agent-Structure Debate

As issues of deterrence and alliances are examined, one is struck by a seemingly perplexing problem. Alliances tend to be systemic factors, as evidenced by a large amount of the literature (Midlarsky, 1988, 1989; Morgenthau, 1985; Schweller, 1998; Snyder, 1997; Christensen and Snyder, 1990; Walt, 1987; Waltz, 1979). Rightly or wrongly, most of this literature, firmly grounded within the realist/neorealist camp, views alliances in terms of capability aggregation. Much of the debate on polarity and international stability (Deutsch and Singer, 1964; Waltz, 1964) centers on the role of alliance blocs and their role in maintaining peace. The terms of such discussions tend to be couched within a framework of relative power and its distribution throughout the international system.

In contrast, decisions on whether to provide extended deterrence through an alliance relationship, or whether or not to initiate or escalate a crisis, are made at the national or individual level. In fact, a rational choice approach to international affairs assumes that decisions are made by a unitary actor (Morrow, 1997).³² How can such disparate levels of analysis be reconciled and still provide valid, meaningful insights into the functioning of deterrence relationships? This is one of the central concerns of the

³² Much recent literature attempts to move away from this unitary actor assumption, notably Schultz (1998) and Smith (1998). See also the essays in the volume edited by Siverson (1997). Much of this recent spate of work focuses on inter-party competition and pressure from domestic interests. However, the final decision on whether to undertake any foreign policy venture tends to rest in the hands of one individual. Thus, I retain the assertion that the ultimate decision-making process follows from the unitary actor assumption. I do, however, maintain that such competition is public to a large extent, and can be witnessed by outside parties.

level of analysis problem, and finds itself manifested in the debate on agency and structure.

3.1.1 Agency and Structure

The agency-structure debate in international relations is largely concerned with providing explanations of how states act in the international system. The definition of agent, following the writing of Wendt (1987) is a single actor, which in the international system is simply a state. The question that emerges from the debate is quite similar to the level of analysis problem, and is concerned with the proper unit of analysis in regards to explaining international phenomenon. Two issues emerge from this debate, one theoretical and one substantive. The first is the definition of structure, and the second is how to transcend the gap between theorizing about international relations and actually empirically analyzing them.

The concept of "structure" is an oft-maligned one in the literature on international relations. Waltz (1979), the leading neorealist, identifies it as "the arrangements of units in the system". Dessler (1989) defines it, according to a scientific realist viewpoint, as "the social forms that preexist action." In turn, Morrow (1988) states that structure is "the processes which create transitive collective orders". Regardless of how it is defined, it is apparent that structure provides some sort of restraining framework that inhibits how states act.

The problem that arises is one of causation. It becomes difficult to determine if agent shapes structure, or if the reverse is true. Dessler and Carlsnaes (1992) tend to favor a more dynamic model between structure and agency, while Morrow advocates a focus on preferences of the individual agents. Morrow supposes that game theory serve

as a bridge between agent and structure, with the preferences of agents clearly outlined. Dessler, and to a lesser extent, Carlsnaes, suggest that agent and structure can assume different forms, and these changes will influence how each of these phenomenon behave.

What implications for empirical research can be drawn from this debate? Two examples will suffice, in order to demonstrate the feasibility (and pitfalls) of extending the debate from the theoretical domain to the empirical one. A researcher can examine, for example, the alliance-war relationship. Is the polarity of the system (structure) a constraining factor, or is it the attributes of the individual alliance (agent) which are responsible for the presence of conflict? Another area, which is currently one of the "hot" topics in international relations, is why democracies do not engage in wars with each other. Is it qualities of the agents or structure that cause such phenomenon to occur? Of utmost importance here is the fact that the two interact to some degree: they do not exist solely in a vacuum. Uneven power distribution or alliance formation (both structural factors) may deter an aggressive state, due to the fact that state leaders may not wish to be defeated in a military contest. The costs are not worth the risks of gaining some benefit through asymmetric conflict initiation.

Of course, the goals of a leader (agency factors) can transcend or mitigate the influence that structural factors have on choice processes. Pursuit of a desired goal may lead to conflictual outcomes, as evidenced by the onset of the Second World War. It was quite apparent that the Germans could not emerge victorious from a long two-front war, especially if the United States became involved. However, Hitler was determined to pursue his policy of conquest, and embarked upon a murderous course of action. We witness the failure of structural explanations here in this example, as they are ameliorated by the goals

[illegible]

and desires of an agent. Regardless, the philosophical underpinnings of the debate suggest that a scientific approach to international relations is possible, even in areas such as comparative foreign policy, where such rigor has often been lacking. As a discipline grows there are certain to be disagreements surrounding how research should be conducted, and international relations is no exception.

The theory developed here is unabashedly rational in its outlook, and focuses on the individual state acting within the constraints of the international system. Although various authors (Singer, 1961; Waltz, 1959) have made distinctions between the various levels of analysis, none have posited linkages between the various levels, as the agent structure debate would have us do. Singer's (1961) seminal piece demarcates the level of analysis problem between systemic and national factors. Waltz (1959), in contrast, focuses his attention on the causes of war emanating from the individual, the state, or the international system.

The belief in structural factors as the cause of war culminated in Waltz's (1979) *Theory of International Politics*, and has effectively stunted much of the research being conducted in the realist paradigm.³³ Those who are adherents to Waltzian neorealism argue that any attempt to theorize at lower levels is reductionist in nature, and should be avoided at all costs. As developed below, a theory of extended deterrence via alliance requires that national and international factors must be taken into consideration. Agency

³³ Recent work by Jervis (1997) on system effects attempts to move beyond mere structural theorizing and incorporate issues of perception. See also the review by Hopmann (1998) on Jervis' new work. Additional debates on the degenerative nature of (neo) realism can be found in the December 1997 issue of the *American Political Science Review*. See the comments by Vasquez, and responses by Christensen, Elman and Elman, Schweller, Walt, and Waltz. Additional challenges to realism can be found in Vasquez (1998).

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

and structure do interact, and cannot be viewed as separate processes functioning independently.³⁴

3.3 A Conceptual Framework: Opportunity and Willingness as Ordering

Concepts in the Study of Extended Deterrence via Alliance

In an attempt to bridge this gap, at least in the study of extended deterrence within an alliance context, I utilize a framework and terminology developed by Starr (1978).³⁵ I conceptualize a state's behavior as responding to various opportunities within the international system. An opportunity, according to this framework, "means that interaction exists between individuals of one nation state and those of another so that it is possible for conflicts to arise-and to arise over values potentially important enough to warrant the utilization of violent coercive action by one or both" (Starr, 1978, 368).

Opportunity is the possibility of acting, given a set of circumstances within the international system.

Let us pause for a moment and take an example from the empirical world. The United States established a treaty of alliance with Taiwan in 1954, largely in response to mainland China's shelling of the offshore islands. However, the United States had just concluded its involvement in the Korean War, and was interested in maintaining an active role in Southeast Asia. The establishment of a military alliance with Taiwan permitted the United States to establish bases on Taiwan, and confront communist China under the

³⁴ The recent book by Friedman and Starr (1997) is the most recent attempt to posit linkages between agency and structure.

³⁵ The opportunity and willingness framework of Starr borrows heavily from the work of the Sprouts (1956, 1965, 1968) in which they posit relationships between men (or states) and their environment. Their focus is on the constraining influences of the environment surrounding individual actors.

[illegible]

guise of containment. Thus, the United States was able to pursue an active policy of containment in the Far East, and continue to encircle what it viewed as the communist menace.³⁶

However, this relationship engendered some risks as well. Being allied with Taiwan increased the likelihood that the United States would be drawn into conflict with communist China, as China maintained that Taiwan was merely a rebellious province and sought to subjugate it. Debate over the nature of the treaty to be signed between the United States and Taiwan, and public debate within the United States regarding foreign policy towards China indicated to the communist regime that pressure could be exerted on Taiwan with impunity. In 1958, therefore, the mainland Chinese regime once again began bombarding the offshore islands of Taiwan. It sensed that a shift in its strategic environment (American concern over the treaty between the United States and Taiwan) presented China with a good opportunity to make a demand of the Nationalist government on Taiwan.

If we assume that favorable conditions exist for the initiation of a crisis on the part of a challenger, we then require an explanation of how and why states will take advantage of these opportunities and potentially exploit them. Willingness, in the framework of Starr and his colleagues, is another way of perceiving a state's decision process. "It is through willingness that decision makers recognize opportunities and then translate these opportunities into alternatives that are, in some manner, weighed" (Siverson and Starr, 1991, 25). As Most and Starr (1989) point out, by focusing on

³⁶ See George and Smoke (1974) for a good history of the establishment of the American deterrence commitment to Taiwan. See Christensen (1995) for a more detailed discussion on the role of American domestic politics and their interaction with the pursuit of American foreign policy goals at the beginning of the Cold War.

100
101
102
103
104
105
106
107
108
109
110
111
112
113
114
115
116
117
118
119
120
121
122
123
124
125
126
127
128
129
130
131
132
133
134
135
136
137
138
139
140
141
142
143
144
145
146
147
148
149
150
151
152
153
154
155
156
157
158
159
160
161
162
163
164
165
166
167
168
169
170
171
172
173
174
175
176
177
178
179
180
181
182
183
184
185
186
187
188
189
190
191
192
193
194
195
196
197
198
199
200
201
202
203
204
205
206
207
208
209
210
211
212
213
214
215
216
217
218
219
220
221
222
223
224
225
226
227
228
229
230
231
232
233
234
235
236
237
238
239
240
241
242
243
244
245
246
247
248
249
250
251
252
253
254
255
256
257
258
259
260
261
262
263
264
265
266
267
268
269
270
271
272
273
274
275
276
277
278
279
280
281
282
283
284
285
286
287
288
289
290
291
292
293
294
295
296
297
298
299
300
301
302
303
304
305
306
307
308
309
310
311
312
313
314
315
316
317
318
319
320
321
322
323
324
325
326
327
328
329
330
331
332
333
334
335
336
337
338
339
340
341
342
343
344
345
346
347
348
349
350
351
352
353
354
355
356
357
358
359
360
361
362
363
364
365
366
367
368
369
370
371
372
373
374
375
376
377
378
379
380
381
382
383
384
385
386
387
388
389
390
391
392
393
394
395
396
397
398
399
400
401
402
403
404
405
406
407
408
409
410
411
412
413
414
415
416
417
418
419
420
421
422
423
424
425
426
427
428
429
430
431
432
433
434
435
436
437
438
439
440
441
442
443
444
445
446
447
448
449
450
451
452
453
454
455
456
457
458
459
460
461
462
463
464
465
466
467
468
469
470
471
472
473
474
475
476
477
478
479
480
481
482
483
484
485
486
487
488
489
490
491
492
493
494
495
496
497
498
499
500
501
502
503
504
505
506
507
508
509
510
511
512
513
514
515
516
517
518
519
520
521
522
523
524
525
526
527
528
529
530
531
532
533
534
535
536
537
538
539
540
541
542
543
544
545
546
547
548
549
550
551
552
553
554
555
556
557
558
559
560
561
562
563
564
565
566
567
568
569
570
571
572
573
574
575
576
577
578
579
580
581
582
583
584
585
586
587
588
589
590
591
592
593
594
595
596
597
598
599
600
601
602
603
604
605
606
607
608
609
610
611
612
613
614
615
616
617
618
619
620
621
622
623
624
625
626
627
628
629
630
631
632
633
634
635
636
637
638
639
640
641
642
643
644
645
646
647
648
649
650
651
652
653
654
655
656
657
658
659
660
661
662
663
664
665
666
667
668
669
670
671
672
673
674
675
676
677
678
679
680
681
682
683
684
685
686
687
688
689
690
691
692
693
694
695
696
697
698
699
700
701
702
703
704
705
706
707
708
709
710
711
712
713
714
715
716
717
718
719
720
721
722
723
724
725
726
727
728
729
730
731
732
733
734
735
736
737
738
739
740
741
742
743
744
745
746
747
748
749
750
751
752
753
754
755
756
757
758
759
760
761
762
763
764
765
766
767
768
769
770
771
772
773
774
775
776
777
778
779
780
781
782
783
784
785
786
787
788
789
790
791
792
793
794
795
796
797
798
799
800
801
802
803
804
805
806
807
808
809
810
811
812
813
814
815
816
817
818
819
820
821
822
823
824
825
826
827
828
829
830
831
832
833
834
835
836
837
838
839
840
841
842
843
844
845
846
847
848
849
850
851
852
853
854
855
856
857
858
859
860
861
862
863
864
865
866
867
868
869
870
871
872
873
874
875
876
877
878
879
880
881
882
883
884
885
886
887
888
889
890
891
892
893
894
895
896
897
898
899
900
901
902
903
904
905
906
907
908
909
910
911
912
913
914
915
916
917
918
919
920
921
922
923
924
925
926
927
928
929
930
931
932
933
934
935
936
937
938
939
940
941
942
943
944
945
946
947
948
949
950
951
952
953
954
955
956
957
958
959
960
961
962
963
964
965
966
967
968
969
970
971
972
973
974
975
976
977
978
979
980
981
982
983
984
985
986
987
988
989
990
991
992
993
994
995
996
997
998
999
1000

opportunity and willingness, one is engaged in a study of political processes. An approach that envisions politics as a process is better equipped to account for the sequential nature of interactions, and account for any dynamics that may exist in the course of some event.

Having discussed the role of alliances and their linkages to extended deterrence, it is only natural that we must now turn our attention to the arena in which deterrence comes into play. International crises are viewed here as the ideal arena in which to examine alliance behavior in the context of extended deterrence. As Morgan (1994, ix) notes, "it has been argued that while some crises do not end in war, all wars are preceded by crises; thus, our ability to explain war rests with our ability to explain crisis outcomes". And, as Lebow (1981) notes, crises and deterrence tend to go hand in hand. According to this logic, therefore, crises are necessary, but not sufficient conditions for the occurrence of war. Of course, in order to prevent any obfuscation, a definition of an international crisis is needed.

An interstate crisis is defined by Snyder and Diesing as "a sequence of interactions between 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" (1977, 6). In a crisis situation, there is the likelihood that an alliance will be required to act in some manner, either to salvage the peace or go to war to maintain its international position. Alliance action (or inaction) requires that some or all of the members of the alliance honor their commitments to the alliance's purpose.

In this study, I conceptualize a change in the status quo between an aggressor and a target state as an opportunity. By opportunity I mean a situation in which the status quo

[illegible]

has been altered in such a manner that a potential aggressor feels that the time is ripe to initiate a crisis in an attempt to gain a favorable outcome.

A crisis evolves along two dimensions. First of all, I maintain that such disputes occur because of disagreement on some issue in the status quo. I assume that crises arise due to contentious issues between the parties involved. Each state has a specific value that it attaches to the issue in question. The value that is placed on the issue determines in part if a state initiates and escalates a crisis, resists or acquiesces, or intervenes. While the issues at stake are exogenous to the model, they are important empirically.

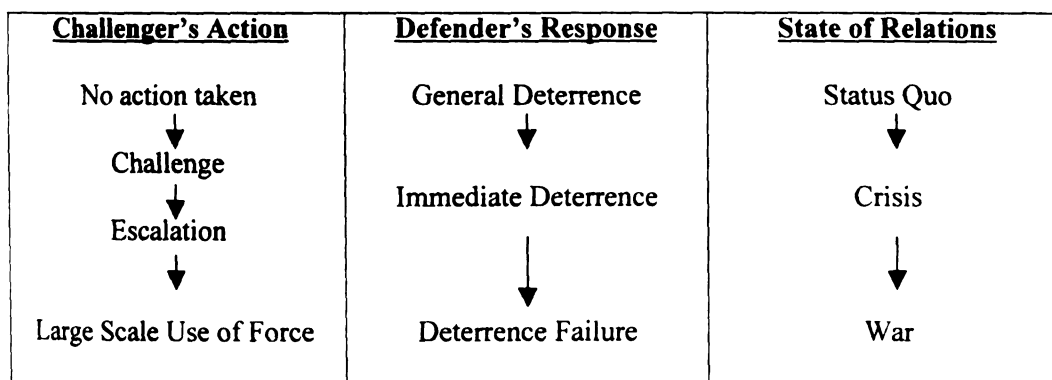
The aggressor has deemed the issue to be of enough importance that he is willing to challenge the prevailing status quo in order to rectify the situation. Such a challenge provides a defending state with the choice of whether or not to intervene on behalf of its ally. I view the initiation of a crisis as the start of a sequential process, which can result in war, but does not necessarily have war as the sole outcome. A breakdown in extended general deterrence, therefore, can be linked to a shift in the international environment that provides an aggressor with an opportunity to make gains on some issue it holds dear.

This breakdown in extended general deterrence leads to a situation of extended immediate deterrence. In case such circumstances arise, a defender must determine if the value of the issue at stake is one that is worth fighting for. Additionally, the aggressor must determine whether escalating the crisis, and possibly not gaining its demands, is worth the effort. In cases of extended immediate deterrence, therefore, both defender and aggressor must determine how much they are willing to absorb in order to gain their objectives. Will an aggressor exploit a momentary weakness in the deterrence alliance it faces, or will it recognize that the military power it faces is too great? If extended general

[illegible]

deterrence encounters are noted as attempts to exploit a structural opportunity, then extended immediate deterrence encounters revolve around the (potential) use of military capabilities. Figure 3.1 depicts the relationship between the two levels of deterrence, and the relationship between the defender and challenger, within the possibility of crisis escalation.

FIGURE 3.1
STAGES OF CRISIS ESCALATION



In this vein, then, I argue that an existing alliance has an impact on the possibility of a crisis escalating to war. Previous studies of alliances and the occurrence of war have neglected to account for the sequential nature of disputes. It is through the notion of a crisis being a process, with decisions being made at various points during the sequence, that we can understand the impact which alliances have on deterring aggression, and, if extended general deterrence fails, then the influence they have on inhibiting the spread of the dispute. The possibility of a third party intervention raises the potential costs that an aggressor must absorb in order to obtain its desired outcomes.

3.4 Willingness and the Pursuit of National Goals

Having addressed the context in which allies and adversaries interact, I now turn to a discussion of the reasons why deterrence alliances form, and what factors influence the decisions of an aggressor and defender in the context of an adversarial relationship. Since deterrence is a benefit extended by a defender to a protégé, the theory developed here focuses on the influences that shape an aggressor's behavior, given the existence of an alliance prior to crisis initiation. Intra-alliance behavior, I argue, influences the willingness of a potential aggressor. One cannot assume that any of the states involved acts in a vacuum. Thus, while the discussion below is largely couched in terms of the interactions transpiring within an alliance, it is the impact that these interactions have on the behavior of the aggressor that is of utmost importance for understanding extended deterrence via alliance.

I maintain that four factors shape a defender's behavior and the perceptions of the potential aggressor: rational behavior, the issues surrounding the relationship of these three states; military capabilities; and domestic politics. I examine each of these foundations in some detail, and then turn to a signaling theory that explains how defending states communicate their commitments in a credible manner, and in doing so provide successful extended deterrence to their allies.

3.4.1 *Rationality*

Before progressing into a detailed elaboration of a signaling theory of extended deterrence via alliance, one initial assumption is required at the onset. States, whether they are initiators of crises, are the targets, or are the defenders, are rational actors.

Sept 10
Sept 11
Sept 12
Sept 13
Sept 14
Sept 15
Sept 16
Sept 17
Sept 18
Sept 19
Sept 20
Sept 21
Sept 22
Sept 23
Sept 24
Sept 25
Sept 26
Sept 27
Sept 28
Sept 29
Sept 30
Oct 1
Oct 2
Oct 3
Oct 4
Oct 5
Oct 6
Oct 7
Oct 8
Oct 9
Oct 10
Oct 11
Oct 12
Oct 13
Oct 14
Oct 15
Oct 16
Oct 17
Oct 18
Oct 19
Oct 20
Oct 21
Oct 22
Oct 23
Oct 24
Oct 25
Oct 26
Oct 27
Oct 28
Oct 29
Oct 30
Oct 31
Nov 1
Nov 2
Nov 3
Nov 4
Nov 5
Nov 6
Nov 7
Nov 8
Nov 9
Nov 10
Nov 11
Nov 12
Nov 13
Nov 14
Nov 15
Nov 16
Nov 17
Nov 18
Nov 19
Nov 20
Nov 21
Nov 22
Nov 23
Nov 24
Nov 25
Nov 26
Nov 27
Nov 28
Nov 29
Nov 30
Dec 1
Dec 2
Dec 3
Dec 4
Dec 5
Dec 6
Dec 7
Dec 8
Dec 9
Dec 10
Dec 11
Dec 12
Dec 13
Dec 14
Dec 15
Dec 16
Dec 17
Dec 18
Dec 19
Dec 20
Dec 21
Dec 22
Dec 23
Dec 24
Dec 25
Dec 26
Dec 27
Dec 28
Dec 29
Dec 30
Dec 31

"Being rational simply implies that the decision-maker uses a maximizing strategy in calculating how best to achieve his goals" (Bueno de Mesquita, 1981, 31).³⁷

The assumption of a unitary, rational actor in international relations is quite widespread (e.g., Bueno de Mesquita, 1981; Bueno de Mesquita and Lalman, 1992; Morgenthau, 1985; Morrow, 1997; Waltz, 1979; Zagare, 1987), although often misunderstood. Assumptions of rationality stipulate that actors have preferences, and that they can be ranked in order of greatest preference to least favorite preference. These preferences are determined by the various costs and benefits associated with them, and are assumed to be fixed for the period in which a decision is to be made.

It should be noted that decision-makers make choices behave in a manner denoted as instrumental rationality. This merely stipulates that rationality is a simple ends-means calculation (Zagare, 1987, 9). This contrasts with a more detailed definition of rationality, known as procedural rationality. Procedural rationality requires a decision-maker to "properly" define his goals and consider *all* possible alternatives (Zagare, 1987, 8). Procedural rationality places much greater emphasis on the subject nature of the goals of the decision-maker. Instrumental rationality, as adopted here, assumes that, in the context of some decision scenario, a decision-maker can order his preferences and choose the strategy that greatest affords him the ability to arrive at his most preferred outcome. It says nothing about the relative worth of the decision-maker's goals; only that he attains them in the manner that incurs the least amount of cost.³⁸

³⁷ Discussions of the debate surrounding rationality and its applicability can be found in chapter 2.

³⁸ A recent paper by Bennett and Stam (1998) addresses the issue of whether instrumental rationality is applicable across a variety of cases and geographical regions, or if it is confined to such scenarios as European conflicts or Great Power behavior. With some

10
 11
 12
 13
 14
 15
 16
 17
 18
 19
 20
 21
 22
 23
 24
 25
 26
 27
 28
 29
 30
 31
 32
 33
 34
 35
 36
 37
 38
 39
 40
 41
 42
 43
 44
 45
 46
 47
 48
 49
 50
 51
 52
 53
 54
 55
 56
 57
 58
 59
 60
 61
 62
 63
 64
 65
 66
 67
 68
 69
 70
 71
 72
 73
 74
 75
 76
 77
 78
 79
 80
 81
 82
 83
 84
 85
 86
 87
 88
 89
 90
 91
 92
 93
 94
 95
 96
 97
 98
 99
 100
 101
 102
 103
 104
 105
 106
 107
 108
 109
 110
 111
 112
 113
 114
 115
 116
 117
 118
 119
 120
 121
 122
 123
 124
 125
 126
 127
 128
 129
 130
 131
 132
 133
 134
 135
 136
 137
 138
 139
 140
 141
 142
 143
 144
 145
 146
 147
 148
 149
 150
 151
 152
 153
 154
 155
 156
 157
 158
 159
 160
 161
 162
 163
 164
 165
 166
 167
 168
 169
 170
 171
 172
 173
 174
 175
 176
 177
 178
 179
 180
 181
 182
 183
 184
 185
 186
 187
 188
 189
 190
 191
 192
 193
 194
 195
 196
 197
 198
 199
 200
 201
 202
 203
 204
 205
 206
 207
 208
 209
 210
 211
 212
 213
 214
 215
 216
 217
 218
 219
 220
 221
 222
 223
 224
 225
 226
 227
 228
 229
 230
 231
 232
 233
 234
 235
 236
 237
 238
 239
 240
 241
 242
 243
 244
 245
 246
 247
 248
 249
 250
 251
 252
 253
 254
 255
 256
 257
 258
 259
 260
 261
 262
 263
 264
 265
 266
 267
 268
 269
 270
 271
 272
 273
 274
 275
 276
 277
 278
 279
 280
 281
 282
 283
 284
 285
 286
 287
 288
 289
 290
 291
 292
 293
 294
 295
 296
 297
 298
 299
 300
 301
 302
 303
 304
 305
 306
 307
 308
 309
 310
 311
 312
 313
 314
 315
 316
 317
 318
 319
 320
 321
 322
 323
 324
 325
 326
 327
 328
 329
 330
 331
 332
 333
 334
 335
 336
 337
 338
 339
 340
 341
 342
 343
 344
 345
 346
 347
 348
 349
 350
 351
 352
 353
 354
 355
 356
 357
 358
 359
 360
 361
 362
 363
 364
 365
 366
 367
 368
 369
 370
 371
 372
 373
 374
 375
 376
 377
 378
 379
 380
 381
 382
 383
 384
 385
 386
 387
 388
 389
 390
 391
 392
 393
 394
 395
 396
 397
 398
 399
 400
 401
 402
 403
 404
 405
 406
 407
 408
 409
 410
 411
 412
 413
 414
 415
 416
 417
 418
 419
 420
 421
 422
 423
 424
 425
 426
 427
 428
 429
 430
 431
 432
 433
 434
 435
 436
 437
 438
 439
 440
 441
 442
 443
 444
 445
 446
 447
 448
 449
 450
 451
 452
 453
 454
 455
 456
 457
 458
 459
 460
 461
 462
 463
 464
 465
 466
 467
 468
 469
 470
 471
 472
 473
 474
 475
 476
 477
 478
 479
 480
 481
 482
 483
 484
 485
 486
 487
 488
 489
 490
 491
 492
 493
 494
 495
 496
 497
 498
 499
 500
 501
 502
 503
 504
 505
 506
 507
 508
 509
 510
 511
 512
 513
 514
 515
 516
 517
 518
 519
 520
 521
 522
 523
 524
 525
 526
 527
 528
 529
 530
 531
 532

With such a focus on decision-makers, then, the model is of necessity state-centric, for the focus is on the choices which individual states make. The state in this conceptualization is represented by a unitary decision-maker, which makes decisions based upon the interests of the state.³⁹ This holds true if we are examining the decision to initiate a crisis by an aggressor, or a choice made by the target or defender in how to respond to a specific use of force. Although a BC alliance exists, it is an aggregation of states, bound together for some common purpose. Each state within the alliance must make a conscious choice when confronted with an opportunity to act.⁴⁰

3.4.2 *Pursuit of Goals*

Secondly, I assume that deterrence alliances form for specified reasons. If we are to understand such structures, we must understand the context within which they are

caveats, they do find that instrumental rationality (in the guise of the expected utility theory of war) is applicable across regions and across time.

³⁹ Students of bureaucratic politics and prospect theorists often take issue with this depiction of a unitary actor taking actions on behalf of a state's interest. As Bueno de Mesquita and Lalman (1992, 26) note, when it comes to instances when military force is likely to be used, the ultimate decision rests in the hands of a single individual. As they further explicate (27), "So long as decisions to negotiate or to use force are made rationally (or as if instrumental rationality were operative), it does not matter, in the context of our model, whether the decision is made by a single actor or by a group". For an elaboration and discussion of theories that differ from rational choice, see the essays in Geva and Mintz (1997).

⁴⁰ Given that the focus of the model is on an existing alliance's impact on the initiation and escalation of a crisis, it makes sense to focus on B and C as individual actors. However, in many cases, there exist allies on A's side that are also involved in the initiation of hostilities. One need only look at the origins of the First World War to witness Germany and Austria-Hungary coordinating their actions prior to commencing hostilities against Serbia to realize that an initiator can be more than one state. (See Joll, 1992, for an in-depth discussion of this phenomenon). In order to cope with this potentially complicating issue, I assume that A behaves as if it is a unitary rational actor, regardless if it is a threatening alliance of states (as in the case of July 1914), or actually is a single state.

formed.⁴¹ As I argued in the previous chapter, deterrence alliances exist to prevent hostile aggression from a defined foe. In the context being examined here, I am looking at alliances in which power is distributed asymmetrically.

Minor powers can offer very little to their major power counterparts in terms of military capability. However, to refer back to Rothstein and Keohane from the previous chapter, such states can have a tremendous amount of influence on their great power partners. I maintain that such relationships exist is due to the trading of security and autonomy benefits within such alliances, as advanced by Morrow (1991).

Minor powers are unable to provide much security to their great power partners. For example, as Marlowe (1965, 300-1), points out, Egypt was able to contribute little militarily to the British. Therefore, the British role in Egypt was primarily of providing security to the Egyptian people. In exchange, the British were able to maintain control over vital trade and strategic routes in the Middle East.

Given that minor powers tend to be weak, they cannot hope to provide direct security benefits to their alliance partners that are great powers. Hence they must provide some additional benefit that the great power desires. For example, in the post 1945 era, the United States used many of its alliances as means to contain the Soviet Union. By offering protection to its allies in Western Europe, for example, the United States was able to gain a military presence in Europe. In addition, the United States was able to gain access to European markets for its exports. Such autonomy benefits are not limited to the nuclear era. For example, the British allied with Turkey in 1878 to deter

⁴¹ The best study of context and international relations remains Goertz (1994).

Russian aggression in the Balkans. In return, the British were able to gain territorial control over Cyprus, and gain access to the Dardanelles (Jelavich, 1973; Langer, 1950).

Additionally, great powers can gain autonomy through the importation of strategic raw materials from their protégé, or through increased trade. Regardless of what benefits are gained by both parties, the alliance always provides the possibility of entanglement on the part of the great power (Snyder, 1984), in which the defender faces the possibility of becoming dragged into a conflict it did not desire. If such a crisis occurs, then the defender must weigh the benefits it receives from the alliance versus the costs that will be incurred if its promise of assistance is broken.

When examining such deterrence alliances, however, a more basic question emerges. What types of states join together in such structures? Differing opinions exist regarding this question. Siverson and Emmons (1991) ascertain that democracies are more likely to ally, in comparison to a baseline probability model. Given the spread of democracies in the world, particularly after the Second World War, this finding has a certain intuitive appeal.

However, Gartzke and Simon (1996) and Simon and Gartzke (1996) mount a serious challenge to this view. They maintain that “friends” do not need to sign treaties of alliance in order to cement their security concerns. Democracies, as is frequently argued in the democratic peace literature, tend to maintain cordial relations.⁴²

Adversaries, on the other hand, have something to gain by allying. The argument made by Gartzke and Simon (1996) is that non-democracies can provide goods and services to democracies that other democracies cannot provide. This includes such goods as

⁴² The current literature on the democratic peace is voluminous. For a good introduction to this current topic of interest in international relations, see Ray (1995).

allowing the defender to establish bases on a protégé's soil, or coordination of foreign policy goals. With fewer constraints on the part of a non-democracy, concessions are easier made in forming alliance relationships.

Hence, we should expect, as Gartzke and Simon (1996) suggest, to see more non-democratic alliances formed for purposes of deterrence than democratic ones. If we examine the data collected, of the 20 deterrence alliances formed between 1870 and 1984, 9 of them (45%) have a democratic defender and a non-democratic protégé. While not an overwhelming number, it does call into question the logic espoused by adherents to a vision of democratic alliances being most common.⁴³

Of course, the underlying assumption surrounding why deterrence alliances form in the first place, and why their members are willing to trade security and autonomy in spite of the fear of abandonment and entrapment, is the fact that some contentious issue exists between a potential aggressor and the protégé of the defender. These issues are often obscured in much of international relations scholarship, with its traditional focus on power. However, as a number of authors (Diehl, 1992; Holsti, 1992; Vasquez, 1993) have noted, the role that issues play in international conflict are often more important than military capability ratios or power distribution in a systemic setting.

If we are to understand why deterrence alliances form, we need to examine what issue is at stake between the protégé, who desires protection from some potential attacker, and the attacker itself. Most states have, at some point in their history, squabbled with adversaries over the issue of territory. Other states attempt to impose

⁴³ It should be noted of the remaining 11 alliances, 8 of them are comprised of two non-democratic states, and only 3 are comprised of two democratic states.

[illegible]

certain regime types on a smaller state, or attempt to control a target economically.

Regardless of the issue, it is important to note that the issue affects two sides and, in the case of extended deterrence, potentially three sides. These issues must be examined and analyzed if extended deterrence success and failure is to be explained.

3.4.3 The Role of Power and Capabilities

Of all the concepts utilized in the social sciences, power is probably the most maligned. In spite of this, it is of central importance to both deterrence and alliance theory. While power, according to Morgenthau (1985) can be defined as the ability of A to get B to undertake some action C that B would not ordinarily like to do, in the case of alliances, power is much more than the ability to influence. Instead, when power is discussed in this dissertation, it is in regards to the military capabilities that a state possesses.

As Huth (1988, 34) points out, the balance of military capabilities is largely a structural feature of any deterrence relationship. Additionally, the use of military power, and its buildup, tends to play a large role in deterrence success or failure. "A credible deterrent depends upon whether the defender appears to possess both the military capabilities to inflict substantial costs on an attacker and the will to use these capabilities if necessary" (Huth, 1988, 33).

As noted above, and demonstrated in the formal and empirical analyses in the following chapters, power is especially important at the level of extended immediate deterrence. The argument made above asserts that aggressor states will initiate a crisis when they view a favorable opportunity in their relationship with their intended target

and its defender. It is at the level of immediate deterrence, when a crisis has the possibility of escalating to conflict, that capabilities play the greatest role.

A potential attacker desiring to alter the status quo in its favor, and sensing a positive environment for doing so, has three military strategies to choose from: limited aims strategy; rapid offensive attack (blitzkrieg); and a war of attrition.⁴⁴ Each strategy assumes different goals for the attacker, and is impacted upon by the balance of military forces in different ways.

If an attacker adopts a limited-aims strategy, it makes a rapid seizure of some territory that belongs to the target, then build up its forces and be prepared to repel any counterattacks on the part of the target and its defender. Such a strategy assumes that the target can be overwhelmed quickly, before it has the opportunity to mobilize and counterattack. Israeli raids into Jordan in the 1950s typify this sort of strategy. As reprisals for Jordanian terrorist attacks within Israel, the Israeli army mounted numerous short attacks into Jordan, where they were able to overwhelm Jordanian troops and inflict punishment before troops could be mobilized (Blechman, 1972; Shimshoni, 1988).

The second strategy available to policymakers is that of rapid offensive attack, or blitzkrieg. The underlying principles behind such a strategy is the rapid destruction of a target's military, and force a defeat due to collapse of the target's economic and civilian infrastructure before it or its allies have a chance to mobilize and retaliate. Such was the case of German aggression towards Poland at the start of the Second World War. Germany overwhelmed the Polish army with such speed and ferocity that there was no

⁴⁴ Much of the work on different types of military strategy can be found in Huth (1988); Mearsheimer (1983); Posen (1984); Reiter (1998); and Stam (1996).

Journal of Management Education 30(6) 789-804
© The Author(s) 2006
Reprints and permissions:
<http://www.sagepub.com/journalsPermissions.nav>

chance for the Poles to mobilize and ward off the German onslaught, nor time for the British and French to intervene on behalf of their Polish ally.

The final strategy available to statesmen is a strategy of attrition. If a state adopts such a policy, it is hoping, as in the case of rapid offensive attack, to decisively defeat the military of its adversary. However, a strategy of attrition differs from a blitzkrieg strategy in that the leaders of the attacking state realize that the war will not be quick, but protracted. Witness Japanese involvement in the Pacific theater of the Second World War. The Japanese leadership recognized that they would be unable to defeat the United States in a protracted fight. However, the hope of the Japanese military was to inflict enough damage on the United States that the Americans would capitulate to Japanese demands rather than fight. Once the war became drawn out, the Japanese were incapable of attaining victory, due to the overwhelming superiority of the American military base.

If we examine these three strategies we see that different balances of military capabilities are at work. The balance of military capabilities can be viewed as operating at three distinct levels: the immediate balance of forces; the short-term balance of forces; and the long-term balance of forces.⁴⁵

In the case of a limited-aims strategy, the immediate balance of forces is most crucial. If a state wishes to inflict some sort of punishment on an adversary, it requires the ability to win quickly and decisively. Hence, the troops that are on the ground at the immediate point of contact are most critical in determining the success of the battle.

When it comes to a rapid attack strategy, the immediate balance of forces does not play as large of a role. Rather, it is the forces that can be mobilized to repulse an invader

[illegible]

in a short span of time that are important. If an attacker wishes to defeat its target rapidly, it needs to have the ability to decisively win an initial battle, and then reinforce its troops to continue a rapid attack and eliminate the remainder of the target's military power before external powers have the ability to intervene.

In a war of attrition, the long-term military capability, coupled with a country's economic base, becomes critical to determining the victor. Knowing that it cannot hope to win such a conflict in a rapid manner, a state must be prepared to mobilize every portion of society in order to prevail. Given the enormous costs that such a conflict inflicts upon a state, both attacker and target (as well as defenders that become involved), it is not a strategy that is normally considered on the part of an attacker. Such wars do occur, but not as a consequence of a leader deliberately initiating a war of attrition.

Military might, therefore, does appear to play a role in how crises are resolved, and what level of force is actually used. Notably absent from such an analysis, however, is the role that domestic factors play on influencing a leader's decision on what strategy to follow. I now turn to an examination of the role that domestic political considerations play in extended deterrence situations.

3.4.4 Domestic Influences

Finally, I assume that domestic politics impinges on the conduct of international affairs. Much recent scholarship has demonstrated that international politics do not take place in a vacuum. Domestic politics plays a role in the decision by states to become involved in conflict. However, this has not always been widely accepted in the academic community.

⁴⁵ Posen (1984-85) discusses these terms exclusively in regards to NATO and the Warsaw Pact during the Cold War. In spite of his limited application, the terms are

1. *Chlorophyll a* (Chl a) content was determined using a spectrophotometer (Shimadzu UV-1601) at 663 nm. The concentration of Chl a was calculated using the following equation: $\text{Chl a (mg/L)} = 12.7 \times \text{OD}_{663}$.

In the study of international relations after the Second World War, realism emerged as the dominant paradigm. Promulgated by such theorists as Carr (1949), Morgenthau (1985), and Bull (1977), the trends within the discipline tended to focus on the primacy of international politics and issues of power and security. Domestic politics and economic issues were largely relegated to the background, and deemed not worthy of inclusion in the realist mode of thought.

Recent work, however, has begun to challenge the fundamental assumptions of realism. In particular, two issues have emerged from this challenging scholarship: the linkage between domestic and international politics as addressed by Putnam (1993) in regards to two-level games, and the audience cost concept as advanced by Fearon (1994a, 1994b).

Putnam's seminal work addressed a simple question. Why should a decision-maker be concerned with the attitudes of his domestic constituency, especially if they are in disagreement with him? Given the dominant status of realism in international relations, one would expect that political leaders would not concern themselves with such beliefs. Unfortunately, at least for officeholders, this is not necessarily the case. Political leaders, as rational actors, wish to retain their privileged position in power. However, if a leader ignores the desire of his constituency, whether it is an entrenched oppositional force or a reluctant legislature, he is inhibiting his opportunity of remaining in office. This can be referred to as "double edged diplomacy", for a leader is attempting to bargain with and satisfy two constituencies; one international, the other domestic.

Therefore, in light of these complications of being forced to please two audiences, we can see that a policy leader is bounded in what is considered acceptable by his

useful in studying deterrence relationships and military strategy elsewhere.

2500

1111

2.

1111

1111

1111

1111

1111

1111

1111

1111

1111

1111

1111

1111

1111

1111

1111

1111

1111

1111

1111

1111

1111

domestic constituency. Given these parameters he is able to function rationally, and maximize his opportunity to remain in office.

Putnam's contribution, therefore, is to move beyond systemic explanations and unitary actor assumptions. Instead, he brings the individual back into international politics, and demonstrates how he or she makes decisions given international and domestic constraints. This work sparked an intense debate within the international relations field about the proper level of analysis for studying international political phenomena. As can be seen from the discussion above, the two-level game framework differs greatly from a realist/neorealist perspective, with their foci on structural power. Other scholars such as Iida (1993) and Mo (1994) seized upon this idea and formalized it to examine conditions in which domestic constraints matter, or situations when the negotiator may have a different desired outcome than his or her constituents.

What happens if a leader ignores the desires of his constituents? As Fearon (1994a, 1994b) demonstrates, there are domestic audience costs associated with international interactions.⁴⁶ These costs can sway public opinion, and, in the case of democratic societies, cost a politician his or her office.⁴⁷ This is not an uncommon argument, at least pertaining to the United States. Many arguments have been made ascertaining that American presidents tie foreign policy ventures to reelection campaigns.

⁴⁶ Morrow (1994a) places the audience cost concept specifically within an alliance context.

⁴⁷ In regards to the United States, Mueller (1973), Ostrom and Job (1986), and Nincic (1992) are just some of the more common studies which demonstrate that public opinion can and does play a role in the fortunes of politicians. Hagan (1993) provides a comparative perspective on the influence of domestic politics and opposition on the conduct of international affairs. Bueno de Mesquita, Woller and Siverson (1992) and Bueno de Mesquita and Siverson (1995) discuss in more general terms the impact that war involvement can have on the fates of political leaders.

Ostrom and Job (1986) discuss the use of force by the president in regards to election cycles, and Aldrich et al. (1989) address the implications of foreign policy issues for presidential electoral outcomes. In summarizing the implications of foreign policy on presidential elections, Nincic remarks (1992, 122), "When foreign policy violates the limits of what interests and expectations have defined as acceptable...it will eventually be pounced upon by the opposition and, sooner or later, denounced by the electorate".

Some recent work (i.e., Raknerud and Hegre, 1997) suggests that democratic states are less likely to become involved in conflicts, but, once they do, they are more likely to win. This finding emphasizes the fact that it is more difficult for democratic states to make commitments within the international system, but that they have a tendency to honor their commitments when they are challenged.

The implication I draw here differs from many popular conceptions regarding the role that domestic politics play in the conduct of foreign policy. I argue, as does Fearon (1994a, 1994b), that as a crisis escalates, there is a cost to be paid if a leader backs down. I take this one step further and assume that domestic costs are paid if a leader fails to intervene on behalf of an embattled protégé. The logic for this lies in an argument that could be termed guns vs. butter (Norpoth, 1987; Powell, 1993). In such a conceptualization, as a defender supplies a protégé with guns (security), it is not spending this money at home on butter for its citizens. As long as the guns are going to protect some vital national interest, people do not seem to mind. However, if the costs are sent abroad and then they are not protected when a protégé comes under attack, these invested costs are in essence thrown away. It is under these conditions that the electorate becomes incensed over foreign affairs, and that leaders should take care.

3. 8

4. 8

5. 8

6. 8

7. 8

8. 8

9. 8

10. 8

11. 8

12. 8

13. 8

14. 8

15. 8

16. 8

17. 8

18. 8

19. 8

20. 8

21. 8

22. 8

23. 8

24. 8

25. 8

26. 8

27. 8

28. 8

3.5 Signaling Commitments, or how to establish a Credible Reputation⁴⁸

We have seen the influences, both systemic and national level, which impinge upon the decision of a great power to become involved in an extended deterrence relationship with a minor power. I now turn my attention to the role that costly signaling plays in ensuring successful deterrence. Specifically, how can a defender make it known that it values its protégé, and will intervene on its behalf if the protégé comes under attack? Given the variety of influences that affect a defender, it must find a means of communicating its value for its protégé.

In particular I argue that it is through the use of costly signaling that great power defenders are able to make their commitments to their allies known, and ensure peace for their alliance partners. Defenders use investments in their proteges as a means of demonstrating their interest in their minor power allies. These investments, at least in theory, commit the defender to come to the aid of an embattled ally. I argue that these investments function as signals that tie the hands of state leaders. If the defender abandons its ally, then it has in essence wasted these investments. As shall be discussed in the remainder of this chapter, and formalized in chapter 4, the greater the investment, the more likely it is that extended deterrence, both general and immediate, will be successful

⁴⁸ Modeling a reputation is not the focus of this section. Reputation implicitly (others would say explicitly) assumes that repeated interaction occurs between states. As the models in the next chapter are specified, iteration does not exist; a crisis is a one shot interaction. However, past behavior does influence the belief structures that the models utilize, so reputation does play a limited role in how aggressors perceive defenders. For more on reputation in international politics, see Mercer (1996). Huth (1997) provides a thoughtful critique of Mercer's work, and Mercer (1997) responds to criticisms of his work.

10
 11
 12
 13
 14
 15
 16
 17
 18
 19
 20
 21
 22
 23
 24
 25
 26
 27
 28
 29
 30
 31
 32
 33
 34
 35
 36
 37
 38
 39
 40
 41
 42
 43
 44
 45
 46
 47
 48
 49
 50
 51
 52
 53
 54
 55
 56
 57
 58
 59
 60
 61
 62
 63
 64
 65
 66
 67
 68
 69
 70
 71
 72
 73
 74
 75
 76
 77
 78
 79
 80
 81
 82
 83
 84
 85
 86
 87
 88
 89
 90
 91
 92
 93
 94
 95
 96
 97
 98
 99
 100
 101
 102
 103
 104
 105
 106
 107
 108
 109
 110
 111
 112
 113
 114
 115
 116
 117
 118
 119
 120
 121
 122
 123
 124
 125
 126
 127
 128
 129
 130
 131
 132
 133
 134
 135
 136
 137
 138
 139
 140
 141
 142
 143
 144
 145
 146
 147
 148
 149
 150
 151
 152
 153
 154
 155
 156
 157
 158
 159
 160
 161
 162
 163
 164
 165
 166
 167
 168
 169
 170
 171
 172
 173
 174
 175
 176
 177
 178
 179
 180
 181
 182
 183
 184
 185
 186
 187
 188
 189
 190
 191
 192
 193
 194
 195
 196
 197
 198
 199
 200
 201
 202
 203
 204
 205
 206
 207
 208
 209
 210
 211
 212
 213
 214
 215
 216
 217
 218
 219
 220
 221
 222
 223
 224
 225
 226
 227
 228
 229
 230
 231
 232
 233
 234
 235
 236
 237
 238
 239
 240
 241
 242
 243
 244
 245
 246
 247
 248
 249
 250
 251
 252
 253
 254
 255
 256
 257
 258
 259
 260
 261
 262
 263
 264
 265
 266
 267
 268
 269
 270
 271
 272
 273
 274
 275
 276
 277
 278
 279
 280
 281
 282
 283
 284
 285
 286
 287
 288
 289
 290
 291
 292
 293
 294
 295
 296
 297
 298
 299
 300
 301
 302
 303
 304
 305
 306
 307
 308
 309
 310
 311
 312
 313
 314
 315
 316
 317
 318
 319
 320
 321
 322
 323
 324
 325
 326
 327
 328
 329
 330
 331
 332
 333
 334
 335
 336
 337
 338
 339
 340
 341
 342
 343
 344
 345
 346
 347
 348
 349
 350
 351
 352
 353
 354
 355
 356
 357
 358
 359
 360
 361
 362
 363
 364
 365
 366
 367
 368
 369
 370
 371
 372
 373
 374
 375
 376
 377
 378
 379
 380
 381
 382
 383
 384
 385
 386
 387
 388
 389
 390
 391
 392
 393
 394
 395
 396
 397
 398
 399
 400
 401
 402
 403
 404
 405
 406
 407
 408
 409
 410
 411
 412
 413
 414
 415
 416
 417
 418
 419
 420
 421
 422
 423
 424
 425
 426
 427
 428
 429
 430
 431
 432
 433
 434
 435
 436
 437
 438
 439
 440
 441
 442
 443
 444
 445
 446
 447
 448
 449
 450
 451
 452
 453
 454
 455
 456
 457
 458
 459
 460
 461
 462
 463
 464
 465
 466
 467
 468
 469
 470
 471
 472
 473
 474
 475
 476
 477
 478
 479
 480
 481
 482
 483
 484
 485
 486
 487
 488
 489
 490
 491
 492
 493
 494
 495
 496
 497
 498
 499
 500
 501
 502
 503
 504
 505
 506
 507
 508
 509
 510
 511
 512
 513
 514
 515
 516
 517
 518
 519
 520
 521
 522
 523
 524
 525
 526
 527
 528
 529
 530
 531
 532

3.5.1 *Defining Costly Signaling*

One of the central concerns within international politics is the question of how state leaders, in the absence of any mechanism able to enforce agreements, make their promises credible? I maintain that, within the context of extended deterrence, states can make their promises credible through the use of costly signaling. Costly signaling, as defined by Fearon (1997, 69) can be conceptualized in the following manner. Costly signaling is the ability of a leader to undertake some action that creates or incurs some cost that the leader would not be inclined to absorb if he or she were not willing to actually carry out the promise or commitment that is made.

