Conflict economics contributes to an understanding of violent conflict and peace in two important ways. First, it applies economic concepts and models to help one understand diverse conflict activities such as war, terrorism, genocide, and peace. Second, it treats appropriation as a fundamental economic activity, joining production and exchange as a means of wealth acquisition. Drawing upon more than a half century of scholarship, the book presents important data trends, theoretical models, and empirical results on economic aspects of violent conflicts and peacebuilding efforts worldwide. Although much work in the field is abstract, the book is made accessible to a broad audience of students, scholars, and policymakers from various disciplines by relying on historical data, relatively simple graphs, and intuitive narratives. In exploring the interdependence of economics and conflict, the book presents current perspectives on conflict and peace in novel ways and offers new insights into economic aspects of violence.

Charles H. Anderton received his PhD in economics from Cornell University. He is Professor of economics at the College of the Holy Cross (Worcester, Massachusetts). His course offerings include the economics of war and peace, topics in conflict economics, and genocide: perspectives from the social sciences. Anderton’s research on conflict and peace has appeared in journals such as Economic Inquiry, Journal of Economic Behavior and Organization, International Studies Quarterly, Journal of Conflict Resolution, and Journal of Genocide Research, as well as in the Handbook of Defense Economics, Volumes I and II. He co-edited (with Jurgen Brauer), Economic Aspects of Genocides, Other Mass Atrocities, and Their Prevention (2016).

John R. Carter received his PhD in economics from Cornell University. He is Professor Emeritus at the College of the Holy Cross (Worcester, Massachusetts). While at Holy Cross, Carter taught a wide range of courses including public choice and political economy, experimental microeconomics, and research methodology. In 1993, Carter received the Holy Cross Distinguished Teaching Award. His research on conflict and peace has appeared in numerous journals and books including Defence and Peace Economics, Economic Inquiry, Journal of Economic Behavior and Organization, as well as in the Handbook of Defense Economics, Volume II.
Principles of Conflict Economics

The Political Economy of War, Terrorism, Genocide, and Peace

CHARLES H. ANDERTON
College of the Holy Cross

JOHN R. CARTER
College of the Holy Cross
To our families
Contents

List of Figures xii
List of Tables xvii
Preface and Acknowledgments xix

PART I INTRODUCTION 1
1 Nature, Scope, and Interdependencies of Conflict and Economics 3
1.1 What Is Conflict Economics? 3
1.2 A Look at Conflict and Peace Large and Small 5
1.3 Conflict and Peace over Time and Geographic Space 14
1.4 Methodologies of Conflict Economics 16
1.5 Organization of the Book 25
1.6 Bibliographic Notes 27

PART II KEY CONCEPTS AND MODELS FOR THE ECONOMIC ANALYSIS OF CONFLICT AND PEACE 29
2 Production Possibilities and Economic Growth 31
2.1 Production Possibilities Model 31
2.2 Applications 37
2.3 Bibliographic Notes 45
3 Demand and Supply 47
3.1 Demand, Supply, and Market Equilibrium 47
3.2 Changes in Demand and Supply 50
3.3 Applications 51
3.4 A Taxonomy of Goods: Private, Common Resource, Club, and Public 56
3.5 Bibliographic Notes 58
## Contents

### 4 Rational Choice Theory
- 4.1 Rational Choice Model 59
- 4.2 Changes in Parameters 65
- 4.3 Applications 69
- 4.4 Bibliographic Notes 75

### 5 Game Theory
- 5.1 Basic Concepts and the Aggression Game 76
- 5.2 Prisoner’s Dilemma 82
- 5.3 Repeated Prisoner’s Dilemma 85
- 5.4 Chicken 89
- 5.5 Bibliographic Notes 92

### 6 Behavioral Economics and the Economics of Identity
- 6.1 Key Concepts in Behavioral Economics 93
- 6.2 Reference Dependence and Loss Aversion: A Formal Model 99
- 6.3 Key Concepts in the Economics of Identity 103
- 6.4 Identity Utility: A Formal Model 107
- 6.5 Bibliographic Notes 111

### 7 Network Economics
- 7.1 Key Concepts of Network Analysis 113
- 7.2 Behavioral Outcomes on Networks 119
- 7.3 Linear Quadratic Model of Conflict and Peace 125
- 7.4 Application: September 11, 2001 Terrorist Attacks in the USA 132
- 7.5 Bibliographic Notes 134

### 8 Conflict Success Functions and the Theory of Appropriation Possibilities
- 8.1 Conflict Success Functions 136
- 8.2 A Model of Appropriation Possibilities 138
- 8.3 Appropriation Possibilities in a Production/Exchange Economy 143
- 8.4 Bibliographic Notes 155

### Part III Economic Aspects of War, Terrorism, and Genocide

#### 9 Geography and Technology of Conflict
- 9.1 Boulding’s Model of Spatial Conflict 159
- 9.2 O’Sullivan’s Three-Dimensional Model of Spatial Conflict 169
## Contents

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Title</th>
<th>Pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>9.3</td>
<td>Technology, Terrain, and Tactics: Schelling’s Inherent Propensity toward Peace or War</td>
<td>172</td>
</tr>
<tr>
<td>9.4</td>
<td>Bibliographic Notes</td>
<td>178</td>
</tr>
<tr>
<td>10</td>
<td>Bargaining Theory of War and Peace</td>
<td>179</td>
</tr>
<tr>
<td>10.1</td>
<td>Two Propositions and a Key Question</td>
<td>179</td>
</tr>
<tr>
<td>10.2</td>
<td>Elements of Conflict and Peace</td>
<td>182</td>
</tr>
<tr>
<td>10.3</td>
<td>Rationalist Sources of Violent Conflict</td>
<td>184</td>
</tr>
<tr>
<td>10.4</td>
<td>Nonrational Sources of Violent Conflict</td>
<td>194</td>
</tr>
<tr>
<td>10.5</td>
<td>Sources of Peace in the Bargaining Model</td>
<td>198</td>
</tr>
<tr>
<td>10.6</td>
<td>Empirical Studies of Risk Factors for War</td>
<td>201</td>
</tr>
<tr>
<td>10.7</td>
<td>Bibliographic Notes</td>
<td>205</td>
</tr>
<tr>
<td>11</td>
<td>Conflict between States</td>
<td>207</td>
</tr>
<tr>
<td>11.1</td>
<td>Definitions</td>
<td>207</td>
</tr>
<tr>
<td>11.2</td>
<td>Patterns of Armed Interstate Conflict</td>
<td>208</td>
</tr>
<tr>
<td>11.3</td>
<td>Theories of Interstate War