Understandably, these communications of signals do not come without a price. Of particular importance in the study of international interactions, be they cooperative or conflictual, is the notion of costs. All actions which states undertake entail some form of expense, and many such actions place restrictions on a state's range of choices. Entering into an alliance is no exception to this rule. States within an alliance are faced with the same dilemma. In an international system characterized by anarchy, there exists no overarching authority capable of enforcing such agreements. Thus, states must determine whether or not to honor their alliance pledges based upon the costs that such an intervention would incur versus the value they place on the current resolution of the issue at stake.⁴⁹ In order to demonstrate credibility in their interactions with minor power protégés, I argue that great power defenders must send some form of concrete signal to

⁴⁹ Of course, costs are imposed upon an aggressor state as well. The consequences of initiating a crisis and carrying it to an outcome of war implies that lives may be lost, or reputations damaged. Leaders who lose wars which they initiate can suffer removal at the hands of the victors, or from their own constituencies. Thus, leaders who initiate

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

indicate their value in their ally. It is through the use of costly signals that state leaders can make their true intentions known.

Fearon (1997) distinguishes between two ideal types of costly signals. The first type can be defined as “tying-hands” signals. Such signals mean taking an action that increases the costs of backing down or reneging on a promise. Such signals should influence the actions a defender takes when a crisis erupts surrounding a protégé, since they can be viewed as investments made by the defender into the alliance relationship. These “tying-hands” signals, I maintain, are represented by the investments that defenders make in providing security benefits to their proteges.

Many great power defenders take some action once a crisis erupts. Oftentimes, as in the British case prior to the Nazi invasion of Poland, public statements are made concerning coming to an ally’s defense in times of crisis. Alternatively, other actions can be undertaken once extended general deterrence falters and a crisis emerges. These tying hand signals, according to Fearon (1994b) also generate costs, especially on the domestic front. While they do not provide tangible benefits to the protégé, they do impinge upon the reputation of the defender, and potentially raise additional considerations at home.

In contrast, a second type of costly signal can be referred to as a “sunk cost” signal. Such signals are more difficult to identify in a pure case, but they are actions that are costly to undertake in the first place. However, they do not come into consideration in times of conflict. Sunk costs, such as troop mobilizations or arms production, are costly, but they do not affect decisions made in times of crisis.

disputes must consider the benefits of success versus the costs of failure. In doing so, they must consider the credibility of the deterrent threat made by the defender.

100
101
102
103
104
105
106
107
108
109
110
111
112
113
114
115
116
117
118
119
120
121
122
123
124
125
126
127
128
129
130
131
132
133
134
135
136
137
138
139
140
141
142
143
144
145
146
147
148
149
150
151
152
153
154
155
156
157
158
159
160
161
162
163
164
165
166
167
168
169
170
171
172
173
174
175
176
177
178
179
180
181
182
183
184
185
186
187
188
189
190
191
192
193
194
195
196
197
198
199
200
201
202
203
204
205
206
207
208
209
210
211
212
213
214
215
216
217
218
219
220
221
222
223
224
225
226
227
228
229
230
231
232
233
234
235
236
237
238
239
240
241
242
243
244
245
246
247
248
249
250
251
252
253
254
255
256
257
258
259
260
261
262
263
264
265
266
267
268
269
270
271
272
273
274
275
276
277
278
279
280
281
282
283
284
285
286
287
288
289
290
291
292
293
294
295
296
297
298
299
300
301
302
303
304
305
306
307
308
309
310
311
312
313
314
315
316
317
318
319
320
321
322
323
324
325
326
327
328
329
330
331
332
333
334
335
336
337
338
339
340
341
342
343
344
345
346
347
348
349
350
351
352
353
354
355
356
357
358
359
360
361
362
363
364
365
366
367
368
369
370
371
372
373
374
375
376
377
378
379
380
381
382
383
384
385
386
387
388
389
390
391
392
393
394
395
396
397
398
399
400
401
402
403
404
405
406
407
408
409
410
411
412
413
414
415
416
417
418
419
420
421
422
423
424
425
426
427
428
429
430
431
432
433
434
435
436
437
438
439
440
441
442
443
444
445
446
447
448
449
450
451
452
453
454
455
456
457
458
459
460
461
462
463
464
465
466
467
468
469
470
471
472
473
474
475
476
477
478
479
480
481
482
483
484
485
486
487
488
489
490
491
492
493
494
495
496
497
498
499
500
501
502
503
504
505
506
507
508
509
510
511
512
513
514
515
516
517
518
519
520
521
522
523
524
525
526
527
528
529
530
531
532
533
534
535
536
537
538
539
540
541
542
543
544
545
546
547
548
549
550
551
552
553
554
555
556
557
558
559
560
561
562
563
564
565
566
567
568
569
570
571
572
573
574
575
576
577
578
579
580
581
582
583
584
585
586
587
588
589
590
591
592
593
594
595
596
597
598
599
600
601
602
603
604
605
606
607
608
609
610
611
612
613
614
615
616
617
618
619
620
621
622
623
624
625
626
627
628
629
630
631
632
633
634
635
636
637
638
639
640
641
642
643
644
645
646
647
648
649
650
651
652
653
654
655
656
657
658
659
660
661
662
663
664
665
666
667
668
669
670
671
672
673
674
675
676
677
678
679
680
681
682
683
684
685
686
687
688
689
690
691
692
693
694
695
696
697
698
699
700
701
702
703
704
705
706
707
708
709
710
711
712
713
714
715
716
717
718
719
720
721
722
723
724
725
726
727
728
729
730
731
732
733
734
735
736
737
738
739
740
741
742
743
744
745
746
747
748
749
750
751
752
753
754
755
756
757
758
759
760
761
762
763
764
765
766
767
768
769
770
771
772
773
774
775
776
777
778
779
780
781
782
783
784
785
786
787
788
789
790
791
792
793
794
795
796
797
798
799
800
801
802
803
804
805
806
807
808
809
810
811
812
813
814
815
816
817
818
819
820
821
822
823
824
825
826
827
828
829
830
831
832
833
834
835
836
837
838
839
840
841
842
843
844
845
846
847
848
849
850
851
852
853
854
855
856
857
858
859
860
861
862
863
864
865
866
867
868
869
870
871
872
873
874
875
876
877
878
879
880
881
882
883
884
885
886
887
888
889
890
891
892
893
894
895
896
897
898
899
900
901
902
903
904
905
906
907
908
909
910
911
912
913
914
915
916
917
918
919
920
921
922
923
924
925
926
927
928
929
930
931
932
933
934
935
936
937
938
939
940
941
942
943
944
945
946
947
948
949
950
951
952
953
954
955
956
957
958
959
960
961
962
963
964
965
966
967
968
969
970
971
972
973
974
975
976
977
978
979
980
981
982
983
984
985
986
987
988
989
990
991
992
993
994
995
996
997
998
999
1000

I advance here a concept of a signaled commitment that unifies Fearon's two ideal types of costly signal. In an alliance relationship that is asymmetric, as was discussed above, the alliance partners trade security and autonomy. If a defender transfers goods such as arms or aid to its protégé, it provides the minor power with increased security, even if the great power fails to intervene.

I maintain that sunk costs and tying hands signals can be combined and viewed as one form of costly signal; an invested cost. In regards to a sunk cost view of providing extended deterrence benefits to a protégé, the formation of an alliance is costly, both in regards to materiel and to reputational effects. If a defender transfers goods to its protégé, such as arms or troop deployments abroad, these impose costs on the defender that could be spent elsewhere. It is the classic guns versus butter problem, with the "guns" being sent abroad to assist a protégé rather than providing "butter" at home for domestic constituents.

Such investment costs also encompass tying-hands signals. This is because they demonstrate that the defender is willing to invest some tangible, potentially costly, good or service in its protégé, in order to provide security to the smaller power in the alliance. These investment costs allow a defender to signal its interest in its protégé, and also provide the protégé with a means of defense if a crisis escalates. Much of this signaling, therefore, serves to enhance the credibility of the defender, at both the levels of extended deterrence, immediate and general.

As Thomas Schelling (1960, 14) points out, the notion of credibility in regards to a threat or a commitment by one state against an adversary is of utmost importance. If a state believes that a threat or commitment by one state is credible (i.e., it is true), it is

100

101

102

103

104

105

106

107

108

109

110

111

112

113

114

115

116

117

118

119

120

121

122

123

124

125

likely that it will be deterred. However, credibility is often difficult to ascertain, and states must rely on beliefs and witnessed actions in order to determine beliefs and choose a course of action. Through costly signaling, a defender is able to signal at various stages of a crisis its value in its ally. These signals can be interpreted and witnessed by an adversary, who must somehow interpret these signals in order to determine how serious the commitment among the allies is.

Figure 3.2 depicts the theoretical framework underlying a costly signaling approach to understanding the provision of extended deterrence via alliance.

FIGURE 3.2

**THE THEORETICAL FRAMEWORK OF COSTLY SIGNALING AND
THE PROVISION OF EXTENDED DETERRENCE VIA ALLIANCE**

INVESTING COSTS INTO PROTÉGÉ



CREDIBILITY OF DEFENDER'S COMMITMENT ENHANCED



EFFECTIVE EXTENDED DETERRENCE

3.6 Conclusion

In the past two chapters I have examined the impact that alliances have on war, and the role that they play in establishing both deterrence credibility and stability. I have maintained that international and domestic factors interact to influence the perceptions that adversaries have of one another, and that structural and agency level variables need to be considered if extended deterrence via alliance is to be comprehended.

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60
61
62
63
64
65
66
67
68
69
70
71
72
73
74
75
76
77
78
79
80
81
82
83
84
85
86
87
88
89
90
91
92
93
94
95
96
97
98
99
100
101
102
103
104
105
106
107
108
109
110
111
112
113
114
115
116
117
118
119
120
121
122
123
124
125
126
127
128
129
130
131
132
133
134
135
136
137
138
139
140
141
142
143
144
145
146
147
148
149
150
151
152
153
154
155
156
157
158
159
160
161
162
163
164
165
166
167
168
169
170
171
172
173
174
175
176
177
178
179
180
181
182
183
184
185
186
187
188
189
190
191
192
193
194
195
196
197
198
199
200
201
202
203
204
205
206
207
208
209
210
211
212
213
214
215
216
217
218
219
220
221
222
223
224
225
226
227
228
229
230
231
232
233
234
235
236
237
238
239
240
241
242
243
244
245
246
247
248
249
250
251
252
253
254
255
256
257
258
259
260
261
262
263
264
265
266
267
268
269
270
271
272
273
274
275
276
277
278
279
280
281
282
283
284
285
286
287
288
289
290
291
292
293
294
295
296
297
298
299
300
301
302
303
304
305
306
307
308
309
310
311
312
313
314
315
316
317
318
319
320
321
322
323
324
325
326
327
328
329
330
331
332
333
334
335
336
337
338
339
340
341
342
343
344
345
346
347
348
349
350
351
352
353
354
355
356
357
358
359
360
361
362
363
364
365
366
367
368
369
370
371
372
373
374
375
376
377
378
379
380
381
382
383
384
385
386
387
388
389
390
391
392
393
394
395
396
397
398
399
400
401
402
403
404
405
406
407
408
409
410
411
412
413
414
415
416
417
418
419
420
421
422
423
424
425
426
427
428
429
430
431
432
433
434
435
436
437
438
439
440
441
442
443
444
445
446
447
448
449
450
451
452
453
454
455
456
457
458
459
460
461
462
463
464
465
466
467
468
469
470
471
472
473
474
475
476
477
478
479
480
481
482
483
484
485
486
487
488
489
490
491
492
493
494
495
496
497
498
499
500
501
502
503
504
505
506
507
508
509
510
511
512
513
514
515
516
517
518
519
520
521
522
523
524
525
526
527
528
529
530
531
532
533
534
535
536
537
538
539
540
541
542
543
544
545
546
547
548
549
550
551
552
553
554
555
556
557
558
559
560
561
562
563
564
565
566
567
568
569
570
571
572
573
574
575
576
577
578
579
580
581
582
583
584
585
586
587
588
589
590
591
592
593
594
595
596
597
598
599
600
601
602
603
604
605
606
607
608
609
610
611
612
613
614
615
616
617
618
619
620
621
622
623
624
625
626
627
628
629
630
631
632
633
634
635
636
637
638
639
640
641
642
643
644
645
646
647
648
649
650
651
652
653
654
655
656
657
658
659
660
661
662
663
664
665
666
667
668
669
670
671
672
673
674
675
676
677
678
679
680
681
682
683
684
685
686
687
688
689
690
691
692
693
694
695
696
697
698
699
700
701
702
703
704
705
706
707
708
709
710
711
712
713
714
715
716
717
718
719
720
721
722
723
724
725
726
727
728
729
730
731
732
733
734
735
736
737
738
739
740
741
742
743
744
745
746
747
748
749
750
751
752
753
754
755
756
757
758
759
760
761
762
763
764
765
766
767
768
769
770
771
772
773
774
775
776
777
778
779
780
781
782
783
784
785
786
787
788
789
790
791
792
793
794
795
796
797
798
799
800
801
802
803
804
805
806
807
808
809
810
811
812
813
814
815
816
817
818
819
820
821
822
823
824
825
826
827
828
829
830
831
832
833
834
835
836
837
838
839
840
841
842
843
844
845
846
847
848
849
850
851
852
853
854
855
856
857
858
859
860
861
862
863
864
865
866
867
868
869
870
871
872
873
874
875
876
877
878
879
880
881
882
883
884
885
886
887
888
889
890
891
892
893
894
895
896
897
898
899
900
901
902
903
904
905
906
907
908
909
910
911
912
913
914
915
916
917
918
919
920
921
922
923
924
925
926
927
928
929
930
931
932
933
934
935
936
937
938
939
940
941
942
943
944
945
946
947
948
949
950
951
952
953
954
955
956
957
958
959
960
961
962
963
964
965
966
967
968
969
970
971
972
973
974
975
976
977
978
979
980
981
982
983
984
985
986
987
988
989
990
991
992
993
994
995
996
997
998
999
1000

In the next chapter I present two formalizations of the theoretical framework advanced in this chapter. I demonstrate that the costly signals sent by a defender have a great impact on ensuring deterrence effectiveness, and that more than structural factors shape such relationships. In particular, I maintain that costly signaling helps create an air of certainty surrounding the relationship between a defender and a protégé. This certainty, I argue, will deter many types of potential aggressors, and lead to the preservation of the status quo.

This focus on certainty stresses the importance of the role that information and beliefs play in shaping the outcomes of international interactions. In the following models, and empirical tests, I capture this uncertainty by focusing on the benefits that are exchanged between defender and protégé. I maintain that the costly signaling that occurs within extended deterrence relationships serves to shape the beliefs of potential aggressors, at least concerning their feelings towards the credibility of the alliance commitment. These beliefs play a great role in determining whether extended general deterrence succeeds or fails. If extended general deterrence falters, then the costly signals that are sent by a defender should assist in helping resolve the crisis.

It should not be forgotten, however, that the defender also gains benefits from the alliance relationship with its protégé. These autonomy benefits are also visible to potential adversaries, and must be considered within the dynamics of an extended deterrence crisis. With these thoughts in mind, I now turn to a formal explication of the costly signaling theory of extended deterrence via alliance that has been developed in this chapter.

1990
 1991
 1992
 1993
 1994
 1995
 1996
 1997
 1998
 1999
 2000
 2001
 2002
 2003
 2004
 2005
 2006
 2007
 2008
 2009
 2010
 2011
 2012
 2013
 2014
 2015
 2016
 2017
 2018
 2019
 2020
 2021
 2022
 2023
 2024
 2025
 2026
 2027
 2028
 2029
 2030
 2031
 2032
 2033
 2034
 2035
 2036
 2037
 2038
 2039
 2040
 2041
 2042
 2043
 2044
 2045
 2046
 2047
 2048
 2049
 2050
 2051
 2052
 2053
 2054
 2055
 2056
 2057
 2058
 2059
 2060
 2061
 2062
 2063
 2064
 2065
 2066
 2067
 2068
 2069
 2070
 2071
 2072
 2073
 2074
 2075
 2076
 2077
 2078
 2079
 2080
 2081
 2082
 2083
 2084
 2085
 2086
 2087
 2088
 2089
 2090
 2091
 2092
 2093
 2094
 2095
 2096
 2097
 2098
 2099
 2100
 2101
 2102
 2103
 2104
 2105
 2106
 2107
 2108
 2109
 2110
 2111
 2112
 2113
 2114
 2115
 2116
 2117
 2118
 2119
 2120
 2121
 2122
 2123
 2124
 2125
 2126
 2127
 2128
 2129
 2130
 2131
 2132
 2133
 2134
 2135
 2136
 2137
 2138
 2139
 2140
 2141
 2142
 2143
 2144
 2145
 2146
 2147
 2148
 2149
 2150
 2151
 2152
 2153
 2154
 2155
 2156
 2157
 2158
 2159
 2160
 2161
 2162
 2163
 2164
 2165
 2166
 2167
 2168
 2169
 2170
 2171
 2172
 2173
 2174
 2175
 2176
 2177
 2178
 2179
 2180
 2181
 2182
 2183
 2184
 2185
 2186
 2187
 2188
 2189
 2190
 2191
 2192
 2193
 2194
 2195
 2196
 2197
 2198
 2199
 2200
 2201
 2202
 2203
 2204
 2205
 2206
 2207
 2208
 2209
 2210
 2211
 2212
 2213
 2214
 2215
 2216
 2217
 2218
 2219
 2220
 2221
 2222
 2223
 2224
 2225
 2226
 2227
 2228
 2229
 2230
 2231
 2232
 2233
 2234
 2235
 2236
 2237
 2238
 2239
 2240
 2241
 2242
 2243
 2244
 2245
 2246
 2247
 2248
 2249
 2250
 2251
 2252
 2253
 2254
 2255
 2256
 2257
 2258
 2259
 2260
 2261
 2262
 2263
 2264
 2265
 2266
 2267
 2268
 2269
 2270
 2271
 2272
 2273
 2274
 2275
 2276
 2277
 2278
 2279
 2280
 2281
 2282
 2283
 2284
 2285
 2286
 2287
 2288
 2289
 2290
 2291
 2292
 2293
 2294
 2295
 2296
 2297
 2298
 2299
 2300
 2301
 2302
 2303
 2304
 2305
 2306
 2307
 2308
 2309
 2310
 2311
 2312
 2313
 2314
 2315
 2316
 2317
 2318
 2319
 2320
 2321
 2322
 2323
 2324
 2325
 2326
 2327
 2328
 2329
 2330
 2331
 2332
 2333
 2334
 2335
 2336
 2337
 2338
 2339
 2340
 2341
 2342
 2343
 2344
 2345
 2346
 2347
 2348
 2349
 2350
 2351
 2352
 2353
 2354
 2355
 2356
 2357
 2358
 2359
 2360
 2361
 2362
 2363
 2364
 2365
 2366
 2367
 2368
 2369
 2370
 2371
 2372
 2373
 2374
 2375
 2376
 2377
 2378
 2379
 2380
 2381
 2382
 2383
 2384
 2385
 2386
 2387
 2388
 2389
 2390
 2391
 2392
 2393
 2394
 2395
 2396
 2397
 2398
 2399
 2400
 2401
 2402
 2403
 2404
 2405
 2406
 2407
 2408
 2409
 2410
 2411
 2412
 2413
 2414
 2415
 2416
 2417
 2418
 2419
 2420
 2421
 2422
 2423
 2424
 2425
 2426
 2427
 2428
 2429
 2430
 2431
 2432
 2433
 2434
 2435
 2436
 2437
 2438
 2439
 2440
 2441
 2442
 2443
 2444

CHAPTER 4

TWO FORMAL MODELS OF EXTENDED DETERRENCE VIA ALLIANCE

4.1 Introduction

In the previous chapter I introduced a theory of extended deterrence via alliance. I discussed in some detail how extended deterrence emerges as a benefit for a minor power in an asymmetric alliance, and the international and domestic factors that shape deterrence effectiveness. I also argued that the actions a defender undertakes influence the perceptions of a potential aggressor. Signals that are sent between allies tend to relay some modicum of information to an adversary.

In this chapter I present two formal models of extended deterrence via alliance. In the first model there exists no uncertainty about the types of players or the signals sent. In the second model, I introduce the concept of uncertainty, and the issues of perception that arise due to this phenomenon.

In the next section of this chapter I outline the game theoretic model with complete and perfect information, and discuss the sequence of moves. Following from that discussion I then elaborate upon the outcomes of the model, and the costs and benefits associated with these outcomes. I then turn to a discussion of the types of players that are available, with type being determined by value for issue at stake and relative military capabilities. I then delineate payoffs for each outcome for each type of state, and discuss the preferences each type of state holds for the various outcomes. I then derive the equilibria of this model, and discuss their implications.

Having presented a simple model of extended deterrence via alliance, I then introduce the concept of uncertainty, and the role that it plays in informing perceptions. I

[illegible]

restructure the game so that the defender C has the ability to signal its commitment to its protégé B prior to the onset of a crisis, but the aggressor A does not know for certain what type of defender C is. I then derive the equilibria from this more fully specified model, and discuss its implications. I discuss the conditions under which these equilibria occur, and the implications that can be drawn from them.

Throughout the chapter I draw upon a number of international incidents to help illustrate the model. These are the Czech crisis of 1939; the Polish Crisis of 1939; the Serbian-Bulgarian War of 1885; U.S. Soviet relations in Western Europe after 1961; and the Sino-Vietnamese War of 1978-1979. In all of these cases an ally has proffered extended deterrence, but different outcomes emerge from each crisis.

4.2 The Theoretical Model with Complete Information

I now present a formal model of extended deterrence via alliance with complete and perfect information. Figure 4.1 depicts the model and the sequence of moves.

[FIGURE 4.1 ABOUT HERE]

Below are the assumptions that structure the game and the moves that each player makes.

Assumption 1: The model involves three players, A, B, and C. A, the aggressor, is a threat to B. B is the minor power protégé of C, and C is a great power defender of B. A BC alliance is assumed to be established exogenously from the game, and is in existence prior to any crisis that erupts.

Assumption 2: A crisis concerns only one issue.⁵⁰

Assumption 3: Each actor in the model is assumed to be an expected utility maximizer.

Assumption 4: The game is played under conditions of perfect information.⁵¹ This means that every player in the game knows all previous moves that every other player has made.

⁵⁰ While this may be a controversial assumption, it is borne out by much of the historical evidence. It also makes the model more tractable. Thus, I do not account for issue linkages within the model, as Morrow (1992) does.

THE NEW YORK PUBLIC LIBRARY
ASTOR LENOX TILDEN FOUNDATION
125 WEST 4TH STREET
NEW YORK, N. Y. 10014

Assumption 5: the game is played under conditions of common knowledge. Common knowledge implies that everybody in a game knows everything, everyone knows that everyone knows everything, into infinity. Nothing is hidden or secret regarding preferences over outcomes or payoffs concerning outcomes.

Assumption 6: Information in the game is complete. Complete information is characterized by having all payoffs to all players as common knowledge.⁵²

Assumption 7: Movement in the game is sequential rather than simultaneous. Each player moves in the prescribed manner laid out in the game, and then the other players have the opportunity to make their moves.

Assumption 8: In a game of complete and perfect information, states play strategies that maximize their expected utilities, and they are playing strategies that are subgame perfect. Strategies that are subgame perfect indicate that the strategies restricted to a proper subgame form a Nash equilibrium for that subgame.⁵³

Assumption 9: Every outcome of the game has a specific cost and/or benefit associated with it. All costs and benefits are greater than 0.⁵⁴

Assumption 10: War is a risky venture. Neither side knows with certainty that it can win in the event a conflict arises.⁵⁵

⁵¹ Discussions of all game-theoretic concepts used in this dissertation can be found in Morrow (1994b) and Gates and Humes (1997).

⁵² In later sections of this chapter I relax this assumption and make information incomplete for player A.

⁵³ Subgame perfection is an equilibrium refinement on Nash equilibrium, the central equilibrium property in game theory. A Nash equilibrium is defined as a pair of strategies S_i and s_j that are best replies to each other (Morrow, 1994, 80). There exists no incentive for either player to deviate from its equilibrium strategy. Subgame perfection refines this concept of Nash equilibrium somewhat, and makes certain equilibria incredible; that is, not possible given a specific equilibrium path.

⁵⁴ See Table 4.1 below for a description of all the benefits and costs which comprise the various payoffs. See Table 4.2 below for an explication of the specific payoffs for each outcome.

⁵⁵ War in this depiction, then, is viewed as the potential outcome of two lotteries, in which an actor must choose whether to accept some situation with a greater degree of certainty, or take a gamble on improving his position by engaging in conflict. I capture this risk in the payoff structure outlined later in this chapter.

1. The first part of the document is a list of names and their corresponding addresses. The names are listed in a column on the left, and the addresses are listed in a column on the right. The names are: John Doe, Jane Smith, and Bob Johnson. The addresses are: 123 Main St, 456 Elm St, and 789 Oak St.

4.2.1 *The Sequence of Moves*

The model outlined above is not intended to be a literal depiction of international crises. It does, however, capture the essence of sequence found in most international crises.⁵⁶ Below is a discussion of how the crisis unfolds, and the strategies that each state can choose from as the crisis escalates.

Prior to the onset of the game, B and C form an asymmetric alliance (hereafter, BC), in which B is a minor power and C is a great power defender. This decision to form an alliance is not explicitly modeled in this game. Rather, I merely assume that the alliance exists due to the common threat of A, and that each state entering into the alliance gains security benefits (in the case of B) or autonomy benefits (in the case of C) as discussed in chapters 2 and 3.⁵⁷

Although the model is sparse, it captures the essential details of an international crisis without becoming hopelessly immured in minute details of particular disputes. It focuses on the opportunities, represented by the potential for a crisis given a contested

⁵⁶ George and Smoke (1974); Fearon (1994a, 1994b); and Powell (1990) all depict international crises as proceeding in a sequential manner. A notable exception to this modeling trait is Snyder and Diesing (1977), who model international crises as games of simultaneous choice.

⁵⁷ Others, notably Morrow (1994), Sorokin (1994), and Smith (1995), model the alliance formation process prior to the onset of a crisis. However, if one is interested in examining the impact that alliances have on the initiation and escalation of crises, then we need to have the existence of an alliance prior to the crisis' onset. The pieces by Morrow and Sorokin mentioned above provide such a structure within their models. However, Smith's piece models the crisis scenario as the aggressor making an initial decision to attack or not, and then having a third party join either the attacker or the target. While this piece, along with Morrow's, re-specifies and more accurately captures the strategic interactions inherent in earlier work of Altfeld and Bueno de Mesquita (1979) and Wu (1990), it is a model that explains a decision to intervene by a previously non-allied third party. Therefore, it is a more apt description of the formation of a coalition rather than an examination of a pre-existing alliance on the occurrence of war.

[illegible]

status quo, and the willingness of a defender to seek an alteration in the status quo, given that its adversary has formed an alliance with a great power.

Of course crises may last longer than the initial two-stage crisis model depicted above.⁵⁸ The essence of a crisis is preserved in the model presented, however, and thus is much more tractable when it comes to purposes of analysis. Having said that, I proceed into a description of the moves that are undertaken in the context of this model.

Having established the existence of a BC alliance, the game begins. A makes the initial move, choosing strategy s from a set of strategies S , $s \in S$, where $S = \{\text{initiate}, \sim\text{initiate}\}$.⁵⁹ If A chooses not to initiate a dispute against B, the game ends, with the outcome being the status quo (SQ). The possible success (or failure) of extended general deterrence in this initial move can be regarded as the first stage in the game.

If A chooses to initiate, the next move in the game belongs to B, the target of A's aggression. Extended general deterrence has failed, and we enter the second stage of the model, which is an extended immediate deterrence encounter. B must choose a strategy s from a set of strategies S , $s \in S$, where $S = \{\text{resist}, \sim\text{resist}\}$. If B chooses not to resist,

⁵⁸ Fearon (1994b) and Powell (1990) present crisis models with infinite horizons; that is, models in which there is no foreseeable end in sight. Such crisis bargaining models include discount parameters that influence payoffs as the models are iterated over time. Future work on extended deterrence via alliance will account for these discount factors by conceptualizing a crisis as a set of iterations. However, at the initial stage of this theory's development, I find it more useful to confine the model to a two-stage crisis, and keep the findings more parsimonious.

⁵⁹ A brief remark on notation. Tilde (\sim) is used throughout this dissertation as the symbol for "not". Thus, $\sim\text{initiate}$ is read as "not initiate". For discussing strategy sets, I use the symbol \in , which means, "is a member of the set". Therefore, $s \in S$ merely indicates that a strategy s is a subset of a larger set of strategies that are denoted as S .

1950
 1951
 1952
 1953
 1954
 1955
 1956
 1957
 1958
 1959
 1960
 1961
 1962
 1963
 1964
 1965
 1966
 1967
 1968
 1969
 1970
 1971
 1972
 1973
 1974
 1975
 1976
 1977
 1978
 1979
 1980
 1981
 1982
 1983
 1984
 1985
 1986
 1987
 1988
 1989
 1990
 1991
 1992
 1993
 1994
 1995
 1996
 1997
 1998
 1999
 2000
 2001
 2002
 2003
 2004
 2005
 2006
 2007
 2008
 2009
 2010
 2011
 2012
 2013
 2014
 2015
 2016
 2017
 2018
 2019
 2020
 2021
 2022
 2023
 2024
 2025
 2026
 2027
 2028
 2029
 2030
 2031
 2032
 2033
 2034
 2035
 2036
 2037
 2038
 2039
 2040
 2041
 2042
 2043
 2044
 2045
 2046
 2047
 2048
 2049
 2050
 2051
 2052
 2053
 2054
 2055
 2056
 2057
 2058
 2059
 2060
 2061
 2062
 2063
 2064
 2065
 2066
 2067
 2068
 2069
 2070
 2071
 2072
 2073
 2074
 2075
 2076
 2077
 2078
 2079
 2080
 2081
 2082
 2083
 2084
 2085
 2086
 2087
 2088
 2089
 2090
 2091
 2092
 2093
 2094
 2095
 2096
 2097
 2098
 2099
 2100
 2101
 2102
 2103
 2104
 2105
 2106
 2107
 2108
 2109
 2110
 2111
 2112
 2113
 2114
 2115
 2116
 2117
 2118
 2119
 2120
 2121
 2122
 2123
 2124
 2125
 2126
 2127
 2128
 2129
 2130
 2131
 2132
 2133
 2134
 2135
 2136
 2137
 2138
 2139
 2140
 2141
 2142
 2143
 2144
 2145
 2146
 2147
 2148
 2149
 2150
 2151
 2152
 2153
 2154
 2155
 2156
 2157
 2158
 2159
 2160
 2161
 2162
 2163
 2164
 2165
 2166
 2167
 2168
 2169
 2170
 2171
 2172
 2173
 2174
 2175
 2176
 2177
 2178
 2179
 2180
 2181
 2182
 2183
 2184
 2185
 2186
 2187
 2188
 2189
 2190
 2191
 2192
 2193
 2194
 2195
 2196
 2197
 2198
 2199
 2200
 2201
 2202
 2203
 2204
 2205
 2206
 2207
 2208
 2209
 2210
 2211
 2212
 2213
 2214
 2215
 2216
 2217
 2218
 2219
 2220
 2221
 2222
 2223
 2224
 2225
 2226
 2227
 2228
 2229
 2230
 2231
 2232
 2233
 2234
 2235
 2236
 2237
 2238
 2239
 2240
 2241
 2242
 2243
 2244
 2245
 2246
 2247
 2248
 2249
 2250
 2251
 2252
 2253
 2254
 2255
 2256
 2257
 2258
 2259
 2260
 2261
 2262
 2263
 2264
 2265
 2266
 2267
 2268
 2269
 2270
 2271
 2272
 2273
 2274
 2275
 2276
 2277
 2278
 2279
 2280
 2281
 2282
 2283
 2284
 2285
 2286
 2287
 2288
 2289
 2290
 2291
 2292
 2293
 2294
 2295
 2296
 2297
 2298
 2299
 2300
 2301
 2302
 2303
 2304
 2305
 2306
 2307
 2308
 2309
 2310
 2311
 2312
 2313
 2314
 2315
 2316
 2317
 2318
 2319
 2320
 2321
 2322
 2323
 2324
 2325
 2326
 2327
 2328
 2329
 2330
 2331
 2332
 2333
 2334
 2335
 2336
 2337
 2338
 2339
 2340
 2341
 2342
 2343
 2344
 2345
 2346
 2347
 2348
 2349
 2350
 2351
 2352
 2353
 2354
 2355
 2356
 2357
 2358
 2359
 2360
 2361
 2362
 2363
 2364
 2365
 2366
 2367
 2368
 2369
 2370
 2371
 2372
 2373
 2374
 2375
 2376
 2377
 2378
 2379
 2380
 2381
 2382
 2383
 2384
 2385
 2386
 2387
 2388
 2389
 2390
 2391
 2392
 2393
 2394
 2395
 2396
 2397
 2398
 2399
 2400
 2401
 2402
 2403
 2404

then it accedes to A's demand, and the game ends with B's acquiescence (ACQ_B). If B chooses to resist, then the next move in the sequence is left to C.

C must then choose a strategy s from a set of strategies S , $s \in S$, where $S = \{\text{intervene}, \sim\text{intervene}\}$. Regardless of what strategy C chooses, A makes the final move in the game. A must choose a final strategy s from one final set of strategies S , $s \in S$, where $S = \{\text{escalate}, \sim\text{escalate}\}$. If C chooses to intervene on behalf of B, and A chooses to escalate the crisis, then the outcome is a trilateral conflict (CN_{ALL}). If C opts for a strategy of non-intervention, and A chooses to escalate the crisis, then the outcome is a bilateral conflict between A and B conflict (CN_{AB}). If C chooses to intervene, and A chooses not to escalate, then the outcome is back down by A (BD). If C chooses not to intervene, and A chooses not to escalate, then the outcome is back down by A without intervention by C (BD*).⁶⁰ Following from this are more detailed discussions of what each strategy entails.

Initiate

States initiate a crisis when they feel it is advantageous to make some alteration in the status quo. Initiation takes the form of a demand, coupled with the use or threat of

⁶⁰ In this model, negotiation is not a potential outcome of a crisis. While some may take issue with the absence of this outcome, many demands made in international crises are non-divisible. For example, many of the demands made by the Soviet Union against the United States during the Cold War were take it or leave it demands. All of the crises that erupted over the status of Berlin, for example, took this form, with the ultimate Soviet goal being the withdrawal of Allied personnel from West Berlin. Or, in the Cuban Missile Crisis, the possibility of using negotiation to force the Soviets to remove their missiles from Cuba was not considered an option for the United States. For a discussion and analysis of the various Berlin crises, see George and Smoke (1974) and Slusser (1973). The definitive text on the Cuban Missile Crisis remains Allison (1971). See Fearon (1995, 389-390) for a further discussion of the indivisibility of issues in international politics.

force. Initiation of a crisis by an adversary indicates the failure of extended general deterrence. Hence, I focus on any demand made by an aggressor towards a target, be it military, diplomatic, or otherwise.

At any point in time, states are confronted with the opportunity to make demands of an adversary, and to couple these demands with force. However, as the data in Chapter 5 demonstrate, demands coupled with the threat or actual use of force are a relatively rare event in the international system. Conflict is not the normal state of affairs among states. Extended general deterrence has a tendency to be successful, largely because a challenger has no incentive (opportunity) to challenge the status quo. This is not to say that the challenger is satisfied with the status quo. It may be more than willing to desire a shift in the status quo in its preferred direction, but not have the opportunity to do so. Rather, it indicates that changing the status quo is too costly for the challenger, rather than assuming satisfaction with current arrangements.

Resist

Once an aggressor has initiated a dispute, the target must make a choice. It can acquiesce to A's demands, or it can choose to resist. If B chooses to accede to A's demand, then the dispute is resolved in A's favor. Of more interest is what occurs if B chooses to resist, and refuses to acquiesce to A's demand.

Refusal to acquiesce means that B is actively engaging A in an attempt to prevent A from attaining its goal. Resistance to A's demand can range from B lodging a diplomatic complaint to responding with force on its own part. If B has an alliance partner in C, then it naturally hopes that C will intervene on its behalf. Such is the

12-13
12-14
12-15
12-16
12-17
12-18
12-19
12-20
12-21
12-22
12-23
12-24
12-25
12-26
12-27
12-28
12-29
12-30
12-31

purpose of alliances. If they fail at deterring aggression, then they serve as units to aggregate capabilities in the event of an armed conflict.

By explicitly incorporating B's choice into the model, the traditional manner of examining general deterrence has been expanded. As Fearon (1993, 1994a) notes, traditional rational deterrence models have focused on a challenger and a defender. They don't incorporate a move made by the target. This omitted move by B, I argue, is imperative for understanding the role that alliances play in dispute escalation.⁶¹ If B refuses to resist, then C has no opportunity to intervene and prolong or settle the dispute.⁶²

Intervention

It should be noted at the onset that intervention can assume various guises. However, they all share one common trait. They provide an indication of the defender's value for its protégé. This value, as was argued in chapter 3, is largely determined by the benefits that the defender gains from its alliance with the protégé.

Intervention can range from implementing diplomatic or economic pressure on an adversary, to outright provision of troops and military resources to fight alongside a threatened protege. If a state is to be viewed as valuing its ally, then it will intervene on

⁶¹ Of course, this tendency to focus on the major powers is largely a function of how international politics tends to be conducted. As Kilgour and Zagare (1994) note, the minor power protégé in extended deterrence relationships takes on the role of a pawn, which is what the major powers are fighting over. The pawn, as any chess player will acknowledge, is sacrificed if it is not of sufficient value to the player who commands it. The same scenario emerges in extended deterrence. If the defender does not have a large enough interest in the protégé, then the protégé will be sacrificed to the aggressor making a demand. The fate of Czechoslovakia in 1938 and 1939 is a prime example of a protégé sacrificed because its defenders (in this case, France and Great Britain) did not deem its survival to be that important.

[illegible]

its ally's behalf. In the context of the model developed here, I assume that intervention means military intervention. A defending state can undertake any of the other aforementioned actions on behalf of its protégé. However, given the definition in the last chapter of alliances, with their focus on security affairs, and the rationale for issuing deterrent threats to prevent an attack, I feel that the focus on military intervention is justified, although I recognize that it may be a simplification.

Escalation

Escalation in this context means increasing the use of force to one in which large-scale armed force is used by A against B (and potentially against C as well). If the initiation of a crisis indicates the breakdown in extended general deterrence, then the escalation of a crisis indicates the failure of extended immediate deterrence. As defined earlier, a crisis in this theoretical framework is defined as a situation in which A makes a demand of B accompanied by the use or threat to use force. By escalating a dispute to war, A is indicating its willingness to change the status quo, presumably in its favor, through the use of large-scale violence against another state.

As was mentioned above, and is elaborated in more detail below, war is a risky venture. A realizes that if it decides to increase the level of force it uses against B, it runs the risk of fighting a war against B and C combined. The decision to escalate a dispute to war, therefore, indicates that A is more risk-acceptant than risk-averse. There always exists the possibility that C will intervene in a dispute, and this is a risk which A faces when it decides to use a greater level of force in an attempt to attain its goals, and is crucial to understanding the impact that an existing alliance has on the possibility of war

⁶² If C chooses to engage A after B's acquiescence, then that becomes another model, which is not the focus of this study

30000
29000
28000
27000
26000
25000
24000
23000
22000
21000
20000
19000
18000
17000
16000
15000
14000
13000
12000
11000
10000
9000
8000
7000
6000
5000
4000
3000
2000
1000
0

occurring. A never knows for certain how much value C places on its relationship with B, and must infer from C's actions prior to and throughout the dispute process what the range of possible outcomes are.⁶³

4.3 Outcomes, Costs, Payoffs, and Types

Having outlined the assumptions that place constraints on actors within the model being developed, I now focus on the outcomes of the game. Every outcome of the game-theoretic model explicated above has a specific payoff associated with it. These payoffs are comprised of the benefits (if any) that a state gains from the outcome less the costs that the specific outcome incurs. Below I discuss in substantive terms what each outcome means. I then discuss in some detail the various benefits and costs associated with the game. I then calculate payoffs for each outcome of the game, with special attention being paid to the type of player.

4.3.1 Outcomes of the Game

There exist six distinct outcomes of the game specified above. In turn I elaborate upon what each one means, and provide a substantive example from the set of crises mentioned in the introduction to this chapter. This helps provide a link between the theoretical model and actual empirical events.

Status (SQ)

As elaborated upon in chapter 2, the essence of deterrence is to prevent hostile aggression from an adversary through the use of threats. In the case of an asymmetric alliance, it should be recalled that the great power in the alliance is extending its

⁶³ This uncertainty is captured on the more complex model below, where incomplete information is assumed.

10
 11
 12
 13
 14
 15
 16
 17
 18
 19
 20
 21
 22
 23
 24
 25
 26
 27
 28
 29
 30
 31
 32
 33
 34
 35
 36
 37
 38
 39
 40
 41
 42
 43
 44
 45
 46
 47
 48
 49
 50
 51
 52
 53
 54
 55
 56
 57
 58
 59
 60
 61
 62
 63
 64
 65
 66
 67
 68
 69
 70
 71
 72
 73
 74
 75
 76
 77
 78
 79
 80
 81
 82
 83
 84
 85
 86
 87
 88
 89
 90
 91
 92
 93
 94
 95
 96
 97
 98
 99
 100
 101
 102
 103
 104
 105
 106
 107
 108
 109
 110
 111
 112
 113
 114
 115
 116
 117
 118
 119
 120
 121
 122
 123
 124
 125
 126
 127
 128
 129
 130
 131
 132
 133
 134
 135
 136
 137
 138
 139
 140
 141
 142
 143
 144
 145
 146
 147
 148
 149
 150
 151
 152
 153
 154
 155
 156
 157
 158
 159
 160
 161
 162
 163
 164
 165
 166
 167
 168
 169
 170
 171
 172
 173
 174
 175
 176
 177
 178
 179
 180
 181
 182
 183
 184
 185
 186
 187
 188
 189
 190
 191
 192
 193
 194
 195
 196
 197
 198
 199
 200
 201
 202
 203
 204
 205
 206
 207
 208
 209
 210
 211
 212
 213
 214
 215
 216
 217
 218
 219
 220
 221
 222
 223
 224
 225
 226
 227
 228
 229
 230
 231
 232
 233
 234
 235
 236
 237
 238
 239
 240
 241
 242
 243
 244
 245
 246
 247
 248
 249
 250
 251
 252
 253
 254
 255
 256
 257
 258
 259
 260
 261
 262
 263
 264
 265
 266
 267
 268
 269
 270
 271
 272
 273
 274
 275
 276
 277
 278
 279
 280
 281
 282
 283
 284
 285
 286
 287
 288
 289
 290
 291
 292
 293
 294
 295
 296
 297
 298
 299
 300
 301
 302
 303
 304
 305
 306
 307
 308
 309
 310
 311
 312
 313
 314
 315
 316
 317
 318
 319
 320
 321
 322
 323
 324
 325
 326
 327
 328
 329
 330
 331
 332
 333
 334
 335
 336
 337
 338
 339
 340
 341
 342
 343
 344
 345
 346
 347
 348
 349
 350
 351
 352
 353
 354
 355
 356
 357
 358
 359
 360
 361
 362
 363
 364
 365
 366
 367
 368
 369
 370
 371
 372
 373
 374
 375
 376
 377
 378
 379
 380
 381
 382
 383
 384
 385
 386
 387
 388
 389
 390
 391
 392
 393
 394
 395
 396
 397
 398
 399
 400
 401
 402
 403
 404
 405
 406
 407
 408
 409
 410
 411
 412
 413
 414
 415
 416
 417
 418
 419
 420
 421
 422
 423
 424
 425
 426
 427
 428
 429
 430
 431
 432
 433
 434
 435
 436
 437
 438
 439
 440
 441
 442
 443
 444
 445
 446
 447
 448
 449
 450
 451
 452
 453
 454
 455
 456
 457
 458
 459
 460
 461
 462
 463
 464
 465
 466
 467
 468
 469
 470
 471
 472
 473
 474
 475
 476
 477
 478
 479
 480
 481
 482
 483
 484
 485
 486
 487
 488
 489
 490
 491
 492
 493
 494
 495
 496
 497
 498
 499
 500
 501
 502
 503
 504
 505
 506
 507
 508
 509
 510
 511
 512
 513
 514
 515
 516
 517
 518
 519
 520
 521
 522
 523
 524
 525
 526
 527
 528
 529
 530
 531
 532

deterrence threat to a minor power. Successful deterrence implies that the potential aggressor (A in the model) realizes that C has made a credible commitment to B via its alliance agreement, and that the likelihood of C intervening is quite high. The possibility of facing such a strengthened target may force a potential aggressor to not initiate any aggressive actions, since the potential costs are viewed as being drastically high. Deterrence succeeds, and the status quo prevails.

Such a scenario emerges after 1961 in Western Europe. The United States, acting through NATO, had emerged from the Second World War as the defender of Western Europe in general, and of West Germany specifically. The Soviet Union challenged this position in the early days of the Cold War quite regularly. Of particular interest to the Soviets was the issue of divided Germany, and especially that of divided Berlin. After a number of attempts to force the United States and its allies from Berlin, the Soviets erected the Berlin Wall in 1961. The Wall, in addition to becoming a symbol of a divided Europe, also symbolized the end of Soviet aggression towards the West on the European continent. This potential aggression was officially quelled in December 1972, when the Soviet Union and the United States signed a treaty regarding the territorial status of Berlin and recognizing its existing boundaries.⁶⁴

Acquiescence by B (ACQ_B)

Oftentimes, a target will know in advance if its ally will not intervene on its behalf. Or, alternatively, the issue at stake is of such little importance that resistance, and the possibility of conflict occurring because of it, is too costly for the target state to

⁶⁴ See George and Smoke (1974) and Hanrieder (1989) for greater discussions of the American role in West Germany after 1945.

[illegible]

bear. In such circumstances, it is often better for B to accede to A's demands. In such a scenario, then, B acquiesces to A, and C never even has the opportunity to intervene.

The 1939 crisis surrounding Czechoslovakia prior to the outset of the Second World War is a prime example of such a scenario. A bit of historical background sets the stage. In 1938, as Nazi Germany was gathering its strength, Adolph Hitler made the decision to annex the Sudetenland portion of Czechoslovakia. The issue at stake was the fate of ethnic Germans residing in this territory. France was linked to the Czechs by a treaty of alliance, with a pledge to intervene if Czechoslovakia's sovereignty was ever endangered. (Great Britain was also a defender of the Czech nation, although not as a formal alliance partner). Unfortunately for the hapless Czechs, the Great Powers gave away the Sudetenland at the Munich Conference of 1938, in exchange for a German promise of peace. Scarcely was the ink dry on the agreement than German tanks were occupying the remainder of Czechoslovakia in early 1939.⁶⁵

The Czechs appealed to their allies for assistance, but none was forthcoming. The alliance failed, and the stage for the Second World War was set. In the face of superior military strength, and without assistance from allies, the Czechs had no choice but to acquiesce, first on the issue of the Sudetenland, and then on the rest of their country. Germany saw an opportunity to act, given the appeasement strategy followed by the British, and acted upon it. The willingness to intervene was lacking on the part of the French and British, and Czechoslovakia became the first major victim of Nazi aggression.

⁶⁵ See Schweller (1998) on the inability of the British and French to deter German aggression prior to the onset of the Second World War.

[illegible]

Back Down by A, given C's intervention (BD_A)

If A makes a challenge against B, then extended general deterrence has failed. Our situation then becomes one of extended-immediate deterrence. If B resists, then the choice falls on C as to whether it should intervene or not. A good example of this phenomenon comes from the Serbian-Bulgarian War of 1885.

As noted previously, Serbia was linked to Austria-Hungary by a defense pact, in which Austria pledged to come to Serbia's assistance if she were attacked by an outside power. Serbia actually launched an offensive war against Bulgaria in the late autumn of 1885, but soon found itself on the losing side.⁶⁶ Bulgaria, sensing the possibility of territorial gains, massed on Serbia's borders and threatened invasion. Serbia pleaded for assistance to its Austrian ally. Given its vested nature in the stability of an independent Serbia, Austria mobilized and threatened to intervene militarily. Through this action she was able to spare Serbia from invasion and defeat at the hands of the Bulgars.⁶⁷

Back Down by A, given C's non-intervention (BD^*_A)

Of all the potential outcomes in the model, this is the only one that does not have a substantive example to describe it. If A is willing to initiate a dispute against B, knowing prior to the crisis' outset that a BC alliance is in existence, then it is not rational for this outcome to occur. I demonstrate this mathematically below, in the section on equilibrium analysis.

⁶⁶ The parallels between the Serbian debacle in 1885 and the Turkish debacle during the Crimean War in 1854 are remarkable, in that both states launched offensive wars and were later obliged to appeal to outside assistance in order to survive.

⁶⁷ See Blainey (1989) and Langer (1950) for more details on the Serbian-Bulgarian War, which, incidentally, is the only major war fought on the European continent during the decade of the 1880s.

1. 1.1
 2. 1.2
 3. 1.3
 4. 1.4
 5. 1.5
 6. 1.6
 7. 1.7
 8. 1.8
 9. 1.9
 10. 1.10
 11. 1.11
 12. 1.12
 13. 1.13
 14. 1.14
 15. 1.15
 16. 1.16
 17. 1.17
 18. 1.18
 19. 1.19
 20. 1.20
 21. 1.21
 22. 1.22
 23. 1.23
 24. 1.24
 25. 1.25
 26. 1.26
 27. 1.27
 28. 1.28
 29. 1.29
 30. 1.30
 31. 1.31
 32. 1.32
 33. 1.33
 34. 1.34
 35. 1.35
 36. 1.36
 37. 1.37
 38. 1.38
 39. 1.39
 40. 1.40
 41. 1.41
 42. 1.42
 43. 1.43
 44. 1.44
 45. 1.45
 46. 1.46
 47. 1.47
 48. 1.48
 49. 1.49
 50. 1.50
 51. 1.51
 52. 1.52
 53. 1.53
 54. 1.54
 55. 1.55
 56. 1.56
 57. 1.57
 58. 1.58
 59. 1.59
 60. 1.60
 61. 1.61
 62. 1.62
 63. 1.63
 64. 1.64
 65. 1.65
 66. 1.66
 67. 1.67
 68. 1.68
 69. 1.69
 70. 1.70
 71. 1.71
 72. 1.72
 73. 1.73
 74. 1.74
 75. 1.75
 76. 1.76
 77. 1.77
 78. 1.78
 79. 1.79
 80. 1.80
 81. 1.81
 82. 1.82
 83. 1.83
 84. 1.84
 85. 1.85
 86. 1.86
 87. 1.87
 88. 1.88
 89. 1.89
 90. 1.90
 91. 1.91
 92. 1.92
 93. 1.93
 94. 1.94
 95. 1.95
 96. 1.96
 97. 1.97
 98. 1.98
 99. 1.99
 100. 1.100

Bilateral Conflict (CON_{AB})

A dyadic conflict emerges when a challenger initiates a dispute against a target, the target resists, and the defender does not come to the aid of its protégé. To reiterate Saborsky's (1980) claim, this is a common recurrence in international politics for the period 1815-1969. In the following chapter this claim will be examined in the extended deterrence context; right now it is sufficient to state that this assertion tends to be accepted as conventional wisdom within the alliance research community.

A good example of abandonment by a major power ally comes from the Sino-Vietnam War of 1978-1979. As Sino-Vietnamese relations began to deteriorate in the 1970s, Vietnam began to look elsewhere for external security. Given the Sino-Soviet split, and the attempts by the Soviet Union to "contain" Chinese influence in Southeast Asia, an alliance between Vietnam and the Soviet Union was formed in November 1978. Angered over Vietnam's invasion of Cambodia, China invaded Vietnam on February 17, 1979. The Soviet Union, although allied with the Vietnamese, failed to intervene in any significant manner, and the Vietnamese were left to conduct the war on their own.⁶⁸

Trilateral Conflict (CON_{ALL})

A multiparty conflict emerges when a defending state decides to intervene militarily on behalf of its protégé, and the aggressor continues to press its attack anyway. This is the ideal for B, for if it is going to be attacked, because it can count on its ally's support. Such a scenario led to the onset of war in the autumn of 1939.

In the aftermath of the Czech debacle, France and Great Britain began to realize the seriousness of the Nazi threat in the center of Europe. France strengthened her ties to

⁶⁸ See Horn (1987) and Organski and Kugler (1980) on the Sino-Vietnamese clashes.

Poland, and the British signed a treaty of alliance with the Poles as well. In addition to this treaty, the British made public statements mentioning their intention to intervene militarily if Poland's sovereignty were compromised. In spite of this, and possibly believing that the British and French commitments were not credible, Germany attacked Poland on September 1, 1939. France and Great Britain declared war on Germany, and the Second World War began.

4.3.2 *Costs and Benefits*

Having discussed the strategies and outcomes that comprise the basic model, I now turn to a description of the costs and benefits that make-up the payoffs associated with each potential outcome. I first outline the potential costs and benefits, and detail their implications. From these discussions I formalize payoffs for the outcomes of the model. Finally I delineate the different types of players that exist.

Each action taken (or not taken) in this model has a variety of benefits and/or costs associated with it. These six terms combine to make up the payoffs that are associated with each outcome of the model. Table 4.1 summarizes these costs and benefits.

TABLE 4.1
Terms in the Model

Terms	Definition
x_i	Value of A's demand for i , $i \in \{A, B, C\}$ (zero sum between A and B)
c_i	Physical cost of conflict for i , $i \in \{A, B, C\}$
d	Domestic political costs
mB/C	Security benefit to B/invested cost undertaken by C
yC/B	Autonomy benefit to C/cost to B for alliance
v_i	Value for conflict for i , $i \in \{A, B, C\}$

[illegible]

Now that the terms that comprise the potential payoffs have been identified, let us now turn to a more detailed discussion of what these terms mean.⁶⁹ The first term to be considered is *x*. This corresponds to the value of the demand that A makes of B. It is the issue at stake for each of the actors that are a party to the crisis. Thus, if A is able to gain its demand, the status quo is shifted in its favor. B and C, on the other hand, witness the status quo as being shifted detrimentally against their desired resolution of the status quo. For A and B, if A makes a demand and B gives in, the result is a zero-sum solution, in which A's gain is B's loss. In the case of C, it may not lose all of its benefits from the alliance if B acquiesces, but it does stand to lose some leverage. How much it values the demand, of course, will determine to a large extent the actions that C undertakes.

For example, consider the 1958 Berlin Crisis. The Soviet Union demanded that Berlin be made a free city, and demanded that the other remaining occupying powers relinquish their control over the divided city. This would have placed the Soviets at a tremendous advantage in the center of Europe, with the United States losing valuable bases and presence in the heart of Germany. Having committed itself to containing Soviet aggression and ideology worldwide, and having become involved in the Korean War because of this pledge, the United States could scarcely afford to lose face in front of the Soviets in Western Europe. American influence, both in Europe and on a global scale, would have been jeopardized.⁷⁰

⁶⁹ Means of operationalizing these terms are detailed in chapter 5, when I discuss the propositions to be tested, and the methods and variables used to conduct the empirical analysis of this dissertation.

⁷⁰ George and Smoke (1974), as well as Slusser (1973) provide excellent accounts regarding the American commitment to Berlin and its implications for American foreign policy outside of Europe.

[illegible]

If B and C are both joined in an alliance, both states can mutually benefit. As outlined earlier in this study, great powers obtain autonomy benefits from allying with minor powers. These smaller alliance members gain security from their defender. I denote autonomy benefits in this model as y . This is the concession that B makes to C in order to gain alliance with C. It may require a coordination of some policy issue, or it may be permission for C to maintain some form of military presence on B's territory.

B also gains from the alliance relationship. I denote the security benefits that B receives from C as m . These benefits serve as a signal from C to B, and provide a dual function. First of all, they allow potential adversaries to witness the importance that C attaches to B, since they are costly investment signals. Secondly, in many instances, these investments help prepare B for potential conflict, if an adversary decides to press an issue. This signal can be items such as arms transfers, statements of intention to protect a protégé, or even tightness of the alliance ties. Both of these terms function as signals that can be witnessed by a hostile aggressor. This trade-off helps shape the perceptions of an antagonist, because it provides an indication of the value that a defender places on a protégé's well being.

Again Western Europe in the aftermath of the Second World War provides a telling example of this phenomenon. The United States was able to use its economic and military power to help rebuild the war-shattered societies of the West after 1945, and use its membership in the NATO alliance to work at containing and deterring the Soviet Union, especially through its presence in West Germany. Western Europe, on the other hand, was able to gain military and economic good that were needed to rebuild their economy and strengthen their military might. The United States gained autonomy by

investing in Western Europe. This allowed the United States to maintain a presence on the Continent, and the NATO allies were able to gain security under the American nuclear umbrella.

We now come to the last three terms that can potentially comprise payoffs to the model: c , d , and w . The first two terms are specifically cost terms. Costs of conflict involvement are represented by c . This cost increases as a crisis escalates. Every action undertaken by a state in times of crisis involves some level of cost that deals with the use (or potential use) of the armed forces. When A makes a demand, it often accompanies it with a use (or threat) of force. If B and C choose to respond, it is often with a threat of military action as well.

In the domestic sphere there exist costs for any military venture as well. Domestic political costs, denoted as d , often act as constraints on decision-makers. While I assume, as do many others (e.g. Fearon, 1994a, 1994b; Hart and Eyerman, 1996) that domestic political costs are imposed if a foreign policy venture leads to conflict, or if no actions are undertaken on behalf of a beleaguered ally, I argue that this is not the only realm in which domestic considerations come into play. In many countries, notably those with competitive political regimes, the decision to undertake a foreign policy venture, such as forming an alliance, is subject to domestic political bargaining as well as international negotiations. This is particularly evident in democracies such as the United States, where international agreements are subjected to ratification by the national legislature. Such costs must be considered as an evaluation of the status quo, as well as the potential costs that erupt by becoming involved in a militarized crisis.

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

Particularly in democracies, but in authoritarian regimes as well, there is always the fear that a major foreign policy defeat will cost an office holder his or her position (Bueno de Mesquita, Siverson, and Woller, 1992; Bueno de Mesquita and Siverson, 1995). While the role of domestic politics in international affairs, as discussed in chapter 3, is one that has not been overly analyzed until recently, it plays a much greater role than traditional realists or neorealists acknowledge. An example from great power interaction demonstrates this quite nicely.

In the aftermath of the Treaty of San Stefano and the Congress of Berlin in 1878, the Balkan Peninsula was reshaped, and Bulgaria, Romania, and Serbia emerged as independent states. Serbia, desperate for security in the face of potential Bulgarian irredentism, sought alliance with Austria-Hungary. Austria's benefit from this alliance was twofold: economic and military. Economically, Serbia provided Austria with favorable trading circumstances. Militarily, alliance with Serbia permitted the Austrian monarchy to actively engage Russia, and permit the eventual annexation of Bosnia-Herzegovina.

The treaty of alliance with Serbia, although attempts were made to keep its provisions secret, was quite problematic for the Austrian government. The Hungarian portion of the Austro-Hungarian empire was overly concerned with the growing Slavic influence within the empire's boundaries. There were concessions that had to be made, and this rift within the empire became known, both to Bulgaria and the Russians, who were eager to exploit this domestic strife. The annexation of Bosnia did not take place at this time primarily due to this conflict of interests, and the Serbian-Bulgarian war of 1885

0000

0001

0002

0003

0004

0005

0006

0007

0008

0009

0010

0011

0012

0013

0014

0015

0016

0017

0018

0019

0020

0021

0022

0023

0024

0025

erupted in large part due to the Bulgarian impression that Austria was constrained at home, and would not assist her Serbian ally.⁷¹

The final term to be discussed is w , the value for conflict. The initiation of a crisis entails the possibility that the crisis could escalate and lead to armed conflict. Each state in the model holds some value for possibly engaging in such activities, and this value is shaped by a variety of factors, as will be discussed below. For now it is sufficient to state that states hold different values for going to war, based upon what they hope to accomplish from engaging in fighting. These values are based largely on a state's military capacity and its willingness to engage in risky behavior to achieve its goals.

4.3.3 *Discussing Payoffs and Types*

Having described the possible outcomes of the model in some detail, and explicated the terms that comprise the payoffs associated with the outcomes of the model, I now turn to an elaboration of the payoffs associated with each of the outcomes. Payoffs are defined as a player's utility for the outcome of a game (Morrow, 1994b, 351). They are a combination of the benefits and costs associated with each outcome. Table 4.2 outlines the payoffs each state gains from each potential outcome.

⁷¹ Further discussions of this issue can be found in Langer (1950, 323-365).

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60
61
62
63
64
65
66
67
68
69
70
71
72
73
74
75
76
77
78
79
80
81
82
83
84
85
86
87
88
89
90
91
92
93
94
95
96
97
98
99
100

TABLE 4.2
PAYOFFS FOR THE MODEL

State	SQ	ACQ _B	BD _A	BD*	CN _{AB}	CN _{ALL}
A	0	x _A	x _A -c-d	x _A -c-d	w-c-d	w-c-d
B	x _B +m _B -	-x _B -d	x _B +m _B -	x _B +m _B -	w-c-d	w-c-d
	y _B -d		y _B -c-d	y _B -c		
C	x _A +y _B -	-x _C	x _A +y _B -	x _A +y _B -	-d-m	w-c-d
	m _B -d		m _B -c-d	m _B -c-d		

Having outlined the benefits and costs that each state potentially encounters in the model, and specified the generalized payoffs each player holds for the specified outcomes, a discussion of players' types is needed. While states may be similar in their desires for security and survival (Morgenthau, 1985; Waltz, 1979), or, more generally viewed as utility maximizing entities (Bueno de Mesquita, 1981; Morrow, 1997), they possess different attributes in how they pursue these goals. To paraphrase George Orwell, all states are created equal, but some are more equal than others.

Two factors figure prominently in determining a player's type: its relative military capabilities vis-a-vis its adversaries, and its value for changing (or maintaining) the current resolution of the status quo. In the following sections I address the role of capabilities in deterrence situations, and the role that risk plays in determining values for different issues. It is these two concepts, I argue, that determine what types of players

exist in the model. Following from this discussion I proceed to outline three distinct types that player A can assume, and the two types that player C can assume.⁷²

4.3.4 *The Role of Capabilities*

Much was made of the role of capabilities in chapter 3, and for good reason. Capabilities, or power, have long been central to the study and conduct of international affairs. Traditional balance of power theorists (Morgenthau, 1985; Walt, 1987; Waltz, 1979) have long argued that power parity leads to peace. Others, notably adherents of power transition theory (Organski and Kugler, 1980; Kugler and Lemke, 1996) maintain that power parity is a path to conflict. Only power preponderance, according to this view, leads to stability and peace within the international system.

Capabilities are a means of measuring the power that a state possesses. As was outlined in chapter 3, relative capabilities lie at much of the heart of both theories of alliances and theories of deterrence.⁷³ In the model developed here, I denote relative capabilities as k_i , where $i \in I$, $I = \{A, B, C\}$. If alliances are means to an end, namely, to deter enemies, then capability aggregation has a justifiably prominent place in the discussion of extended deterrence via alliance.⁷⁴ However, capabilities are not the only

⁷² In keeping with most studies of extended deterrence (Fearon, 1994a; Huth, 1988; Huth and Russett, 1984, 1988, 1990, 1993), it is the capabilities of the aggressor and the potential defender that are considered most important. A notable exception to this is Sorokin (1994), who examines the capabilities of the target and the role they play in determining whether or not to form an alliance in the first place.

⁷³ Singer, Bremer, and Stuckey (1972) define relative capabilities (or power) as a state's measure of capabilities in relation to its adversaries. Absolute power, on the other hand, is concerned with how much total power a state has, without being concerned with its adversary's power. See also the recent work on the relative versus absolute gains debate (Grieco 1988; Powell 1991; and Snidal 1991).

factor that influences deterrence success or failure, as will be discussed in the following section.

4.3.5 *Discussing Risk*

If military power were the sole factor in determining deterrence success or failure, we would never witness asymmetric conflict, or conflict initiation by weaker powers (Paul, 1994). However, as much of history demonstrates, this is not the case. In a recent theoretical study, Fearon (1994a) demonstrates that it is not mere capability ratios that determine extended deterrence failure. In fact, he shows that states with fewer capabilities than the combined attributes of an alliance can actually initiate a dispute and gain their demands. They merely need to make a demand on an issue that is of low salience to the defender.

As Fearon's findings demonstrate, capabilities are not the only determinants of an extended deterrence encounter. Aggressors need to know how much a defender (and target) value a certain issue as well prior to challenging it. Failure to determine a defender's value for an issue can lead to an unwanted conflict. Thus, an attacker's decisions in this model must often be made under conditions of risk.

In their relations with one another, states continually encounter situations with uncertain outcomes. With such uncertainty being present, states must often make choices that involve some amount of risk. Risk inherently involves making decisions in which outcomes are not known ultimate clarity.

In initiating a crisis, an aggressor state (A) may not know for certain if a target state's ally (C) will intervene. A may feel confident in being able to gain concessions

⁷⁴ When using relative capabilities in this study, I am talking about a combination of immediate, short-term, and long-term capabilities that a state can call upon in time of

from B if B fights alone, but may feel differently if C decides to intervene on B's behalf. This decision is often made, therefore, under conditions of uncertainty. Elaboration on the role that uncertainty plays in deterrence/crisis situations will be detailed in later sections of this chapter.

Different states assume different attitudes toward risk. These can be termed risk propensities. "Risk propensities capture the fact that different decision makers may make different choices when faced with the same set of alternatives solely because of their attitude towards choosing options with probabilistic outcomes" (Huth, Bennett, and Gelpi, 1992, 482).

War, as Morrow (1987) discerns, is an inherently risky choice. Within the context of militarized interstate disputes, an initiator may never know with ultimate certainty if a third party will intervene in the conflict. I view the decision by A in choosing to initiate a dispute or not as being one made under conditions of risk. Since war is a distinct possible outcome of a dispute, but the outcome of the war is probabilistic in nature, A must choose whether 1) it is willing to escalate a dispute to war, and 2) it is willing to fight against the combined capabilities of an alliance. The term w in the payoff structure to the model captures this risk attitude on the part of state A, and it is also an indication of how willing C is to fight to save its ally.

The value for conflict, I argue, can be derived from the desire to change the status quo and the military might k that each state possesses. In regards to power, as I noted above, I am concerned with immediate, short-term, and long-term military power. Such a distinction between capabilities in regards to deterrence encounters is not new. Many leaders, when considering war initiation, have factored in the power of their adversary.

crisis.

214
213
212
211
210
209
208
207
206
205
204
203
202
201
200
199
198
197
196
195
194
193
192
191
190
189
188
187
186
185
184
183
182
181
180
179
178
177
176
175
174
173
172
171
170
169
168
167
166
165
164
163
162
161
160
159
158
157
156
155
154
153
152
151
150
149
148
147
146
145
144
143
142
141
140
139
138
137
136
135
134
133
132
131
130
129
128
127
126
125
124
123
122
121
120
119
118
117
116
115
114
113
112
111
110
109
108
107
106
105
104
103
102
101
100
99
98
97
96
95
94
93
92
91
90
89
88
87
86
85
84
83
82
81
80
79
78
77
76
75
74
73
72
71
70
69
68
67
66
65
64
63
62
61
60
59
58
57
56
55
54
53
52
51
50
49
48
47
46
45
44
43
42
41
40
39
38
37
36
35
34
33
32
31
30
29
28
27
26
25
24
23
22
21
20
19
18
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1

The Japanese in the Pacific theater of the Second World War, for example, recognized that they could not win a long-term war with the United States. Their hope had been to win decisively at the onset, and then be able to come to terms with the United States that were favorable to their long-term goals. Similar thinking also occurred in the European theater of the war. Hitler realized that he could quickly overpower Poland, and the rest of Europe. Although his generals noted that the combined strength of the British and French could defeat the German army in the event of a protracted war, Hitler was willing to use blitzkrieg tactics in an attempt to win a short war decisively.

At issue for a potential aggressor, then, is to accurately discern what type of defender it is facing. Thus, below I describe the different types of A that exist, based upon the value A holds for w . This value, as mentioned above, is based upon A's capability ratios with BC, which is an indirect measure of A's willingness to run risks to change the status quo.⁷⁵ I assume that A's capabilities are always greater or equal to that of B. I make this assumption because, as Sorokin (1994) demonstrated, if B is more powerful than its adversary, then it does not require the additional security benefits of alliance. I then proceed to discuss the two types of player that C can assume, based upon the value they hold for w . In regards to C, I maintain that w is based upon the value it holds for the autonomy benefits it receives from its alliance relationship with B. In the following section regarding preference orderings, I link types with values for the various payoffs.

⁷⁵ Carlson (1998) uses capability ratios as a measure of the costs that states are able to absorb in a conflict. The reasoning she uses and that put forth here are similar. The greater the ability of a state to absorb costs, the more likely it is to use force in an attempt to alter (or preserve) the status quo.

Player A

Player A can be of three types. Formally, let $t_A \in T_A$, $T_A = \{1, 2, 3\}$. If $t_A = 1$, it has greater relative capabilities than BC. Thus, $k_A > k_B > k_C$. With such an advantage, then, A prefers to make a demand x than remaining at the status quo. With higher levels of military power, it has a higher value for the possibility of conflict.

If $t_A = 2$, it has capabilities that are less than the combined capabilities of the alliance BC. Thus, $k_A < k_{BC}$. By the assumption made above, $k_A > k_B$.⁷⁶ Therefore, if A knows that C will intervene for certain, it will prefer the status quo to x . The costs are too high. However, if A believes that C has little interest in the issue being challenged, it will still prefer x to the status quo, even if its capabilities are evenly matched with those of B. Thus, we see here that capabilities may not be the only indicator of success in determining crisis outcomes. Success or failure also hinges upon determining each state's utility for the specific outcome.

If $t_A = 3$, then it has capabilities that are equal to those of BC. Formally, $k_A = k_{BC}$. If capabilities are evenly distributed, then decisions are made under conditions of power parity. This implies that it is more than capabilities that determine the strategies that A will choose; rather, one must focus on its utility for the status quo versus its utility for x .

Player C

Player C can assume two types. Types for C are determined by the value they hold for y with respect to the other costs they must face in maintaining relations with their minor power ally. The first type is $t_C = 1$. This type of defender places a strong value on its relationship with its protégé. It has a higher value for its protégé, which can be

evidenced by the strength of signal it sends to its ally. Formally, for this type of defender, $y > m$. A strongly committed defender will strictly prefer the status quo to any other outcome.

If $t_C = 2$, then it is a weakly committed defender of B. In such an instance it is willing to run the risk of letting B fight A alone, if it comes to conflict, rather than intervening. Formally, $y \leq m$. It does not hold the status quo in very high regard, at least in respect to its relationship with its ally.

4.3.6 *Preferences*

Now that the types of players have been delineated, our attention is turned to the preferences that each type of player possesses. Although the payoff structures coupled with the types of players have the potential to lead to a dizzying amount of different preference orderings, I place restrictions below on the preferences that each type of state may hold. While modeling states' types in such a discrete manner may be cumbersome, I believe that it captures the essence of actual relations between states.⁷⁷ Prior to outlining the preferences of each state, however, a few words about preference orderings are necessary.

Preference orderings, as Morrow (1994b), and Gates and Humes (1997) point out, must meet three criteria for them to be valid. Since making choices based upon one's

⁷⁶ The special case of $k_A = k_B$ is discussed below in the equilibrium analysis.

⁷⁷ It had been suggested that I model the types of players as continuous types rather than as discrete types. While there do exist some arguments for such a modeling strategy, it should be recalled that the purpose of the model here is to shed light on substantive issues surrounding extended deterrence via alliance. I fear that by making the mathematics more complex may hinder an understanding of the substantive results that I derive from the models.

10/10/10

10/10/10

10/10/10

10/10/10

10/10/10

10/10/10

10/10/10

10/10/10

10/10/10

10/10/10

10/10/10

10/10/10

10/10/10

10/10/10

10/10/10

10/10/10

10/10/10

10/10/10

preferences for outcomes lies at the heart of rational choice modeling, it is imperative that we understand the situations under which preference orderings can be viewed as logical.

First of all, preferences must be complete. By this is meant that actors prefer one outcome to another, or they are indifferent (Gates and Humes, 1997, 8). Secondly, preferences are assumed to be fixed. This means that as the game progresses, actors may not change their preferences. They can, however, choose to alter how to arrive at their most preferred outcome. Finally, preferences are assumed to be transitive. This means that if an actor prefers A to B, and B is preferred to C, then A is preferred to C. This prevents cycles of preferences from arising, which can give rise to nonsensical behavior.

I now discuss in some detail the preference orderings of each state. I then derive the equilibria of the game, and discuss its implications. Table 4.3 outlines the preferences that each state holds.

TABLE 4.3

Preference Orderings of Each State (Ordinal Outcomes)

State and Type	Preference Ordering
A=1	$ACQ_B > CN_{AB} > CN_{ALL} > SQ > BD_A > BD^*_A$
A=2	$ACQ_B > CN_{AB} > SQ > BD > CN_{ALL} > BD^*_A$
A=3	$ACQ_B > CN_{AB} > CN_{ALL} > SQ > BD > BD^*_A$
B	$SQ > BD_A > BD^*_A > CN_{ALL} > ACQ_B > CN_{AB}$
C=1	$SQ > BD^*_A > BD_A > CN_{ALL} > CN_{AB} > ACQ_B$
C=2	$SQ > BD^*_A > CN_{AB} > BD_A > CN_{ALL} > ACQ_B$

1. 2000
 2. 2001
 3. 2002

2000

513 W

Figure 1

22

100

۱۲۶۷

11

۱۲۰۰

10

1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 2675, 2676, 2677, 2678, 2679, 26

22

10

•

10

2

10

...

-

1

1

Let us examine each state's preferences in turn. Although the above table outlines the preferences in ordinal form, that is for ease of presentation. Given that preferences are at the heart of rationality, it is necessary to determine the course of action that each state would prefer, given the above situation. We do so by carefully delineating what cost and benefits terms go into each different preference ordering.

Player A ($t_A=1$):

If A is a type 1 player, it would prefer for Player B to accede to his demands, given that he has initiated a dispute in hopes of altering the status quo in its favor. If A were comfortable with the issue at hand, it would have no reason to make a demand of B.⁷⁸ If conflict is to be an outcome, he would prefer it to be a bilateral one. It is easier to defeat a single adversary if conflict is the outcome than it is to defeat two states fighting alongside one another. The status quo (SQ) is preferred over backing down in both of its guises. However, A prefers a trilateral conflict to backing down. If A chooses to back down, it incurs costs that it feels are unacceptable, given that its capabilities are greater than those combined of BC, $k_A > k_{BC}$.

Player A ($t_A=2$):

If A is a type 2 player, it would once again prefer for Player B to accede to his demands, given that he has initiated a dispute in hopes of making some gain for himself. If conflict is to be an outcome, he would prefer it to be a bilateral one. Once again, it is easier to defeat a single adversary if conflict is the outcome than it is to defeat two states fighting alongside one another, especially if, as was assumed above, $k_A > k_B$. If $t_A=2$, it is

⁷⁸ Recall the above assertion that international disputes occur due to dissatisfaction by one (or more) parties with the current resolution of a specific issue.

4. 1000
 5. 1000
 6. 1000
 7. 1000
 8. 1000
 9. 1000
 10. 1000
 11. 1000
 12. 1000
 13. 1000
 14. 1000
 15. 1000
 16. 1000
 17. 1000
 18. 1000
 19. 1000
 20. 1000
 21. 1000
 22. 1000
 23. 1000
 24. 1000
 25. 1000
 26. 1000
 27. 1000
 28. 1000
 29. 1000
 30. 1000
 31. 1000
 32. 1000
 33. 1000
 34. 1000
 35. 1000
 36. 1000
 37. 1000
 38. 1000
 39. 1000
 40. 1000
 41. 1000
 42. 1000
 43. 1000
 44. 1000
 45. 1000
 46. 1000
 47. 1000
 48. 1000
 49. 1000
 50. 1000
 51. 1000
 52. 1000
 53. 1000
 54. 1000
 55. 1000
 56. 1000
 57. 1000
 58. 1000
 59. 1000
 60. 1000
 61. 1000
 62. 1000
 63. 1000
 64. 1000
 65. 1000
 66. 1000
 67. 1000
 68. 1000
 69. 1000
 70. 1000
 71. 1000
 72. 1000
 73. 1000
 74. 1000
 75. 1000
 76. 1000
 77. 1000
 78. 1000
 79. 1000
 80. 1000
 81. 1000
 82. 1000
 83. 1000
 84. 1000
 85. 1000
 86. 1000
 87. 1000
 88. 1000
 89. 1000
 90. 1000
 91. 1000
 92. 1000
 93. 1000
 94. 1000
 95. 1000
 96. 1000
 97. 1000
 98. 1000
 99. 1000
 100. 1000

willing to make a limited probe against B, and see what action C will undertake. Thus, it is willing to take this chance and back down if C will intervene. It prefers backing down (BD) to the possibility of trilateral conflict, the status quo, or the utility of backing down when it knows that C will not intervene.

Player A ($t_A=3$):

If A is a type 3 player, it would (as in the other two cases) prefer that B give in to its demand immediately, and save the costs of further crisis involvement. And if A realizes that B is going to resist, he would rather fight against B alone, especially since A's capabilities are greater. However, if A is willing to change the issue and challenge B, knowing full well that B is allied with C, then it implies that $x > 0$ (status quo). Thus, trilateral conflict is preferred to the status quo. Backing down in either of its possibilities is the least attractive outcome, because costs have been incurred with no appreciable benefit.

Player B:

Obviously, Player B would prefer that Player A left him alone, and that the status quo (SQ) prevails. However, if an attack does come, B would prefer to have the dispute end in BD_A . This allows B to realize that its ally was willing to come to its defense. B's next preferred outcome is BD^*_A . Even if its ally C chooses not to intervene, B would rather witness A's backing down. However, if conflict arises, Player 2 understandably would want its ally C to fight on his side. This follows from the assertion above that alliances oftentimes form for security purposes. Nations join in alliances to increase their capabilities, and to prevent another nation from attacking them. If this is not to be, then acquiescing to Player A's demands is preferred to fighting a conflict alone against an

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

aggressor. Although B knows with certainty that by giving into A's demands it will be altering the issue at stake, but not to its advantage, it is better than fighting a bilateral conflict. By fighting, B has the chance that it may lose the conflict, and suffer the new imposed status quo. In addition, it must absorb the costs that the conflict imposed upon it.

Player C ($t_C = 1$):

By functioning as a defender in the alliance relationship between itself and Player B, Player C is making a commitment to Player B, that it will defend its ally in case it is attacked. Given that disputes are costly, and have the potential to change the status quo, a highly committed C would prefer to have the status quo maintained. However, if B were challenged by A, C would prefer to have A back down without having to threaten to intervene. A threat to intervene means that C must mobilize its forces, and incurs some costs. Hence, it would prefer this outcome (BD^*_A) to the possibility of conflict.

If conflict is to be the outcome, C would prefer a trilateral conflict. C, being a strongly committed defender, realizes that the outcome of such hostilities may be in its favor, and the status quo preserved. (Not to mention that A as an adversary may no longer pose a threat). A bilateral conflict between A and B is the next preference, because B may win the conflict on its own, and be able to maintain a status quo which is favorable to C. Finally, C would least prefer the acquiescence of B to A, because the benefits it received from the alliance may be severely curtailed, since B's acquiescence ascertains that B will lose its value for the issue at stake with a probability of 1.0.

201

202

203

204

205

206

207

208

209

210

211

212

213

214

215

216

217

218

219

220

Player C ($t_C = 2$):

The case of a less-committed defender is a novel one, for traditional theories of alliances do not predict such a type. However, as was discussed in some detail above, empirical evidence indicates that states are, more often than not, unreliable in regards to their alliance commitments. A player C of this type wishes, as does its highly committed counterpart, to have the status quo remain. However, if a dispute is initiated by A, and conflict is the result, it would prefer to have a bilateral conflict between A and B. C may not intervene due to other factors (high domestic political costs, fear that A's capabilities are too great, etc.). However, a victory by B would preserve the status quo, without C not having to incur the costs of becoming embroiled in conflict. Finally, acquiescence by B is less preferred than is a trilateral conflict.

4.4 Solving the Model: The Game's Equilibria

Since the game is one of complete and perfect information, it can be solved through the use of backwards induction. If there are no information sets, the equilibrium concept that is used is that of subgame perfection. A subgame perfect equilibrium (SPE) is defined as "a set of strategies if for every proper subgame, the restriction of these strategies to the subgame forms a Nash equilibrium" (Morrow, 1994b, 129). Backwards induction calls for us to begin at the end of the game and work our way back up the game tree, and via this method determine the equilibria of the game. Backwards induction compares each player's preferences for outcomes at each node of the game, and has them choose the strategy which will avail them of the greatest expected utility.

As Morrow (1997, 22, note 4) notes, solving games via backwards induction requires only preferences over outcomes. Fully specified utility functions are not

required, as long as chance moves do not figure into the model. Since the model outlined above does not assume any moves by nature, given the assumptions of information being common, complete, and perfect, I can proceed by solving the game in this fashion.⁷⁹

Having specified the game's structure and its relevant payoffs, we can now turn to the solutions of the game. Depending upon types of players, there exist four unique subgame perfect equilibria in pure strategies in this model.⁸⁰

Equilibrium 4.1: In a game with complete and perfect information, the status quo (SQ) is a subgame perfect equilibrium in pure strategies if the following conditions are met: $t_A = 2$ and $t_B = 1$ and $t_C = 1$. The equilibrium is {initiate, escalate; \sim resist; \sim intervene}.

Equilibrium 4.2: In a game with complete and perfect information, acquiescence by B (ACQ_B) is a subgame perfect equilibrium in pure strategies iff 1) $t_A = 1$, $t_B = 1$, and $t_C = 2$; or 2) $t_A = 2$, $t_B = 1$, $t_C = 2$ or 3) $t_A = 3$, $t_B = 1$, $t_C = 2$.

Equilibrium 4.3: In a game with complete and perfect information, trilateral conflict (CN_{ALL}) is a subgame perfect equilibrium in pure strategies if 1) $t_A = 1$, $t_B = 1$, and $t_C = 1$ or 2) $t_A = 3$, $t_B = 1$, and $t_C = 1$.

Equilibrium 4.4: If the game is played under conditions of complete and perfect information, then bilateral conflict (CN_{AB}) is a subgame perfect equilibrium outcome in pure strategies if we relax 1) the assumption of $k_A > k_B$ and assume that $k_A = k_B$ and 2) assume that under conditions of power parity, B prefers CN_{AB} to ACQ_B . Hence the game is played under conditions in which $t_A = 2$, $t_B = 2$, and $t_C = 2$.

4.4.1 Discussion

Under conditions of complete and perfect information, four distinct outcomes are possible. Deterrence may succeed; B may accede to A's demand; a trilateral conflict may erupt; or a bilateral war may be the result. All of these outcomes are intuitively reasonable, given that information is complete. In the remainder of this section I

⁷⁹ This manner of solving for subgame perfect equilibria in games with complete and perfect information is quite common in the international relations literature. A good example can be found in Bueno de Mesquita and Lalman (1992).

[illegible]

elaborate upon this and discuss some of the shortcomings that arise when informational uncertainties are not modeled. This discussion leads into a more properly specified model, in which information is limited.

Three items of interest emerge from this simple model. First, conflict can take place under conditions of *both* power parity and power preponderance. This calls into question the role that capabilities alone play in determining whether deterrence succeeds or fails. As the model indicates, there is more shaping a state's behavior than the distribution of power within the international system, or within a triadic relationship. If we are to understand the impact that a potential defender has on deterring an adversary, we need to look more deeply into the issues over which they are fighting, and the values they place on trying to attain their ideal resolutions of the issue at stake.

Secondly, we notice that conflict can occur under conditions of certainty. This result is somewhat counterintuitive, although it has been noted by others (Bueno de Mesquita and Lalman, 1992). This counterintuitive finding is interesting because so much of the literature in international politics (e.g. Jervis, 1976, 1988; Kim and Bueno de Mesquita, 1995) suggests that conflict (with war as the most extreme form of conflict) is the result of uncertain perceptions about an adversary. However, certain states may place such a premium on the issues at stake that they cannot be deterred. The quintessential example of this is Nazi Germany in 1939 (Khong, 1996). Additionally, certain states may value the issue or status quo to such a degree that they are willing to fight for it, despite being overwhelmed in regards to military capabilities. North Korea's continued advances towards the South fall into this category, especially given the overwhelming

⁸⁰ Appendix A provides the proofs of these equilibria.

100

101

102

103

104

105

106

107

108

109

110

111

112

113

114

115

116

117

118

119

120

121

122

123

military superiority of the United States, which maintains a large military presence in South Korea.

Third, we notice that an aggressor does not undertake limited probes, and then back down in the face of a defender's intervention. Extended immediate deterrence is either never encountered, or it always fails. However, the historical record does not bear this conclusion out. In the nineteenth century, for example, we witness Bulgaria backing down in the face of Austrian intervention in 1885. In more recent times, the Soviet Union made a number of demands regarding the status of Berlin, and then backed down in the face of American resolution to protect Berlin at all costs. How can such results be explained? Is it merely an artifact of the model's simplicity, or is there a different explanation?

I maintain here that the model is correctly specified, and that it depicts the empirical world quite well under conditions of *certainty*. This argument follows from an earlier one made by Bueno de Mesquita (1978). Certainty, he argues can be denoted by the structure of the international system, and uncertainty emerges when change occurs within the system. Both of these concepts can be measured, he argues, with alliance ties.

Expanding upon this notion of certainty, I argue that it is not alliance ties per se that signify certainty in the international system, but the signals sent between allies are the source of certainty. How an adversary perceives the strength of an alliance contributes to its views regarding the certainty of intervention by a target's defender. Under specific conditions, as was noted in the equilibrium analysis, conflict emerges in spite of the fact that it is believed that a defender will intervene. In other circumstances general deterrence succeeds. I maintain that it is the signaling that takes place between

allies that helps create this aura of certainty. This is not to say that increasing signals of commitment will always lead to peace. American experiences in Korea demonstrate that regardless of how much aid and assistance is given to the South, there are continual challenges on the part of the communist North. Rather, these signals serve as means to inform an uncertain adversary about what possible factors it may be facing in the case of a conflict.

To account for the fact that limited probes do take place, and therefore model international crises more accurately, we need to introduce some elements of uncertainty. In the expanded model below, I focus on limited information being available to the aggressor. A does not know what how strong C's commitment to its ally is, and must depend upon witnessing C's actions to determine what type of player it is facing. I will demonstrate below that conditions of uncertainty result in some very interesting behavior on the part of a potential aggressor.

4.5 Adding Uncertainty to the Model: Perceptions and Signals

As I build up to a more fully specified model of extended deterrence via alliance, I discuss the role that uncertainty and signaling commitments have on a state's perceptions of its adversaries. I link these concepts to the modeling literature in general, and to the deterrence literature in particular.

4.5.1 Uncertainty and Perceptions

If we recall the outcomes of the model with complete information for a moment, it should be quite simple to ascertain why a demand by A is never followed by A backing down from a crisis it initiated. If A knows everything about its adversaries B and C, including their capabilities and their values for conflict, then it can predict in advance the

outcome of the (potential) crisis. As history has demonstrated to the contrary, such knowledge is not always readily available. We do witness limited probes made by states, in which they do back down (the Bulgarian challenge to Serbia), and we do witness conflicts that were not necessarily expected (Germany's belief that France and Britain would not come to the aid of Poland in 1939).

Uncertainty in the expanded model is concerned with two issues: the relative strength of the BC alliance, as measured by military capabilities and the value that C as a defender has for the alliance. State A begins a crisis witnessing the existence of the BC alliance, and being cognizant that C has made some signal of commitment to its protégé. These issues of uncertainty and perception are captured in A's initial beliefs about what sort of alliance it is facing. Capabilities, as Bueno de Mesquita, Morrow, and Zorick (1997) demonstrate, often provide uncertainty for potential aggressors. The implications of signals between allies, however, are not as clearly defined. A state may be willing to supply its protégé with aid and weapons, but be unwilling to commit troops if the protégé is attacked. In other instances the defender may be willing to run the risk of all out armed conflict in order to protect an ally that it deems particularly valuable.

Take for a moment the relationship between Great Britain and Poland in 1939. Germany's invasion of Poland occurred after France and Britain had abandoned Czechoslovakia to Hitler's demands. Neville Chamberlain had even remarked that the British people were unconcerned about the fates of the Czechs, a people they knew little about. France had behaved in a very similar manner. Based upon these actions, Hitler

1. *Species*
 2. *Genus*
 3. *Family*
 4. *Order*
 5. *Class*
 6. *Phylum*
 7. *Kingdom*
 8. *Domain*
 9. *Life*
 10. *Form*
 11. *Structure*
 12. *Function*
 13. *Behavior*
 14. *Ecology*
 15. *Evolution*
 16. *Systematics*
 17. *Phylogeny*
 18. *Biogeography*
 19. *Conservation*
 20. *Management*
 21. *Policy*
 22. *Education*
 23. *Research*
 24. *Teaching*
 25. *Learning*
 26. *Assessment*
 27. *Feedback*
 28. *Improvement*
 29. *Quality*
 30. *Standards*
 31. *Curriculum*
 32. *Syllabus*
 33. *Program*
 34. *Course*
 35. *Module*
 36. *Unit*
 37. *Lesson*
 38. *Activity*
 39. *Exercise*
 40. *Assignment*
 41. *Project*
 42. *Paper*
 43. *Report*
 44. *Thesis*
 45. *Dissertation*
 46. *Monograph*
 47. *Journal*
 48. *Article*
 49. *Book*
 50. *Textbook*
 51. *Reference*
 52. *Source*
 53. *Information*
 54. *Knowledge*
 55. *Understanding*
 56. *Insight*
 57. *Wisdom*
 58. *Intelligence*
 59. *Reason*
 60. *Logic*
 61. *Mathematics*
 62. *Science*
 63. *Technology*
 64. *Innovation*
 65. *Discovery*
 66. *Invention*
 67. *Creation*
 68. *Production*
 69. *Manufacturing*
 70. *Construction*
 71. *Development*
 72. *Growth*
 73. *Progress*
 74. *Advancement*
 75. *Improvement*
 76. *Enhancement*
 77. *Refinement*
 78. *Optimization*
 79. *Maximization*
 80. *Minimization*
 81. *Reduction*
 82. *Elimination*
 83. *Removal*
 84. *Deletion*
 85. *Erasure*
 86. *Exclusion*
 87. *Exclusion*
 88. *Exclusion*
 89. *Exclusion*
 90. *Exclusion*
 91. *Exclusion*
 92. *Exclusion*
 93. *Exclusion*
 94. *Exclusion*
 95. *Exclusion*
 96. *Exclusion*
 97. *Exclusion*
 98. *Exclusion*
 99. *Exclusion*
 100. *Exclusion*

most likely believed that Poland was not a vital interest to these Western democracies, and, due to his miscalculation, the Second World War erupted.⁸¹

Many discussions regarding perception and uncertainty take the form of counterfactual arguments, in which one can posit questions speculating on what *may* have occurred, given a particular change in some historical event.⁸² So, in this respect, what if Britain and France had been firm in their demands at Munich? Or if the United States had negotiated a stronger treaty with Taiwan in 1954? The result of these differences could have changed world history. However, it is uncertain if we could ever know for sure.⁸³

Moving from conceptual thoughts on uncertainty and perception, I now discuss how to account for such uncertainty in game-theoretic models. Let it be recalled that the concern here is over the type of player that C is, and how strongly or weakly committed it is to its minor power protégé. How can different types of players be modeled within a common framework? The solution to this question can be found in Harsanyi (1967-1968). In his seminal article on Bayesian games, Harsanyi allows nature to make an initial move in a game, and the move stipulates with particular probabilities the type of player(s) in the model. So, in the model presented below, nature makes a first move and determines the type of player that C is, with some probability π . Thus, nation A is able to

⁸¹ See Huth (1988); Khong (1996); and Thompson (1997) for greater discussions on the possibility of deterring Nazi aggression under Hitler's leadership.

⁸² Fearon (1990) and the selections in Tetlock and Belkin (1996) all address this issue from a variety of methodological perspectives.

46

Signal

determine in some probabilistic fashion how committed of a defender C actually is. Rather than knowing at the onset C's type, A must use its senses of perception, witness actions undertaken by C, and make an educated guess as to how sincere C is about defending its protégé.

Such uncertainty in the model can be potentially overcome by witnessing the signal sent by C to B in regards to the alliance they share. Signals serve two purposes in this model of extended deterrence: they demonstrate the value that a defender holds for the protégé; and they provide a measure of C's willingness to assist its ally in time of need. Both of these provide A with information regarding C's type. In this vein, the discussion now turns to a delineation of signaling within the context of an alliance.

4.6 Extended Deterrence via Alliance with Incomplete Information and Signaling

By introducing the concept of uncertainty, we are introducing a larger dose of reality into the model. With uncertainty present in the model, we can allow the signals sent by C to be indicators of its willingness and to model the types of player that A is facing. This next section outlines the modifications made to the earlier game in order to account for uncertainty and signaling.

4.6.1 Extensions and Modifications to the Previous Model

Having discussed the role that perception plays in international politics, and the use of signals to help identify types, we can now proceed to outline the expansions made to the earlier model. To account for these refinements, I must make a few additional assumptions.

⁸³ These "what if" scenarios are actually counterfactuals. The recent book edited by Tetlock and Belkin (1996) provide some interesting insights into the use of such

[illegible]

Assumption 11: Information in this model is incomplete and asymmetric. C and B know A's type. A is uncertain about C's type. In addition, A knows its own type, and B and C know their own type. A only knows the types of C that are available, and not the specific type that C is.

Assumption 12: If C is strongly committed to its alliance with B, it will always signal that it is strongly committed to its protégé. Thus, $\pi(\text{say strong}|\text{strong}) = 1$ and $\pi(\text{say weak}|\text{strong}) = 0$.⁸⁴

Assumption 13: If C is weakly committed to its ally, it may signal strong in an attempt to deceive its adversary.

These additional assumptions provide additional uncertainty within the model.

To account for this uncertainty, we must introduce the concept of beliefs into our equilibrium refinement. Players are forced to update their beliefs based upon the actions that other players take. Thus, we rely on an equilibrium concept known as perfect Bayesian equilibrium (PBE). A perfect Bayesian equilibrium is defined as “a belief-strategy pairing such that the strategies are sequentially rational given the beliefs and the beliefs are calculated from the equilibrium strategies by means of Bayes's Theorem whenever possible” (Morrow, 1994b, 176). A PBE requires us, therefore, to utilize the tools of probability in order to update our beliefs of what is happening in the world around us. In analyzing the game outlined below, we must account for this uncertainty, and acknowledge that states update their beliefs as their interactions occur throughout the game. In the game presented here, the concern is with A's perceptions of its adversary.

The conceptualization and implications of commitments being viewed as signals in the context of deterrence and alliances was introduced earlier. In the remainder of this

scenarios for generating scientific knowledge.

⁸⁴ There is no incentive within a deterrence alliance for a defender to signal weak when it is actually strong, because such a signal may actually invite an attack upon a protégé.

section I identify the generic components of a signaling model, and then present my extended model in a signaling context.

4.6.2 *The Structure of Signaling Games*⁸⁵

Signaling models are a special class of incomplete information, and generally rely on Bayesian techniques to arrive at solutions. In such a dynamic game a signal serves as communication prior to the onset of the game itself. Such signals can serve as “cheap talk” indicators, which are costless to send (Banks, 1990), or they can serve as “costly signals” that indicate some measure of commitment (Fearon, 1994a, 1994b, 1997).⁸⁶ In the model developed below, signals are costly, but vary in their intensity depending upon the type of defender.

In its theoretical form, a signaling model involves two players; a Sender (S) and a Receiver (R). The progression of the model occurs in the following manner:

1. Nature determines from a set of types T a type t_i for the Sender. Formally, $T = \{t_1, \dots, t_l\}$. This type is drawn with a probability distribution of $p(t_i) > 0$, and $p(t_i) + \dots + p(t_l) = 1$.
2. The Sender knows its type, given Nature’s draw. Sender then chooses a signal m_i from a set of signals M , where $M = \{m_1, \dots, m_j\}$.
3. The Receiver witnesses m_i (but not Nature’s choice of t_i). The Receiver then chooses an action a_k from a set of possible actions, where $A = \{a_1, \dots, a_k\}$.
4. Payoffs for the signaling model are given as $U_S(t_i, m_j, a_k)$ and $U_R(t_i, m_j, a_k)$.

⁸⁵ Most of the discussion here comes from Gibbons (1992). The concept of signaling stems from Spence (1973). Others that provide good discussions of signaling models in a purely theoretical manner are Fudenberg and Tirole (1993); Kreps (1991); and Osborne and Rubinstein (1994). Applications within political science include Banks (1991) and Morrow (1994b). Within international relations the main works are Banks (1990) and Fearon (1994a, 1994b, 1997).

⁸⁶ In keeping with the arguments made in chapter 3, I maintain that costless signals do not exist in the models developed herein.

4.6.3 *A Signaling Model of Extended Deterrence via Alliance with Incomplete Information*

Having discussed the additional assumptions, we are now ready to view the updated model. Figure 4.2 depicts the model of extended deterrence via alliance with incomplete information and signaling.

[FIGURE 4.2 ABOUT HERE]

Some discussion of the initial moves and the terminology associated with the new additions to the model are warranted. The model begins with a move by Nature⁸⁷, which determines the type of player C is. C can be a strongly committed defender with probability Θ , or a weakly committed defender with probability $1-\Theta$.⁸⁸ C then makes its initial move, and signals if it is strongly or weakly committed to its alliance relationship with B, with $m=1$ being a signal of a strong commitment and $m=2$ signaling a weak commitment.

Upon witnessing C's signal, A must decide whether or not to initiate a demand against B. Since, by the assumption made above, we know that C will never signal weak if it is actually strong, A knows that if it witnesses a weak signal it is facing a weak defender. However, what if A witnesses a strong signal? It must determine whether it is a true signal of C's intentions, or if it's an attempt to bluff A into not initiating any sort

⁸⁷ Nature is defined as a "non-player who takes random actions at specified points in the game with specified probabilities" (Rasmusen, 1989, 22). As an alternative means of envisioning nature, nature can be depicted as chance (or fate) determining certain types.

⁸⁸ In the complete information variant of the model presented above, we assume that the value of Θ is known to be either 0 or 1. In this model there is uncertainty on the part of the aggressor, and Θ serves as one of the components of calculating A's prior beliefs.

[illegible]

of a demand. A believes that C is a specific type of defender with prior beliefs μ . Based upon its prior beliefs about C's type, A must decide whether or not to initiate.⁸⁹

As in the above model, B must decide whether or not to resist. If B resists, then C is faced with deciding whether or not to intervene. This action by C forces A to update its beliefs about what type of defender it is facing. A updates its beliefs after witnessing C's move. Its posterior beliefs about C being an actual strong defender is represented by μ^* , where $\mu^* = 1$ means that A knows that C is strong with absolute certainty.

A few moments should be taken within the context of the theory developed in this dissertation to discuss the factors that influence a potential aggressor's updated beliefs. As was noted above, a defender can assume two distinct types: a strongly committed defender and a weakly committed defender. As was discussed at some length, the type of defender is based upon the value it holds for its protégé. How can an attacker update its beliefs regarding the type of defender it is facing?

Information and beliefs are intimately connected. States have certain prior beliefs about their adversaries, and must update them as interactions transpire. Often times, however, these beliefs are uncertain; information is incomplete or private. Based upon this limited information, the potential aggressor must make conjectures concerning the type of defender it is facing.

Beliefs are formed at the extended general deterrence level and updated at the extended immediate deterrence level in the game outlined above. At the level of extended general deterrence, a potential aggressor, uncertain about the commitment level of a defender, can formulate beliefs based upon the strength of signal sent by the defender

⁸⁹ In the equilibria proofs in Appendix C these posterior beliefs are calculated.

1890

1891

1892

1893

1894

1895

1896

1897

1898

1899

1900

1901

1902

1903

1904

1905

1906

1907

to the protégé, the past actions of the defender in regards to its protégé and/or other allies, and in the benefits that the defender receives from the protégé in return for security benefits.

Regardless of how these prior beliefs are formulated by a potential aggressor, they must be updated once a crisis is initiated and (potentially) escalates. Such updating depends upon the actions a defender takes regarding its threatened protégé. Does the defender do nothing, offer concessions, match military force with military force? All of these actions allow the attacker to update its beliefs regarding the type of defender it is facing. Thus, beliefs and limited information play a major role in determining whether a crisis will escalate or not.

Having discussed the role that beliefs play in the model developed here, we now progress to the formal explication of the model. A few modifications to the traditional signaling format are required. In this model the Sender is C, the defender in the alliance relationship. The Receiver is A, the potential aggressor. Equilibria will be denoted in the following manner. $U_{A, B, C}(m_C; a_A; a_B; a_C; t_C)$, where m is the signal sent by C; a is the action undertaken by A, B, and C respectively; and t is what type of defender C is. To account for the actions each player can take, Table 4.4 outlines the meanings behind each action.

TABLE 4.4**Defining Actions in the Signaling Model**

State	Action	Definition
A	1	Initiate, Escalate
A	2	Initiate, ~Escalate
A	3	~Initiate, ~Escalate
B	1	Resist
B	2	~Resist
C	1	Intervene
C	2	~Intervene

With these modifications in place, I now move to solving the model with incomplete information.

4.6.5 *The Model's Equilibria*

In accordance with the above discussion, the solution concept for the model is that of perfect Bayesian equilibria. I focus on the two different situations that occur. In the first situation, C signals that it is weak. In the second situation, C signals that it is strong, but A is uncertain regarding the legitimacy of this signal. I examine the case of a weak signal first.

Scenario 1: C signals weak.

If A witnesses a weak signal, then it knows with absolute certainty ($\mu = 1.0$) that it is facing a weak defender. Thus, the relevant complete information conditions as discussed above hold. This is not surprising, since information is complete and perfect in such a situation. It is in the second scenario that signaling becomes an issue.

Scenario 2: C signals strong

What becomes more interesting is the existence of a strong signal. Then there exists the possibility that C is bluffing in an attempt to deter A.

To

by Gates

Strategy C

assumed

axis for

the 4th

reference

more than

7.5% and

7.5% and

7.5% and

7.5% and

7.5% and

7.5% and

7.5% and

7.5% and

7.5% and

7.5% and

7.5% and

7.5% and

7.5% and

7.5% and

7.5% and

7.5% and

To solve the equilibria of this modified model, I follow the procedure explicated by Gates and Humes (1997). I specify the type of player A is, and draw out all possible strategy combinations that exist in regards to the two possible types of player C can assume. I then determine which ones are in equilibrium, and denote what beliefs must exist for such an equilibrium to occur. In order to do this, I first calculate the prior beliefs that A has concerning C. Θ , as was already noted, is the probability that C is a strong defender, and $1-\Theta$ is the probability that C is a weak defender. I now introduce some more notation regarding beliefs. I denote the following probabilities as π . Thus,

$$\pi(\text{signal strong}|\text{strong}) = 1.$$

$$\pi(\text{signal weak}|\text{strong}) = 0.$$

$$\pi(\text{signal strong}|\text{weak}) = \alpha$$

$$\pi(\text{signal weak}|\text{weak}) = 1-\alpha$$

From this discussion we note that if C is actually strong, it will signal with certainty that it is strong. Conversely, if we witness a weak signal, we can ascertain with certainty that C is weak. C does have an incentive to signal that it is strong if it is weak, and naturally has an incentive to signal strong when it truly is strong. We need to specify A's belief about C's strength when it witnesses a strong signal from C. We state this by using Bayes' rule.

Bayes' Rule is a means for an actor to determine its beliefs under uncertainty. We specify Bayes' Rule for A in the following manner:

$$\mu_A(t|m) = \frac{p(t)\pi_1(s|t)}{p(t)\pi_1(s|t) + p(t')\pi_1(s|t')}$$

Page 1

Page 2

Page 3

Page 4

Page 5

Page 6

Page 7

Page 8

Page 9

Page 10

Page 11

Page 12

Page 13

Page 14

Page 15

Page 16

Page 17

Page 18

Page 19

Page 20

Page 21

Page 22

Page 23

Page 24

Page 25

Having this general rule at hand, we can now calculate the beliefs that A holds concerning the type of defender it is facing.⁹⁰ These beliefs are denoted as A's prior beliefs, having witnessed C's signal, and are represented by μ . The beliefs that A holds are developed by A given the context within which it interacts with both B and C. Thus, beliefs are shaped by the signals C sends to B, changes made in the status quo between A and B, or in the past actions C has undertaken on behalf of its protégé or other allies.

Noting the origins of these beliefs, I now turn to an explication of how they are represented in the formal model.

$$\mu_A(\text{weak}|\text{weak}) = 1.0$$

$$\mu_A(\text{strong}|\text{weak}) = 0$$

$$\mu_A(\text{strong}|\text{strong}) = \frac{\Theta}{\Theta + \alpha - \alpha\Theta}$$

$$\mu_A(\text{weak}|\text{strong}) = \frac{\alpha - \Theta\alpha}{\alpha - \alpha\Theta + \Theta}$$

These denote the prior probabilities that A possesses about C, upon witnessing a strong signal from C. As noted above, a move by C in the game allows A to know with certainty what type of defender it is facing. In game-theoretic parlance, C's actions reveal its type. Thus, as A makes its final move, its posterior (updated probability), denoted as μ^* , is 1.0 in all of the cases here. With these beliefs in hand, we can now examine the different cases that arise.

⁹⁰ Derivations of these prior probabilities utilizing Bayes' Rule can be found in Appendix B.

Case 1

In

(Hens)

minimize

the cost

Equation

$m=1$

the cost

The cost

Equation

$m=1$

the cost

The cost

Case 2

is not

possible

Equation

$m=1$

the cost

The cost

Equation

$m=1$

the cost

The cost

Case 1: $t_A=1$

In this case, A is an aggressor that is stronger than the combined strength of B and C. Hence, we know from the definition of $t_A=1$ from above that it will never fail to initiate a crisis in the first place, and it will never fail to escalate a crisis. Thus, we need only examine all instances in which A initiates and escalates.

Equilibrium 4.5:

$\{m=1: a_A=1; a_B=1; a_C=1; t_C=1\}$ with beliefs $\mu=1.0$ is a perfect Bayesian Equilibrium of the model with the following belief structure: $\mu_A = \frac{\Theta}{\Theta + \alpha - \alpha\Theta}$; $\mu_A^* = 1.0$.

The outcome is a trilateral conflict.

Equilibrium 4.6:

$\{m=1: a_A=1; a_B=2; a_C=2; t_C=2\}$ is a perfect Bayesian Equilibrium of the model with the following belief structure: $\mu_A = \frac{\alpha - \Theta\alpha}{\alpha - \alpha\Theta + \Theta}$; $\mu_A^* = 1.0$.

The outcome is acquiescence by B.

Case 2: $t_A=2$

In this case A is an aggressor that is weaker than a combined foe of B and C, but is stronger than B is alone. Hence, we know from the definition of $t_A=2$ that it will never escalate against an intervention by C.

Equilibrium 4.7:

$\{m=1: a_A=2; a_B=1; a_C=1; t_C=1\}$ is a perfect Bayesian Equilibrium of the model with the following belief structure: $\mu_A = \frac{\Theta}{\alpha + \Theta + \alpha\Theta}$; $\mu_A^* = 1.0$.

The outcome is back down by A.

Equilibrium 4.8:

$\{m=1: a_A=1; a_B=2; a_C=2; t_C=2\}$ is a perfect Bayesian Equilibrium of the model with the following belief structure: $\mu_A = \frac{\alpha - \Theta\alpha}{\alpha - \alpha\Theta + \Theta}$; $\mu_A^* = 1.0$.

The outcome is acquiescence by B.

Doc 14

Index cas

Index SS

Index SS

Index SS

Index SS

Index SS

Index SS

Index SS

Index SS

Index SS

Index SS

Index SS

Index SS

Index SS

Index SS

Case 3: $t_A=3$

In this case, A is equal in power to the combined alliance BC. This then becomes an analysis of the model under conditions of power parity.

Equilibrium 4.9:

$\{m=1: a_A=1; a_B=1; a_C=1: t_C=1\}$ is a perfect Bayesian Equilibrium of the model with the following belief structure: $\mu_A = \frac{\Theta}{\alpha + \Theta + \alpha\Theta}$; $\mu_A^* = 1.0$.

The outcome is a trilateral conflict.

Equilibrium 4.10:

$\{m=1: a_A=1; a_B=2; a_C=2: t_C=2\}$ is a perfect Bayesian Equilibrium of the model with the following belief structure: $\mu_A = \frac{\alpha - \Theta\alpha}{\alpha - \alpha\Theta + \Theta}$; $\mu_A^* = 1.0$.

The outcome is acquiescence by B.

4.6.6 Discussion

When compared to the model with complete information, some interesting differences emerge from the signaling model. For purposes of comparison, Table 4.5 indicates the equilibria that emerge from the model with complete information, and Table 4.6 presents the equilibria that emerge from the model with complete information.

TABLE 4.5
EQUILIBRIA UNDER COMPLETE INFORMATION

C's Type	$t_A=1$	$t_A=2$	$t_A=3$
$t_C=1$	CN_{ALL}	SQ	CN_{ALL}
$t_C=2$	ACQ_B	ACQ_B, CN_{AB} ⁹¹	ACQ_B

TABLE 4.6
EQUILIBRIA UNDER INCOMPLETE INFORMATION

C's Type	$t_A=1$	$t_A=2$	$t_A=3$
$t_C=1$	CN_{ALL}	BD_A	CN_{ALL}
$t_C=2$	ACQ_B	ACQ_B, CN_{AB}	ACQ_B

First of all, we notice that it is only under conditions of certainty that extended general deterrence via alliance is successful, and the status quo prevails. This seemingly contradicts much of the standard conventional wisdom in international politics that suggests that bluffing can lead to the status quo being preserved.⁹² Upon further reflection, however, it is not that surprising. There is an incentive for challengers to make limited probes, and see what actions a defender will take. Given the assertion that alliances have a tendency to be unreliable in regards to their honoring obligations, this is intuitively plausible.

⁹¹ Recall from above that a bilateral conflict is a special case of a target being equal in military capabilities to the attacker, and the defender is not willing to intervene. This result holds under both complete and incomplete information scenarios.

1000

**REPORT OF THE
COMMISSIONERS**

2000

1. *Prunella vulgaris* L.

ראש

END

۱۰۸

53

میں نے

47

জানুয়ারি

300

22

424

10

50

10

100

1

100

1

If an incentive for states to challenge the status quo exists under conditions of incomplete information, then how do we explain the preponderance of cases in which conflict does not break out, and general deterrence holds? As noted above, extended general deterrence succeeds only under conditions that approximate complete information and certainty regarding the commitment level of a defender. Based upon their beliefs about a defender, challengers will determine whether to select themselves into crises or to forgo any initiation (Fearon, 1993, 1994a). This issue of selection effects, then, hinges largely upon the information and beliefs that a potential aggressor holds prior to the possible initiation of a crisis. As a aggressor's beliefs are adjusted towards 1.0, in believing that a defender will intervene, then conditions of certainty are approximated.

Secondly, conflict can once again occur under conditions of power parity.⁹³ Once again this suggests that military capabilities are not the only force that drives disputes. Rather, it is largely a concern the issues that are at stake that drive disputes, rather than mere calculations of military power. If power were all that mattered, one would witness few conflicts in the world. The fact that asymmetric initiation occurs suggests that power is not the end-all to understanding world politics and interactions among hostile states.

⁹² Unfortunately I cannot assume full credit for this insight. Both Fearon (1997) and Papayounou (1997) find that attempts at bluffing are not upheld in equilibrium.

⁹³ While I do not relax the assumption here that A and B can be equal in capabilities, the same results do hold if I do. The result will be a bilateral conflict with no intervention by C. Interested readers in this proof are advised to consult Appendix A.

The

applied

interior

usually

The

between

between

the other

model

interior

interior

financial

house

system

potential

between

between

Ha

time

exchange

approach

4.7 Conclusion

The above games demonstrate the conventional wisdom that exists regarding extended deterrence. If a defender is able to make a credible commitment to its ally, then deterrence should be effective. However, the failure of a defender to credibly commit to its ally can lead to the ally giving in to an aggressor's demands.

I have argued that these commitments can be viewed as signals, which are costs that defending states are willing to incur in their quest for autonomy. Alliances can provide deterrence for member states if the parties involved all have common knowledge about the others involved. Only when uncertainty is introduced can deterrence fail. The models suggest that since signals are costly, the greater the likelihood that a defender will intervene, so as not to see its sunk costs go to waste. This is a finding that often runs contrary to the literature on alliance reliability, and warrants further scrutiny.

In the formal models presented here, the theoretical framework outlined in chapter 3 is validated. The actions of a defending state, witnessed by the signals it sends and receives to and from its protégé, help to create an aura of certainty in the international system. These signals, envisioned as costs that have been invested, provide a means for potential aggressor states to formulate beliefs and perceptions about the commitment of a defender. These perceptions help determine whether an aggressor wishes to exploit a favorable opportunity in the international system in order to further its national goals.

Having presented a theory of extended deterrence via alliance in a formal fashion, the time has come to evaluate the theory against the empirical record. Do costly signals exchanged between allies provide the desired deterrence benefits? Do they influence an aggressor's perceptions and create conditions approximating certainty? Do states make

2000

2001

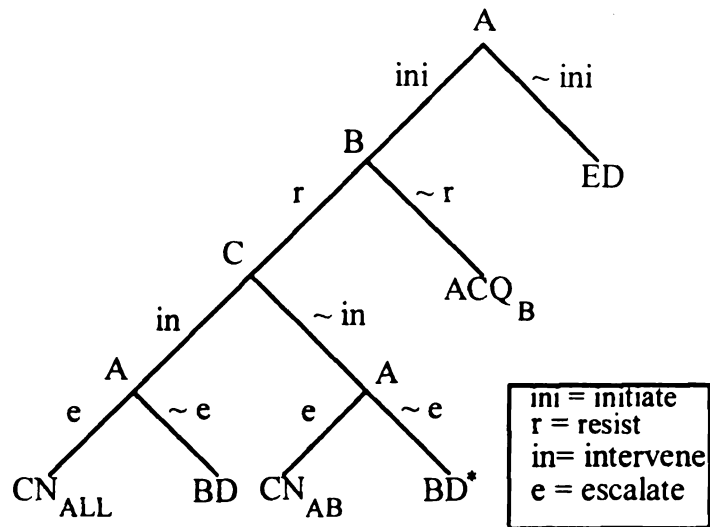
2002

2003

attempts to exploit opportunities in the status quo in spite of the existence of a deterrence alliance? Are deterrence alliances effective at ensuring the status quo for their minor partners? These are some of the questions that emerge from the theory presented above, and will be subjected to empirical scrutiny in the following chapters.

FIGURE 4.1

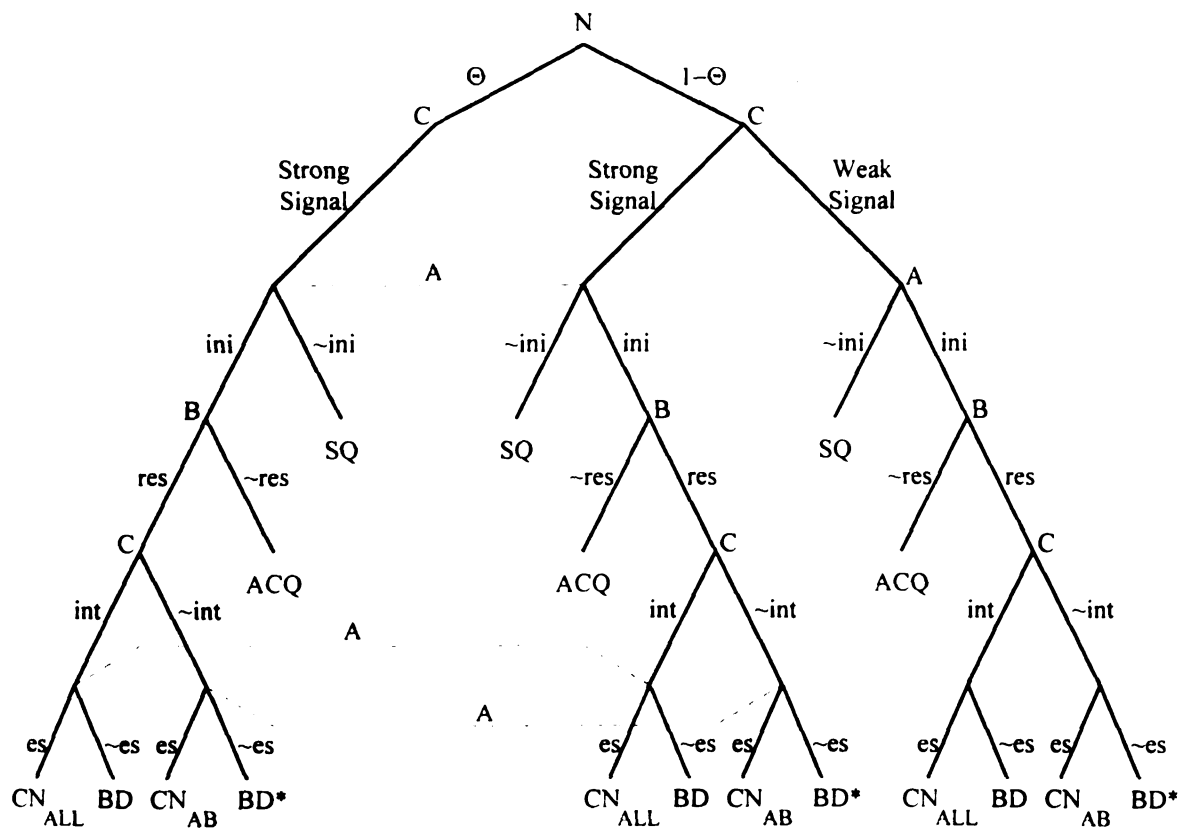
EXTENDED DETERRENCE VIA ALLIANCE WITH COMPLETE
INFORMATION



EX



FIGURE 4.2
EXTENDED DETERRENCE VIA ALLIANCE WITH INCOMPLETE
INFORMATION AND SIGNALING



Example

Example

Example

Example

Example

Example

Example

Example

Example

Example

Example

Example

Example

Example

Example

Example

Example

CHAPTER 5

PROPOSITIONS, CASES, AND VARIABLES

5.1 Introduction

A common critique of game theoretic models is that they do not lend themselves to empirical testing, or that they demonstrate the “obvious”. As discussed in chapter 2, game theoretic models of deterrence are often the targets of those opposed to rational deterrence theory. As the equilibria from the models in chapter 4 demonstrate, interesting, even counterintuitive findings can come from formal analysis. Unfortunately, many opponents of formal theory criticize it for being too elegant, with no empirical references.

One mistake that I intend on avoiding is not testing my models in an empirical manner. Modeling solely for the sake of modeling is not something I am interested in. Models help us to understand a particular question, and identify the important factors which influence behavior. In this regard, I realize that there may be particulars to certain wars or conflicts that my models may not address. Aberrations and outliers do occur, and often provide avenues for further investigations and refinements to theoretical discourse. However, I feel that the formal models presented in this dissertation adequately address situations in which extended deterrence via alliance is functioning. It merely becomes a matter of finding the proper means of testing them against the historical record.

Such concerns are not new. In fact, as I noted in chapter 2 when the rational deterrence debate was discussed, the most common criticism of formal models is the difficulty of scrutinizing their results empirically. A large portion of this problem has been the failure of formalists to draw out testable aspects of their models. Fearon (1994a,

17.10.19

17.10.19

17.10.19

17.10.19

17.10.19

17.10.19

17.10.19

17.10.19

17.10.19

17.10.19

17.10.19

17.10.19

17.10.19

17.10.19

17.10.19

17.10.19

17.10.19

17.10.19

17.10.19

17.10.19

17.10.19

17.10.19

237) notes this problem and remarks; “modelers have probably not done enough to draw out hypotheses that can be tested using simple, plausible, and readily available measures”. Given that factors such as power, issues, audience costs, and signals are central to much of international politics, and to the theory developed in this dissertation in particular, such limitations need to be overcome to the greatest extent possible.

With this in mind, it should be noted that not all of the parameters in the formal model can be estimated in a statistical/empirical manner. How does one operationalize a concept such as resolve, or model limited information in a quantitative manner? Often the best that we can hope for is to test implications from the formal models, and augment these implications with evidence from the historical realm.⁹⁴ Thus, in this chapter I will be focusing on the operational definitions of the variables being tested, but when I turn to actual testing in chapter 6, I will return to the six cases that have been elaborated upon throughout this body of work. The focus on these cases adds a greater richness and validity to the theory developed here, and provides some bite to the often-cold numbers derived from statistical formulations.

Having stated my desire to test my formal models empirically, my attention now turns to what specifically is being examined by my statistical modeling. My concern throughout this dissertation has been to model the impact that an existing alliance has on ensuring effective deterrence. Since deterrence in its extended form is a policy proffered by one state (a defender) in exchange for some benefit, I feel that is most important to

⁹⁴ Gates and Quinones (1994) and Gates and Humes (1997) both argue that in many instances, only implications can be tested from formal models, rather than testing the models directly. The best attempt within international relations to test a game-theoretic model directly, with developed measures for utility, is Bueno de Mesquita and Lalman (1992).

concentrations

decreased

patients

and the

no longer

the same

or has

are the

between

and the

quantities

be the

associations

indicate

52

are a

situation

the

which

case

is the

concentrate on the factors that shape both a defender's and a potential aggressor's decision calculus. Therefore, I believe that my empirical models are an accurate portrayal of the factors that A encounters when it considers when making a choice in a conflict situation. Although much of this focus is on the actions of an aggressor, it does not imply that the game models are incorrectly specified. The decision made by any of the actors in the system is conditioned to some extent by what the other two actors have (or have not) done.

In the remainder of this chapter I develop empirically testable propositions that are derived from my formal models. I discuss at what level these propositions function (extended general deterrence or extended immediate deterrence), and the implications and reasoning behind each. I then discuss the issues of selection bias that occur in quantitative studies of deterrence. Moving from this discussion on selection effects, I delineate my set of cases, and explain how I've attempted to avoid some of the problems associated with selection effects. Finally I operationalize the variables, dependent and independent, that I will use to empirically test the propositions in chapter 6.

5.2 Propositions

As the theoretical framework and formal models suggest, two distinct processes are at work in the study of extended deterrence via alliance. There exist a number of situations in which extended general deterrence via alliance is attempted. In most years, the status quo is not challenged. In the minority of cases in which an actual challenge is witnessed, escalation to large-scale conflict is not the norm. However, in some of these cases, extended general deterrence failures escalate, and extended immediate deterrence is challenged as well. Thus, in order to test in an empirical fashion the influences that

various par-

terence.

proposition

following t

from the ar

discussion.

It s

theoretic m

attempts h

developed

has been c

(1999) ap

Internatio

Smith (19

that utiliz

data he fi

evidence

empirical

from the

models.

5.2.1. P

I

which de

various parameters from the formal model have on the success or failure of extended deterrence at both the general and immediate levels, we need to formulate specific propositions from both levels that can be subjected to empirical scrutiny. In the following two sections I outline and elaborate upon the testable propositions that emerge from the analysis of the models' equilibria in chapter 4. I provide some detailed discussion of the propositions, and how they emerge from the formal model.

It should be recalled from the introduction to this chapter that testing game-theoretic models is an often difficult, if not impossible, venture. This is not to say that attempts have not been made to directly test outcomes of formal models. A technique developed by McKelvey and Palfrey (1998), logit quantal response equilibrium (LQRE) has been developed as a means of empirically testing game-theoretic models. Signorino (1999) applies the LQRE framework to Bueno de Mesquita and Lalman's (1992) International Interaction game, and finds limited support for its findings. Alternatively, Smith (1997) develops what he terms a Strategically Censored Discrete Choice model that utilizes Bayesian techniques. In his reanalysis of the Bueno de Mesquita and Lalman data he finds overwhelming support for their findings. As evidenced from the brief evidence presented above, there exists no consensus on how to test formal models empirically. In this vein, therefore, the propositions stated below seek to test implications from the formal models, rather than test every single parameter that was included in the models.

5.2.1 Propositions regarding Extended General Deterrence

The first set of propositions deals with a larger set of cases; namely, those in which deterrence has been extended by a great power defender to a minor power protégé.

As the

determi

and 12

param

Estima

where

$m = 0$

$j = 0$

$d = 0$

$k = m$

$u = 4$

Propo

Propo

Propo

Propo

Propo

Propo

Propo

Propo

Propo

Propo

Propo

Propo

Propo

As the equilibrium analysis from chapter 4 demonstrates, at the level of extended general deterrence, there are five major factors that influence whether deterrence is successful or not. I argue that extended general deterrence success is a function of these five key parameters, which are derived from the formal models in chapter 4. Formally,

$$\text{Extended general deterrence success} = f(m, y, d, k, \mu) \quad (1)$$

where

m = commitment sent from C to B (sunk cost).

y = autonomy benefits C receives from B .

d = domestic political constraints on C .

k = military balance (short term and long term balance).

μ = A 's prior beliefs about the defender's type.

Proposition 1.0 (Commitment/Security Proposition)

As the level of commitment C sends to its protégé B increases, the greater the likelihood that extended general deterrence will be successful.

Proposition 1.1

As the level of arms transferred from a defender to its protégé increases, the greater the likelihood that extended general deterrence will be successful.

Proposition 1.2

The likelihood that extended general deterrence will succeed increases if the defender and protégé are united by a defense pact.

Proposition 1.3

The likelihood that extended general deterrence will succeed increases if the defender establishes military bases on the territory of the protégé.

These first three propositions test the impact that specific commitments made by a defender on behalf of a protégé have on ensuring extended deterrence success. As is borne out by the equilibrium analysis in the prior chapter, the signal that is sent is strongly associated with the status quo being preserved. Increasing the signal sent

regard

system

it know

becom

help in

Sabin

police

was ar

interes

securit

protég

esult

of all

pacts

assiste

such a

them

comm

Ad

Mesq

dema

could

regarding security to an ally helps to create a sense of certainty in the international system, and provides little incentive for a potential challenger to initiate a dispute which it knows will lead to the intervention by a third party.

If we examine each of these propositions in more detail, their implications become much clearer. In the first instance, arms transfers from a defender to a protégé help increase the security that a minor power gains from the alliance relationship. As Sislin (1994) notes, arms tend to be utilized as means of influence. They often provide political ties, and symbolize the possibility of improved relations as time progresses. As was argued in chapter 3, if great powers use alliances with minor powers to pursue interests abroad, then the transfer of arms ties a defender much more closely to the security and defense of its protégé. If these transfers are witnessed, then the value of the protégé becomes all the clearer to potential challengers.⁹⁵

In the second proposition the concern is over the type of alliance that has been established between the defender and protégé. As discussed in chapter 2, different types of alliance ties exist. I distinguished between defense pacts, ententes, and non-aggression pacts. The defense pact is the tightest form of commitment, for it pledges military assistance in the case a signatory is attacked. Formalizing the alliance commitment in such a tight manner sends a strong signal from defender to potential challengers, warning them that the protégé is of considerable value to the defender.

Finally, the establishment of military bases on a protégé's territory is a signal of commitment that should increase deterrence effectiveness. The establishment of bases

⁹⁵ Additionally, as Bueno de Mesquita (1981) and Ray's (1990) replication of Bueno de Mesquita confirms, allies have a tendency to fight one another. Arming an ally demonstrates a great deal of faith in the intentions of the minor power, for these weapons could conceivably be used against the defender at some later date.

straddles the

the protégé.

great power

framework of

formation. C

international

How

their soldier

establishme

than autono

intervention

Proposition

*The greater
likelihood t*

Proposition

*The higher
likelihood t*

Proposition

*The likelih
able to imp*

Proposition

*The likelih
geographic*

Proposition

*The likelih
democratic*

straddles the line between being a benefit for the defender and being a security benefit for the protégé. As Harkavy (1989) points out, the establishment of bases abroad permits a great power to maintain a global military presence. According to the theoretical framework outlined in Chapter 3, this is one of the main goals of asymmetric alliance formation. Great powers ally with smaller ones in order to gain some leverage in their international affairs.

However, security benefits arise for the protégé as well. No state wishes to see their soldiers killed and then have their leaders stand by and do nothing. The establishment of bases, I argue, provide a much greater security benefit to the protégé than autonomy to the defender, because the help increase the likelihood of military intervention in the case of extended general deterrence being challenged.

Proposition 2.0 (Autonomy Proposition)

The greater the degree of autonomy benefits that C receives from B, the greater the likelihood that extended general deterrence will be successful.

Proposition 2.1

The higher the level of exports that goes from a defender to its protégé, greater the likelihood that extended general deterrence will be successful.

Proposition 2.2

The likelihood that extended general deterrence will succeed increases if the defender is able to import vital strategic raw materials from its protégé.

Proposition 2.3

The likelihood that extended general deterrence will succeed increases if the protégé is geographically situated in a strategic locale that is beneficial to the defender.

Proposition 2.4

The likelihood that extended general deterrence will fail increases if the BC alliance is democratic in nature.

obtain

issues

little

for for

more

prote

of stu

prote

iGoo

little

disc

the a

2010

Har

dic

too

View

Seq

all

Gen

In these four propositions we are able to see what benefits a great power is able to obtain from its minor power protégé. The first two propositions deal with economic issues: trade and supply of vital raw materials. If a great power defender is able to gain little in terms of security from allying with a minor power, then it must have some reason for forming the alliance in the first place. Trade and the acquisition of valuable raw materials would make the relationship more valuable. Being able to export goods to the protégé helps increase the economic base on the defender's home front, while the import of strategic raw materials helps the defender maintain its military might. And, to the protégé's benefit, trade often produces what have been termed security externalities (Gowa, 1994; Mansfield and Bronson, 1997).

Having an ally in a strategic locale is also beneficial for the defender, as was discussed in the previous chapter. Territorial contiguity, protection of a trade route, or the ability to use a protégé's territory for forward basing are all issues that provide autonomy benefits to the defender. Take for example, the relationship between Austria-Hungary and Serbia in the latter part of the nineteenth century. Although the Austrians did not establish military bases on Serbian territory, they did have permission to move troops across Serbian soil in the event of a war. Alternatively, the Turks have often been viewed as good alliance partners due to their control of the straits leading to the Black Sea.⁹⁶ Strategic location, therefore, is a primary benefit that a defender can gain from allying with a minor power.

Finally, a democratic alliance may lead to an increased chance of extended general deterrence failing. As was noted in chapter 3, the "gains from trade" argument

expous

regime

great p

the det

that of

leader

deman

sovere

sovere

regim

arith

allian

secur

devis

of the

being

expla

evan

Prop

The

point

* be

and

espoused by Gartzke and Simon (1996) and Simon and Gartzke (1996), non-democratic regimes may be more willing to tolerate restrictions and policy concessions demanded by great power defenders than are democracies. Such states may be more willing to permit the defender to establish bases on their territory, or align their foreign policy aims with that of the defender. Much of this can be done due to the fewer constraints placed upon leaders of non-democratic states. Democracies tend to be more hesitant to give in to the demands of a defender in regards to policy coordination, or surrendering some issues of sovereignty, as in base establishments.

Harkavy (1989) elaborates upon the fact that the establishment of bases erodes the sovereignty of the minor power in such a relationship. On another note, examining regime type in this manner allows us to get at a measure of policy coordination, albeit in a rather rough manner. Bueno de Mesquita (1981) has argued that the tau-b measure of alliance portfolios is a good means of measuring policy similarity, at least in regards to security issues. In contrast to the tau-b approach, Signorino and Ritter (1999) have devised a measure, S, to measure policy similarities between states. Unfortunately, both of these measures use alliance configurations to explain policy coordination. In the study being conducted in this dissertation, I find it problematic to use alliance configurations to explain alliance behavior. Hence, I rely upon the regime measure as a means of examining policy coordination among allies.

Proposition 3.0 (Domestic Political Constraints Proposition)

The likelihood of extended general deterrence succeeding decreases as the domestic political constraints imposed upon the defender increase.

⁹⁶ Jelavich (1973) and Langer (1950) provide excellent descriptions of these two alliances and the policies that drove their formation.

Proposed

As the co-
operation

Proposed

The like
detention

There are

form and

policy

example

branch

opposite

amount

United

regard

comes

and sig

to mak

to be p

democ

perce

Proposition 3.1

As the constraints placed upon the executive in a defender state increase, the greater the likelihood that extended general deterrence will fail.

Proposition 3.2

The likelihood extended general deterrence success increases if the government in the defending state is a unified (single party) government.

Foreign policy decisions, as was argued in chapter 3, are not made in a vacuum. There exist constraints upon leaders regarding the choices they make. The decision to form an alliance, and protect a friend from aggression, is just merely one of the many policy choices that state leaders face on a regular basis. In many democratic societies, for example, foreign treaties are subject to some formal ratification process by the legislative branch. As these restrictions increase on an executive, he or she is more likely to face opposition to various policies that are proposed.

Alternatively, greater restrictions placed upon an executive indicate that greater amounts of bargaining may transpire in order to have a treaty of alliance ratified. As the United States discovered in 1954, there existed a fair amount of debate within the Senate regarding the exact nature of the treaty of alliance to be signed with Taiwan. Such domestic divisions do not exist within countries whose executives are less constrained, and signal (in some cases wrongly), the lack of resolve on the part of a defending state.

In regards to the second proposition, a unified government may have more leeway to make foreign policy decisions. This, I argue, is because different factions do not need to be pleased. Therefore, I maintain that a single party government (democratic or non-democratic) will have an easier time providing extended general deterrence, for it is perceived that there are fewer obstacles in the government's path.

Proposi

As the b
general

Propos

As the b
extende

Propos

As the b
likeliho

facing

Militar

The ab

the det

import

forces

These

attitud

other

is con

minia

Prop

As a p
strong
deter.

Proposition 4.0 (Balance of Forces Proposition)

As the balance of forces favors the BC alliance, the greater the likelihood that extended general deterrence will be successful.

Proposition 4.1

As the balance of short-term forces favors the BC alliance, the greater the likelihood that extended general deterrence will be successful.

Proposition 4.2

As the long term balance of forces shifts and favors the BC alliance, the greater the likelihood that extended general deterrence will be successful.

The balance of military forces between a potential aggressor and the alliance it is facing is quite important in determining whether an initial challenge is made or not.

Military capabilities, as was argued in chapter 3, help to enhance deterrence credibility.

The ability to inflict punishment on an attacker tends to be a function of the forces that the defender can marshal once a crisis erupts. Hence, the short-term balance of forces is important in determining whether or not a crisis is initiated in the first place.

The second proposition, that dealing with the long-term balance of military forces, addresses the resources that a state can draw upon over a long period of time. These capabilities can help a state prevail in the case of a drawn out conflict, or a war of attrition. In such instances, states must delve deep into the resources they have available, other than manpower. The long-term balance of forces captures these resources, since it is comprised of the industrial base of a state as well as the manpower it has in the military.

Proposition 5.0 (Initial Beliefs Proposition)

As a potential aggressor's initial beliefs regarding the defender's type as being a strongly committed defender increase, the greater the likelihood that extended general deterrence will succeed.

Proposition 5

If a defender is
extended gene

Proposition 5

If a defender is
greater the lik

These

defender are c

and when it v

initiate a crisi

to escalate a c

potential atta

environment.

In the

regarding its

statement tha

ensure that it

Willingness

credibility of

In the

come to the

during the sa

lead to less e

Proposition 5.1

If a defender intervened on behalf of any ally in the past, the greater the likelihood that extended general deterrence will succeed.

Proposition 5.2

If a defender is actively involved in another dispute that doesn't involve its protege, the greater the likelihood that extended general deterrence will fail.

These two propositions regarding the potential attacker's perceptions of a defender are critical for understanding when extended general deterrence will succeed, and when it will falter. As discussed in chapter 4, many aggressors will be willing to initiate a crisis against a target, given a favorable opportunity structure, but not be willing to escalate a crisis if it will lead to a defender's intervention. Hence, the beliefs that a potential attacker holds are a good indication of how it views its international environment, and when it is opportune to launch an attack on a target.

In the first proposition we are able to witness the credibility of a defender regarding its other allies around the world. This keeps in line with Schelling's (1960) statement that the United States was willing to sacrifice troops in South Korea in order to ensure that its commitment to West Germany was viewed by the Soviets as ironclad. Willingness on the part of a defender to assist other allies in crisis bodes well for the credibility of its commitment.

In the second proposition the concern is about the willingness of a defender to come to the aid of its protégé when it has already been involved in additional disputes during the same year. "War weariness" may be the result on the part of the defender, and lead to less effective deterrence at the general level.

5.2.2 Propositions Regarding Extended Immediate Deterrence

Having outlined the testable propositions that are concerned with the success of extended general deterrence, and how a deterrence commitment can be communicated as credible, our attention now turns to a situation that emerges when a crisis erupts. Our concern turns to ensuring deterrence stability; conditions under which the aggressor does not fear some form of preemptive strike on the part of the defender. At the level of general deterrence, more long-term strategic factors shape circumstances. When it comes to the level of immediate deterrence, different factors come into play.

$$\text{Extended immediate deterrence} = f(k, d, x, \mu^*) \quad (2)$$

Where

k = balance of forces (immediate, short-term, long-term, nuclear capability).

d = domestic political costs of C .

x = issue at stake for A .

μ^* = A 's updated beliefs regarding C .

Once extended general deterrence has broken down, the defender must make a decision as to whether it will intervene on behalf of its beleaguered protégé or not. As I noted in the theoretical chapter, Fearon (1997) conceptualizes these actions on the part of the defender as tying-hands signals. As I maintained above, I differ from Fearon in this conceptualization in that I maintain that these signals also serve as sunk costs. In particular, they have an impact upon a state's reputation, both at home and abroad. These reputation costs, although not modeled explicitly in this dissertation, impinge upon a leader's decision calculus.

These differences aside, Fearon and I are both addressing a similar idea. A defender must use its actions to signal its intentions to the adversary. These signals can range from doing nothing to full-scale armed intervention. I argue that as the defender

increases its w

possibility tha

the aggressor.

Proposition 6

*As the balance
immediate de*

Proposition 6

*As the balance
extended imm*

Proposition 6

*As the balance
extended imm*

Proposition 6

*As the long t
likelihood th*

Proposition

*The likelihood
defender pos*

Milit

when it com

exists, but is

within the a

In the imme

be won quick

capabilities.

increases its willingness to fight, it signals these intentions by providing for the possibility that the crisis may escalate to war. These tying-hands signals reveal its type to the aggressor, and provide for stability in the immediate deterrence situation.

Proposition 6.0 (Balance of Forces Proposition)

As the balance of forces favors the BC alliance, the greater the likelihood that extended immediate deterrence will be successful.

Proposition 6.1

As the balance of immediate forces favors the BC alliance, the greater the likelihood that extended immediate deterrence will be successful.

Proposition 6.2

As the balance of short-term forces favors the BC alliance, the greater the likelihood that extended immediate deterrence will be successful.

Proposition 6.3

As the long term balance of forces shifts and favors the BC alliance, the greater the likelihood that extended general deterrence will be successful.

Proposition 6.4

The likelihood of extended immediate deterrence being successful increases if the defender possesses nuclear weapons.

Military capabilities, as discussed in the previous section, are inherently an issue when it comes to analyses of deterrence. At the level of general deterrence, hostility exists, but is not necessarily overtly expressed. As was argued in chapter 3, it is changes within the aggressor's environment that determine when it will exploit an opportunity. In the immediate case, on the other hand, the concern is largely with how can a conflict be won quickly, and goals attained. In such an instance, therefore, the role of military capabilities, especially the immediate balance of forces, comes into play.

The immediate balance of forces between the attacker and the combined strength of the defender and protégé that are in place at the moment a crisis erupts are oftentimes crucial to determining whether the demand of an aggressor are met, or if the demand is met with resistance. For example, at the onset of the Second World War, despite their intentions, France and Great Britain were in no position to intervene militarily in the immediate aftermath of the German invasion of Poland. No British or French troops were deployed to assist the Polish army in case of an attack. Hitler took advantage of this weakness, and war on the Eastern Front began.

The short-term balance of forces comes into play once an attacker has made a demand and moved militarily to secure this demand (i.e., seized the territory of the target state). The short-term balance between the attacked alliance and the aggressor is important within the first few months of conflict, as resources are mobilized and reserve troops are called up. As the short-term balance shifts towards the embattled alliance, it becomes increasingly unlikely that the attacker will be able to gain its objectives.

The long-term balance of forces comes into impact if a war becomes one dominated by attrition strategies. It is dependent upon the resources that a state can call upon for its war effort over a long period of time. While this balance should have a positive impact on deterrence success, it should not be that large, given that states do not tend to plan on fighting wars of attrition.

Finally we turn to a post 1945 phenomenon: the possession of nuclear weapons on the part of a small number of states. Nuclear weapons are often credited with keeping the peace between the United States and the Soviet Union during the Cold War (Sagan and Waltz, 1995), but they also demonized as being “terrors without deterrence” (Kugler,

1984). I main

immediate de

is difficult to

crisis may sp

Given the str

decision-mak

Proposition

As the dome

extended im

Proposition

The existenc

that extende

Proposition

The existenc

the likelihoo

As w

and desires

that investin

as some ben

sacrifice in

defended in

wasted. He

pressure act

1984). I maintain that nuclear weapons should have an impact on the success of extended immediate deterrence due to the fear that the crisis may escalate out of control. While it is difficult to make the nuclear option credible (Powell, 1990), there is the chance that a crisis may spin out of control and cause such weapons of mass destruction to be utilized. Given the stress that is often present during times of crisis, and potentially faulty decision-making procedures, this proposition appears logical.

Proposition 7.0 (Domestic Political Constraints Proposition)

As the domestic political constraints increase for C, the greater the likelihood that extended immediate deterrence will be successful.

Proposition 7.1

The existence of a democratic regime in the defender's state will increase the likelihood that extended immediate deterrence will be successful.

Proposition 7.2

The existence of a unified (single party) government in the defender's state will decrease the likelihood that extended immediate deterrence will be successful.

As was argued in chapter 3, there exist costs that emanate from the preferences and desires of domestic political audiences. In the theory developed here, I maintained that investing in a protégé generates costs through a guns and butter argument. As long as some benefits is seen in providing “guns” to an ally, the people don’t mind the sacrifice in “butter”. However, if assistance is provided abroad, and the interests are not defended in time of crisis, then the domestic audience views the assistance as being wasted. Hence, I argue, contrary to what many would think, that increased domestic pressure actually increases the effectiveness of extended immediate deterrence.

Howe

fear of becom

discerned, co

reciprocate a

they conjectu

guys". In ke

to have a pos

Proposition

As A 's value

deterrence v

Proposition

If the issue d

immediate d

Terr

international

dissertation

of a potentia

Congress of

part of the t

prevent Ind

Giv

1870. I mai

that crises t

failure of c

However, a single party government may be less likely to intervene in a crisis, for fear of becoming entrapped in an undesired conflict. As Prins and Sprecher (1999) discerned, coalition governments within parliamentary democracies are more prone to reciprocate and escalate militarized disputes than are single party governments. This, they conjectured, was due to the ability of the government to place blame with “the other guys”. In keeping with this finding, I argue that unified governments will be less likely to have a positive impact on extended immediate deterrence success.

Proposition 8.0 (Issue at Stake Proposition)

As A's value for x increases, the greater the likelihood that extended immediate deterrence will fail.

Proposition 8.1

If the issue at stake is territorial in nature for A, the greater the likelihood that extended immediate deterrence will fail.

Territory, as was discussed in chapter 3, has been an underlying issue of international conflict for much of human history. Many of the alliances examined in this dissertation were formed for the purpose of preventing territorial irredentism on the part of a potential aggressor. Serbia, for example, sought Austrian protection after the Congress of Berlin in 1880 due to Bulgarian designs on Serbian territory. Or, in the latter part of the twentieth century, Great Britain's alliance with Malaysia was an attempt to prevent Indonesian aggression against the newly formed Malay state.

Given the centrality of territory to so much of conflict that has transpired since 1870, I maintain that territory is a major issue at stake in many crises. Thus, I maintain that crises that evolve due to territorial issues will be more likely to escalate, and lead to a failure of extended immediate deterrence.

Proposition

As A's belief
extended into

Proposition

If C practice
extended into

Proposition

If C practice
the likelihood

Proposition

If C is involved
deterrence v

Proposition

If a defender
in the past, it

In an

will actually

was discuss

aggressor ha

whether ext

deterrence f

regarding w

account for

The first t

strategy tha

Proposition 9.0 (Updated Beliefs Proposition)

As A's beliefs about C being a strong defender increase, the greater the likelihood that extended immediate deterrence will succeed.

Proposition 9.1

If C practices a policy of tit-for-tat military escalation, the greater the likelihood that extended immediate deterrence will succeed.

Proposition 9.2

If C practices a policy of firm-but-flexible diplomatic response to the crisis, the greater the likelihood that extended immediate deterrence will succeed.

Proposition 9.3

If C is involved in an ongoing dispute, the greater the likelihood that extended immediate deterrence will fail.

Proposition 9.4

If a defender intervened on behalf of its protégé with regards to the potential aggressor in the past, the greater the likelihood that extended immediate deterrence will succeed.

In an extended immediate deterrence crisis, the beliefs of what actions a defender will actually commit to have a great impact on whether the crisis escalates or not. This was discussed in chapter 3, and formalized in chapter 4, where the beliefs that an aggressor has concerning the type of defender were of some consequence for determining whether extended general deterrence succeeded or failed. In the cases in which general deterrence faltered, the actions the defender took allowed the attacker to update its beliefs regarding what type of defender it was actually facing. The propositions outlined here account for the updating on the part of the attacker.

The first two propositions are concerned with the military and diplomatic bargaining strategy that the defender uses when a challenger has made a threat to alter the status quo.

The concern

alliance con

In th

defender ha

of caution.

responds to

mobilizatio

but it may a

full mobiliz

Alt

during the

which may

question.

Fin

reciprocal

policy com

its intentio

the attacke

the empiri

on extende

⁴⁷ The dis
from Huth
Wheeler (C
cooperatio

The concern on the part of the defender is how to make the aggressor perceive the alliance commitment as credible, but also keep the commitments stable as well.

In the case of the first proposition, regarding military escalation behavior, the defender has three alternatives to choose from. It can adopt a policy of strength, a policy of caution, or a policy of tit-for-tat.⁹⁷ If a defender adopts a policy of strength, it responds to provocation on the part of an aggressor with overwhelming military mobilizations. Such a policy may lend credibility to a defender's commitment to its ally, but it may also risk inflaming the aggressor, and leading to a preemptive strike, prior to full mobilization of the defender.

Alternatively, a defender can adopt a policy of caution, much as the French did during the Munich crisis. A defender can choose to cautiously intervene in the crisis, which may prevent harm from befalling the defender, but also leave its credibility open to question.

Finally, a defender can adopt a policy of tit-for-tat, in which it responds in a reciprocal fashion to the actions of an aggressor. As Huth (1988) has argued, this sort of policy combines both deterrence stability and credibility. It allows the defender to signal its intentions regarding its ally, yet it does not so overwhelm the attacker, and provides the attacker with a means of withdrawal, that deterrence stability is preserved. Hence, in the empirical model in the next chapter, I examine the effect that a tit-for-tat policy has on extended immediate deterrence success.

⁹⁷ The discussions of military escalation policies and bargaining techniques are drawn from Huth (1988); Gochman and Leng (1983); Leng (1984, 1993); and Leng and Wheeler (1979). For detailed discussions on a strategy of tit-for-tat and its ability to elicit cooperation, see Axelrod (1984).

Of course, the
processes are
made in food
pursue a bu

A b
negotiate o
difficult for
attacker.

Alte
no demand
Such a poli
defender ap
future.

Ag
extended in
the aggress
made by an
concern. in
leverage on

The
defender's
additional

Of course, military strategy tends to be coupled with diplomatic bargaining processes as well. Borrowing again largely from Huth (1988; see also the references made in footnote 76), I denote three distinct diplomatic strategies that a defender can pursue; a bullying strategy, a conciliatory strategy, and a firm-but-flexible strategy.

A bullying strategy adopted by a defender indicates that it is not willing to negotiate on any issue. This may enhance the credibility of the defender, but makes it difficult for any compromise to be arrived at, and may invite escalation on the part of the attacker.

Alternatively, the defender could adopt a conciliatory strategy, in which it makes no demands of the aggressor, and accedes to the demands made at the onset of a crisis. Such a policy does nothing to ensure credibility or stability. It actually makes the defender appear weak and irresolute, and may open the door to more challenges in the future.

Again, as Huth (1988) discerned, the strategy that offers the greatest hope for extended immediate deterrence success is a firm-but-flexible response to the actions of the aggressor. A firm-but-flexible strategy allows a defender to stand up to the demands made by an aggressor, but also to introduce some bargaining leverage in other areas of concern, in an attempt to entice the aggressor to compromise on one issue while gaining leverage on something else.

The third proposition above is concerned with an attacker's perception of a defender's willingness to fight, given that the defender is currently involved in an additional dispute. As noted in the analysis of extended general deterrence above, the

likelihood of a defender intervening is reduced if it is already involved in an ongoing dispute elsewhere.

In the fourth and final proposition above, the past behavior of a defender regarding its protégé and attacker should have a positive impact on general deterrence success. The willingness of a defender to intervene in previous disputes between an attacker and its protégé send a signal that it values its relationship with its ally quite highly.

Having described the testable propositions that can be derived from the formal models in chapter 4, I now turn to a discussion of how to operationally measure variables that can be used to empirically test these propositions. Before proceeding into the details of measurement, however, some discussion is needed that frames the set of cases that would comprise a good scientific study of extended deterrence via alliance. In this vein, I turn to a delineation of the role that selection bias plays in studies of extended deterrence. Failure to account for this issue can lead to many problems in the statistical estimation of the propositions outlined above. Since selection effects are so germane to the study of deterrence, and figure prominently in the criticisms of those that challenge rational deterrence theory, I feel it necessary to elaborate on the issue in some detail.

5.3 The Problem of Selection Effects in Analyzing Deterrence Situations

As was noted in chapter 3 in the theory specification, and in chapter 4, where the formal models were developed, the crisis sequence can be viewed as a process. In the context of the theory developed in this dissertation, crisis escalation is dependent upon extended general deterrence failing in the first place. Since the theory developed herein

examines the impact of a deterrence alliance at both the onset and escalation of a crisis, great care must be taken in order to prevent bias from entering into the analysis.

Problematic here is the issue of selection bias, which was touched upon in the last chapter⁹⁸. In this section and the following I discuss the role that selection bias plays in the study of extended deterrence relationships.⁹⁹ In the following chapter, when I present my statistical results, I discuss how standard econometric techniques fail to account for these selection effects, and provide an alternate way of examining a model of extended deterrence via alliance that accounts for both crisis initiation and escalation.

One of the greatest dangers that plagues the study of deterrence is that of selection bias. Selection bias can best be defined as selecting on the dependent variable (Geddes, 1991). Selection bias is not only a problem in deterrence situations, but manifests itself quite clearly in this strand of research.¹⁰⁰ The problem is that one finds it difficult to identify cases of successful deterrence. We witness deterrence failures. Challenges are made, counter-threats posed, a challenger escalates or back down. Deterrence failures correspond nicely with crises. What we don't see are challenges not made. Leaders tend to be loath to admit that an adversary has deterred them, for it invites more of the same. For example, it would be difficult to imagine the Soviet leadership publicly announcing

⁹⁸ This issue of selection effects is a current topic of interest in the international relations literature. See, for example, Achen and Snidal (1989); Gartner and Siverson (1996); Fearon (1993, 1994a); and Smith (1996, 1997).

⁹⁹ Throughout this chapter and the next I use the terms selection bias and selection effects interchangeably. They refer to the same phenomenon.

¹⁰⁰ Geddes (1991) deals with selection effects in the context of comparative politics, and Dubin and Rivers (1989) develop their bivariate probit model with selection with direct reference to the study of American voting behavior.

that they ha

American d

Fail

problems in

mentioned

And in the

equilibria d

problems t

derrence

tes 1, and b

3.1. Set

As

although b

analysis. S

general de

general de

immediate

Cr

States can

pice on t

confirms

occurring

that they had ceased making demands regarding Berlin because of the effectiveness of the American deterrence commitment!

Failing to account for the possibility of selection bias can lead to a variety of problems in the study of extended deterrence via alliance. Some of these concerns were mentioned in chapter 2, in the debate surrounding the role of rational deterrence theory. And, in the previous chapter, issues of selection bias were noted in discussing the equilibria of the two formal models. In the following two sections I elaborate upon the problems that selection bias play in both game-theoretic and empirical analyses of deterrence. The focus in both sections is on how to control for their effects in empirical tests, and how the two methods of analysis are related.

5.3.1 Selection Effects and Theory Development

As Fearon (1993, 1994a) demonstrates, studies in extended immediate deterrence, although based on classical rational deterrence theory, do not account for the initiation of a crisis. Studies in immediate deterrence fail to account for the initial challenge to general deterrence. As his work has noted, the factors that are operative at the level of general deterrence (i.e., domestic political costs) may have a reversed impact at the immediate deterrence level.

Crises, in Fearon's conception, operate as a set of costly signaling encounters. States can, and will, select themselves in and out of crises depending upon the value they place on the issues of stake. His reanalysis of Huth and Russett's (1984, 1988) data confirms some of his theoretical predictions. Hence, there is a sort of self-selection occurring here, and is corroborated by the equilibria from the models in chapter 4.

Fearon's conception of crisis is one of crisis bargaining, in which each stage of the crisis is an exchange of costly signals. At each encounter in the crisis process, states reveal information regarding their resolve through the actions they take (or don't take). His focus on signaling differs somewhat from mine. I argue that when an alliance is formed, defending states send signals through the mechanisms of formation that allow potential aggressors to determine the credibility of the commitment. These signals form the prior beliefs of an aggressor, and subsequent moves on the part of the defender allow the aggressor to update his belief structures.

Hence, my model is an extension of Fearon's work in that I allow for a signal to occur prior to the onset of a crisis, and also allow updating throughout the crisis to take place. This modeling technique allows for selection bias as Fearon describes it to be accounted for, and, as I have argued, allows for a more accurate depiction of a deterrence encounter.

5.3.2 Selection Effects and Empirical Analyses

Turning from the game-theoretic concept of selection bias, we now address the role that selection bias plays in empirical analyses. As Geddes reminds us, the cases you choose affect the results you get. In the situation being analyzed here, the problem is magnified. First of all, how do we know if deterrence is the real purpose of the alliance? Secondly, what is the relationship between an extended general deterrence failure and an extended immediate deterrence failure? Third, at an even more basic level, how do we know that deterrence is the actual reason for the absence of any crisis between adversaries? This is not a problem for merely deterrence theorists, but all who study international politics.

see

ten

wh

con

con

lea

stu

ext

son

de

stu

of

po

d.

w

se

al

se

of

st

As Most and Starr (1989, 47) point out, analysts who study interstate conflict need to account for selection effects in their research strategies. Cases of non-initiation tend to be coded as missing data. If we identify conflict by determining all cases in which violence occurred and work backwards, we are not considering cases in which conflict could have occurred but didn't. Hence, selecting on the dependent variable (conflict), or, in the cases being analyzed here, extended general deterrence failure, will lead to results that simply may be wrong.

From a purely theoretical point of view, this issue of selection bias has plagued studies of deterrence, and could potentially play a confounding role in the study of extended deterrence via alliance as well. To counter this potential problem, I follow some advice given by two analysts concerned with the role that selection plays in determining cases of attempted deterrence.

Achen and Snidal (1989), in their discussion of deterrence and comparative case studies, maintain that one needs a sound theoretical reason for determining a population of cases. In that vein, I examine all cases in which a great power defender has extended a policy of deterrence to a protégé. This allows me to then examine both cases in which a dispute was initiated, and when it was not. It also provides me with a set of cases in which targets have alliances with other states, and cases in which they do not. Thus, the selection bias inherent in many studies of deterrence can be corrected for. By examining all cases in which alliances were formed, and examining those cases in which extended general deterrence faltered, as well as those cases in which deterrence was not challenged, I am able to eliminate much of the bias that could be introduced into this study. This allows me to examine the processes by which extended general deterrence

situations r

examine th

5.4 Th

Fol

deterrence

identified

minor pow

force on th

between t

manner th

public stat

made wit

defensive

U

all asym

the alian

(1969). v

COW da

T

internat

⁴⁴ Data

(<http://www>

Bennett

incorpor

of asym

situations move into situations of extended immediate deterrence. I can therefore examine the decisions made at each point, as the crisis escalates.

5.4 The Set of Alliances

Following the lead of Achen and Snidal (1989) mentioned above, I outline a set of deterrence alliances using theoretical criteria. I maintain that a deterrence alliance can be identified in the following manner. First, there must be some identifiable threat to the minor power that it desires protection from. This can be the result of threats or uses of force on the part of the potential aggressor, or the product of long-running rivalry between the two states. Secondly, the great power defender must make it clear in some manner that the purpose of its alliance with the minor power is to deter aggression. Thus, public statements, as the British made on behalf of Poland in 1939, or explicit promises made within the treaty of alliance, as in the NATO treaty, stipulate the defensive/deterrent nature of the alliance.

Using data from the Correlates of War (COW) project, I have identified the set of all asymmetric alliances in the period spanning 1870-1984. The sources for identifying the alliances come from Singer and Small (1966a, 1966b, 1968), Small and Singer (1969), with additional data being drawn from Oren (1990). Bennett (1997) updated the COW data through 1984.¹⁰¹

The question of when to begin analysis is one that continually arises in studies of international politics. A variety of watershed events exist, and all of them could provide

¹⁰¹ Data was made available to me by D. Scott Bennett, and is available on his website (<http://www.personal.psu.edu/faculty/d/s/dsb10/>), This is the data that was used in Bennett (1997), and extends the COW alliance data to 1984. Additionally, the data set incorporates some discrepancies noted by Oren (1992), and codes for Morrow's concept of asymmetry as well.

a starting point for this study. In using the Correlates of War data, I did have information on alliances going back to 1816. My reason for starting my analysis at 1870 is largely due to data availability regarding military bases, arms transfers, and data on international trade. Data that is available after 1918 is much more accurate than data from the pre World War I era, but through exhaustive consultation of various sources (outlined in the coding rules of the independent variables below), I feel confident in the data that I have assembled that goes back to 1870.

In narrowing down the set of alliances, I adopted the following coding rules. First of all, due to the fact that the nature of the theory being examined is defensive, I included only alliances that were coded by the COW project as defense pacts or ententes. These are the two types of alliances in which some form of military cooperation in case of conflict is pledged.

Secondly, I examined the context within which the alliance was formed. This involved reading the treaties that were signed and seeing if they specified a specific threat. Unfortunately, many of the treaties are quite vague, and secondary sources were necessary to establish the contextual situation in which the alliances were formed. Sources for the treaties included Grenville (1974), Grenville and Wasserstein (1987) and Hurst (1972), which are comprehensive compendiums of international treaties from 1815 onwards. Additionally, Langer (1950), Osgood (1964, 1968), and Pribham (1921) possessed commentary on the circumstances surrounding the formation of many of these alliances.

Attempting to determine the potential aggressor against a target was an even more difficult task. For the period of 1870–1890, Langer (1950) was a primary source, at least

within a European context. Other cases were a bit more difficult. I relied to a great deal on the works of Dupuy and Dupuy (1970), and Langer (1972) as very broad, general military histories of the world. Other more specific sources on each alliance are mentioned in Appendix D, where I describe each alliance in some detail.

Third, I had to determine a unit of analysis. While a majority of the alliances analyzed (17/20) were bilateral in nature, three were multilateral. Alliances that were multilateral presented a more complicated task. Should they be disaggregated into dyadic components, or should they be treated differently? These three multilateral alliances were decomposed into dyads. The reasoning behind this is twofold. First of all, the theory as presented poses a dyadic (actually, it is triadic in nature if one accounts for the potential aggressor) specification. Thus, it seems natural to arrange the data in a dyadic manner. Secondly, and one that is more consistent with historical reality, in the cases in which there is more than one signatory to the alliance, there are also separate alliance treaties binding the signatories in a dyadic fashion. For example, in the treaty that joins the Romania with Germany and Austria-Hungary in alliance, there are separate treaties between each major power and Romania.

Third, since the focus of this dissertation is on deterrence, I had to ascertain the time frame in which extended deterrence was one of the goals of the defending state. This involves, in four of the cases, censoring the data. For example, the Soviet Union and Mongolia were united by a defense pact from 1936 until 1984. Prior to 1945, when the Second World War came to a close, the pact was directed against Japanese aggression. However, the Japanese threat after the war was replaced by a threat from the People's Republic of China, who laid claim to territory on the two countries' borders. In

1962, Mongolia and China signed a treaty ending their territorial dispute. However, the Soviet-Mongolian alliance persisted, even though the contentious issue had been removed. Given the settlement of the issue that threatened the peace between the two neighbors, I code the deterrent component of the alliance ending in 1962.¹⁰²

Having coded the alliances in the above described manner, I arrived at a set of twenty alliances that were formed with the express notion of a defender providing extended deterrence benefits to the protégé. Table 5.1 denotes the set of alliances, the duration of the alliance, the potential aggressors, and number of disputes, if any.

¹⁰² Any censoring decisions, and justifications for them, can be found in the descriptions provided in Appendix D. The other cases are the United States and West Germany (1954-1972), the United Kingdom and Egypt (1936-1943), and the United Kingdom and Jordan (1949-1957).

TABLE 5.1**ALLIANCES IN WHICH EXTENDED DETERRENCE IS ATTEMPTED
1870-1984**

Defender	Protégé	Aggressor	Duration of Alliance	Number of Crises
United Kingdom	Turkey	Russia	1878-1880	0
Austria-Hungary	Romania	Bulgaria	1883-1916	1
Germany	Romania	Bulgaria	1883-1916	1
Austria-Hungary	Serbia	Bulgaria	1881-1895	1
Russia	China	Japan	1896-1900	0
France	Belgium	Germany	1921-1936	1
France	Poland	Germany	1921-1939	1
France	Czechoslovakia	Germany	1924	0
France	Czechoslovakia	Germany	1925-1939	2
Italy	Romania	Bulgaria	1926-1930	1
Italy	Albania	Yugoslavia	1927-1939	1
United Kingdom	Egypt	Italy	1936-1943	5
Soviet Union	Mongolia	Japan(until 1945) China (1945-1962)	1936-1962	4
United Kingdom	Poland	Germany	1939	1
United Kingdom	Jordan	Israel	1949-1956	2
United States	South Korea	North Korea	1954-1984	10
United States	Taiwan	China	1954-1979	4
United Kingdom	Malaysia	Indonesia	1957-1971	5
Soviet Union	Vietnam	China	1978-1984	3
United States	West Germany	Soviet Union	1954-1972	3

From this I was able to arrive at 302 years in which extended deterrence via alliance was attempted. This observation, the alliance year, is the underlying unit of analysis for the empirical studies conducted in the following chapter. A full description of each alliance, its duration, its reason for existing, and dispute involvement can be found in Appendix D.

5.5 The Set of Crises: Measuring Deterrence Failures

The identification of cases of extended general deterrence provides the researcher with a dilemma. How does one know if deterrence was actually effective? Cases of

deterrence failure are easier to identify. A demand is made, an attack is committed, a crisis is escalated. However, as the central question in this dissertation states, we are interested on determining the impact which existing alliances have on the initiation and escalation of crises. But alliances often have deterrent effects. Thus, we don't witness dispute initiations when deterrence succeeds. If we focus only on cases in which a dispute is initiated, we are introducing selection bias into our sample, as was discussed at length above.

The statistical framework adopted in the next chapter helps control to a great extent the problems of selection bias that often emerge in analyses of deterrence. However, we need to also take care and make certain that our population of crises is as accurate as possible. The above section identified the strategies that were undertaken in identifying the alliances that were formed with an extended deterrence component. In this section I describe the manner in which I identified the challenges to extended general deterrence success, and what occurs when extended general deterrence falters.

5.5.1 Identifying Cases of Extended General Deterrence Failure

The first task is to define what a case of extended general deterrence failure looks like. I adopt similar coding rules to those found in Huth (1988) and Huth and Russett (1993). A case of extended general deterrence failure can be viewed as occurring as long as the following criterion is met:

A threat has been made by a potential aggressor against the target. It must be a clearly defined, explicit threat, with the actual use of or threat to use force and the target must be clearly identified. Such actions include one or more of the following:

- a. Statement of intent to use force.
- b. Buildup of military forces for potential use.

- c. Preparation of military forces for imminent use.
- d. Actual use of force directed against the target.

In order to identify the set of cases of extended general deterrence failure; I utilized the Militarized Interstate Dispute (MID) data set, as developed by Gochman and Maoz (1984) and updated by Jones, Bremer, and Jones (1996). According to Gochman and Maoz, (1984, 587), "a militarized international dispute is a set of interactions between or among states involving threats to use military force, displays of military force, or actual use of military force". This corresponds nicely with Snyder and Diesing's definition of crisis in chapter 3. This data set spans the years 1816-1992, and is the most encompassing data set of its sort in the quantitative international relations field.

Unfortunately, the size of the data set also causes a few problems. As the recent study by Jones, Bremer and Singer (1996) shows, in the years 1816-1992 there have been at least 2000 MID^s.¹⁰³ Every single dispute, however, does not threaten a state in a similar manner. Due to this large number, I chose to focus this study on those disputes in which force was threatened, displayed, or used at the beginning of a crisis. A threat to use force is defined as a verbal indication of hostile intent; a display of force involves military demonstration but no actual combat; and a use of force is one in which active military operations are used. This includes blockades, border clashes, occupation of territory, seizures of personnel or material, clash, raid, declaration of war, or use of CBR weapons (Jones, Bremer, and Singer, 1996, 171-173).

In identifying cases of extended general deterrence failure, I first went through the MID data and identified all cases in which hostility existed between the protégé and the

¹⁰³ I say "at least" because data sets are continually updated, and future work may expand (or decrease) the number of disputes which have occurred since 1816.

potential aggressor. I then turned to more detailed sources to ensure that the dispute actually appeared to be a crisis of some sort, in which basic values were threatened on the part of the protégé. To assist in identifying in more detail these crises, I turned in part to the ICB data of Brecher and Wilkenfeld (1997) for the period 1918-1984, Tillema (1991) for events in the post 1945 era, and to Dupuy and Dupuy (1970) and Langer (1950, 1972) for more general military histories. Additional information was garnered from Small and Singer (1982), especially in identifying what they term extra-systemic wars¹⁰⁴

Once I determined that the aggressor made a serious threat towards the protégé, I coded extended general deterrence as failing. I coded this on a yearly basis. For crises that spanned years, I coded extended deterrence as failing in the first year when the crisis was initiated, and coded it as failing in the second year as well. This is the first dependent variable (EGDSUCC), with extended general deterrence success being coded as a 1, and extended general deterrence failure being coded as a 0. I identify 302 cases from 1870-1984 in which extended deterrence via alliance has been attempted. In these cases, there exist 257 cases of extended deterrence succeeding and 46 cases in which it fails. Table 5.2 provides some summary statistics regarding this dependent variable.

TABLE 5.2
**FREQUENCY DISTRIBUTIONS OF EXTENDED GENERAL
DETERRENCE SUCCESS**

EGDSUCC	Frequency	Percent	Valid Percent	Cumulative Percent
0 (failure)	46	11.1	15.2	15.2
1(success)	256	62.0	84.8	100.0
Total	302	73.1	100.0	

¹⁰⁴ An extra-systemic war is defined by Small and Singer (1982, 52) as a war that exists between a system member and a political entity that is not construed as a system member.

5.5.2 Identifying Cases of Extended Immediate Deterrence Failure: The Possibility of Escalation

Cases of crisis escalation, or extended immediate deterrence failure, provide a more difficult problem in regards to identification and coding. The MID data codes for highest level of hostility, but does not code for initial use of force, nor does it code for escalation dynamics.¹⁰⁵ To construct my variable for extended immediate deterrence success, I had to turn to other sources than the MID data set. In Appendix D, along with my descriptions of the twenty alliances that comprise my data set, I also discuss the crises (if any) in which they become involved. In this appendix I provide bibliographic information regarding the specific crises. Much of this is taken from the sources mentioned above, and others are taken from more specific histories of the crises and wars that surround them.

Adopting the coding rules of Huth (1988, 26-27). I define extended immediate deterrence success/failure in the following manner. First of all, extended immediate deterrence succeeds when the attacker refrains from using military force against the target, or the combat is limited to a small-scale use of force (under 200 casualties). If

¹⁰⁵ The MID coding for level of hostility is as follows 1) no militarized action; 2) threat to use force; 3) display of force; 4) use of force; 5) war (Jones, Bremer, and Singer, 1996). Carlson (1998) examines crisis escalation within the context of extended deterrence, and utilizes the MID data, along with data from Huth (1988), in part to code for escalation processes. I argue that while one can assume that the failure of extended immediate deterrence as coded by Huth (1988) implies escalation occurred, it is better and more accurate to examine the sequence of events that took place surrounding an individual crisis.

extended immediate deterrence is successful, the attacker does not attain the goals which it had when initiating the crisis in the first place.

I code extended immediate deterrence as failing when a large-scale use of force on the part of the attacker is launched at the protégé (totaling more than 200 fatalities in all parties involved), or the demands of the aggressor are acceded to by the protégé and/or defender.

This leads to my second dependent variable, extended immediate deterrence success (EIDSUCC). I code the variable as a 1 if extended immediate deterrence succeeded, and 0 if it failed. Below in Table 5.3 I provide some summary statistics on the 45 cases of extended immediate deterrence that I have identified for the time period under analysis.

TABLE 5.3
FREQUENCY DISTRIBUTIONS OF EXTENDED IMMEDIATE DETERRENCE SUCCESS

EIDSUCC	Frequency	Percent	Valid Percent	Cumulative Percent
0 (failure)	19	4.6	41.3	41.3
1 (success)	27	6.5	58.7	100.0
Total	46	11.1	100	

5.6 Operationalization of the Independent Variables: Measuring influences on Willingness

Having described how my dependent variables are measured, I now turn to a discussion of the variables that impinge upon extended deterrence success and failure, at both the general and immediate levels. In each section I discuss the variables that

measure the concepts that were introduced as parameters in the formal models in chapter 4.

5.6.1 Security Benefits (Invested Costs)

The following paragraphs discuss the variables that measure the concept of security benefits, or invested costs, that a defender has proffered to a protégé.

Defense Pact

Capabilities may reflect a state's ability to ward off attack, or defend itself or a protégé, but it needs to signal its value in its ally in some manner, or it will continually be using its capabilities to fight. As was argued in the theoretical portion of this dissertation, the signing of an alliance treaty binds two states together for military/security purposes, and also sends a signal regarding the defender's interest in its protégé. This signal, I argued above, functions as a security benefit for the protégé.

In keeping with this line of reasoning, I limited myself to two classes of alliances, as discussed above. I then coded whether each alliance was a defense pact or an entente. I coded the variable DEFPACT as a dummy, with the variable taking on a value of 1 if the alliance was a defense pact and 0 otherwise. This data was taken from Bennett (1997).

Arms Transfers

"Arms transfers and arms production have appeared as an inevitable concomitant to war and military preparation throughout human history" (Krause, 1992, 34). The transfer of armaments between allies serves a threefold purpose. First, it provides additional security to the smaller alliance partner. Secondly, the transfer of arms

provides a signal of the value defender places on a protégé. Third, the arms trade allows the defender to exert some degree of influence on the protégé (Sislin, 1994).¹⁰⁶

To construct this variable I examined conventional arms transfers from the defender to the protégé. I coded arms transfers in the following manner. I took the total number of conventional arms imported by a protégé from the defender, and divided this total by the total number of arms the protégé imported from all countries. The variable ARMS is measured on an annual basis.

I utilize a measure based upon percentage rather than number of weapons systems transferred or conversions into constant dollar amounts for two reasons. First of all, I believe that the percentage measure demonstrates the degree of dependence that the protégé relies upon the defender for armaments. Secondly, the use of number of arms transfers, as Kinsella and Tillema (1995) and Schrodtt (1983) note, is more of a measure of political influence. Given that my theoretical question is on the provision of security rather than the degree of political influence that the defender has with the protégé, I feel that the measure constructed here is appropriate.

Given the difficulties of locating arms transfer data, I have utilized a variety of sources.¹⁰⁷ In the post 1945 era I have relied heavily on SIPRI (1975), as well as the SIPRI *Yearbooks* (1961-1984). In order to ensure validity and reliability across years, I also used data from the U.S. Arms Control and Disarmament Agency's *World Military*

¹⁰⁶ A good example of the use of arms as a means of political pressure can be seen in the British embargo of arms to Jordan in the aftermath of the 1948 Arab-Israeli War. Britain refused to send arms to Jordan until certain conditions were met within the Jordanian government. On this topic, see Pundik (1994).

¹⁰⁷ Brozka (1982) provides a thoughtful insight into the problems of finding arms transfer data. Nearly twenty years later, the issues he raises are still germane.

Expenditures and Arms Transfers data (1963-1984). When it came to data from the pre-World War II era, I utilized a diverse set of sources. The *Statesman's Yearbook* (1886-1939), Harkavy (1975), Kolodziej (1989), Krause (1992), and Laurance (1992) were all additional sources that I utilized in constructing this indicator.

Bases

Military bases established on the territory of a protégé combine both elements of security and autonomy. They permit a great power defender greater leeway for pursuing international objectives, while providing a greater degree of security for the host country. Witness, for example, the American naval bases established on the island of Taiwan. The ability of the American Seventh Fleet to dock and base itself at various ports in Taiwan allowed for a more rapid American response in the various Taiwan Straits crises, as well as allowing the United States to maintain a presence in the Far East and pursue a variety of foreign policy goals in the region.

Due to the fact that there are distinctions between functions that bases serve (see Harkavy, 1982, ch. 2 on the different roles that bases play), it would be ideal to construct separate indicators for different base types. However, many bases have a tendency to serve dual functions (naval operations and intelligence gathering, for example). Due to these problems, I do not differentiate between different types of bases. Rather, I construct an indicator that merely signifies if bases are present or absent year to year within the protégé.

The variable I construct for bases, BASES, is coded as the number of bases in any given year that a defender has established on a protégé's territory. I code this variable on a yearly basis. For example, Russia and China are allied beginning in 1896, but the

Russians do not establish a military base at Port Arthur in China until 1898. Thus, the first two years of the alliance are coded as 0 for the existence of Russian bases on Chinese soil.

Data for this variable were drawn primarily from Harkavy (1982, 1989). Additional information on U.S. bases in the Cold War era was drawn from Duke (1989) and Duke and Krieger (1993). For years prior to the First World War these data were drawn from a variety of diplomatic histories, including Albrecht-Carre (1973), Craig (1978), Kann (1974), and Jelavich (1973).

5.6.2 Autonomy Benefits

The following paragraphs discuss the benefits that a great power defender is able to gain from being allied with a smaller power. This is the autonomy portion of the trade-off between security and autonomy in deterrence alliances.

Export

Trade between a defender and a protégé serves as another indicator of the value the defender has in the protégé. As I hypothesized above, the more a defender exports to a protégé, the greater the likelihood that extended general deterrence will be successful. Since most minor powers can offer little to their great power patrons in terms of security, they need to provide other goods that will make them more attractive as alliance partners. Increased access to foreign markets is a significant autonomy benefit for a defender, and, as mentioned above, has a tendency to create security externalities as well.

I constructed my variable EXPORT as a measure of the percentage of exports that a defender exports to its protege. This is calculated as the ratio of exports of the dyadic trade between protégé and defender over the total and exports of the defender. This

variable is derived as a yearly measure. Data was taken from a variety of sources. . I utilized the *Statesman's Yearbook* (1885-1939), the IMF *Direction of Trade* (1950-1984), Mitchell (1975), the League of Nations *International Trade Statistics* (1933-1938), and the United Nations *Yearbook of International Trade Statistics* (1950-1984).

Strategic Location

Oftentimes, the protégé in an alliance is strategically located in regards to the interests the defender is pursuing. I code a protégé as being strategically located if it meets one of three criteria. First of all, is it contiguous to the territory of the defender? Secondly, does the protégé border upon the colonies of a defender? Third, does the protégé control access to major trade routes or choke points on these trade routes? I code the variable STRALOC as 1 if it is strategically located, and 0 if the protégé is not strategically located.

Strategic Raw Materials

Additionally I code whether or not a defender is importing strategic raw materials from the protégé. This variable, STRAW, is coded on an annual basis, and is coded as a the percentage of strategic raw materials the defender imports from its protégé divided by the total number of strategic raw materials the defender imports. Strategic raw materials in the pre World War I era include coal, iron ore, petroleum, copper, nickel, lead, and sulfur. In the interwar period cotton rubber, bauxite, manganese, and chromium are added to the list. In the aftermath of the Second World War titanium and cobalt are additionally coded as being strategic materials. All of these factors can be used to increase military production. I coded this variable on an annual basis. Sources include the *Statesman's Yearbook* (1885-1984), Mitchell (1975), the League of Nations

International Trade Statistics (1933-1938), and the UN's *International Trade Statistics* (1950-1984).

Democratic Alliance

I code whether an alliance is a democratic alliance or not by examining if both the defender and the protégé are democratic or non-democratic. Jointly democratic states are coded as a 1 and non-democratic or mixed alliance dyads are coded as 0. I code this on a yearly basis, with data coming from the Polity database.

5.6.3 Domestic Constraints

The following paragraphs describe the various constraints and restrictions that are placed on a government.

Executive Constraints

I code executive constraints for the defender state as a means of measuring audience costs. The Polity project has developed a scale to identify the amount of constraints that a state has on the actions its executive branch can undertake. The scale is a 7-point scale, ranging from 1-7.

A brief description of this scale is as follows. 1) the leader has unlimited authority. 2) intermediate category. 3) slight to moderate limitations on executive authority. 4) intermediate category 5) substantial limitations on executive authority. 6) intermediate category. 7) executive parity or subordination. Further details on the coding procedures can be found in Jagers and Gurr (1995), and in the revised Polity II codebook of Gurr (1997).

Unified Government

In order to determine if a government is a unified (single party) government or not, I focused on the regime type of the defender. I first noted if the government was a democracy or a non-democracy, using the criteria described in the following variable description of democratic defender. I then examined the democratic states that emerged, and coded on a yearly basis if the defender had a single party government or a divided (or coalition) government. This variable, UNIFIED, is coded as a 1 if the government is a single party government and 0 if it is not. Data was taken from Mackie and Rose (1974), along with the Polity III data.

Democratic Defender

To account for the domestic audience costs that leaders in the defending state face, I code if the defender is a democracy or not (DEMC). Democracies, as many scholars have argued (Fearon, 1994a, 1994b; Hart and Eyerman, 1996), face higher domestic costs in regards to success and failure in foreign affairs. I determine on a yearly basis if the defender is a democracy or not. I utilize the Polity III dataset (Gurr, 1974; Jagers and Gurr, 1995; McLaughlin et. al., 1998) to determine the state's yearly democracy score. I denote any state that receives a 6 or higher on the Polity scale as a democracy. Additionally, since there do exist regime changes throughout history, I utilize the Polity III data of McLaughlin et. al. (1998) to determine if, at the point of crisis initiation, the defender was truly a democracy.

5.6.4 Initial Beliefs of the Attacker

The following paragraphs discuss how I have operationalized the prior beliefs of the attacker.

Credibility

In a first attempt to measure a potential aggressor's beliefs about the commitment of a defender, I examine the defender's past actions in regards to the other allies it has. This is an attempt to measure the argument made by Schelling that was mentioned above, that credibility is often maintained by acting in a variety of venues.

Data for total alliance involvement on the part of a defender was taken from Bennett (1997). I used the MID and ICB datasets to determine previous encounters in which a defender had the opportunity to assist another ally. I code my variable CREDIBLE as a 1 if the defender aided another ally in the previous year against some threat, and 0 if the defender did not aid another ally or had no opportunity to do so.

Involvement

Secondly, I propose that additional dispute involvement in any given year on the part of a defender should have an impact on the success of extended general deterrence. Using the MID and ICB datasets, I code on a yearly basis the variable INVOLVE. I code it as a 1 if the defender is involved in a dispute with another state and 0 if it is not.

5.6.5 Military Balance

The following paragraphs describe how I have measured the military capability measures that are used in my empirical analyses.

Immediate Balance of Forces

The immediate balance of forces is best defined as those as those land forces of the potential attacker in a position to initiate an attack and those land forces of the defender and protégé to repulse such an attack (Huth, 1988, 58). As in regards to the long-term balance of forces, I code the immediate balance of forces (IMMFOR) as a ratio

of the defender's capabilities plus the protégé's capabilities divided by the attacker's capabilities.

Data for the immediate balance of forces is not as easily found as is the long-term balance. Some data was garnered from Huth (1988), Clodfelter (1992), and Dupuy and Dupuy (1970). Other sources for this data are listed in Appendix D, where sources on the various alliances and crises are listed.

Short Term Balance of Forces

The short-term balance of forces (STBAL) differs from the immediate balance in that it is also concerned with what military forces each side can call upon within a short period of time. It is largely concerned with the fear attacker has in a possible military intervention on the part of the defender.

Once again the short-term balance is expressed as a ratio between the combined capabilities of the defender and protégé and the potential attacker. However, in this case, I adjust for distance if the defender and attacker are not contiguous with the protégé. The distance procedure is discussed below, in the coding for the long-term balance of forces. Data regarding the short-term balance of forces are drawn from Clodfelter (1992), The Correlates of War projects dataset on military capabilities, Dupuy and Dupuy (1970) (1977), Huth (1988), May (1984), Wolfe (1970), *The Military Balance* (1961-1984), and the *Statesman's Yearbook* (1885-1984). Additional sources that were consulted can be found in Appendix D, under the descriptions of the various crises.

Long-term Balance of Forces

As elaborated upon earlier, military capabilities play a great role in ensuring deterrence success or failure. At the level of extended general deterrence, we are

preoccupied largely with the long-term balance of forces. This corresponds with an attacker being concerned about a long war of attrition; namely, what power can a defender and protégé combined raise to fight a war that may drag out. Such a concern is evident in Japanese and German thinking in the Second World War. Both states believed that by striking fast, they could neutralize the Allied power enough to prevent the emergence of a long costly conflict.

I construct two measures of the long-term balance of military capabilities. Both of them are based upon the Correlates of War's measure of national capabilities (Singer, Bremer, and Stuckey, 1972). The measure of national capabilities takes each state's military capabilities (percentage of world military personnel and military expenditures) and multiplies by the sum of that state's industrial and demographic resources. These additional resources include percentage of world steel production, industrial fuel consumption, urban, and total population. The long-term balance of forces, denoted as LTBAL, is calculated as the ratio of the combined capabilities of B and C divided by the capabilities of A.

However, there is some discussion concerning the projection of power around the globe. As Boulding (1962) termed it, there is a "loss of strength" gradient. To put it simply, power declines with distance. As a defender, the United States for example, prepares to undertake action when a protégé is threatened, it must make preparations to potentially use military force away from home. Moving material from the United States to West Germany, for example, is costly and time-consuming. Travel conditions are poor, troops become ill, supplies become damaged or lost in transit. To account for these issues, I utilize an adjustment developed by Bueno de Mesquita (1981, 105), to calculate

the adjustments made to take into account the distance the defender must travel in order to reach the protégé.

The variable, termed ALTBAL (adjusted long-term balance) adjusts the capabilities of both the defender and attacker by the distance they must cover. The formula (Bueno de Mesquita, 1981, 105) is as follows:

$$\text{adj capabilities} = \text{capabilities}^{\log(\text{distance ib/miles}) + (10-e)}$$
, where ib is the distance in miles between A or C to the defender, and miles is the number of miles a state can reasonably expect to cover in one day. For the time period 1816-1918, Bueno de Mesquita argues that states could move on average 150 miles per day. For the interwar period, the figure rose to 375 miles per day. In the post 1945 era, the figure is 500 miles per day.¹⁰⁸

Once the adjusted capabilities for A and C are calculated, the balance of forces is once again derived, with the adjusted capabilities of C being added to the capabilities of B, and this being divided by the adjusted capabilities of A.¹⁰⁹ This figure is the final variable used in the analysis to measure the long-term balance of forces.

Nuclear Weapons

Nuclear weapons have long been surmised to have kept the peace between the superpowers during the Cold War. I maintain that since nuclear weapons have been viewed as weapons of last resort, they do not play that large of a role at the level of general deterrence. This keeps in line with Schelling's (1966) concept of brinkmanship, which asserts that nuclear weapons may be used in a crisis as it spirals out of control.

¹⁰⁸ Distances were computed from capital city to capital city for A to B, and C to B. Distances were calculated using the EUGene program of D. Scott Bennett and Allan Stam. Data and documentation on the EUGene program can be found at the following website: (<http://wizard.ucr.edu/cps/eugene/eugene.html>).

The variable (NUCLEARC) is coded as a 1 if the defender possessed nuclear weapons at the time of a crisis, and 0 if it did not possess such weapons.

5.6.6 *Issue at Stake*

The following paragraph discusses how I measured the territorial issue at stake for each crisis in my data set.

Issue at Stake

Above I hypothesized that as the value that the defender placed on the issue at stake x increased, the greater the likelihood that extended immediate deterrence would be successful. As the implications of the formal models suggest, an attacker will, in certain situations, make a demand of a state, even if it is unevenly matched in terms of military capabilities. All the attacker must do is make a demand that has little salience to the minor power's defender (Fearon, 1994a).

As evidenced in so many conflicts throughout the years, territory is an issue that states have fought over. Since much of the empirical record noted earlier suggests that states fight primarily over territorial issues, I code whether the issue at stake for the attacker and target is territorial in nature. I code this variable TERRITORY as a 1 if territorial concerns are the reason for the crisis, and 0 otherwise. Data for this variable is taken to some extent from Brecher and Wilkenfeld (1997), as well as from the detailed histories listed in Appendix D.

5.6.7 *Updated Beliefs of Attacker*

The following paragraphs describe how I measured the updated (posterior) beliefs of the attacker, once a crisis has been initiated.

¹⁰⁹ All calculations were done using the SPSS statistical package. Data for the capabilities was derived using the EUGene program.

Tit-for-Tat

As was argued above, a military strategy of tit-for-tat should lead to a successful extended immediate deterrence outcome. A policy of tit-for-tat allows a defender to signal its resolve, but it is a response to the actions of the attacker, so provocative measures are not undertaken. I code this variable, TFT, as a 1 if such a policy is adopted by the defender and 0 if a different policy is adopted. In order to determine what policy of military escalation was adopted by the defender, I consulted various historical accounts of the 45 extended immediate deterrence encounters that comprise my dataset. Details on these cases can be found in Appendix D.

Firm-but-Flexible

In addition to using military means, states pursue diplomatic measures in order to resolve crises. As was argued above, a firm but flexible bargaining strategy will provide the greatest leverage in peacefully ending a crisis. This allows a defender to make offers regarding the ending of the crisis, rather than merely reacting in a negative fashion to the actions of the attacker. I coded this variable, FBF, as a 1 if the defender adopted a firm-but-flexible stance in a crisis, and as a 0 if it adopted another form of bargaining behavior. In order to determine what policy of bargaining behavior was adopted by the defender, I consulted various historical accounts of the 45 extended immediate deterrence encounters that comprise my dataset. Details on these cases can be found in Appendix D.

Past Behavior

In a first attempt to determine the credibility of a defender, and the influence this has on the perceptions of a defender, I examine the past behavior of a defender with respect to its protégé. In particular, I examine if the defender has come to the assistance

of its protégé when the protégé has had some sort of adversarial encounter with the current potential aggressor.

I code this variable, PAST, on a yearly basis. I code it as a 1 if the defender aided its protégé in the previous year (or most recent past encounter with the potential aggressor) and 0 if the defender did not aid its protégé or had no opportunity to do so. I used the MID and ICB data to identify past encounters between the involved states.

Ongoing Dispute

I code for a final variable ONGOING, which measures if the defender is engaged in any additional ongoing crises. As was argued above, this variable helps determine the updated beliefs of an aggressor. I code the variable as a 1 if yes, and 0 if not. I hypothesize that ONGOING should have a negative impact on the success of extended immediate deterrence. The presence of this variable helps control for any cross-sectional variations that may arise. Data was taken from the MID and ICB datasets.

5.7 Descriptive Statistics: A First Cut at Analysis

Having delineated all of the independent variables to be utilized in the statistical analysis, I now turn to a first examination of these measures. Table 5.4 provides descriptive statistics of all of these variables.

TABLE 5.4**Descriptive Statistics**

Variable	N	Mean	Std. Dev.	Min.	Max.
Past	302	.1986755	.3996654	0	1
Credible	302	.4801325	.5004343	0	1
Export	302	.0261122	.0341379		
Strategic Location	302	.3410596	.4748522	0	1
Defense Pact	302	.7682119	.4226747	0	1
Arms	302	.6863245	.3521581	.05	1
Bases	302	9.324503	22.10772	0	95
Adjusted Long-term Balance of Forces	302	.7993212	.2608836	.2462212	1.503868
Executive Constraints on C	302	4.675497	2.419603	1	7
Democratic C	302	.5364238	.4994992	0	1
Involved	302	.5496689	.4983527	0	1
Democratic Alliance	302	.5364	.4995	0	1
Nuclear C	302	.3940397	.4894545	0	1
Unified	302	.6721854	.470196	0	1
Short-term Balance of Forces	302	1.024783	.4985791	.36	2.88
Tit-for-Tat	46	.6956522	.4652151	0	1
Firm-but-Flexible	46	.5217391	.505047	0	1
Territory	46	.5217391	.505047	0	1
Ongoing Dispute	46	.5217391	.505047	0	1
Immediate Balance of Forces	46	.561087	.2795888	.15	1.1

In addition to these descriptive statistics, I perform some initial examinations of the data to ascertain if any problems exist. As a first cut, I attempt to determine if any

multicollinearity exists between any of the independent variables.¹¹⁰ Multicollinearity, as noted by Hanushek and Jackson (1977, 87-89), exists when two or more independent variables are highly correlated in a sample of the data. High degrees of collinearity among independent variables calls into question the assumption that the independent variables are independent of one another.

I examined the correlation matrix of all of the independent variables to determine whether multicollinearity is a problem with my independent variables. As a good rule of thumb, multicollinearity is problematic if the absolute value of any variable is correlated with any other variable at the level of .75 or higher. Upon inspection of this matrix, the only variables that have any potential problems arising from multicollinearity are XCON and DEMC. Both of them, as noted above, are a means of measuring domestic audience costs in democratic states. Hence, it is not surprising that they are correlated at such a high level (.828). However, since they are not used in the same equation, this high correlation is not damaging to the empirical analysis conducted in the next chapter.

5.8 Conclusion

Prior to empirically testing the implications of my formal models, I made an initial examination of the data and its implications. This second examination of the data is more of a descriptive nature than one assessing the nature of the data's proper measurement and specification. As was noted in chapter 4, there exist six distinct outcomes of the formal model. In Table 5.5 I break down the 302 cases of attempted deterrence via alliance, and categorize them with their respective outcomes.

¹¹⁰ In the next chapter I examine the data for an additional potentially confounding factors: autocorrelation

Table 5.5
Distribution of the Model's Outcomes

Outcome	Number of Cases
Status Quo	256
ACQ _B	3
BD _A	27
BD _A [*]	0
CN _{AB}	5
CN _{ALL}	11

A number of interesting items emerge from this initial examination of case distribution. First of all, extended general deterrence has a tendency to be successful. In 256 of the 302 total cases, the status quo is the outcome. In the 46 remaining cases, an aggressor backs down in 27 of the 46 cases. Thus, in 58.7% of all extended immediate deterrence cases identified here, the aggressor did not gain its objectives. This is a good indication that alliances have a decent impact on ensuring that crises do not escalate in the event that extended general deterrence falters.

In the remaining 19 cases in which extended general deterrence was unsuccessful, 14 of these 19 cases involved the active military intervention of the defender on behalf of its protégé. This preliminary analysis calls into question the assertion that has been made regarding the impact that alliances have on the onset of conflict. It also calls into question the conventional wisdom regarding the reliability of alliances as well.

These preliminary statistics only reveal some rough indicators regarding the effectiveness of extended deterrence via alliance. Further analysis is required to determine why alliances serve as such good deterrent. In the following chapter I discuss the methodological means by which I will test the propositions presented in this chapter.

Having outlined the variables that comprise the empirical portion of these tests, I now turn to the statistical testing of my game-theoretic models.

CHAPTER 6

EMPIRICAL TESTS

6.1 Introduction

In this chapter I present a means of testing the propositions that emerged from my formal models. I have argued throughout this dissertation that extended general deterrence and extended immediate deterrence are linked as part of a larger process. One cannot assume that extended immediate deterrence encounters occur without first acknowledging that extended general deterrence faltered. If one assumes that the two processes are unrelated, then one is introducing selection bias into the statistical framework. Such bias can possibly introduce errors into the statistical estimation, and provide misleading results.

In this chapter I outline a statistical method that can account for this selection bias in related equations. Specifically, I utilize a bivariate probit model that accounts for selection (Dubin and Rivers, 1989; Reed, 1999). Since this method is based upon the maximum likelihood probit model, I first outline the assumptions underlying a probit specification. I then provide separate probit models for my two equations, extended general deterrence success and extended immediate deterrence success. These estimates serve as baselines to which we can compare a more properly specified model that accounts for the selection process.

Building upon the initial probit estimates, I then delineate why a bivariate probit model that accounts for selection is the more appropriate means for testing the theory developed in this dissertation. I present estimates from the bivariate probit model, and compare them with the standard probit results.

Having empirically tested my models, I move to a discussion of what the results mean in a substantive fashion. I examine the substantive effects of my independent variables, and interpret their impact within the context of the six cases I have been tracing throughout this dissertation. I focus on the role that the signals sent by the defender at both the general and immediate levels have on ensuring deterrence effectiveness, and the perceptions that a potential aggressor develops given these signals.

6.2 The Probit Framework

Most political scientists that are trained in quantitative methodologies are familiar with linear regression. Specifically, they tend to be most familiar with ordinary least squares (OLS), a technique that assumes that the model being estimated is linear in nature, and that the dependent variable of interest is normally distributed and continuous. An OLS regression equation assumes the following functional form:

$$y_i = \alpha + \beta x_i + \varepsilon_i, i = 1, \dots, n \quad (1)$$

In the above equation, known as the classic linear regression model, a certain number of assumptions are made. These are as follows:

1. The disturbance term of the equation has a mean of 0. $E[\varepsilon_i] = 0$ for all i .
2. Homoskedasticity, which assumes that the variance σ^2 is a constant for all i .
3. Non-autocorrelation among the disturbance terms, $\text{Cov}[\varepsilon_i, \varepsilon_j] = 0, i \neq j$.
4. The regressor x and the disturbance term ε_i are not correlated, $\text{Cov}[x, \varepsilon_i] = 0$ for all i and j .

In the models being estimated in this dissertation, these assumptions are not met. The classic linear model assumes a continuous measure for the dependent variable y . In the models being estimated below, the dependent variables are both dichotomous, coded

as 0 and 1. Hence, attempts at estimating the equations of interest with OLS would lead to results that are misleading.

Instead of linear regression techniques I utilize maximum likelihood estimation (MLE) procedures (Aldrich and Nelson, 1984; Eliason, 1993; Fisher, 1950; King, 1989). Maximum likelihood provides a means of estimating equations that are nonlinear in nature, with dependent variables that are dichotomous (or non-continuous). The logic of MLE is aptly captured in the following quote. “Find an estimate for Θ such that it maximizes the likelihood of observing those data that were actually observed” (Eliason, 1993, 7-8).

I have the option of using two different model specifications to estimate my equations. The first functional form would be the logit equation, which has the following functional form:

$$Pr(\text{extended general (immediate) deterrence success}) = \frac{1}{1 + e^{-XB}} \quad (2)$$

where the equation is read the probability of extended deterrence success and XB are the independent variables in the equation.

Alternatively, the probit specification could be used. The functional form of the probit equation is:

$$Pr(\text{extended general (immediate) deterrence success}) = \Phi(B'x) \quad (3)$$

where the equation is read the probability of extended deterrence success and B'x are the independent variables in the equation being estimated.

Regardless of which specification is used, the statistical results will be virtually identical.¹¹¹ In the analysis conducted below I use the probit specification. Although probit results are a bit more difficult to interpret than are logit results, I feel that probit is more appropriate, given that the following section will estimate the model with a bivariate probit specification.¹¹²

6.2.1 The Statistical Models to be Tested

Having noted the methodology being used to test my two statistical models, I now turn to a specification of the equations to be estimated. The first equation concerns itself with extended general deterrence success. The second equation concerns itself with extended immediate deterrence success. The first equation, therefore, can be written as follows:

$$y = c + b_1x_1 + b_2x_2 + b_3x_3 + b_4x_4 + b_5x_5 + u \quad (4)$$

where y is the dichotomous dependent variable extended general deterrence success (EGDSUCC), $x_1 \dots x_5$ represent the parameters from the formal models that are being estimated, and the symbol in parentheses afterwards denotes the expected sign of the statistical coefficient;¹¹³

c = constant term

x_1 represents the security commitment component of the equation (+)

¹¹¹ Good discussions of the use of binary choice models can be found in Greene (1993, ch. 21).

¹¹² King (1989, 112) discusses how to transform probit estimates into logit estimates and vice versa.

x_2 represents the autonomy component of the equation (+)

x_3 represents the domestic costs component of the equation (-, +)

x_4 represents the beliefs component of the equation. (+)

u = error term.

The second equation to be estimated is concerned with extended immediate deterrence, and the determinants of its success or failure. The second equation can also be written in the following manner:

$$y = c + b_1x_1 + b_2x_2 + b_3x_3 + b_4x_4 + u \quad (5)$$

where y is the dichotomous dependent variable extended immediate deterrence success (EIDSUCC); x_1, \dots, x_4 represent the parameters from the formal models that are being estimated, and the symbol in parentheses afterwards denotes the expected sign of the statistical coefficient;

c = constant term

x_1 represents the balance of forces (immediate, short-term, long-term, nuclear capability of the defender) (+)

x_2 represents the issue at stake in the crisis (-)

x_3 represents the domestic political constraints on the defender (+, -)

x_4 represents the updated (posterior) beliefs of the aggressor (-)

u = error term.

Table 6.1 provides an overview of the variables to be examined in the empirical models being tested at the level of extended general deterrence. This table links the level of analysis, parameters from the formal models, and their empirical operationalization.

¹¹³ In the cases in which two different propositions can be tested, and the different propositions predict different signs on the coefficients, I specify the direction for both

TABLE 6.1**Parameters and Variables Influencing
Extended General Deterrence Success**

Parameter from Formal Model	Definition	Empirical Operationalization
m	Security Commitment	Arms transfers
“	“	Defense pact established
“	“	Bases established
y	Autonomy Benefit	Exports
“	“	Strategic Location
“	“	Democratic Alliance
“	“	Import of strategic raw materials
d	Domestic Political Constraints on Defender	Executive Constraints on Defender
“	“	Unified government
μ	Initial (prior) beliefs of attacker regarding defender's type	Credible Defender toward other allies
“	“	Involvement in other Crises
k	Military Balance	Short-term Balance of Forces
“	“	Long-Term Balance of Forces

In the same vein, Table 6.2 provides an overview of the variables to be examined in the empirical models being tested at the level of extended immediate deterrence. This table also links the level of analysis, parameters from the formal models, and their empirical operationalization.

estimates.

622

empir

conce

TABLE 6.2

**Parameters and Variables Influencing
Extended Immediate Deterrence Success**

Parameter from Formal Model	Definition	Empirical Operationalization
k	Balance of military forces	Immediate balance of forces
“	“	Short-term balance of forces
“	“	Long-term balance of forces
“	“	Nuclear capability of defender
x	Issue at stake in crisis	Territory
d	Domestic Political Constraints on Defender	Regime type of defender
“	“	Unified Government
μ^*	Updated (posterior) beliefs of attacker regarding defender	Tit-for-tat strategy of military escalation
“	“	Firm-but-flexible diplomatic strategy
“	“	Defender involvement in additional ongoing crisis
“	“	Past behavior of defender regarding protégé

6.2.2 *Empirical estimates*

Having described the equations to be tested, we now turn our focus to the empirical estimates of these equations. Table 6.3 presents the results of the equation concerning extended general deterrence, and Table 6.4 presents the results of the equation

concerning extended immediate deterrence. Both equations were estimated with a probit specification.¹¹⁴

In these statistical estimates I also make every attempt to control for a problem that often plagues empirical models of this sort. Of great concern here is the issue of autocorrelation. Autocorrelation (or serial correlation) is a problem that often plagues time series models. It generally occurs when “measurement errors lead to the same difficulties or problems encountered during several successive time periods” (Hanushek and Jackson, 1977, 143). Autocorrelation, when it is present, causes parameter estimates to be inefficient, although they remain unbiased. The standard error of the variable is often increased when autocorrelation is present, and this decreases the t-statistic, which may cause a researcher to reject it as being insignificant, even if this is not actually the case.

In data such as those being analyzed here, autocorrelation is often a major issue. This is because the data under analysis are binary cross sectional time series (BCSTS) data.¹¹⁵ Simply put, the data here is a set of groups, each group being measured according to some temporal constraint. In the analysis being conducted here, the year is

¹¹⁴ All estimates used in this dissertation were derived using the Stata 6.0 statistical program. Data was entered into SPSS format for ease of manipulation, and then the Stat Transfer package was used to transform the SPSS data into Stata format. I also ran the model in SPSS to ascertain that the results did not differ. The statistical estimates were identical.

¹¹⁵ Beck and Katz (1995) deal with the issue of autocorrelation in time-series cross sectional (TSCS) models. However, this assumes a continuous dependent variable. Their discussion is of importance in that it calls researchers attention to the issue of autocorrelation in the context of cross-sectional data. Beck, Katz, and Tucker (1998) extend this discussion to the study of BTSCS data. I utilize their techniques below to ascertain if autocorrelation is present in my statistical model of extended general deterrence success.

the temporal unit of analysis. The problem that arises is that the dependent variables may be influenced by temporal problems. In a first attempt to account for any possible temporal problems with the data, I run the statistical estimates using robust standard errors. Robust standard errors assist in correcting for temporal autocorrelation among the data.¹¹⁶

Both models presented below are the result of testing a variety of empirical specifications in order to obtain the best fit. In both cases at least one variable represents the parameters from the formal models, as outlined in tables 6.1 and 6.2.

¹¹⁶ For more on the role of robust standard errors, a good introduction is Beck (1996). Greene (1993, 308-309) discusses the role of robust estimates in econometric models. Beck, Katz, and Tucker (1998) discuss the role that autocorrelation plays in BTSCS models. For the original discussion of robust standard errors, see Huber (1967) and White (1980).

TABLE 6.3

**PROBIT ESTIMATES OF EXTENDED GENERAL DETERRENCE
SUCCESS**

Variable	Concept	Coefficient (Robust Standard Error)	P > z
DEFPACT	Security Benefit	.5372159 (.2166767)	.013
EXPORT	Autonomy Benefit	8.21895 (4.328146)	.058
DEMBC.	Autonomy Benefit	-.4939739 (.2328589)	.034
STBAL ¹¹⁷ (logged)	Military Balance	3.25e-07 (4.40e-08)	.000
XCONC	Domestic Constraints on C	-.0479043 (.0442018)	.278
INVOLVED	Initial Beliefs	-.3435184 (.1971593)	.081
CONSTANT		.7766715 (.2298518)	.001

N= 302

χ^2 (6) = 89.09

Null Model = 84.77%

Pseudo R^2 = .0784.

Prob. > χ^2 = 0.000

Cases properly predicted = 90.5%

Log-Likelihood = - 118.76899

¹¹⁷ I take the log of the short-term balance of forces in each equation in order to account for the overwhelming advantage some countries have in regards to manpower.

TABLE 6.4**PROBIT ESTIMATES OF EXTENDED IMMEDIATE
DETERRENCE SUCCESS**

Variable	Concept	Coefficient (Robust Standard Error)	P > z
IMMBAL	Military Balance	1.04627 (.825643)	.205
STBAL (logged)	Military Balance	.0000685 (.0000428)	.110
BASE*ARMS	Security Benefit	.0238293 (.0080145)	.003
DEMC	Domestic Constraints on C	.795814 (.5786693)	.169
TERRITORY	Issue at Sake for A	-1.603661 (.5561154)	.004
FIRMBFLE	Updated Beliefs of A	.3427852 (.5041317)	.497
Constant		1.062651 (1.01146)	.293

N= 46

Pseudo R² = .3336 Cases properly predicted = 87.0% χ^2 (6) =40.49Prob. > χ^2 =0.000

Log-Likelihood = - 20.782421

Null Model = 52.2%

Prior to any discussion of these models, I examine the extended general deterrence model for the presence of autocorrelation. To test for autocorrelation in my extended general deterrence model, I utilized the BTSCS temporal dummy variable method of Beck, Katz, and Tucker (1998). For my estimated model without any corrections for temporal correlation, I obtained a chi-square statistic with 6 degrees of freedom of 89.09. I then created temporal dummy variables to account for any potential

autocorrelation within the model.¹¹⁸ The model with the temporal dummies yielded a chi-square statistic with 8 degrees of freedom of 34.31. A log-likelihood ratio test of the two models gives a probability of 0.3564. Hence, duration dependence is not present in the extended general deterrence model being estimated here. Inclusion of temporal dummy variables in such a model leads to induced multicollinearity and hence problems in the estimation, including improper standard errors.

Having examined the model for autocorrelation, I now turn to some initial discussion of the implications of the estimates. In both models I discuss the overall power of the model, and the impact that the individual coefficients have on the dependent variable. I then present some analysis based on the substantive effects that each independent variable has on the dependent variable. I concern myself first with the influences on extended general deterrence.

6.2.3 Predicting Extended General Deterrence Success

In regards to extended general deterrence, the empirical estimates lend credible support to the theoretical suppositions made in chapter 3: that potential aggressors respond to opportunities within their structural environment; constraints on an executive make it harder for defenders to ensure deterrence credibility; and signals that are observed from trading security and autonomy play a major role in providing extended general deterrence success. The overall model is statistically significant at the .0000 level, and predicts 90.5 % of the cases correctly, and all coefficients are in the predicted direction.

¹¹⁸ These procedures are discussed in some detail in Beck, Katz, and Tucker (1998). For a Stata program that calculates temporal dummy variables, see Richard Tucker's website (www.fas.harvard.edu/~rtucker).

Each of the six variables is statistically significant below the $p < .10$ level, and two (DEFPACT and DEMBC) are significant below significant below the $p < .05$ level. And, as prior theories of deterrence suggest, military capabilities (STBAL) is significant at the $p < .01$ level.

Since MLE coefficients are non-linear in nature, they cannot be interpreted in a manner similar to OLS coefficients. Therefore, in order to interpret their overall impact on a dependent variable, we need to resort to a different method. I will use here a technique called marginal effects, or method of first differences (King, 1999, 106-108). According to Quinones and Gates (1995, 72, n. 27), “marginal effects are not equal to the coefficients. ...By calculating the marginal effects of each independent variable, it is possible to determine the effects of a change in x on predicted probabilities for different values of the dependent variable”.

In a more technical vein, the following is a discussion of how marginal effects are calculated. If we hold all independent variables save one constant at their mean, we can then examine the marginal impact the one remaining variable has on the dependent variable. This allows us to alter the specification of the model, and see what happens as values of the independent variables are fluctuated. Table 6.5 demonstrates the substantive effects the independent variables have on extended general deterrence.

TABLE 6.5

**SUBSTANTIVE EFFECTS OF INDEPENDENT VARIABLES ON
EXTENDED GENERAL DETERRENCE SUCCESS**

Variable	Variable Held at Minimum Value	Variable Held at Maximum Value	Percentage Change
DEFPACT	.06	.22	+.16
EXPORT	.04	.07	+.03
DEMBC	.06	.01	-.05
STBAL	.04	.08	+.04
INVOLVED	.02	.01	-.01
XCONC	.05	.02	-.03

As can be seen from the substantive effects, the costly signaling theory is lent fair amount of credence at the level of extended general deterrence. If we move the variable DEFPACT from its empirical low to its empirical high, the probability of extended general deterrence being successful increases by 16%. If we examine this in more detail, it is not surprising.

The signing of a defense pact on the part of a defender signifies a much greater commitment to defending an ally. Partaking in a defense pact tends to have additional effects for both parties as well. In the case of the United States and West Germany, the United States used its power and prestige to protect the nascent Federal Republic from Soviet aggression. After varied attempts to change the status on the European continent, the Soviet Union ceased these actions after 1961. The magnitude of the American commitment to West European security in general, and to German security in particular, sent messages to the Soviets that the American presence in Europe was permanent. The

costly signals that the United States was able to send through its strong alliance commitment to West Germany helped prevent any challenges after 1961.

Although the costly signal has such a large impact, it should also be noted that the other variables in the equation also exert influence on whether extended general deterrence succeeds or fails. As expected, the military balance between the alliance and potential attacker is quite important. As the short-term military balance is fluctuated from its empirical low to its empirical high, the probability of extended general deterrence succeeding increases by 4%.

It should be noted that it is the short-term balance, not the measure of national capabilities, which has the greater influence on deterrence success. This corroborates the findings of Huth (19880, who discerned that challengers hope for quick victory, and will strike when they feel it is opportune. The national capability measure is important for a long-term war of attrition, but it plays little role in determining whether or not an attack is imminent. This helps explain why we witness conflicts that are asymmetric in nature; that is, war initiation by a weaker power. It is the hope of the challenger that if the short-term balance is in its favor, it can prevail.

The actions taken by Germany during the Czech crisis of 1939 illustrate this nicely. Germany realized that if it annexed Czechoslovakia, it might possibly incur the wrath of the British and the French. However, the German short-term balance was favorable compared to the British and French, who could not mobilize troops quickly enough to fight the German threat. In this case, the advantage lay with the Germans, and they exploited it to its full potential.

Autonomy benefits play quite a role in determining whether or not extended general deterrence succeeds or fails. One of the key benefits defenders receive from allying with minor powers is the ability to gain access to foreign markets. As the EXPORT variable demonstrates, as the level of export from a defender to a protégé increases, the probability of deterrence being successful increases 3%.

If we go back to the nineteenth century, we see that the role of economics played quite a part in the decision of Austria-Hungary to ally with Serbia and with Romania. As Langer (1950) points out, the decision to ally with both of these states was an Austrian desire and need for greater access to markets (along with an importation of raw materials needed for the military). Although the importation of strategic materials is not statistically significant, the ability to export signifies a greater willingness for a defender to fight on behalf of a protégé if a crisis erupts. In the years that Austria maintained its alliance ties with these two Balkan states, only two crises erupted. Both were quite minor, and settled due to Austria's rapid involvement. In her zeal to protect economic interests, Austria reacted quickly to threats to her small allies.

Two variables that coincide are the democratic alliance variable and the executive constraints variable. Both of them have a negative impact upon the success of extended general deterrence. DEMBC decreases the likelihood of deterrence success by 5% as it is fluctuated between its empirical low and high, and XCONC decreases the likelihood of deterrence success by 3% as it goes from its low to high values.

As was argued in earlier chapters, both of these variables address regime characteristics and willingness of states to make concessions to their allies. In the case of similar regime types, the implication is that democracies will be less willing to coordinate

policies with alliance partners, due to the fear that it would infringe upon their sovereignty. As France found out in the interwar period, the Belgian refusal to coordinate common defense policies or permit French bases on Belgian soil was largely a belief on the part of the Belgian government that to do so was a violation of Belgian independence. However, as the United States has found out in regards to South Korea and Taiwan, it is much easier to coerce a non-democracy into making concessions over policy or base establishment.

This leads into a discussion of the impact that executive constraints have upon ensuring effective deterrence policies. As was suggested in chapter 3, the more constraints that are placed upon a government, the harder it is for that government to credibly commit to other states. Hence, democracies may find themselves the targets of aggression, or find their allies as more common targets due to the conception that the democracy will not intervene. It appears from the analysis that it is merely the presence of constraints at the institutional level that matter, rather than the presence or absence of a single-party unified government. This calls into question some of the beliefs that state that certain types of government are more or less vulnerable to external pressures. Rather, it provides an indication that it is an institutional constraint that matters more.

Finally we turn to an analysis of beliefs and their impact on when extended general deterrence will succeed or fail. Contrary to many other beliefs (Mercer, 1996; Schelling, 1960), credibility does not appear to be an important factor at the level of general deterrence. Past behavior also does not appear to play a role in determining whether extended general deterrence succeeds or fails. These findings, since the faith in them has driven much of the foreign policy process during the post 1945 era, warrant

further investigation. However, it is interesting to note that if a defender has been involved in a dispute during the previous year, extended general deterrence success decreases by 1%.

This can, I maintain, be explained by the fact that attackers recognize vulnerabilities in defenders, and act upon them. China, for example, tended to initiate attacks on Taiwan in the 1950s when the United States was either currently involved in another dispute or had recently been involved in one. “War-weariness” makes it difficult for defenders to respond to every provocation that arises, at least in the minds of the challengers. If the issue is that pressing to an attacker, it will often use the defender’s dispute involvement as a good clue as to when to make a demand.

6.2.5 Predicting Extended Immediate Deterrence Success

Having discussed the influences that shape extended general deterrence success, our attention now turns to the situation that occurs when extended general deterrence fails. As I argued in chapter 3, while extended general deterrence failure is largely due to changing opportunities within the international system, when it comes to immediate deterrence success or failure, it is the more contextual factors that matter, notably the costly investments that are made and the balance of military capabilities.

When it comes to predicting the success of extended immediate deterrence, the overall model is quite successful. It is statistically significant at the .0000 level, and all of the coefficients are in the proper direction. It predicts 87% of the cases correctly, with a null model predicting 52.2% of the cases properly.

However, when it comes to interpreting the individual variables, the results are not as successful. Only two variables (TERRITORY and BASE*ARMS) are statistically

significant below the $p \leq .01$ level. Others, notably the military balance variables (IMMBAL and STBAL) and the domestic constraints variable (DEMC) are close to being statistically significant, but do not meet the criteria that is conventionally accepted. Due to this, I suspect that there is some sort of modeling issue that is affecting the results. It is to account for such problems that I utilize a bivariate probit model with selection.

In the following section I introduce the bivariate probit model that accounts for selection. As the discussion demonstrates, modeling extended immediate deterrence encounters without accounting for the failure of extended general deterrence can lead to erroneous estimates.

6.3 The Bivariate Probit Model with Selection: Accounting for Selection Bias

While the models above are statistically significant in their own right, there is something lacking. This is especially the case with the equation that estimates extended immediate deterrence success. As was argued in chapters 3 and 4 extended deterrence must be viewed as a process, with immediate deterrence encounters being a subset of general deterrence failures. Additionally, as I maintained in chapter 3, and demonstrated in the formal models in chapters 4, extended immediate deterrence encounters arise directly out of the failure of extended general deterrence. The two distinct probit models estimated above, however, do not capture this sequential process.

There exist two distinct alternatives to modeling extended general deterrence and extended immediate deterrence as an interrelated sequential process. The first, as was done above, is to model the two equations separately. This assumes that no dependence exists between the two stages of the deterrence process. However, as our theory demonstrates, this assumption is not realistic.

The second alternative would be to use a modification of the Heckman (1979) two-step procedure. Huth (1996) utilized such a method in his study of territorial disputes. This procedure estimates two probits (or logits), and saves their predicted probabilities. The predicted probabilities from the first equation are transformed into Mill's inverse ratio. This new variable would be included in the extended immediate deterrence equation, and captures the selection effects that may be existent in the models. Unfortunately, it assumes that one has properly specified the exact population of cases (in this analysis, the entire population of extended deterrence via alliance cases). It also produces results that are heteroskedastic and inefficient.

Given that the two options discussed above are problematic, there is a third means of estimating the two equations to account for the fact that the extended immediate deterrence equation is a subset of the larger, extended general deterrence, phenomenon. This is through the use of a bivariate probit model with selection, as developed by Dubin and Rivers (1989), and utilized by Reed (1999) in a study of conflict initiation and escalation.¹¹⁹

A bivariate probit model assumes the following model structure:

$$y_1^* = X_1\beta_1 + u_1 \quad (3)$$

$$y_2^* = X_2\beta_2 + u_2 \quad (4)$$

¹¹⁹ Brehm and Gates (1997) also utilize a similar framework in their study of bureaucratic oversight. See Greene (1993, 360-363) for a brief, yet detailed description of this procedure.

Let y_1^* be the dependent variable extended general deterrence success, and let y_2^* represent the dependent variable extended immediate deterrence success. We only observe y_2^* if y_1^* is equal to 0; that is, extended general deterrence has failed.

Implicitly assumed in the independent equations estimated above is the notion that the value of the error term, u , is uncorrelated between the two models. Hence, it assumes that the covariance $Cov [u_1, u_2] = 0$. However, given the nature of the theory specified above, we cannot assume that the two models are unrelated. Given this belief, we can assume that $Cov [u_1, u_2] = \rho$. This symbol, ρ , captures the selection effects that transpire between the two equations being estimated.

With these assumptions, therefore, we can write the likelihood function of the bivariate probit model with selection as follows:¹²⁰

$$\begin{aligned} \text{Log } L = & \sum_{y_1=0} \log (1-\phi (\beta_1 X_1)) \\ & + \sum_{y_1=0, y_2=0} \log \phi_2 ((\beta_1 X_1, (\beta_2 X_2, -\rho)) \\ & + \sum_{y_1=1, y_2=1} \log \phi_2 ((\beta_1 X_1, (\beta_2 X_2, -\rho)) \end{aligned}$$

Having specified the likelihood function for the model being estimated some clarifications on the terminology in the function are in order. ϕ is the distribution of the univariate normal function, and ϕ_2 is the bivariate normal distribution function. The first term on the right side of the equation relates to the censored observations that are an issue of extended general deterrence never fails. The second and third terms on the right side

¹²⁰ This likelihood function comes out of work conducted by Meng and Schmidt (1986), and has been used by Brehm and Gates (1997), Dubin and Rivers (1989), and Reed (1999) in their studies of similar models.

relate to those cases in which extended general deterrence fails but does not escalate (extended immediate deterrence success), and those cases in which the crisis escalates (extended immediate deterrence failure).

6.3.1 Empirical estimation with the bivariate probit model with selection

Having discussed the framework within which we will estimate the two-equation model, we now turn to an estimate of the fully specified model. The variables in the bivariate model are identical to those estimated above. The results of the model are presented in Table 6.7.¹²¹

¹²¹ The model was estimated in Stata 6.0 using the nested command.

Log
Sar

* =

TABLE 6.6

**A UNIFIED MODEL OF EXTENDED GENERAL DETERRENCE AND
CRISIS ESCALATION USING BIVARIATE PROBIT ANALYSIS**

Variable	Unified Model β (std. Error)	Extended General Deterrence Success Only β (std. Error)	Extended Immediate Deterrence Success Only β (std. error)
DEFPACT	.5372 (.2167)**	.5372 (.2167)**	
EXPORT	8.218 (4.328)*	8.218 (4.328)*	
DEMBC.	-.4940 (.2329) **	-.4940 (.2329) **	
STBAL (logged)	3.25e-07 (4.40e-08)***	3.25e-07 (4.40e-08)***	
XCONC	-.0479 (.0442)	-.0479 (.0442)	
INVOLVED	-3.435 (1.971) *	-3.435 (1.971) *	
IMMBAL	.9854 (.7628) *		1.046 (.8256)
STBAL	.209 (.397) **		.0000 (.0000)
DEMC	.637 (1.458) **		.7958 (.5787)
BASE*ARMS	.025 (.0074) ***		.0238 (.0080) ***
TERRITORY	-1.54 (.5329) ***		-1.604 (.5561) ***
FIRMBFLE	.3046 (.4871) *		.3428 (.5041)
ρ SELECTION EFFECT	-0.7413 (.0494)***		
Log-Likelihood	-121.59	-118.77	-20.78
Sample Size	302	302	46

* = $p \leq .10$; ** = $p \leq .05$; *** = $p \leq .01$

As can be seen with just a cursory glance, the bivariate probit model that accounts for selection does a much better job of estimating the entire extended deterrence process than do the two independent probit equations. From this, two issues arise. First of all, the value for ρ that captures the selection effects within the model is negative, and it is statistically significant. If extended general deterrence failure and extended immediate deterrence success were two unrelated events, then the ρ would not be significant. In other words, we could assume that $\rho = 0$, and that the two equations are actually independent. However, this is not the case. By examining the two equations independently, we are failing to account for the wider range of a larger political process that is taking place.

Secondly, the bivariate probit model that accounts for selection demonstrates that the variables that influence extended immediate deterrence success are statistically significant after the selection effects have been accounted for. Therein lies the major reason for using this modeling technique: it accounts for problems that tend to go unrecognized when individual probit estimates are made.

6.3.2 General Implications of the Unified Model using Bivariate Probit Modeling

Before turning to the substantive interpretations of the variables that influence extended immediate deterrence success, I wish to delineate the success that the bivariate probit with selection has in testing the signaling model outlined in chapter 4. It cannot be noted enough that extended deterrence is a sequential process. As the empirical evidence in Table 6.7 demonstrates, costly signaling through investment plays a major role in determining when extended general deterrence will succeed, and when extended immediate deterrence will be successful if general deterrence falters.

As was seen in the equilibrium analysis of the models in chapter 4, greater investments on the part of the defender lead to a situation of certainty, and thus lead to deterrence success. These help ensure deterrence credibility at the level of extended general deterrence. And, as the unified model demonstrates, these investments, especially in the guise of arms and bases, help in resolving crises as well. Additionally, the model lends support to the argument made by Fearon (1994a, 1994b) that domestic political costs play in resolving a crisis. And, as a majority of deterrence theorists suggest, the role of military might is also quite important at both levels of deterrence.

The results here demonstrate the predictive qualities of the signaling model quite strongly. In cases where enough investments have been made by a defender on behalf of a protégé, extended general deterrence succeeds. And, when it is challenged, these investments help to resolve the crisis without escalation. Additionally, the model predicts, and is borne out by the statistical results, that under certain conditions deterrence, both extended and immediate, will fail. As the empirical estimates show, when the issue at stake for the attacker is territorial in nature, extended immediate deterrence is much more likely to fail. As much of the historical evidence suggests, cases of deterrence failure tend to emerge from territorial disputes. Thus, the empirical findings in this chapter, notably with the bivariate probit modeling technique, lend a large amount of support to the costly signaling theory developed in this dissertation.

The statistical modeling technique helps correct for deficiencies found in modeling the two deterrence scenarios as distinct processes, and accounts for the selection bias that often occurs within studies of deterrence. With these thoughts in mind,

I turn now to a substantive interpretation of the variables that influence extended immediate deterrence success.

6.3.3 *Predicting Extended Immediate Deterrence Success*

Having noted that the estimates provided by the bivariate probit model differ for the extended immediate deterrence equation, I now turn to an analysis of the substantive effects of these variables on influencing extended immediate deterrence success. Once again I use the marginal effects technique to test the influence of each independent variable on the success of extended immediate deterrence success. Table 6.6 presents these substantive effects.

TABLE 6.7
SUBSTANTIVE EFFECTS OF INDEPENDENT VARIABLES ON
EXTENDED IMMEDIATE DETERRENCE SUCCESS

Variable	Variable Held at Minimum Value	Variable Held at Maximum Value	Percentage Change
IMMBAL	.09	.16	+.07
STBAL	.14	.303	+.163
DEMC	.132	.232	+.10
BASE*ARMS	.10	.25	+.15
TERRITORY	.32	-.689	-.36
FIRMBFLE	.08	.142	+.06

As we examine the factors that influence extended immediate deterrence, we are immediately struck by the fact that military capabilities play a much greater role in determining whether deterrence succeeds or fails. Once again, the short-term military balance is most important, and the immediate balance of forces is also quite influential.

This is quite logical and intuitive, given that states do not desire to fight prolonged wars. As in the case of extended general deterrence, the long-term capabilities of a state do not appear to matter.

If we turn back to the Serbian Bulgarian War of 1885, we notice that the immediate balance of forces favored the Bulgarian offensive aimed at the Serb forces. However, when the Bulgarian leadership factored in the Austrian intervention, and the power that the Austrian army would have been able to provide to the Serbs, they felt that they had not option but to back away from their demands. The possibility of fighting one of the strongest armies in Europe was not appealing to the Bulgars at the time.

Interestingly enough, the presence of nuclear weapons on the part of the defender does not serve a deterrent purpose. In the 1978-79 Sino-Vietnamese War, the Soviet Union had the ability to defend its Vietnamese protégé with nuclear weapons. The possibility of a nuclear strike, albeit remote, did not deter the Chinese from launching an attack against their Vietnamese adversaries. Nuclear weapons do not seem to play a role in extended deterrence encounters, most likely because they do not pose credible threats.

The establishment of both bases and arms, which are costly investments on the part of a defender, have a major impact on determining whether extended immediate deterrence succeeds or fails. If we fluctuate the interactive variable $BASE*ARMS$ from its empirical low to its empirical high, the probability that extended immediate deterrence will succeed increases by 15%. This again lends support to the costly signaling argument advanced in this dissertation. Such actions are costly for defenders to undertake, and to throw these investments away without any attempt at protecting them is not in their best interest.

The American ability during the Cold War, both within Europe and in regards to Taiwan, exemplifies this finding. The United States maintained a vast network of military bases in Western Europe and Taiwan, with many of these bases being concentrated in West Germany. The United States during the Cold War was the largest arms supplier to both these countries. In many cases, the United States was the sole provider of weaponry for these states. These investments demonstrated American commitment to these states, and also allowed them to protect themselves in the event of a crisis.

Having noted the fact that leaders do not like to waste costs that have been invested, we now turn to an analysis of the role that domestic constraints play on extended immediate deterrence encounters. As Fearon (1994a, 1994b) has noted, defenders who are democratic in nature tend not to back down in crises due to pressures that they will feel at home. The empirical evidence presented here corroborates this finding. As we fluctuate the variable DEMC from its empirical low to its empirical high, the probability of deterrence succeeding increases by 10%. This links in quite well with the concept that costly signals can be viewed as investments made by defenders. If the leaders of a democratic state renege on their promises, and let their investments go to waste, then they may face removal at the hands of the people they are sworn to serve.

The role of updated beliefs plays a minor role in determining when extended immediate deterrence will succeed or fail. If a defender adopts a policy that is firm but flexible (FIRMBFLE), the likelihood that extended immediate deterrence will succeed increases by 6%. In the case of the United States being a defender of West Germany, we notice that the United States was never willing to concede on issues regarding Berlin to

the Soviets. However, in 1958, and in 1961, the United States was able to make political overtures to events in the Middle East and in East Asia that mollified the Soviets, and showed that while the United States would be firm on the issue of Berlin, it was willing to work with the Soviet Union on cooperating in other spheres.

The final factor that influences extended immediate deterrence success is the issue of territory. If the issue at stake is territorial in nature for the aggressor, the likelihood that extended immediate deterrence will succeed decreases by 38%. This is not surprising, given that a majority of conflicts throughout human history have been territorial in nature. If we examine again the onset of the Second World War, we see this in stark detail. Germany, seeking living space in the East, launched an attack on Poland in September 1939. Despite French and British intervention, Germany could not be deterred and forced to back down.

6.4 Conclusion

The more unified structure found within the bivariate probit modeling specification is a more accurate test of the theory outlined in chapter 3, and formalized in chapter 4. In many cases, potential aggressors witness events within their strategic environments, and find it opportune to initiate a crisis and make a demand of another state. However, as was argued in chapter 3, when extended general deterrence fails, the success or failure of extended immediate deterrence is largely based upon military might and the willingness to become involved in a conflict.

The case of the Serbian-Bulgarian War of 1885 provides a perfect illustration of this concept. Bulgaria, sensing weakness on the part of the Serbs, launched an attack. Serbia was weakened, and Bulgaria was rapidly gaining on the offensive. However, the

threat of Austrian intervention changed the decision calculus of the Bulgarian leaders. Faced with overwhelming military power, the Bulgarians were forced to back down from their demands.

Extended general deterrence failure, therefore, can be viewed as a process that sets the stage for further escalation of conflict. As was noted, in only 46 of the 302 cases of attempted extended general deterrence did a crisis erupt. The results of the model above suggest that costly signaling does help enhance a defender's credibility and create an aura of certainty within the international system. If we as researchers are interested in deterrence failure and the escalation of crises, either in the case of alliance commitments or not, we need to address the issue of interdependence between the two distinct events. Failure to do so leads to erroneous conclusions at worst and only partially correct conclusions at best.

In this chapter I have empirically estimated the implications of my costly signaling model, and have found support for the propositions that were derived from the formal analysis. Using a dataset that I developed to test cases of extended deterrence via alliance, I have discerned that costly signaling plays a major role in deterrence effectiveness. Rather than focus on military capabilities, as so many deterrence theorists have in the past, I have chosen to examine the actions that a state takes in order to make its commitments to an ally credible. While not denying the central role of military prowess and might in the study of deterrence, the findings posed in this chapter suggest that we need to concentrate more on the interactions between structural environment and the goals of the individual actors. As references to the various cases suggest, military might has not always been the best means of providing a peaceful status quo.

This chapter has also highlighted some of the methodological concerns that arise when we attempt to analyze complex political processes. As the bivariate probit analysis demonstrates, in order to understand extended immediate deterrence success, we need to understand the conditions in which extended general deterrence faltered in the first place. If we are to engage in studies that address such concerns, we need to utilize appropriate methodologies in order to arrive at reasonable statistical inferences.

I have maintained throughout this dissertation, and demonstrated theoretically and empirically, that costly signaling can induce deterrence stability. I have argued that we need to utilize appropriate methodological tools in order to understand both strands of deterrence as an interdependent process. The empirical estimates lend credence to the arguments posed in earlier chapter. The empirical results corroborate the findings of the theoretical model, and are rigorously derived from the formal specification of the theory developed earlier. Thus, we witness here both additive and integrative cumulation on the question of alliances and their impact on deterrence success or failure.

In the following chapter I summarize the findings of this dissertation. I discuss the cumulative findings that have emerged from it, and make suggestions for further research agendas in the area of alliances and deterrence.

CHAPTER 7

CONCLUSION

7.1 Introduction

This dissertation began with the simple question “what impact do existing alliances have on the success of extended deterrence?” As I have endeavored to answer this question, I have ventured into game-theoretic models of signaling, cross-sectional and cross-temporal statistical issues, and in-depth analyses of various alliances. I have learned that this question, while simple in origin, does not have a simple answer.

In the following pages of this conclusion I summarize the implications of my analysis, both formal and empirical. In doing so I discuss what has been learned in this dissertation regarding the additive and integrative cumulative knowledge surrounding the role that alliances play in deterrence. I conclude with some thoughts on future work and refinements that can be drawn from this dissertation.

7.2 Implications from the Formal Analysis: Integrative Cumulation

As the theory outlined in chapter 3 suggests, and the formal analysis in chapter 4 demonstrates, investing costs into a protégé can help ensure effective extended deterrence. And, if extended general deterrence fails, the investments made by the defender help in resolving the crisis by providing a means for the beleaguered protégé to defend itself.

The formalization of the theory sheds light on two aspects of the alliance/deterrence puzzle. First of all, it introduced a costly signaling approach to Morrow’s (1991) framework of autonomy and security. Secondly, it demonstrates in

some detail the role that limited information and beliefs play in deterrence scenarios. I examine each in turn.

7.2.1 Costly Signaling and the Autonomy/Security Tradeoff

As was noted earlier, states enter into alliances for various reasons. Small states seek security, while larger states seek other benefits. In the cases examined here, deterrence is the security benefit that is provided by a larger state to its minor power protégé. In return, the protégé provides some sort of benefit that can be broadly construed as autonomy.

Many previous studies have focused on the ability of a defender to provide security to a protégé, and this study is no exception. As the empirical evidence demonstrates, the ability of a defender to invest costly measures in a protégé distinctively helps extended general deterrence succeed. And, in the cases in which extended general deterrence breaks down, these invested costs make it more likely that the defender will actually intervene on its protégé's behalf.

In most of the cases analyzed, the defender was able to gain some meaningful autonomy benefit from its protégé. Such a benefit, either in terms of increased access to foreign markets or change in a protégé's policy, was quite indicative of when extended general deterrence would succeed, and when it would fail. In a tangential manner, the exchange of autonomy benefits could be viewed as a costly signal sent from the protégé to the defender, as a means of indicating how serious and tight the alliance relationship is.

Of course, there are some limitations on what the formal model explains and predicts. Costly signaling does not ensure perfect general deterrence. Challenges do occur, and at times they do escalate to large-scale conflict. The beginnings of the Second

World War have their roots in such deterrence failure, in spite of the costly signals that France and Great Britain sent regarding their guarantees to Polish sovereignty. Certain types of states can be deterred due to fear of third party intervention. After 1961, the Soviet Union ceases to challenge the United States over the status of divided Germany. Alternatively, with the exception of a very minor challenge in the Second Balkan War, the presence of an Austrian-Romanian alliance deterred Bulgarian designs on Romanian territory. However, Germany under Hitler, or North Korea for much of the Cold War, continually made challenges against states that had powerful allies. The possibility that alliances may not deter aggression, in spite of costly signaling, highlights the role that information and beliefs play in extended deterrence situations. It is to a discussion of these topics that I now turn my attention.

7.2.2 Information and Beliefs

Costly signaling and the transfer of security and autonomy benefits are public events. What is unknown is the willingness of a defender to come to the aid of an embattled ally. Potential aggressors must base their initial beliefs upon something, and costly signaling is a good mechanism for demonstrating the willingness a defender possesses in regards to fighting on behalf of a protégé. However, why does costly signaling not ensure perfect deterrence? This question continually arises. The answer, I maintain, and as was supported by the formal analysis in chapter 4, is that different states have different willingness functions when it comes to making challenges and attempting to achieve their goals. Alternatively, different states also have different willingness functions when it comes to deciding whether or not to intervene in a crisis on behalf of an ally.

These different types of players, as explicated in the formal analysis, place different values on the status quo. In the case of a defender, it is largely based upon the benefits received less the costs invested in a protégé. In regards to a challenger, it is largely based upon capability ratios *and* the perceptions it has of the sincerity of the defender. These perceptions, I have argued, are often as (if not more) important as military balances.

Once again I take an example from the onset of the Second World War to illustrate the role that beliefs and information play in an attacker's decision calculus. Germany realized that Poland was allied with Great Britain and France. Both defenders, particularly the British, had made promises in regards to Polish security. The military might of Germany was less than the overall military might of the French, British, and Poles. If one adheres to a strict interpretation of deterrence, these capabilities should have prevented the Second World War from ever taking place. However, Germany was not deterred, and Poland was attacked. The question remains. Why?

The answer to this question, as is suggested by the formal analysis, is that certain states value changing the status quo to such an extent that they are difficult, if not impossible, to deter. Much of this, I argue, can be drawn from the actions a challenger witnesses. So, in the case of Germany prior to the 1939, Hitler was able to witness the British and French failure to act during the Rhineland Crisis of 1936, and the debacle at Munich in 1938. Given this, then, Germany's initial beliefs were that Britain and France would do nothing to protect Poland.

Of course, upon witnessing actions taken by a defender once a crisis is initiated, challengers have the ability to update their beliefs. Some challengers will back down, as

the Bulgarians did in 1885, upon witnessing Austrian intervention on behalf of their Serbian allies. On the other hand, Germany continued to press its attack in 1939, and extended immediate deterrence also failed. These illustrations suggest two items of interest. First of all, certain states are difficult, if not impossible, to deter once they have initiated a crisis. They hold the issue at stake so dear to their heart that they are willing to run the risk of fighting (and potentially losing) a war in order to attain their goals. Secondly, it suggests that bluffing is not a strategy for defenders to follow. If a commitment is credible, then this will be revealed at the time of an initial challenge. If the commitment is not credible, then why make it in the first place? Such counterfactual events are difficult to test, it is true, but the evidence from this analysis suggests that the more a commitment can be made credible through costly signaling, the greater the impact it will have on ensuring extended deterrence effectiveness.

7.3 Implications from the Empirical Analysis: Additive Cumulation

Moving from the formalization of the theory to the empirical testing of the theory against the historical record, my focus turns more to the additive cumulative knowledge that has been gained from the statistical analysis conducted in this dissertation. This is not to suggest, however, that it is only through formal modeling that we can uncover integrative knowledge. The findings of the signaling model are merely conjectures if they are not tested against evidence obtained from the empirical realm. In that vein, therefore, I discuss the empirical findings of my models, and show how they belie some of the conventional wisdom regarding alliances and extended deterrence. I then turn to a discussion of the methodologies used and the data that were developed, and elaborate

upon how they have helped us move forward in the study of alliances and their deterrent impacts.

7.3.1 *Contradictory Findings*

Three items of importance emerge from the empirical examination of data surrounding extended deterrence via alliance. First of all, alliances are quite good mechanisms for providing extended *general* deterrence. Of the 302 possible opportunities for extended general deterrence via alliance to fail, it only did so on 46 of those occasions. And, in those 46 cases, the defender failed to intervene in only 5 of these events.

This finding casts suspicion on the results of Sabrosky (1980), who suggested that alliances tend to be quite unreliable. While it should be noted that my results are applicable to the set of deterrence alliances that I analyzed, and may not be generalizable to all cases of alliances, the results are still intriguing and call for further scrutiny on the alliances and war question. Alliances in this case do appear to be quite good at deterring aggression, and defenders do come to the aid of embattled proteges. The rationale behind, this, I maintain, is the impact of costly signaling.

The impact of costly signaling is the second issue of importance to be discussed here. More than beliefs, more than military capabilities, the trade-off between security and autonomy benefits are paramount in determining the success or failure of extended general deterrence. As was noted in the formal analysis, the goods or services traded between allies serves as a public indication of the value that each state places in the alliance relationship. This differs from many of the earlier studies of extended deterrence, which have tended to focus on the role of capabilities and their ability to

make a deterrence commitment credible. The substantive effects that were presented in the previous chapter demonstrate that costly signals, particularly the security benefits that are transferred from a defender to a protégé, are quite important in maintaining the status quo.

The third item of interest that emerges from the empirical analysis of the costly signaling theory developed here is the fact that different factors influence extended deterrence at its different levels. Much of the previous work that has been conducted on extended deterrence has focused on the immediate level, due to the easier task of identifying success and failure. However, as the bivariate probit with selection results indicate, the two processes of extended general deterrence failure and the success or failure of extended immediate deterrence cannot be separated. As the results demonstrate, failure to account for the larger process can lead to erroneous findings.

Costly signaling arguments have rarely been subjected to empirical scrutiny, so the findings in this dissertation are both novel and unique. They demonstrate that it is possible to operationalize concepts from formal models and submit them to rigorous empirical testing. Having noted that, I turn to a discussion of the genuine additive findings this dissertation has contributed to our knowledge of alliances and deterrence.

7.3.2 New Data and Methodological Techniques

As mentioned above, the dataset that was created in this dissertation was designed to test models that were the result of both extended general deterrence success and failure, and extended immediate deterrence success and failure. These data represent a novel development in the study of extended deterrence, although it should be recalled that they are specific to the alliances within the dataset. As noted in chapter 2, there exist no

scientific studies that analyze extended deterrence as a complete process. The data devised here sought to remedy this oversight, and used the presence of alliances as agents of extended deterrence as a means of determining a set of cases. This is truly additive cumulation in the sense that Zinnes (1976, 1981) mentions in her work.

Additionally, two new methodologies were utilized in the empirical work conducted here. I used new techniques developed to account for cross-temporal issues. As the model above found, autocorrelation was not present. However, the procedure is simple enough, and can correct temporal issues so readily, that it should become a tool used by all analysts who encounter binary cross-sectional time series data.

Finally, in an attempt to test the entire deterrence process, from crisis initiation to potential escalation to conflict, I utilized a methodology, the bivariate probit model with selection, to account for the selection effects that often occur within the study of deterrence. If we are to model conflict initiation and escalation properly, we need to account for the fact that they are part of a larger process. At each level within the process different factors may be at work, and this methodology allows us to capture these disparate conditions.

7.4 Concluding Remarks and Directions for Future Research

This dissertation has provided a good foundation for understanding the role that costly signaling plays in providing successful deterrence to minor power allies. However, there is still work to be done on the topic of extended deterrence via alliance. In the remainder of this chapter I discuss three directions for future research.

7.4.1 An Extension of the Data

As was noted earlier, the dataset developed here is limited to the time period 1870-1984. One of the first tasks that should be undertaken is an effort to extend the dataset, both back in time and forwards. A preliminary examination was made of the alliances that existed between 1816-1870, and while some of them can be viewed as deterrence alliances, there do exist data limitations. Data on international trade, for example, is often difficult to find for periods prior to 1870. Such data that does exist is often suspect. Similar concerns exist regarding the establishment of military bases abroad, and the transfer of weaponry. Such data is needed by the international relations research community, and a project that seeks to locate such data and make it available would be a boon to researchers worldwide.

Secondly, the dataset needs to be extended forward in time. The data as it exists now ends while the Cold War is still in full force. Now that the superpower rivalry has faded into the annals of history, we need to know if alliances still provide means of security to minor powers, or has the functioning of international relations also changed along with the international climate. Given the heated debate surrounding NATO expansion, and events taking place within the former Yugoslavia, it is apparent that alliances still play a role in international affairs. Time will tell if they continue to play a deterrence role, and if this is a policy that statesmen should be eager to pursue.

7.4.2 The Role of Domestic Politics in Alliance Affairs

A second topic that is ripe for further examination is the role that domestic political considerations play in alliance politics. The decision to join an alliance, as any foreign policy decision, is often a source of controversy. In the analysis above, both

formal and statistical, domestic constraints were hypothesized to play a role in the success or failure of extended deterrence in both of its incarnations.

In this vein, therefore, two issues need to be addressed. First of all, what constraints operate on a domestic level besides the ones analyzed in this study. In democracies, do electoral cycles play a role? Are there additional constraints upon authoritarian regimes that may have a pacifying effect on their leaders? What about domestic economic conditions? All of these factors may play a role in determining the willingness of state leaders to become involved in a crisis.

Secondly, the focus should also encompass the leadership in the government of the attacker. Much has been made in the literature on domestic politics and international conflict on the domestic constraints that are faced by a defender. Indeed, the entire audience costs argument focuses on this scenario. However, what restrictions do the leadership within an aggressor state face? Do similar constraints operate for the initiation of a crisis, or are other factors at work? In order to provide a more nuanced rigorous theory of domestic politics and their influence on alliance behavior, such considerations must be accounted for.

7.4.3 Analyzing Crisis Bargaining

A third area of interest is a further analysis, both formally and empirically, is a detailed examination of the events that occur as a crisis progresses from extended general deterrence failure to resolution either through extended immediate deterrence success or escalation to conflict. Formally, we need to account for the actions each side takes as the crisis escalates. Through the use of discount rates, we can arrive at conclusions of what level of hostility a defender (or aggressor, or even a protégé) is willing to absorb before it

decides to capitulate to an opponent. Through the use of bargaining models we can begin to understand some more of the crisis dynamics that occur in the process of extended deterrence failure and crisis escalation

7.4.4 Some Concluding Thoughts

This dissertation has called into question some of the conventional wisdom on the role that alliances play on ensuring effective deterrence. Alliances actually do have a fair amount of success in deterring aggression, and at assisting an embattled protégé if a crisis does escalate. However, this does not mean that all alliances will always serve as deterrent structures, or does it imply that all states can be deterred. Hitler's Germany and North Korea are but two examples of states that repeatedly challenged the status quo.

The implications from this dissertation suggest that costly signaling can be quite beneficial in ensuring credibility in international politics. It should be noted that the costly signaling framework applies to situations outside of deterrence as well, and that this framework is not bound to studies of security and conflict. The theory does suggest that we must move beyond "mere" structural theorizing when it comes to strategic issues, and look at the incentive structures, domestically and internationally, that states face. Doing so allows us to focus on the opportunities that states encounter, and also to focus on the calculations that drive their willingness to act.

International politics, both in the empirical world and in the research community, is moving forward at a dizzying pace. This dissertation has attempted to examine one of the recurring entities in international politics, alliances, and determine when they will provide deterrence benefits. In that, it has succeeded to a large extent. With the end of the Cold War and the restructuring of the international system, many believed that the

age of alliances and concerns over deterrence were past. But as long as states threaten others, and as long as major powers are willing to defend smaller states, deterrence will be a cornerstone of security policy for many states. In many instances, deterrence will be a benefit extended through a formal alliance. Only by understanding how it has functioned in the past can we hope to understand and predict the impact that military alliances will have on ensuring deterrence success in the future.

APPENDICES

APPENDIX A

PROOFS OF THE EQUILIBRIA FROM THE MODEL WITH COMPLETE INFORMATION

Proof of Equilibrium 1

Equilibrium 1: In a game with complete and perfect information, status quo (SQ) is a subgame perfect equilibrium in pure strategies if the following conditions are met: $t_A = 2$ and $t_B = 1$ and $t_C = 1$.

Proof: We can solve this equilibria through straightforward backwards induction. If we start at the last two nodes, A has a choice to make between CN_{ALL} and BD. At the other node A must choose between CN_{AB} and BD*. At the one node A prefers BD to CN_{ALL} , since when $t_A = 2$, the potential costs outweigh its utility for the new resolution of the issue; $x - c > 0$, with 0 being the value to A for the status quo. At the other node, A prefers CN_{AB} to BD*. Again, by definition of $t_A = 2$, A would prefer to fight against a lone B, since $k_A > k_B$.

We now turn to the choice made by C. C must choose whether to intervene (int.) or not to intervene (\sim int.). Since $t_C = 1$, it is a strongly committed defender, and will always intervene on B's behalf. its utility for the current status quo is greater than any costs that may be incurred; $m - y > d + c$. C prefers a trilateral conflict to having B fight alone.

B must now make a choice between resist (r) and not resist (\sim r). B's choice lies in resisting, where it knows the outcome will be BD, or in not resisting, and having the outcome be acquiescence by B (ACQ_B). Since $t_B = 1$, and it knows that its defender is willing to intervene, B is willing to resist aggression on the part of A. This keeps with

the logic of alliances as capability aggregation units interested in preserving security. If aggression is to take place, B would rather have an ally fight alongside him.

The final choice belongs to A. A must choose between fighting a trilateral conflict (BD) and accepting the current resolution of the issue (SQ). By the preference orderings above, A would rather not incur the costs of initiating a crisis and then being forced to back down. Hence, a crisis is never begun, and extended general deterrence prevails. The subgame perfect equilibrium can be written as $\{\sim\text{initiate}, \sim\text{escalate}; \text{resist}; \text{intervene}\}$, where the first choice refers to A's chosen strategies, the second choice refers to B's chosen strategy, and the third choice refers to C's chosen strategy.

Proof of Equilibrium 2

Equilibrium 2: In a game with complete and perfect information, acquiescence by B (ACQ_B) is a subgame perfect equilibrium in pure strategies iff 1) $t_A=1$, $t_B=1$, and $t_C=2$; or 2) $t_A=2$, $t_B=1$, $t_C=2$ or 3) $t_A=3$, $t_B=1$, $t_C=2$.

Proof: I will address each case separately.

Case 1: In the first case, $t_A=1$, $t_B=1$, and $t_C=2$. We start again at the final two nodes, and work backwards to the top of the model. If $t_A=1$, then it has greater military capabilities than the combined attributes of the alliance it faces: $k_A > k_{BC}$. At the left node A must choose between a trilateral conflict (CN_{ALL}) and backing down (BD). At the right node A must choose between a bilateral conflict (CN_{AB}) and backing down without intervention by C (BD*). On both sides A chooses conflict, since $x > c + d$.

The choice now falls to C, who must decide whether or not to intervene. Since $t_C=2$, it is a weakly committed defender, unwilling to intervene militarily. Its utility for the status quo is less than the costs of becoming involved in a potential militarized

conflict; $m-y < c + d$. Hence, in choosing between the possibility of trilateral conflict (CN_{ALL}) over bilateral conflict (CN_{AB}), C will choose to not intervene.

The choice now falls to B. Since $t_B=1$, we know that it is weaker in terms of military capabilities vis a vis A. And, since B knows that its ally will not intervene militarily, it realizes that its choice lies between fighting A alone and acquiescing to A's demand. Thus, B chooses to acquiesce (ACQ_B).

Once again the final move belongs to A. It knows that B will give in to its demand, because its ally has refused to intervene. Therefore, A will initiate a crisis against B, and B will accede to A's demand. The subgame perfect equilibrium can be written as {initiate, escalate; \sim resist; \sim intervene}.

Case 2: In the second case, $t_A=2$, $t_B=1$, $t_C=2$. . If we start at the last two nodes, A has a choice to make between CN_{ALL} and BD. At the other node A must choose between CN_{AB} and BD*. At the one node A prefers BD to CN_{ALL} , since when $t_A=2$, the potential costs outweigh its utility for the new resolution of the issue; $c+d > x$. At the other node, A prefers CN_{AB} to BD*. Again, by definition of $t_A=2$, A would prefer to fight against a lone B, since $k_A > k_B$.

The choice now falls to C, who must decide whether or not to intervene. Since $t_C=2$, it is a weakly committed defender, unwilling to intervene militarily. Its utility for the status quo is less than the costs of becoming involved in a potential militarized conflict; $m-y < c + d$. Hence, in choosing between the possibility of trilateral conflict (CN_{ALL}) over bilateral conflict (CN_{AB}), C will choose to not intervene.

The choice now falls to B. Since $t_B=1$, we know that it is weaker in terms of military capabilities vis a vis A. And, since B knows that its ally will not intervene

militarily, it realizes that its choice lies between fighting A alone and acquiescing to A's demand. Thus, B chooses to acquiesce (ACQ_B).

The final move again belongs to A. Although A is weaker than the alliance as a whole, it is still stronger than B. Knowing that C will not intervene, A can initiate a crisis against B without fearing third party intervention. Hence, A makes its demand, and B once again gives in. The subgame perfect equilibrium is {initiate, escalate; \sim resist; \sim intervene}.

Case 3: We start again at the end of the game, and work backwards. A moves first, and must decide whether it prefers conflict (either bilateral or trilateral) to either forms of backing down. On either side of the game tree A chooses conflict over backing down. A knows that its capabilities are equivalent to those of B and C combined, so it must be willing to fight in order to change the issue at stake. $x > c+d$.

The choice now falls to C, who must decide whether or not to intervene. Since $t_C = 2$, it is a weakly committed defender, unwilling to intervene militarily. Its utility for b is less than the costs of becoming involved in a potential militarized conflict; $m - y < c + d$. Hence, in choosing between the possibility of trilateral conflict (CN_{ALL}) over bilateral conflict (CN_{AB}), C will choose to not intervene.

The choice now falls to B. Since $t_B = 1$, we know that it is weaker in terms of military capabilities vis a vis A. And, since B knows that its ally will not intervene militarily, it realizes that its choice lies between fighting A alone and acquiescing to A's demand. Thus, B chooses to acquiesce (ACQ_B).

The final move again belongs to A. Although A is weaker than the alliance as a whole, it is still stronger than B. Knowing that C will not intervene, A can initiate a crisis

against B without fearing third party intervention. Hence, A makes its demand, and B once again gives in. The subgame perfect equilibrium is {initiate, escalate; ~resist; ~intervene}.

Proof of Equilibrium 3

Equilibrium 3: In a game with complete and perfect information, trilateral conflict (CN_{ALL}) is a subgame perfect equilibrium in pure strategies if 1) $t_A=1$, $t_B=1$, and $t_C=1$ or 2) $t_A=3$, $t_B=1$, and $t_C=1$.

Proof: I will address each case separately.

Case 1: We start again at the final two nodes, and work backwards to the top of the model. If $t_A=1$, then it has greater military capabilities than the combined attributes of the alliance it faces: $k_A > k_{BC}$. At the left node A must choose between a trilateral conflict (CN_{ALL}) and backing down (BD). At the right node A must choose between a bilateral conflict (CN_{AB}) and backing down without intervention by C (BD*). On both sides A chooses conflict, since $x > c + d$.

We now turn to the choice made by C. C must choose whether to intervene (int.) or not to intervene (~int.). Since $t_C=1$, it is a strongly committed defender, and will always intervene on B's behalf. Its utility for the current status quo is greater than any costs that may be incurred; $m - y > c + d$. C prefers a trilateral conflict to having B fight alone.

B must now make a choice between resist (r) and not resist (~r). B's choice lies in resisting, where it knows the outcome will be BD, or in not resisting, and having the outcome be acquiescence by B (ACQ_B). Since $t_B=1$, and it knows that its defender is willing to intervene, B is willing to resist aggression on the part of A.

Finally, the choice once again belongs to A. A must choose between not initiating a crisis and accepting the status quo (SQ), or initiating the crisis and ending up with a trilateral conflict (CN_{ALL}). Since A is militarily superior to the BC alliance, it initiates the crisis, and conflict is the result. The subgame perfect equilibrium is {initiate, escalate; resist; intervene}.

Case 2: We start again at the end of the game, and work backwards. A moves first, and must decide whether it prefers conflict (either bilateral or trilateral) to either forms of backing down. On either side of the game tree A chooses conflict over backing down. A knows that its capabilities are equivalent to those of B and C combined, so it must be willing to fight in order to change the issue at stake. $U(x) > 0$.

We now turn to the choice made by C. C must choose whether to intervene (int.) or not to intervene (\sim int.). Since $t_C = 1$, it is a strongly committed defender, and will always intervene on B's behalf. Its utility for the current status quo is greater than any costs that may be incurred; $m - y > c + d$. C prefers a trilateral conflict to having B fight alone.

B must now make a choice between resist (r) and not resist (\sim r). B's choice lies in resisting, where it knows the outcome will be BD, or in not resisting, and having the outcome be acquiescence by B (ACQ_B). Since $t_B = 1$, and it knows that its defender is willing to intervene, B is willing to resist aggression on the part of A.

Finally, the choice once again belongs to A. A must choose between not initiating a crisis and accepting the status quo (SQ), or initiating the crisis and ending up with a trilateral conflict (CN_{ALL}). Since A, while not militarily superior to the BC alliance, places a high value on changing the status quo. Thus, it initiates the crisis, and trilateral

conflict is the result. The subgame perfect equilibrium is {initiate, escalate; resist; intervene}.

Proof of Equilibrium 4

Equilibrium 4: If the game is played under conditions of complete and perfect information, then bilateral conflict (CN_{AB}) is a subgame perfect equilibrium outcome in pure strategies if we relax 1) the assumption of $k_A > k_B$ and assume that $k_A = k_B$ and 2) assume that under conditions of power parity, B prefers CN_{AB} to ACQ_B . Hence the game is played under conditions in which $t_A = 2$, $t_B = 2$, and $t_C = 2$.

Proof: This is a special case in which $t_B = 2$. In all the other instances, $k_A > k_{BC}$ or $k_A < k_{BC}$. This is the only case in which the capabilities of B are a factor. We start again with A's decision at the final two nodes.

A has a choice to make between CN_{ALL} and BD. At the other node A must choose between CN_{AB} and BD*. At the one node A prefers BD to CN_{ALL} , since when $t_A = 2$, the potential costs outweigh its utility for the new resolution of the issue; $c + d > x$. At the other node, A prefers CN_{AB} to BD*.

The choice now falls to C, who must decide whether or not to intervene. Since $t_C = 2$, it is a weakly committed defender, unwilling to intervene militarily. Its utility for y is less than the costs of becoming involved in a potential militarized conflict; $(U) y < c + d$. Hence, in choosing between the possibility of trilateral conflict (CN_{ALL}) over bilateral conflict (CN_{AB}), C will choose to not intervene.

B now must make its choice, and choose between bilateral conflict (CN_{AB}) and acquiescence (ACQ_B). In this instance, B is not inferior to A in terms of military capabilities. Therefore, B will resist A's demand, and choose the possibility of fighting over giving in.

A once again makes the final decision. Although A is weaker than the alliance as a whole, it is as strong B. Knowing that C will not intervene, A can initiate a crisis against B without fearing third party intervention. Hence, A makes its demand, and B fights back. The outcome in equilibrium is bilateral conflict. The subgame perfect equilibrium is {initiate, escalate; resist; ~intervene}.

APPENDIX B

DERIVATIONS OF BELIEFS VIA BAYES' RULE

In this appendix I provide the derivations via Bayes' Rule to determine the prior beliefs that A possesses upon witnessing a strong signal from C.

Recall from above that

$$\pi(\text{signal strong}|\text{weak}) = \alpha$$

$$\pi(\text{signal weak}|\text{weak}) = 1-\alpha$$

Additionally, recall that A is actually a strongly committed defender with probability Θ ,

and is actually a weakly committed defender with probability $1-\Theta$.

Given this, we can then calculate the prior beliefs that A possesses upon witnessing a strong signal from C.

$$\mu_A(C = \text{strong} \mid C \text{ signals strong}) = \frac{p(\text{strong}) * p(\text{signals strong}|\text{strong})}{p(\text{strong}) * p(\text{signals strong}|\text{strong}) + p(\text{weak}) * p(\text{signals strong}|\text{weak})}$$

$$\mu_A(C = \text{strong} \mid C \text{ signals strong}) = \frac{(\Theta) 1}{(\Theta) 1 + (1-\Theta)(\alpha)} = \frac{\Theta}{\Theta + \alpha + \Theta\alpha}$$

$$\mu_A(C = \text{weak} \mid C \text{ signals strong}) = \frac{p(\text{weak}) * p(\text{signals strong}|\text{weak})}{p(\text{weak}) * p(\text{signals strong}|\text{weak}) + p(\text{strong}) * p(\text{signals strong}|\text{strong})}$$

$$\mu_A(C = \text{weak} \mid C \text{ signals strong}) = \frac{(1-\Theta) \alpha}{(1-\Theta)(\alpha) + \Theta(1)} = \frac{\alpha - \alpha\Theta}{\alpha - \alpha\Theta + \Theta}$$

APPENDIX C

PROOFS OF THE EQUILIBRIA OF THE SIGNALING MODEL WITH INCOMPLETE INFORMATION

In this appendix I provide proofs for the six equilibria that emerge from the signaling model in chapter 4. It should be recalled that a weak signal on the part of a defender provides identical results as the model with complete information did. Thus, this appendix focuses on the scenarios in which the defender (C) signals strong, and the challenger (A) must determine what type of defender it is facing. In each scenario I outline the strategies that each state follows, and how the updated beliefs of A are calculated for the equilibria that arise.

Scenario 1: $t_A = 1$ and $t_C = 1$

Strategies

In this first scenario, we can rule out by definition a number of strategy choices for player A. If A is a type 1 player, it always has an incentive to initiate and escalate a dispute. Its dominant strategy is to play {initiate, escalate}. And, if C is a type 1 player, it will always come to the assistance of its protégé. And, given C's type, B will always resist.

Given this, there exists only one case in which equilibrium occurs. This is {initiate, escalate; resist; intervene}. The outcome is a trilateral conflict.

The logic is as follows. First of all, as a type 1 player, A always has an incentive to initiate a crisis. And, due to its military capabilities, it always has an incentive to escalate the crisis. B, knowing that its ally will intervene, due to C's type, will always

resist. And C, being a type 1 defender, will always intervene on behalf of an embattled protégé.

In this case, the updating of beliefs on the part of the attacker does not matter. It will always play the same strategy, regardless of what type of defender it is facing.

Beliefs

Thus, A's initial beliefs that C is a strongly committed defender are

$$\mu_A = \frac{\Theta}{\Theta + \alpha + \Theta\alpha}, \text{ as derived in Appendix B.}$$

And, A's initial beliefs that C is a weakly committed defender are

$$\mu_A = \frac{\alpha - \alpha\Theta}{\alpha - \alpha\Theta + \Theta}, \text{ as derived in Appendix B.}$$

And its updated beliefs are $\mu_A^* = 1.0$. These updated beliefs are calculated by using Baye's Rule, and update the first set of beliefs outlined above.

$$\mu_A^*(C = \text{strong} | C \text{ signals strong}) = \frac{(\Theta) 1}{(\Theta) 1 + (1 - \Theta)(\alpha)}$$

To update, this becomes

$$\frac{1(1)}{1(1) + (1 - \theta)(0)} = 1.0$$

The fully specified equilibrium is {initiate, escalate; resist; intervene};

$$\mu_A = \frac{\Theta}{\Theta + \alpha + \Theta\alpha}; \quad \mu_A^* = 1.0.$$

Scenario 2: $t_A = 1$ and $t_C = 2$

Strategies

In this second scenario, we can once again rule out a number of strategy combinations. If A is a type 1 player, it always has an incentive to initiate and escalate a dispute. Its dominant strategy is to play {initiate, escalate}. And, if C is a type 2 player,

it will not come to the assistance of its protégé. And, given C's type, B will always acquiesce.

Given this, there exists only one case in which equilibrium occurs. This is {initiate, escalate; ~resist; ~intervene}. The outcome is acquiescence on the part of B

The logic is as follows. Again, as in the first scenario A is a type 1 player. Thus, A always has an incentive to initiate a crisis. And, due to its military capabilities, it always has an incentive to escalate the crisis. B, knowing that its ally will not intervene, due to C's type, will acquiesce, rather than resist. And C, being a type 2 defender, will not intervene on behalf of an embattled protégé. Noting that C will not intervene, A would escalate the crisis if B chose to resist. However, since B chose to concede the issue at hand, the escalation does not occur.

Beliefs

Once again the updating of beliefs on the part of the attacker does not matter. It will always play the same strategy, regardless of what type of defender it is facing.

Thus, A's initial beliefs that C is a strongly committed defender are

$$\mu_A = \frac{\Theta}{\Theta + \alpha + \Theta\alpha}, \text{ as derived in Appendix B.}$$

And, A's initial beliefs that C is a weakly committed defender are

$$\mu_A = \frac{\alpha - \alpha\Theta}{\alpha - \alpha\Theta + \Theta}, \text{ as derived in Appendix B.}$$

And its updated beliefs are $\mu_A^* = 1.0$. These updated beliefs are calculated by using Baye's Rule, and update the second set of beliefs outlined above.

$$\mu_A^*(C = \text{weak} \mid C \text{ signals strong}) = \frac{(1-\Theta)\alpha}{(1-\Theta)(\alpha) + \Theta(1)}$$

This becomes $\frac{1(1)}{1(1) + (0)1} = 1$

The fully specified equilibrium is {initiate, escalate; ~resist; ~intervene};
 $\mu_A = \frac{\alpha - \alpha\Theta}{\alpha - \alpha\Theta + \Theta}$; $\mu_A^* = 1.0$.

Scenario 3: $t_A = 2$ and $t_C = 1$

Strategies

This scenario is more difficult to analyze, due to the fact that as a type 2 player, A does not have a dominant strategy set of {initiate, escalate}. This is especially so if A believes that it is facing a type 1 defender. Thus, there are five distinct cases that emerge.

Case 1:

A (a) plays initiate.
 And (b) plays escalate if C plays intervene.

B plays resist if A plays initiate.

C plays intervene if A plays initiate.

This case is not an equilibrium. If A witnesses an intervention by C, it knows that C is a type 1 defender. In such a scenario, A will choose to change its strategy and not escalate against B.

Case 2:

A plays ~initiate.

B plays ~ resist.

C plays ~ intervene.

This case is not an equilibrium. Under conditions of uncertainty, A always has an incentive to challenge the status quo. Thus, it will always initiate a crisis, in an attempt to determine if it can make gains.

Case 3:

A (a) plays initiate
And (b) plays ~ escalate if C plays ~ intervene.

B plays resist.

C plays ~intervene.

This case is not an equilibrium for two reasons. First of all, if C is a type 2 player and does not intervene, then A has no incentive to back down. Instead, A will escalate the crisis against B. Secondly, if C is a type 2 player, B will not resist in the first place, so there will be no opportunity for A to escalate the crisis anyway.

Case 4:

A (a) plays initiate
And (b) plays escalate if C plays ~intervene.

B plays ~ resist.

C plays ~intervene.

This case is not an equilibrium. By definition of C's type, it will always intervene on behalf of its protégé if a crisis erupts.

Case 5:

A (a) plays initiate
And (b) plays ~ escalate if C plays intervene.

B plays resist.

C plays intervene.

This case is an equilibrium. A has an incentive to make a probe, given that it is uncertain about C's type. And, upon witnessing C's intervention, it will back down.

Beliefs

In this case the updating of beliefs on the part of the attacker does matter. A will play a different strategy, depending upon what type of defender it is facing.

Thus, A's initial beliefs that C is a strongly committed defender are

$$\mu_A = \frac{\Theta}{\Theta + \alpha + \Theta\alpha}, \text{ as derived in Appendix B.}$$

And, A's initial beliefs that C is a weakly committed defender are

$$\mu_A = \frac{\alpha - \alpha\Theta}{\alpha - \alpha\Theta + \Theta}, \text{ as derived in Appendix B.}$$

And its updated beliefs are $\mu_A^* = 1.0$. These updated beliefs are calculated by using Baye's Rule, and update the first set of beliefs outlined above.

$$\mu_A^*(C = \text{strong} | C \text{ signals strong}) = \frac{(\Theta) 1}{(\Theta) 1 + (1-\Theta)(\alpha)}$$

To update, this becomes

$$\frac{1(1)}{1(1) + (1-\Theta)(0)} = 1.0$$

The fully specified equilibrium is {initiate, ~escalate; resist; intervene};

$$\mu_A = \frac{\Theta}{\Theta + \alpha + \Theta\alpha}; \quad \mu_A = 1.0^*$$

Scenario 4: $t_A = 2$ and $t_C = 2$

Once again this scenario is more difficult to analyze, due to the fact that as a type 2 player, A does not have a dominant strategy set of {initiate, escalate}. This is especially so if A believes that it is facing a type 1 defender. Thus, there are four distinct cases that emerge.

Case 1:

A (a) plays initiate.

And (b) plays escalate if C plays intervene.

B plays resist if A plays initiate.

C plays intervene if A plays initiate.

This case is not an equilibrium. If A witnesses an intervention by C, it knows that C is a type 1 defender. In such a scenario, A will choose to change its strategy and not escalate against B.

Case 2:

A plays ~initiate.

B plays ~ resist.

C plays ~ intervene.

This case is not an equilibrium. Under conditions of uncertainty, A always has an incentive to challenge the status quo. Thus, it will always initiate a crisis, in an attempt to determine if it can make gains.

Case 3:

A (a) plays initiate

And (b) plays ~ escalate if C plays ~ intervene.

B plays resist.

C plays ~intervene.

This case is not an equilibrium for two reasons. First of all, if C is a type 2 player and does not intervene, then A has no incentive to back down. Instead, A will escalate the crisis against B. Secondly, if C is a type 2 player, B will not resist in the first place, so there will be no opportunity for A to escalate the crisis anyway.

It should be noted that if the assumption that $k_A > k_B$ is relaxed, and we assume that $k_A = k_B$, then this case can be an equilibrium. The logic behind this can be found in Appendix A.

Case 4:

A (a) plays initiate
And (b) plays escalate if C plays ~intervene.

B plays ~ resist.

C plays ~intervene.

This case is an equilibrium. Since C refuses to intervene, B will acquiesce to A's demands. C's inaction reveals its type. The equilibrium is {initiate, escalate; ~resist; ~intervene}. The outcome is acquiescence by B.

Beliefs

In this case the updating of beliefs on the part of the attacker does matter. A will play a different strategy, depending upon what type of defender it is facing.

Thus, A's initial beliefs that C is a strongly committed defender are

$$\mu_A = \frac{\Theta}{\Theta + \alpha + \Theta\alpha}, \text{ as derived in Appendix B.}$$

And, A's initial beliefs that C is a weakly committed defender are

$$\mu_A = \frac{\alpha - \alpha\Theta}{\alpha - \alpha\Theta + \Theta}, \text{ as derived in Appendix B.}$$

And its updated beliefs are $\mu_A^* = 1.0$. These updated beliefs are calculated by using Baye's Rule, and update the second set of beliefs outlined above.

$$\mu_A^*(C = \text{weak} \mid C \text{ signals strong}) = \frac{(1-\Theta)\alpha}{(1-\Theta)(\alpha) + \Theta(1)}$$

$$\text{This becomes } \frac{1(1)}{1(1) + (0)1} = 1$$

Thus, the fully specified equilibrium is {initiate, escalate; ~resist; `intervene};

$$\mu_A = \frac{\alpha - \alpha\Theta}{\alpha - \alpha\Theta + \Theta}; \quad \mu_A^* = 1.0.$$

Scenario 5: $t_A = 3$ and $t_C = 1$

Strategies

This scenario is easier to analyze than is scenario 2. If A is a type 3 player, it always has an incentive to initiate and escalate a dispute. We can thus rule out any strategy combinations that have A not initiating or escalating a crisis. Its dominant strategy is to play {initiate, escalate}. And, if C is a type 1 player, it will always come to the assistance of its protégé. And, given C's type, B will always resist.

Given this, there exists only one case in which equilibrium occurs. This is {initiate, escalate; resist; intervene}. The outcome is a trilateral conflict.

The logic is as follows. First of all, as a type 3 player, A always has an incentive to initiate a crisis. And, due to its military capabilities, it always has an incentive to escalate the crisis. B, knowing that its ally will intervene, due to C's type, will always resist. And C, being a type 1 defender, will always intervene on behalf of an embattled protégé.

In this case, the updating of beliefs on the part of the attacker does not matter. It will always play the same strategy, regardless of what type of defender it is facing.

Beliefs

Thus, A's initial beliefs that C is a strongly committed defender are

$$\mu_A = \frac{\Theta}{\Theta + \alpha + \Theta\alpha}, \text{ as derived in Appendix B.}$$

And, A's initial beliefs that C is a weakly committed defender are

$$\mu_A = \frac{\alpha - \alpha\Theta}{\alpha - \alpha\Theta + \Theta}, \text{ as derived in Appendix B.}$$

And its updated beliefs are $\mu_A^* = 1.0$. These updated beliefs are calculated by using Baye's Rule, and update the first set of beliefs outlined above.

$$\mu_A^*(C = \text{strong} | C \text{ signals strong}) = \frac{(\Theta) 1}{(\Theta) 1 + (1-\Theta)(\alpha)}$$

This becomes

$$\frac{1(1)}{1(1) + (1-\theta)(0)} = 1.0$$

The fully specified equilibrium is {initiate, escalate; resist; intervene};

$$\mu_A = \frac{\Theta}{\Theta + \alpha + \Theta\alpha}; \quad \mu_A^* = 1.0.$$

Scenario 6: $t_A = 3$ and $t_C = 2$

Strategies

In this final scenario, we can once again rule out a number of strategy combinations. If A is a type 3 player, it always has an incentive to initiate and escalate a dispute. Its dominant strategy is to play {initiate, escalate}. And, if C is a type 2 player, it will not come to the assistance of its protégé. And, given C's type, B will always acquiesce.

Given this, there exists only one case in which equilibrium occurs. This is {initiate, escalate; ~resist; ~intervene}. The outcome is acquiescence on the part of B

The logic is as follows. Again, as in the fifth scenario A is a type 3 player. Thus, A always has an incentive to initiate a crisis. And, due to its military capabilities, it always has an incentive to escalate the crisis. B, knowing that its ally will not intervene, due to C's type, will acquiesce, rather than resist. And C, being a type 2 defender, will not intervene on behalf of an embattled protégé. Noting that C will not intervene, A

would escalate the crisis if B chose to resist. However, since B chose to concede the issue at hand, the escalation does not occur.

Beliefs

Once again the updating of beliefs on the part of the attacker does not matter. It will always play the same strategy, regardless of what type of defender it is facing.

Thus, A's initial beliefs that C is a strongly committed defender are

$$\mu_A = \frac{\Theta}{\Theta + \alpha + \Theta\alpha}, \text{ as derived in Appendix B.}$$

And, A's initial beliefs that C is a weakly committed defender are

$$\mu_A = \frac{\alpha - \alpha\Theta}{\alpha - \alpha\Theta + \Theta}, \text{ as derived in Appendix B.}$$

And its updated beliefs are $\mu_A^* = 1.0$. These updated beliefs are calculated by using Baye's Rule, and update the second set of beliefs outlined above.

$$\mu_A^*(C = \text{weak} \mid C \text{ signals strong}) = \frac{(1-\Theta)\alpha}{(1-\Theta)(\alpha) + \Theta(1)}$$

$$\text{This becomes } \frac{1(1)}{1(1) + (0)1} = 1$$

$$\text{The fully specified equilibrium is } \{\text{initiate, escalate; } \sim\text{resist; } \sim\text{intervene}\};$$

$$\mu_A = \frac{\alpha - \alpha\Theta}{\alpha - \alpha\Theta + \Theta}; \quad \mu_A^* = 1.0.$$

APPENDIX D

Deterrence Alliances, 1870-1984

This appendix discusses the various alliances that were used in the empirical portions of chapters 5 and 6. In each description I denote the members, potential aggressors, the duration of the alliance, the duration of the deterrence commitment. I then provide a description of the alliance and its rationale for existence, discuss any crises that emerged between the potential aggressor(s) and the protégé, and delineate the source material used in determining the information outlined above.

1. Alliance Members: United Kingdom, Ottoman Empire

Potential Aggressor(s): Russia

Duration of Alliance: 6/4/1878- 12/31/1880

Duration of Deterrence Commitment: 6/4/1878- 12/31/1880

Reasons for Alliance's Existence: In 1878 Turkey and Russia concluded yet another war, which was ended with the Treaty of San Stefano and subsequent revisions at the Congress of Berlin. The implications of the treaty shifted the balance of power in the Balkans, with the creation of Bulgaria and Serbia, and fear on the part of the Turks and English of increased Russian involvement in the region. The treaty of alliance signed between Great Britain and Turkey permitted the British access to the Black Sea, while specifically pledging British support for the Ottoman Empire against Russia. In exchange for military assistance from Britain, Turkey relinquished control of Cyprus to the British.

Crisis Involvement: None.

Sources: Hurst (1972); Jelavich (1973, 1991), Langer (1950).

2. Alliance Members :Austria-Hungary, Romania

Potential Aggressor(s): Bulgaria

Duration of Alliance: October 1883-December 1915

Duration of Deterrence Commitment: October 1883-December 1915

Reasons for Alliance 's Existence: The aftermath of the Russo-Turkish War, formalized at Congress of Berlin, established a number of new states on the Balkan Peninsula.

Romania, being one of these new states, was ever fearful of territorial expansion by its Bulgarian neighbors. On Austria's part, alliance with Romania provided access to Romania's natural resources, as well as provided a means to confront Russian expansion. Hence, while the Romanians were wary of Bulgarian designs on Romanian territory, Austria used this alliance as a means of containing Russian expansion in the Balkans. Access to Romanian territory was the benefit for Austria, while deterrence benefits against the Bulgarian threat was the benefit accrued by the Romanian state.

Crisis Involvement: In the history of the Austro-Romanian alliance, only one minor crisis erupted. In 1913, in the aftermath of the First Balkan War, which effectively ended Ottoman influence on the European continent, Bulgaria turned on its former allies. In an attempt to gain more territory, Bulgaria attacked Greece, Romania, and Serbia. Austria made a diplomatic threat to Bulgaria regarding its commitment to Romania, and the combined forces of Greece, Romania, and Serbia were able to rapidly defeat Bulgaria and end her aspirations for a greater Bulgarian state in the Balkans.

Sources: Choucri and North (1975); Hurst (1972); Jelavich (1973, 1991), Langer (1950), Taylor (1954).

3. *Alliance Members:* Germany, Romania

Potential Aggressor(s): Bulgaria

Duration of Alliance: October 1883-December 1915

Duration of Deterrence Commitment: October 1883-December 1915

Reasons for Alliance's Existence: The aftermath of the Russo-Turkish War, formalized at Congress of Berlin, established a number of new states on the Balkan Peninsula.

Romania, being one of these new states, was ever fearful of territorial expansion by its Bulgarian neighbors. On Germany's part, alliance with Romania provided access to Romania's natural resources, as well as provided a means to confront Russian expansion. Bismarck in particular was wary of Russian encroachment in this region, and even more than the Austrians were concerned about containing the Russian threat. Hence, while the Romanians were wary of Bulgarian designs on Romanian territory, Germany used this alliance as a means of containing Russian expansion in the Balkans. Access to Romanian territory was the benefit for Germany, while deterrence benefits against the Bulgarian threat was the benefit accrued by the Romanian state.

Crisis Involvement: In the history of the German-Romanian alliance, only one minor crisis erupted. In 1913, in the aftermath of the First Balkan War, which effectively ended Ottoman influence on the European continent, Bulgaria turned on its former allies. In an attempt to gain more territory, Bulgaria attacked Greece, Romania, and Serbia. Germany also made a diplomatic threat to Bulgaria regarding its commitment to Romania, and the combined forces of Greece, Romania, and Serbia were able to rapidly defeat Bulgaria and end her aspirations for a greater Bulgarian state in the Balkans.

Sources: Choucri and North, 1975; Craig (1966), Hurst (1972); Jelavich (1973, 1991), Langer (1950), Taylor (1954).

4. *Alliance Members:* Austria-Hungary, Serbia

Potential Aggressor(s): Bulgaria

Duration of Alliance: January 1881-December 1895

Duration of Deterrence Commitment: January 1881-December 1895

Reasons for Alliance's Existence: In the aftermath of the Congress of Berlin, Austria made a deliberate overture to maintain a presence in the Balkans. In large part this was due to the possibility of annexing Bosnia-Herzegovina. Serbia for its part was concerned over Bulgarian attempts to expand at the expense of its neighbors. In an attempt to keep Serbia under Austrian suzerainty, if not outright domination, Serbia was compelled in 1881 to sign a treaty of alliance with the Austrian empire. In return for protection, Serbia was to make no foreign policy decisions without Austrian consent, allow Austria access to her markets at favorable terms, and permit the passage of Austrian troops through Serbia in time of war.

Crisis Involvement: The only war to take place on the European continent in the decade of the 1880s involved Serbia and Bulgaria. Serbia, witnessing political turmoil within Bulgaria, struck first. Unfortunately for the Serbs, the Bulgarians were able to rally and make threatening overtures towards Serbian territory. Faced with imminent defeat, Serbia appealed to its Austrian ally, who threatened the Bulgarians with Austrian intervention if they did not cease their advancement towards Belgrade. The Serbian-Bulgarian War lasted scarcely a fortnight in the autumn of 1885 (November 14-28), and established Bulgaria as the dominant state on the Balkan Peninsula.

Sources: Blainey (1988, 60-63), Hurst (1972), Jelavich (1973, 1991), Langer (1950), Taylor (1954).

5. *Alliance Members:* Russia, China

Potential Aggressor(s): Japan

Duration of Alliance: May 1896 to December 1900

Duration of Deterrence Commitment: May 1896 to December 1900

Reasons for Alliance's Existence: In the aftermath of a disastrous war with Japan, China looked elsewhere to guarantee her security. Russia, hoping to expand in the Far East, provided the perfect opportunity. In return for a base at Port Arthur (established in 1898), Russia provided China with military aid and support against possible renewed aggression by the Japanese.

Crisis Involvement: None

Sources: Hurst (1972), Huth (1988), Taylor (1954).

6. *Alliance Members:* France, Belgium

Potential Aggressor(s): Germany

Duration of Alliance: September 1921 to December 1936

Duration of Deterrence Commitment: September 1921 to December 1936

Reasons for Alliance's Existence: Given Belgium's experiences in the First World War, it is not surprising that she turned to a great power to ensure her future. France, on the other hand, was interested in containing Germany, and ensuring that she was confronted in the event of German rearmament.

Crisis Involvement: In 1936, three years after Hitler's ascension to power, Germany sought to reoccupy the Rhineland. This region of western Germany was ordered

demilitarized by the treaty of Versailles, and had been a constant reminder to the German people of their defeat in the First World War. In March 1936 German troops entered the demilitarized Rhineland, which was threatening to the Belgians. Regardless of the fact that this was a major violation of the Versailles Treaty, the French did little but protest to the League of Nations. While the major powers denounced the German actions, no military moves were made to prevent Hitler's actions. In large part this failure of France to stand up to German aggression led to the cessation of the Franco-Belgian alliance at the end of 1936, with the proclamation of Belgian neutrality.

Sources: Brecher and Wilkenfeld, (1997); Grenville (1974); Hurst (1974), Lebow (1981), Reiter (1996).

7. *Alliance Members:* France, Poland

Potential Aggressor(s): Germany

Duration of Alliance: February 1921 to September 1939

Duration of Deterrence Commitment: February 1921 to September 1939

Reasons for Alliance's Existence: The First World War transferred much former German territory to the newly independent state of Poland. After numerous clashes in the early 1920s, Polish-German relations settled into an uneasy peaceful coexistence. Poland, fearful of German desires for her territory, particularly the Danzig area, sought alliance ties with France. The arrangements called for France to guarantee Polish security, and established greater trading ties between the two states.

Crisis Involvement: The German invasion of Poland on September 1, 1939 sparked the Second World War. In the aftermath of the Munich debacle, France took a stronger

approach to German aggression. When Poland's sovereignty was violated in the autumn of 1939, France was quick to declare war on Germany.

Sources: Brecher and Wilkenfeld (1997), Khong, (1996), Seton-Watson (1967), Schweller (1998), Thompson (1997).

8. *Alliance Members:* France, Czechoslovakia

Potential Aggressor(s): Germany

Duration of Alliance: 1924

Duration of Deterrence Commitment: 1924

Reasons for Alliance's Existence: In 1924, due to Czech fears of German resurgence, the French signed a treaty of alliance with Czechoslovakia. Limited in nature, it was replaced in 1925.

Crisis Involvement: None.

Sources: Grenville (1974), Hurst (1972), Seton-Watson (1967).

9. *Alliance Members:* France, Czechoslovakia

Potential Aggressor(s): Germany

Duration of Alliance: 1925-1939

Duration of Deterrence Commitment: 1925-1939

Reasons for Alliance's Existence: In 1925, France signed a tighter treaty of alliance with Czechoslovakia, including provisions for military intervention in case Czech sovereignty were threatened.

Crisis Involvement: The crises surrounding Czechoslovakia and Germany in 1938 and 1939 underscore the failure of British and French foreign policy in the 1930s. In 1938, demanding that German people in the Sudetenland portion of Czechoslovakia be

admitted to the German Reich, Hitler threatened war. The French, although bound by a treaty of alliance with the Czechs, signed away the Sudetenland at the Munich conference without a struggle. Scarcely was the ink dry on that document than German troops annexed the remainder of Czechoslovakia in the early spring of 1939. In spite of their treaty, the French did nothing but protest diplomatically.

Sources: Brecher and Wilkenfeld (1997), Craig (1966), Seton-Watson (1967).

10. Alliance Members: Italy, Romania

Potential Aggressor(s): Bulgaria

Duration of Alliance: 1926-1930

Duration of Deterrence Commitment: 1926-1930

Reasons for Alliance's Existence: Romanian-Bulgarian relations had been tense ever since the formation of the Balkan states after 1880. In the aftermath of the First World War, the interest in a greater Bulgaria emerged again. Italy, seeking a role as a great power in European affairs, allied with Romania against the Bulgarian threat in exchange for trade and influence within Romanian affairs. The short-lived alliance accomplished its task, and kept the Bulgarians at bay.

Crisis Involvement: In the one clash that occurs between Bulgaria and Romania, in 1936. Italy intervened with a show of force. Bulgaria, overwhelmed, was unable to gain its territorial objectives and backed down.

Sources: Burgwyn (1997), Seton-Watson (1967).

11. Alliance Members: Italy, Albania

Potential Aggressor(s): Yugoslavia

Duration of Alliance: 1927-1939

Duration of Deterrence Commitment: 1927-1939

Reasons for Alliance's Existence: Italy had long sought control over Albania, largely due to its ports and locale. Albania, on its part, feared its newly formed Yugoslav neighbor. In 1937, Italy formalized its relationship with Albania in the guise of a security alliance. It maintained this until 1939, when it invaded Albania and occupied it for the duration of the Second World War.

Crisis Involvement: In 1927, Yugoslavia was embroiled in conflict with Albania over territorial issues. Italy intervened on behalf of its minor ally, and was able to prevent Yugoslavia from gaining hegemony over Albania.

Sources: Brecher and Wilkenfeld (1997); Burgwyn (1997); Seton-Watson (1967).

12. Alliance Members: Great Britain, Egypt

Potential Aggressor(s): Italy

Duration of Alliance: 1936-1956

Duration of Deterrence Commitment: 1936-1943

Reasons for Alliance's Existence: The British granted Egypt sovereignty in 1936, and signed an alliance of 20 years duration with the Egyptian government. Fearful of Italian expansion in the Mediterranean and in Africa, Egypt agreed to permit the British access to the Suez Canal, and permitted the maintenance of British bases on Egyptian soil.

Crisis Involvement: During the Second World War, Britain and Italy fought battles in the desert from 1940-1943. After the defeat of Italy, Egypt resumed its attempt to remove the British from their territory, finally succeeding in 1956.

Sources: Brecher and Wilkenfeld (1997); Clodfelter (1992); Marlowe (1965).

13. Alliance Members: Soviet Union, Outer Mongolia

Potential Aggressor(s): Japan (until 1945); China (after 1945)

Duration of Alliance: 1936-1984

Duration of Deterrence Commitment: 1936-1962

Reasons for Alliance's Existence: Mongolia, after gaining independence, was continually fearful of Japanese aggression. In 1936 the Soviet Union signed a treaty of alliance with Mongolia, and relegated the Mongolian state to a virtual satellite of the Soviet Union.

The Soviet Union was able to use Mongolia as a base for its increasing conflicts with China and Japan, and in return Mongolia gained security and all of its military supplies from its Soviet patron. Prior to 1945, Japan was the major concern of the Mongolians, and, from 1945-1962, when territorial differences were settled, the Mongolians were wary of communist China.

Crisis Involvement: Throughout the 1930s, as Japan extended its empire into China and Manchukuo, Mongolia continually sparred with Japanese troops. In 1936 the Soviet Union involved itself in the conflict between Japan and Mongolia, and found itself involved again in 1938 and 1939, in the Changkugeng and Nomonhan conflicts. After the Second World War, Mongolia had a clash over territorial issues with China in 1947-1948, which the Soviets became involved in militarily as well.

Sources: Brecher and Wilkenfeld (1997); Coox (1977); Friters (1949); Tang (1959); Tillema (1991).

14. Alliance Members: United Kingdom, Poland

Potential Aggressor(s): Germany

Duration of Alliance: 1939

Duration of Deterrence Commitment: 1939

Reasons for Alliance's Existence: In the aftermath of Munich, and German demands made on Poland regarding Danzig, the British realized that German aggression must be halted on the continent. In the spring of 1939 Prime Minister Chamberlain made a statement to the British Parliament stating that Britain would go to war to protect Polish sovereignty.

Crisis Involvement: Britain's commitment was soon tested. On September 1, 1939, Germany invaded Poland. Britain declared war on Germany, and the Second World War began.

Sources: Brecher and Wilkenfeld (1997); Craig (1966); Khong, (1996), Seton-Watson (1967), Schweller (1998); Thompson (1997).

15. *Alliance Members:* United Kingdom, Jordan

Potential Aggressor(s): Israel

Duration of Alliance: 1936-1957

Duration of Deterrence Commitment: 1949-1957

Reasons for Alliance's Existence: Great Britain and Jordan signed an alliance agreement in 1936, when the Jordanian state was granted autonomy. Although tensions between the states flared during the Second World War, they cooled with the formation of the Israeli state in 1948 and the subsequent war. In 1949 Great Britain issued a public pledge, saying it would protect Jordan from Israeli aggression. In return, the British were able to maintain their rights to airfields and military bases within Jordan.

Crisis Involvement: Although numerous border skirmishes occurred after 1948, only two major crises erupted before the end of the British-Jordanian alliance in 1957. In 1953, as

a response to Jordanian infiltration into Israel, Israeli troops fired upon the Jordanian village of Qibya. After Jordan appealed to the United Nations and the British, Israel promised to cease its border incursions against Jordan. In 1956, Israeli forces retaliated for Jordanian raids against the city of Qalqilya. Jordan responded by asking for Iraqi assistance militarily, and inviting Iraqi troops into Jordan. Israel threatened retaliation if this occurred. The crisis ended with a British show of planes, and an Israeli promise not to invade Jordan unless she were physically attacked.

Sources: Blechman (1972); Brecher and Wilkenfeld (1997); Shimshoni (1988); Tillema (1991).

16. Alliance Members: United States, South Korea

Potential Aggressor(s): North Korea

Duration of Alliance: 1954-1984

Duration of Deterrence Commitment: 1954-1984

Reasons for Alliance's Existence: In the aftermath of the Korean War, the United States determined that an increased American presence in Southeast Asia was necessary to prevent the further spread of communism in that region. In 1954, the United States formalized its security arrangements with South Korea in the form of a military alliance. The United States gained access to markets for trade, and military bases in South Korea in exchange for providing weapons and security to the South Korean regime.

Crisis Involvement: Almost immediately after the cease fire was signed in 1953 ending the Korean War, violations on the part of North Korea began. At various points during the 1950s and 1960s, the North Koreans continually infiltrated the South, in an attempt to destabilize the South Korean regime. The United States troops stationed in South Korea

continually mobilized and repelled incursions from the North. In 1968 the United States was embroiled in a crisis with North Korea regarding the USS Pueblo, and in 1976 the United States was once again enmeshed in a crisis regarding North Korean attacks on American and South Korean soldiers. Since then the Korean peninsula has been relatively quiet.

Sources: Bandow and Carpenter (1992); Brecher and Wilkenfeld (1997); Curtis and Ham (1983); George and Smoke (1974); Tillema (1991).

17. Alliance Members: United States, Taiwan

Potential Aggressor(s): China

Duration of Alliance: 1955-1979

Duration of Deterrence Commitment: 1955-1979

Reasons for Alliance's Existence: In its attempts to contain Soviet and communist influence worldwide, the United States increasingly supported the Nationalist Chinese regime on Taiwan. Communist China maintained that Taiwan was merely a rebellious province, not an independent entity. Ratified in 1955, the United States treaty of alliance with Taiwan guaranteed protection of the home islands, with vagaries mentioned regarding the offshore islands of Quemoy and Matsu. In return, the United States was able to gain export markets on Taiwan, as well as maintain various naval bases. The alliance continued until 1979, when the United States formally recognized the People's Republic of China and ended its formal diplomatic relations with Taiwan.

Crisis Involvement: Four crises erupted for the United States regarding Taiwan. In 1954-1955, the United States sent the Seventh Fleet to halt Chinese shelling of the offshore islands, which, as was mentioned above, were not wholly within the protection purview

of the alliance treaty. Similar situations occurred in 1958-59, and in 1962. In each instance China made threatening overtures towards Taiwan, and the United States continually intervened with a show of naval force in order to force the Chinese to back down.

Sources: Blechman and Kaplan (1979); Brecher and Wilkenfeld (1997); Christensen (1996); George and Smoke (1974); Whiting (1975).

18. Alliance Members: United Kingdom, Malaysia

Potential Aggressor(s): Indonesia

Duration of Alliance: 1957-1971

Duration of Deterrence Commitment: 1957-1971

Reasons for Alliance's Existence: In 1957, Malaysia became an independent member of the British Commonwealth. The British, concerned with Indonesian hostility directed towards their former colony, and seeking to maintain good economic ties and military bases in Malaysia, formed an alliance in 1957 with the Malay state. In return for protection being provided by British bases and forces, Malaysia maintained its good economic relations with the British and permitted British garrisons to remain on the peninsula.

Crisis Involvement: Indonesian opposition to the Malay Federation came to a head in 1962, and Indonesian incursions began in early 1963. Until 1966, when a treaty ended hostilities between Malaysia and Indonesia, guerrilla warfare raged along the borders of Malaysia, instigated by the Indonesian government. British soldiers stationed on the Malay Peninsula took an active role in suppressing these raids.

Sources: Brecher and Wilkenfeld (1997); Tillema (1991).

19. Alliance Members: Soviet Union, Vietnam

Potential Aggressor(s): China

Duration of Alliance: 1978-1984

Duration of Deterrence Commitment: 1978-1984

Reasons for Alliance's Existence: China and Vietnam, communist neighbors, finally split due to ideological differences in the aftermath of American involvement in the Vietnam War. Vietnam allied itself closely with the Soviet Union, desiring the weaponry and trade it would receive from the international leader of the communist bloc. In return, the Soviet Union gained access to former American military bases that were remnants of the American involvement in Southeast Asia, and had a strong ally on China's border.

Crisis Involvement: China and Vietnam became embroiled in two conflicts between 1978 and 1984. On Christmas Day, 1978, Chinese troops invaded Vietnam in a show of displeasure over Vietnamese actions in Cambodia. The Soviet Union failed to provide any significant military support. Again, in 1984, China sent troops across the Vietnamese border in an attempt to once again restrain Vietnamese actions in Cambodia. The Soviet navy staged a landing of 400 troops off the shore of Vietnam as a show of solidarity, but made no direct military intervention.

Sources: Brecher and Wilkenfeld (1997); Horn (1987); McGregor (1988); Organski and Kugler (1980).

20. Alliance Members: United States, West Germany

Potential Aggressor(s): Soviet Union

Duration of Alliance: 1954-1984

Duration of Deterrence Commitment: 1954-1972

Reasons for Alliance's Existence: As tensions between the United States and the Soviet Union began to increase after the Second World War, occupied Germany became the symbol of a European continent divided by ideology. With the establishment of two German states in 1949, a Soviet blockade of Berlin in 1948, and American concern in communist expansion in the aftermath of the Korean War, the United States decided to bring West Germany into the NATO alliance. West German entry into NATO guaranteed an American presence in Europe, as the United States sought to contain communist influence worldwide. In return, the West German state was guaranteed security from its eastern neighbors.

Crisis Involvement: Two major crises erupted between West Germany and the Soviet Union from 1954-1972, and both were concerned with the status of divided Berlin. In 1958, and lasting until late in 1959, the Soviet Union declared that it desired that Berlin be turned into a "Free City", and Western occupation of West Berlin should come to an end. This would have effectively brought West Berlin under East German control, and deeply damaged America's reputation regarding its commitment to a free Europe. After both superpowers mobilized military forces, an agreement was reached excluding nuclear weapons from Berlin, but it remained a divided city.

In 1961, after two years of political wrangling over the status of Berlin, the Soviet Union erected the Berlin Wall. This effectively ended East German defections to the West for Berlin, and stabilized East German society. The fear on the part of the United States was of a Soviet military attempt to unify Berlin by force. The United States mobilized its military, and Khrushchev ended his demands for a decision to be made on

the Berlin question. In 1972 the occupying powers finally signed a treaty that solidified the status of Berlin as a divided city.

Sources: Brecher and Wilkenfeld (1997); Hanrieder (1989); Slusser (1973).

BIBLIOGRAPHY

Bibliography

- Achen, Christopher and Duncan Snidal. 1989. "Rational Deterrence Theory and Comparative Case Studies." *World Politics* 41 (2): 153-169.
- Albrecht-Carrie, Renee. 1973. *A Diplomatic History of Europe: Since the Congress of Vienna, revised edition*. New York: Harper & Row
- Aldrich, John H. and Forrest D. Nelson. 1984. *Linear Probability, Logit, and Probit Models*. Newbury Park: Sage Publications.
- Aldrich, John, John Sullivan and Eugene Brogatt. 1989. "Foreign Affairs and Issue Voting: Do Presidential Candidates 'Waltz' before a Blind Audience?" *American Political Science Review* 83 (1): 123-41.
- Allison, Graham. 1971. *Essence of Decision*. Boston: Little and Brown.
- Altfeld, Michael. 1984. "The Decision to Ally: A Theory and Test." *Western Political Quarterly* 37 (4): 523-44.
- Altfeld, Michael and Bruce Bueno de Mesquita. 1979. "Choosing Sides in Wars." *International Studies Quarterly* 23 (1): 87-112.
- Axelrod, Robert. 1984. *The Evolution of Cooperation*. New York: Basic Books.
- Bandow, Doug and Ted Galen Carpenter, Eds. 1992. *The U.S.-South Korean Alliance: Time for a Change*. New Brunswick: Transaction Publishers.
- Banks, Jeffrey. 1990. "Equilibrium Behavior in Crisis Bargaining Games." *American Journal of Political Science* 34 (3): 599-614.
- . 1991. *Signaling Games in Political Science*. New York: Harwood.
- Banks, Jeffrey and Joel Sobel. 1987. "Equilibrium Selection in Signaling Games." *Econometrica*, 55 (3): 647-62.
- Beck, Nathaniel. 1996. "Reporting Heteroskedasticity Consistent Standard Errors." *The Political Methodologist* 7: 3-6.
- Beck, Nathaniel and Jonathan Katz. 1995. "What to Do (and Not to Do) with Time-Series--Cross-Section Data." *American Political Science Review* 89 (3): 634-47.

Beck, Nathaniel, Jonathan Katz and Richard Tucker. 1998. "Beyond Ordinary Logit: Taking Time Seriously in Binary Time-Series Cross-Section Models." *American Journal of Political Science* 42 (4): 1260-88.

Bennett, D. Scott. 1997. Testing Alternative Models of Alliance Duration, 1816-1984." *American Journal of Political Science* 41(3): 846-78.

Bennett, D. Scott and Alan Stam. 1998. "Is Instrumental Rationality a Universal Phenomenon?" Paper presented at the 56th Annual Meeting of the Midwest Political Science Association, April, Chicago, IL

Blainey, Geoffrey. 1988. *The Causes of War*. 3rd edition. New York: The Free Press.

Blechman, Barry. 1972. "The Impact of Israel's Reprisals on Behavior of the Bordering Arab Nations directed at Israel." *Journal of Conflict Resolution* 16 (2): 155-81.

Brecher, Michael and Jonathan Wilkenfeld. 1997. *A Study of Crisis*. Ann Arbor: University of Michigan Press.

Brehm, John and Scott Gates. 1997. *Working, Shirking, and Sabotage*. Ann Arbor: University of Michigan Press.

Boulding, Kenneth. 1962. *Conflict and Defense*. New York: Harper and Row.

Brozka, Michael. 1982. "Arms Transfer Data Sources." *Journal of Conflict Resolution* 26 (1): 77-108.

Bueno de Mesquita, Bruce. 1978. "Systemic Polarization and the Occurrence and Duration of War." *Journal of Conflict Resolution* 22 (3): 241-68.

---. 1981. *The War Trap*. New Haven: Yale University Press.

---. 1985. "Toward a Scientific Understanding of International Conflict: A Personal View." *International Studies Quarterly* 29 (2): 121-36.

Bueno de Mesquita, Bruce, Gary Woller, and Randolph Siverson. 1992. "War and the Fate of Regimes: A Comparative Analysis." *American Political Science Review* 86 (3): 638-46.

Bueno de Mesquita, Bruce and David Lalman. 1992. *War and Reason: Domestic and International Imperatives*. New Haven: Yale University Press.

Bueno de Mesquita, Bruce, and Randolph Siverson. 1995. "War and the Survival of Political Leaders." *American Political Science Review* 84 (3): 841-55.

- Bueno de Mesquita, Bruce, James Morrow, and Ethan Zorick. 1997. "Capabilities, Perception, and Escalation," *American Political Science Review* 91 (1): 15-27.
- Burgwyn, H. James. 1997 *Italian Foreign Policy in the Interwar Period 1918-1940*. Westport: Praeger Publishers.
- Bull, Hedley. 1977. *The Anarchical Society*. New York: Columbia University Press.
- Carlsnaes, Walter. 1992. "The Agent-Structure Problem in Foreign Policy Analysis." *International Studies Quarterly* 36 (3): 245-70.
- Carlson, Lisa. 1998. "Crisis Escalation: An Empirical Test in the Context of Extended Deterrence." *International Interactions* 24 (3): 225-54.
- Carr, E.H. 1949. *The Twenty Years' Crisis*. London: Macmillan.
- Chernoff, Fred. 1995. *After Bipolarity: NATO and the Vanishing Threat*. Ann Arbor: University of Michigan Press.
- Choucri, Nazli and Robert C. North. 1974. *Nations in Conflict: National Growth and International Violence*. San Francisco: W. H. Freeman and Company.
- Christensen, Thomas. 1996. *Useful Adversaries: Grand Strategy, Domestic Mobilization, and Sino-American Conflict, 1947-1958*. Princeton: Princeton University Press.
- Christensen, Thomas and Jack Snyder. 1990. "Chain Gangs and Passed Bucks: Predicting Alliance Patterns in Multipolarity." *International Organization* 44 (2): 137-68.
- . 1997. "Progressive Research on Degenerative Alliances." *American Political Science Review* 91 (4): 919-22.
- Clodfelter, Micheal. 1992. *Warfare and Armed Conflicts*. London: McFarland.
- Coneybeare, John and Todd Sandler. 1991. "The Triple Entente and Triple Alliance 1880-1914: A Collective Goods Approach." *American Political Science Review* 84 (4): 1197-1206.
- Coox, Alvin D. 1977. *The Anatomy of a Small War: The Soviet-Japanese Struggle for Changkufeng/Khasan, 1938*. Westport: Greenwood Press.
- Craig, Gordon. 1966. *Germany, 1866-1945*. New York: Oxford University Press.
- Curtis, Gerald L. and Sung-joo Han. 1983. *The U.S.-South Korean Alliance*. Lexington: Lexington Books.

Dessler, David. 1989. "What's at Stake in the Agency-Structure Debate?" *International Organization* 43 (3): 441-73.

Deutsch, Karl and J. David Singer. 1964. "Multipolar Power Systems and International Stability." *World Politics* 16 (4): 390-406.

Diehl, Paul. 1992. "What are they Fighting For? The Importance of Issues in International Conflict Research." *Journal of Peace Research* 29 (3): 333-44.

Dion, Douglas. 1998. "Evidence and Inference in the Comparative Case Study." *Comparative Political Studies* 30 (2): 127-45.

Dubin, Jeffrey and Douglas Rivers. 1989. "Selection Bias in Linear Regression, Logit, and Probit Models." *Sociological Methods and Research*, 18 (3): 360-90.

Duke, Simon. 1989. *United States Military Forces and Installations in Europe*. Oxford: Oxford University Press.

Duke, Simon and Wolfgang Krieger, Eds. 1993. *U.S. Military Forces in Europe: The Early Years, 1945-1970*. Oxford: Oxford University Press.

Dupuy, R. Ernest and Trevor N. Dupuy. 1970. *The Encyclopedia of Military History from 3500 B. C. to the Present. Revised edition*. New York: Harper & Row.

Elman, Colin and Miriam Fendius Elman. 1997. "Lakatos and Neorealism: A Reply to Vasquez." *American Political Science Review* 91 (4): 923-26.

Eyerman, Joseph and Robert Hart. 1996. "An Empirical Test of the Audience Costs Proposition: Democracy Speaks Louder than Words." *Journal of Conflict Resolution* 40 (3): 597-617.

Fearon, James. 1990. "Counterfactuals and Hypothesis Testing in Political Science." *World Politics* 43 (2): 169-95.

---. 1993. "Selection Effects and Deterrence." Typescript. University of Chicago.

---. 1994a. "Signaling versus the Balance of Power and Interests." *Journal of Conflict Resolution* 38 (2): 236-69.

---. 1994b. "Domestic Political Audiences and the Escalation of International Disputes." *American Political Science Review* 88 (4): 577-99.

---. 1995. "Rationalist Expectations for War." *International Organization* 49 (3): 379-414.

---. 1997. "Signaling Foreign Policy Interests." *Journal of Conflict Resolution* 41 (1): 68-90.

Friedman, Gil and Harvey Starr. 1997. *Agency, Structure, and International Politics: From Ontology to Empirical Inquiry*. London: Routledge.

Friedman, Jeffrey, ed. 1996. *The Rational Choice Controversy*. New Haven: Yale University Press.

Friters, Gerald M. 1949. *Outer Mongolia and Its International Position*. Baltimore: The John Hopkins University Press.

Fudenburg, Drew and Jean Tirole. 1993. *Game Theory*. Cambridge: MIT Press.

Gartner, Scott Sigmund and Randolph Siverson. 1996. "War Expansion and War Outcomes." *Journal of Conflict Resolution* 40 (1): 4-15.

Gartzke, Erik and Michael Simon. 1996. "Gains from Trade versus Social Contract Models: Testing Alternative Theories of Alliance Formation." Paper presented at the annual meeting of the International Studies Association Meeting, Midwest, October, St. Louis.

Gates, Scott and Sherry Bennett Quinones. 1994. "Game Theoretic and Empirical Methodologies: Ever the Two Shall Meet?" *Political Methodologist* 6 (2): 30-6.

Gates, Scott and Brian Humes. 1997. *Games, Information, and Politics: Applying Game Theoretic Models to Political Science*. Ann Arbor: University of Michigan Press.

Gates, William and Katsuaki Terawasa. 1992. "Commitment, Threat Perceptions, and Expenditures in a Defense Alliance." *International Studies Quarterly* 36 (1): 101-18.

Geddes, Barbara. 1991. "How the Cases You Choose Affect the Answers You Get: Selection Bias in Comparative Politics." *Political Analysis* 2: 131-50.

George, Alexander. 1979. "Case Studies and Theory Development: the Method of Structured, Focused Comparison." In Paul Gordon, ed. *Diplomacy: New Approaches in History, Theory, and Policy*. New York: Free Press.

George, Alexander and Richard Smoke. 1974. *Deterrence in American Foreign Policy: Theory and Practice*. New York: Columbia University Press.

---. 1989. "Deterrence in Foreign Policy." *World Politics* 41 (2): 170-82.

Geva, Nehemia and Alex Mintz, Eds. 1997. *Decision-making on War and Peace: The Cognitive-Rational Debate*. Boulder: Lynne Rienner.

- Gibbons, Robert. 1992. *Game Theory for Applied Economists*. Princeton: Princeton University Press.
- Gibler, Douglas. 1996. "Alliances that never balance: the Territorial Settlement Treaty." *Conflict Management and Peace Science* 15 (1): 75-98.
- Gibler, Douglas and John Vasquez. 1998. "Uncovering the Dangerous Alliances, 1495-1980." *International Studies Quarterly* 42 (4): 785-807.
- Gochman, Charles and Russell Leng. 1983. "Realpolitik and the road to war: an analysis of attributes and behavior." *International Studies Quarterly* 27 (1): 97-120.
- Gochman, Charles and Zeev Maoz. 1984. " Militarized Interstate Disputes: Patterns, Processes and Procedures, 1816-1976." *Journal of Conflict Resolution*, 28 (4): 585-616.
- Goertz, Gary. 1994. *Contexts of International Politics*. Cambridge: Cambridge University Press.
- Gowa, Joanne. 1994. *Allies, Adversaries, and International Trade*. Princeton: Princeton University Press.
- Green, Donald and Ian Shapiro. 1994. *Pathologies of Rational Choice Theory*. New Haven: Yale University Press.
- Greene, William. 1993. *Econometric Analysis*. 3rd ed. New York: Macmillan.
- Grenville, J.A.S. 1974. *The Major International Treaties 1914-1973*. London: Methuen.
- Grenville, J.A.S and Bernard Wasserstein. 1987. *The Major International Treaties since 1945*. New York: Methuen.
- Grieco, Joseph. 1988. "Anarchy and the Limits of Cooperation: a Realist Critique of the newest Liberal Institutionalism." *International Organization* 42 (3). 485-507.
- Gurr, Ted Robert. 1974. "Persistence and Change in Political Systems, 1800-1971." *American Political Science Review* 68 (4): 1482-1504.
- Gurr, Ted Robert, Keith Jagers, and Will Moore. 1997. *Polity II Codebook*. Boulder: Center for Comparative Politics, University of Colorado.
- Hagan, Joe. 1993. *Political Opposition and Foreign Policy in Comparative Perspective*. Boulder, CO: Lynne Rienner.
- Hanrieder, Wolfgang. 1989. *Germany, America, Europe*. New Haven: Yale University Press.

Hanushek, Eric and John Jackson. 1977. *Statistics for Social Sciences*. New York: Academic Press.

Harkavy, Robert E. 1975. *The Arms Trade and International Systems*. Cambridge: Ballinger.

---. 1982. *Great Power Competition for Overseas Bases: The Geopolitics of Access Diplomacy*. New York: Pergamon Press.

--- 1989. *Bases Abroad: The Global Foreign Military Presence*. New York: Oxford University Press.

Harsanyi, John. 1967-8. "Games with Complete Information Played by Bayesian Players." Parts 1-3. *Management Science* 14: 159-82, 320-334, 486-502.

Harvey, Frank. 1998. Rigor Mortis or Rigor, More Tests: Necessity, Sufficiency, and Deterrence Logic." *International Studies Quarterly* 42 (4): 675-707.

Heckman, James. 1979. "Sample Selection Bias as a Specification Error." *Econometrica* 47 (2): 153-62.

Holsti, Kalevi. 1992. *Peace and War: Armed Conflicts and International Order, 1648-1989*. Cambridge: Cambridge University Press.

Holsti, Ole R., P. Terrance Hopmann, and John D. Sullivan. 1973. *Unity and Disintegration in International Alliances*. New York: John Wiley & Sons.

Hopmann, P. Terrance. 1998. "Complexity and Uncertainty in International Systems (book review of *System Effects*, by Robert Jervis)." *Mershon International Studies Review* 42 (2): 313-6.

Hopmann, P. Terrance, Dina Zinnes, and J. David Singer, Eds. 1981. *Cumulation in International Relations Research*. Denver: University of Denver.

Horn, Robert C. 1987. *Alliance Politics Between Comrades: The Dynamics of Soviet-Vietnamese Relations*. Los Angeles: Rand/UCLAC SSIB.

Hurst, Michael. 1972. *Key Treaties for the Great Powers, 1814-1914*. New York: Newton Abbott, David and Charles.

Huth, Paul. 1988. *Extended Deterrence and the Prevention of War*. New Haven: Yale University Press.

---. 1990. "The Extended Deterrence Value of Nuclear Weapons." *Journal of Conflict Resolution* 34 (2): 270-90.

---. 1994. "When do States Take on Extended Deterrence Commitments?" in Francis Wayman and Paul Diehl, eds. *Reconstructing Realpolitik*. Ann Arbor: University of Michigan Press.

---. 1996. *Standing Your Ground*. Ann Arbor: University of Michigan Press.

---. 1997. "Reputations and Deterrence." *Security Studies* 7 (1): 72-99.

---. 1998. "Major Power Intervention in International Crises, 1918-1988." *Journal of Conflict Resolution* 42 (6): 744-70.

Huth, Paul and Bruce Russett. 1984. "What Makes Deterrence Work?" *World Politics*, 36 (3): 496-526.

---. 1988. "Deterrence Failure and Crisis Escalation", *International Studies Quarterly* 32 (1): 29-45.

---. 1990. "Testing Deterrence Theory: Rigor Makes a Difference." *World Politics*, 42 (3): 466-501.

---. 1993. "General Deterrence between Enduring Rivals: Testing three Competitive Models." *American Political Science Review* 87 (1): 61-73.

Hyland, William. 1987. *Mortal Rivals*. New York: Random House.

Iida, Keisuke. 1993. "When and How do Domestic Constraints Matter?" *Journal of Conflict Resolution* 37 (3): 403-26.

Institute for International Strategic Studies. 1961-1984. *The Military Balance*. London: Institute for International Strategic Studies.

International Monetary Fund. 1950-1984. *Direction of Trade*. New York: International Monetary Fund.

Jagers, Keith and Ted Gurr. 1995. "Tracking Democracy's Third Wave with the Polity III data." *Journal of Peace Research* 32 (4): 469-83.

Jelavich, Barbara. 1973. *The Ottoman Empire, the Great Powers, and the Straits Question 1870-1887*. Bloomington: Indiana University Press.

---. 1991. *Russia's Balkan Entanglements*. New York: Cambridge University Press.

Jervis, Robert. 1970. *The Logic of Images in International Relations*. Princeton: Princeton University Press.

---. 1976. *Perception and Misperception in International Politics*. Princeton: Princeton University Press.

---. 1988. "War and Misperception." In Robert Rotberg and Theodore Rabb, eds. *The Origin and Prevention of Major Wars*. New York: Cambridge University Press.

---. 1997. *System Effects*. Princeton: Princeton University Press.

Jervis, Robert, Richard Ned Lebow, and Janice Gross Stein, eds. 1985. *Psychology and Deterrence*. Baltimore: Johns Hopkins University Press.

Joll, James. 1992. *The Origins of the First World War*. Second edition. Oxford: Oxford University Press.

Jones, Daniel, Stuart Bremer and J. David Singer. 1996. "Militarized Interstate Disputes, 1816-1992: Rationale, Coding Rules, and Empirical Patterns." *Conflict Management and Peace Science* 15 (2): 163-213.

Kahn, Hermanin. 1965. *On Escalation: Metaphors and Scenarios*. Baltimore: Penguin Books.

Kahneman, David and Amos Tversky. 1979. "Prospect Theory: An Analysis of Decision under Risk." *Econometrica* 47 (2): 263-91.

Kann, Robert A. 1974. *A History of Austria-Hungary*. Berkeley: University of California Press.

Kegley, Charles and Gregory Raymond. 1990. *When Trust Breaks Down*. Columbia: University of South Carolina Press.

Keohane, Robert. 1971. "The Big Influence of Small Allies." *Foreign Policy* 1 (2): 161-82.

Khong, Yuen Foong. 1996. "Confronting Hitler and Its Consequences", in Tetlock, Philip and Aaron Belkin, Eds. *Counterfactual Thought Experiments in World Politics*. Princeton: Princeton University Press.

Kilgour, D. Marc and Frank Zagare. 1991. "Credibility, Uncertainty, and Deterrence." *American Journal of Political Science*, 35 (3): 303-34.

---. 1993. "Asymmetric Deterrence." *International Studies Quarterly* 37(1): 1-27.

---. 1994. "Uncertainty and the Role of the Pawn in Extended Deterrence." *Synthese*, 100 (3): 379-412.

- Kim, Woosang and Bruce Bueno de Mesquita. 1995. "How Perceptions Influence the Risk of War." *International Studies Quarterly* 39(1): 51-66.
- King, Gary. 1989. *Unifying Political Methodology: The Likelihood Theory of Statistical Inference*. Cambridge: Cambridge University Press.
- Kinsella, David and Herbert Tillema. 1995. "Arms and Aggression in the Middle East: Overt Military Interventions, 1948-1991." *Journal of Conflict Resolution* 39 (2): 306-29.
- Kolodziej, Edward. 1989. *Making and Marketing Arms: the French Experience and its Implications for the International System*. Princeton: Princeton University Press.
- Krause, Keith. 1992. *Arms and the State: Patterns of Military Production and Trade*. Cambridge: Cambridge University Press.
- Kreps, David. 1991. *A Course in Microeconomic Theory*. Princeton: Princeton University Press.
- Kugler, Jacek. 1984. "Terror without Deterrence." *Journal of Conflict Resolution* 28 (4): 470-506.
- Kugler, Jacek and Douglas Lemke, eds. 1996. *Parity and War: Critical Reexaminations of the War Ledger*. Ann Arbor: University of Michigan Press.
- Kuhn, Thomas. 1962. *The Structure of Scientific Revolutions*. Chicago: University of Chicago Press.
- Lakatos, Imre. 1970. "The Methodology of Scientific Research Programmes", in Lakatos and Alan Musgrave, eds. *Criticism and the Growth of Knowledge*. Cambridge: Cambridge University Press.
- Lalman, David and David Newman. 1991. "Alliance Formation and National Security." *International Interactions* 16 (2): 229-253.
- Lalman, David, Joe Oppenheimer and Piotr Swistak. 1993. "Formal Rational Choice Theory: A Cumulative Science of Politics. In Ada Finifter, ed. *Political Science: The State of the Discipline II*. Washington, DC: American Political Science Association.
- Langer, William L. 1950. *European Alliances and Alignments 1871-1890*. New York: Alfred A. Knopf.
- . 1972. *An Encyclopedia of World History, 5th ed.* Boston: Houghton Mifflin Company
- Laurance, Edward J. 1992. *The International Arms Trade*. New York: Lexington Books.

- Lebow, Richard Ned. 1981. *Between Peace and War: The Nature of International Crisis*. Baltimore: Johns Hopkins University Press.
- Lebow, Richard Ned and Janice Gross Stein. 1987. "Beyond Deterrence." *Journal of Social Issues* 43 (1): 5-71.
- . 1989. "Rational Deterrence Theory: I Think, Therefore I Deter." *World Politics* 41 (2): 208-24.
- . 1990. "Deterrence: The Elusive Dependent Variable." *World Politics* 42 (4): 336-69.
- Leng, Russell. 1984. "Reagan and the Russians: Crisis Bargaining Beliefs and the Historical Record." *American Political Science Review* 78 (2): 338-55.
- . 1993. *Interstate Crisis Behavior, 1816-1980. Realism versus Reciprocity*. Cambridge: Cambridge University Press.
- Leng, Russell and Hugh Wheeler. 1979. "Influence Strategies, Success, and War." *Journal of Conflict Resolution* 23 (4): 657-63.
- Levy, Jack. 1988. "When do Deterrent Threats Work?" *British Journal of Political Science* 18 (4): 485-512.
- . 1989. "Quantitative Studies of Deterrence." In Stern, Paul C., Robert Axelrod, Robert Jervis, and Roy Radner, eds. 1989. *Perspectives on Deterrence*. 1989. New York: Oxford University Press.
- . 1997. "Prospect Theory and The Rational-Cognitive Debate." In Geva, Nehemia and Alex Mintz, eds. 1997. *Decision-making on War and Peace: The Cognitive-Rational Debate*. Boulder: Lynne Rienner.
- Lijphart, Arend. 1971. "Comparative Politics and Comparative Method." *American Political Science Review* 65 (3): 682-93.
- Liska, George, *Nations in Alliance: The Limits of Interdependence*, 1962. Baltimore: Johns Hopkins University Press.
- Lowi, Theodore. 1992. "The State in Political Science: How We become what We Study." *American Political Science Review* 86 (1): 1-7.
- Mackie, Thomas and Richard Rose. 1974. *The International Almanac of Electoral History*. New York: Macmillan.

- Mansfield, Edward and Rachel Bronson. 1997. "Alliances, Preferential Trading Arrangements, and International Trade." *American Political Science Review* 91(1): 94-107.
- Marlowe, John. 1965. *Anglo-Egyptian Relations 1800-1956*. London: Frank Cass.
- May, Ernest R. ed. 1984. *Knowing One's Enemies: Intelligence Assessment Before The Two World Wars*. Princeton: Princeton University Press.
- McGregor, Charles. 1988. *The Sino-Vietnamese Relationship and the Soviet Union*. London: International Institute for Strategic Studies.
- McKelvey, Richard and Thomas Palfrey. 1998. "Quantal Response Equilibria for Extensive Form Games." *Experimental Economics* 1(1): 9-41.
- McLaughlin, Sara, Scott Gates, Havard Hegre, Ranveig Gissinger, and Nils Petter Gleditsch. 1998. "Timing the Changes in Political Structures: A New Polity Database." *Journal of Conflict Resolution* 42 (2): 231-42.
- Mearsheimer, John J. 1983. *Conventional Deterrence*. Ithaca: Cornell University Press.
- Meng, Chun-Lo and Peter Schmidt. 1986. "On the Costs of Partial Observability in the Bivariate Probit Model." *International Economic Review* 26 (1): 71-86.
- Mercer, Jonathan. 1996. *Reputation and International Politics*. Ithaca: Cornell University Press.
- . 1997. "Reputation and Rational Deterrence Theory." *Security Studies*, 7 (1): 100-13.
- Midlarsky, Manus. 1988. *The Onset of World War*. Boston: Unwin Hyman.
- . 1989. "Hierarchical Equilibria and the Long-run Stability of Multipolar Systems." In. Manus Midlarsky, ed. *Handbook of War Studies*. Ann Arbor: University of Michigan Press.
- Mitchell, Brian. 1975. *European Historical Statistics, 1750-1970*. New York: Columbia University Press.
- Mo, Jongryn. 1994. "Two level games with Endogenous Domestic Coalitions." *Journal of Conflict Resolution* 38 (3): 402-23.
- Moe, Terry. 1979. "On the Scientific Status of Rational Models." *American Journal of Political Science* 23 (1): 215-43.

- Monroe, Kristin Renwick. 1996. *The Heart of Altruism: Perceptions of a Common Humanity*. Princeton: Princeton University Press.
- Morgan, Patrick M. 1983. *Deterrence: A Conceptual Analysis*, 2nd ed.. Beverly Hills: Sage Publications.
- Morgan, T. Clifton. 1994. *Untying the Knot of War*. Ann Arbor: University of Michigan Press.
- Morgan, T. Clifton and Glenn Palmer. 1997. "Room to Move: Security, Proaction and Institutions in Foreign Policy Decision Making." In Randolph Siverson, ed. *Strategic Politicians, Institutions, and Foreign Policy*. Ann Arbor: University of Michigan Press.
- Morgenthau, Hans J. 1985. *Politics Among Nations: the Struggle for Power and Peace*. 6th ed. New York: Knopf.
- Morrow, James. 1987. "On the Theoretical Basis of a Measure of National Risk Attitudes." *International Studies Quarterly* 31 (4): 423-38.
- . 1988. "Social Choice and System Structure in World Politics." *World Politics* 41 (1): 75-97.
- . 1989. "Capabilities, Uncertainty, and Resolve: A Limited Information Model of Crisis Bargaining." *American Journal of Political Science* 74 (3): 941-72.
- . 1991. "Alliances and Asymmetry: An Alternative to the Capability Aggregation Model of Alliances." *American Journal of Political Science* 35 (4): 904-33.
- . 1992. "Signaling Difficulties with Linkage in Crisis Bargaining." *International Studies Quarterly* 36 (2): 153-72.
- . 1993. "Arms vs. Allies: Trade-Offs in the Search for Security." *International Organization* 47 (2): 207-33.
- . 1994a. "Alliances, Credibility, and Peacetime Costs." *Journal of Conflict Resolution* 38 (2): 270-97.
- . 1994b. *Game Theory for Political Scientists*. Princeton: Princeton University Press.
- . 1997. "A Rational Choice Approach to International Conflict." In Geva, Nehemia and Alex Mintz, eds. 1997. *Decision-making on War and Peace: The Cognitive-Rational Debate*. Boulder: Lynne Rienner.
- Most, Benjamin and Harvey Starr. 1989. *Inquiry, Logic and International Politics*. Columbia: University of South Carolina Press.

- Mueller, John. 1973. *War, Presidents, and Public Opinion*. New York: Wiley.
- Nalebuff, Barry. 1987. "Credible Pretrial Negotiation." *Rand Journal of Economics*, 18 (2): 198-209.
- Nicholson, Michael. 1992. *Rationality and the Analysis of International Conflict*. New York: Cambridge University Press.
- Nincic, Miroslav. 1992. *Democracy and Foreign Policy. The Fallacy of Political Realism*. New York: Columbia University Press.
- Norpoth, Helmut. 1987. "Guns, Butter and Government Popularity in Britain." *American Political Science Review* 81 (3): 949-59.
- Olson, Mancur and Richard Zeckhauser. 1966. "An Economic Theory of Alliances." *Review of Economics and Statistics* 48 (2): 266-79.
- O'Neill, Barry. 1995. "Weak Models, Nil Hypotheses, and Decorative Statistics." *Journal of Conflict Resolution* 39 (4): 731-47.
- Oren, Ido. 1990. "The War Proneness of Alliances." *Journal of Conflict Resolution* 34 (2): 208-33.
- Organski, A.F.K. and Jacek Kugler. 1980. *The War Ledger*. Chicago; University of Chicago Press.
- Osborne, Martin and Ariel Rubinstein. 1994. *A Course in Game Theory*. Cambridge: MIT Press.
- Osgood, Robert E. 1962. *NATO: The Entangling Alliance*. Chicago: University of Chicago Press.
- . 1968. *Alliances and the American Foreign Policy*. Baltimore: Johns Hopkins University Press.
- Ostrom, Charles and Francis Hoole. 1978. "Alliances and War Revisited." *International Studies Quarterly* 22 (2): 215-36.
- Ostrom, Charles and Brian Job. 1986. "The President and the Political Use of Force." *American Political Science Review* 80 (2): 541-66.
- Papayounou, Paul. 1997. "Intra-alliance Bargaining and U.S. Bosnia Policy." *Journal of Conflict Resolution* 41 (1): 91-116.
- Paul, T.V. 1994. *Asymmetric Conflicts: War Initiation by Weaker Powers*. New York: Cambridge University Press.

- Posen, Barry. 1984. *The Sources of Military Doctrine*. Ithaca: Cornell University Press.
- . 1984-85. "Measuring the European Conventional Balance: Coping with Complexity in Threat Assessment." *International Security* 9 (3): 47-88.
- Powell, Robert. 1985. "The Strategic Foundations of Nuclear Deterrence Theory." *Political Science Quarterly* 100 (1): 75-96.
- . 1987. "Crisis Bargaining, Escalation, and MAD." *American Political Science Review* 81 (3): 717-35.
- . 1990. *Nuclear Deterrence Theory: The Search for Credibility*. Cambridge, Cambridge University Press.
- . 1991. "Absolute and Relative Gains in International Relations Theory", *American Political Science Review*, 85 (4):, 1303-20.
- . 1993. "Guns, Butter and Anarchy." *American Political Science Review* 87 (1): 115-32.
- Pribham, E.F. 1921. *The Secret Treaties of Austria-Hungary, 1879-1914*. New York: Howard Fertig.
- Prins, Brandon and Christopher Sprecher. 1999. 'Institutional Constraints, Political Opposition, and Interstate Dispute Escalation: Evidence from Parliamentary Systems, 1946-89.' *Journal of Peace Research* 36 (3): 271-87.
- Pundik, Ron. 1994. *The Struggle for Sovereignty: Relations Between Great Britain and Jordan 1946-1951*. Oxford: Blackwell.
- Putnam, Robert. 1993. "Diplomacy and Domestic Politics: The Logic of Two Level Games", in Peter B. Evans, Harold K. Jacobson, and Robert D. Putnam, eds. *Double-Edged Diplomacy*. Berkeley: University of California Press.
- Quinones, Sherry and Scott Gates. 1995. "Economic Risk and the Politics of Protectionism." *International Interactions* 21 (1): 63-83.
- Raknerud, Arvid and Havard Hegre. 1997. "The Hazard of War: Reassessing the Evidence for the Democratic Peace." *Journal of Peace Research* 34 (4): 385-404.
- Rasmusen, Eric. 1989. *Games and Information*. Oxford: Blackwell.
- Ray, James Lee. 1990. "Friends as Foes: International Conflict and Wars between Formal Allies." In Charles Gochman and Alan Sabrosky eds. *Prisoners of War? Nation States in the Modern Era*. Lexington: D.C. Heath.

---. 1995. *Democracy and International Conflict*. Columbia: University of South Carolina Press.

Reed, William. 1999. "A Unified Model of Conflict Onset and Escalation: Capabilities, Democracy, and Status Quo Evaluations", *American Journal of Political Science*, (forthcoming).

Reiter, Dan. 1994. "Learning, Realism, and Alliances: The Weight of the Shadow of the Past." *World Politics* 46 (3): 490-526.

---. 1996. *Crucible of Beliefs: Learning, Alliances, and World Wars*. Ithaca: Cornell University Press.

---. 1998. "The Emerging Significance of Military Strategy in the Study of International Conflict." Paper presented at the annual meeting of the Peace Science Society (International), East Brunswick, New Jersey, October, 1998.

Rosenau, James N, ed. 1976. *In Search of Global Patterns*. New York: The Free Press.

Rothstein, Robert L. 1968. *Alliances and Small Powers*. New York: Columbia University Press.

Russett, Bruce. 1963. "The Calculus of Deterrence." *Journal of Conflict Resolution* 7 (1): 97-109.

Sabrosky, Alan. 1980. "Interstate Alliances. Their Reliability and the Expansion of War". In J. David Singer, ed. *The Correlates of War II: Testing some Realpolitik Models*. New York: Free Press.

Sagan, Scott and Kenneth Waltz. 1995. *The Spread of Nuclear Weapons: A Debate*. New York: Norton.

Sandler, Todd and Keith Hartley. 1995. *The Economics of Defense*. New York: Cambridge University Press.

Schelling, Thomas. 1960. *The Strategy of Conflict*. Cambridge: Harvard University Press.

---. 1966. *Arms and Influence*. 1966. New Haven: Yale University Press.

Schrodt, Philip. 1982. *Preserving Arms Distributions in a Multi-polar World: a Mathematical Study*. Denver: University of Denver Press.

---. 1983. "Arms Transfers and International Behavior in the Arabian Sea Area." *International Interactions* 10 (2): 101-27.

- Schroeder, Paul. 1976. "Alliances, 1815-1945; Weapons of Power and Tools of Management". In Klaus Knorr, ed. *Historical Dimensions of National Security Problems*. Lawrence: University Press of Kansas.
- Schultz, Kenneth. 1998. "Domestic Opposition and Signaling in International Crises." *American Political Science Review* 92 (4): 829-44.
- Schweller, Randall. 1997. "New Realist Research on Alliances: Refining, not Refuting, Waltz's Balancing Proposition." *American Political Science Review*, 91 (4): 927-30.
- . 1998. *Deadly Imbalances: Hitler's Strategy of World Conquest*. New York: Columbia University Press.
- Sen, Amartya. 1970. *Collective Choice and Social Welfare*. New York: North Holland.
- Seton-Watson, Hugh. 1967. *Eastern Europe Between The Wars 1918-1941*. 3rd ed. New York: Harper Torchbooks.
- Shimshoni, Jonathan. 1988. *Israel and Conventional Deterrence: Border Warfare from 1953-1970*. Ithaca: Cornell University Press.
- Signorino, Curtis. 1999. "Strategic Interaction and the Statistical Analysis of International Conflict." *American Political Science Review* 93 (2): 279-98.
- Signorino, Curtis and Jeffrey Ritter. 1999. "Tau-b or not Tau-b: Measuring the Similarity of Foreign Policy Positions." *International Studies Quarterly* 43 (1): 115-44.
- Simon, Michael and Erik Gartzke. 1996. "Do Democracies Flock Together, or do Opposites Attract?" *Journal of Conflict Resolution* 40 (4): 617-35.
- Singer, J. David. 1961. "The Level of Analysis Problem in International Relations." *World Politics* 14 (1): 77-92.
- Singer, J. David and Melvin Small. 1966a. "National Alliance Commitments and War Involvement, 1815-1945", *Peace Research Society (International) Papers* 5: 109-140.
- . 1966b. "Formal Alliances, 1815 –1939." *Journal of Peace Research* 1 (1): 1-32.
- . 1968. "Alliance Aggregation and the Onset of War, 1815-1945." In J. David Singer, ed. *Quantitative International Politics*. New York: Free Press.
- Singer, J. David, Stuart Bremer, and John Stuckey. 1972. "Capability Distribution, Uncertainty and Major Power War, 1820-1965." In *Peace, War and Numbers*, Bruce Russett, ed. Beverly Hills: Sage.

Sislin, John. 1994. "Arms as Influence: The Determinants of Successful Influence." *Journal of Conflict Resolution* 38 (4): 665-89.

Siverson, Randolph, ed. 1997. *Strategic Politicians, Institutions, and Foreign Policy*. Ann Arbor: University of Michigan Press.

Siverson, Randolph and Joel King. 1979. "Alliances and the Expansion of War." In J. David Singer, ed. *To Augur Well: Early Warning Indicators in World Politics*. Beverly Hills: Sage.

---. 1980. "Attributes of National Alliance Membership and War Participation, 1815-1965." *American Journal of Political Science* 24 (1): 1-15.

Siverson, Randolph and Julie Emmons. 1991. "Birds of a Feather." *Journal of Conflict Resolution* 35 (3): 285-306.

Siverson, Randolph and Harvey Starr. 1991. *The Diffusion of War*. Ann Arbor: University of Michigan Press.

Slusser, Robert. 1973. *The Berlin Crisis of 1961*. Baltimore: Johns Hopkins University Press.

Small, Melvin and J. David Singer. 1969. "Formal Alliances: An Extension of the Basic Data." *Journal of Peace Research* 6 (3): 257-82.

---. 1982. *Resort to Arms: International and Civil Wars, 1816-1980*. Beverly Hills: Sage.

Smith, Alastair. 1995a. *A Theory of Alliances*. Ph.D. Dissertation, University of Rochester.

---. 1995b. "Alliance Formation and War." *International Studies Quarterly* 39 (4): 405-25.

---. 1996. "To Intervene or not to Intervene; A Biased Decision." *Journal of Conflict Resolution* 40 (1): 16-40.

---. 1997. "The Effect of Foreign Policy Statements on Foreign Nations and Domestic Electorates." In Randolph Siverson, ed. *Strategic Politicians, Institutions, and Foreign Policy*. Ann Arbor: University of Michigan Press.

---. 1998. "International Crises and Domestic Politics." *American Political Science Review* 92 (3): 623-38.

Snidal, Duncan. 1986. "The Game Theory of World Politics." *World Politics* 38 (1): 25-57.

- . 1991. "Relative Gains and the Pattern of International Cooperation." *American Political Science Review* 85 (3): 701-26.
- Spence, Michael. 1973. "Job Market Signaling." *Quarterly Journal of Economics* 87 (3): 355-74.
- Stam, Alan. 1996. *Win, Lose, or Draw*. Ann Arbor: University of Michigan Press.
- Statesman's Yearbook. 1886-1939. *Statistical and Historical Annual of the State of the World*. London: Macmillan.
- Stockholm International Peace Research Institute (SIPRI). 1975. *Arms Trade Registers: The Arms Trade with the Third World*. Stockholm: Almqvist and Wiksell.
- . 1961-1984. *World Armaments and Disarmaments*. Oxford: Oxford University Press.
- Snyder, Glen H. 1961. *Deterrence and Defense: Toward A Theory of National Security*. Princeton: Princeton University Press.
- . 1984. "The Security Dilemma in Alliance Politics." *World Politics* 36 (4): 461-95.
- . 1991. "Alliances, Balance, and Stability." *International Organization* 45 (1): 121-42.
- . 1997. *Alliance Politics*. Ithaca: Cornell University Press.
- Snyder, Glenn and Paul Diesing. 1977. *Conflict Among Nations*. Princeton: Princeton University Press.
- Sorokin, Gerald. 1994. "Alliance Formation and General Deterrence: A Game-Theoretic Model and the Case of Israel." *Journal of Conflict Resolution* 38 (2): 298-325.
- Sprout, Harold and Margaret Sprout. 1956. *Man-Milieu Relationships in the Context of Politics*. Princeton: Center of International Affairs, Princeton University.
- . 1965. *The Ecological Perspective on Human Affairs*. Princeton: Princeton University Press.
- . 1968. *An Ecological Paradigm for the Study of Politics*. Princeton: Center of International Affairs, Princeton University.
- Starr, Harvey. 1978. "Opportunity and Willingness as Ordering Concepts in the Study of War." *International Interactions* 4 (4): 363-87.
- Stern, Paul C., Robert Axelrod, Robert Jervis, and Roy Radner, eds.. 1989. *Perspectives on Deterrence*. 1989. New York: Oxford University Press.

- Tang, Peter S. H. 1951 *Russian and Soviet Policy in Manchuria and Outer Mongolia 1911-1931*. Durham: Duke University Press.
- Taylor, A.J.P. 1954. *The Struggle for Mastery in Europe 1848-1918*. Oxford: Oxford University Press.
- Tetlock, Philip and Aaron Belkin. Eds. 1996. *Counterfactual Thought Experiments in World Politics*. Princeton: Princeton University Press.
- Thompson, William R. 1997. "Anglo-German Rivalry and the 1939 Failure of Deterrence." *Security Studies*, 7 (2): 58-89.
- Tillema, Herbert. 1991. *International Armed Conflict since 1945: A Bibliographic Handbook of Wars and Interventions*. Boulder: Westview.
- United Nations. 1950-1984. *Yearbook of International Trade Statistics*. New York: United Nations.
- United States Arms Control and Disarmament Agency. 1975-1984. *World Military Expenditures and Arms Transfers 1963-1990*. Washington, DC: Government Printing Office.
- Vasquez, John. 1987. "The Steps to War: Toward a Scientific Explanation of Correlates of War Findings." *World Politics* 40 (1):108-145.
- . 1993. *The War Puzzle*. Cambridge: Cambridge University Press.
- . 1997. "The Realist Paradigm and Degenerative versus Progressive Research Programs: An Appraisal of Neotraditional Research on Waltz's Balancing Propositions." *American Political Science Review* 91 (4): 899-912.
- . 1998. *The Power of Power Politics*. Cambridge: Cambridge University Press.
- Walt, Stephen. 1987. *The Origins of Alliances*. Ithaca: Cornell University Press.
- . 1991. "The Renaissance of Security Studies." *International Studies Quarterly* 35 (2): 211-39.
- . 1997. "The Progressive Power of Realism." *American Political Science Review* 91 (4): 931-6.
- Waltz, Kenneth N. 1959. *Man, the State and War: A Theoretical Analysis*. New York: Columbia University Press.
- . 1964. "The Stability of a Bipolar World." *Daedalus* 93 (4): 881-909.
- . 1979. *Theory of International Politics*. New York: Random House.

---. 1997. "Evaluating Theories." *American Political Science Review* 91 (4): 913-18.

Ward, Michael Don. 1982. *Research Gaps in Alliance Dynamics*. Denver: University of Denver Press.

Wayman, Frank. 1990. "Alliances and War: A Time Series Analysis", in Charles Gochman and Alan Sabrosky eds. *Prisoners of War? Nation States in the Modern Era*. Lexington: D.C. Heath.

Wendt, Alexander. 1987. "The Agent-Structure Problem in International Relations." *International Organization* 17 (3): 335-70.

Whiting, Allen. 1975. *The Chinese Calculus of Deterrence*. Ann Arbor: University of Michigan Press.

Wolfe, Thomas W. 1970. *Soviet Power and Europe 1945-1970*. Baltimore: Johns Hopkins University Press.

Wu, Samuel. 1990. "To Attack or not to Attack: a Theory and Empirical Assessment of Extended Immediate Deterrence." *Journal of Conflict Resolution* 34 (4): 531-52.

Zagare, Frank C. 1987. *The Dynamics of Deterrence*. Chicago: University of Chicago Press.

---. 1990. "Rationality and Deterrence." *World Politics* 42 (3): 238-60.

Zinnes, Dina. 1976. "The Problem of Cumulation". In James Rosenau, ed. *In Search of Global Patterns*. New York: Free Press.

---. 1980. "Three Puzzles in Search of a Researcher", *International Studies Quarterly* 24 (3): 315-42.

---. 1991. "Musings on Mathematical Modeling." *Conflict Management and Peace Science* 11 (2): 1-17.

Zinnes, Dina, Harvey Starr, Barbara Hill and Stephen Portnoy. 1985. "From War to War: Stochastic Models of Wartime Alignment Patterns." In Michael D. Ward ed. *Theories, Models, and Simulations in International Relations*. Boulder: Westview Press.

Zinnes, Dina and Robert Muncaster. 1997. "Prospect Theory versus Expected Utility Theory: A Dispute Sequence Appraisal." In Geva, Nehemia and Alex Mintz, eds. 1997. *Decision-making on War and Peace: The Cognitive-Rational Debate*. Boulder: Lynne Rienner.

MICHIGAN STATE UNIV. LIBRARIES



31293018127260

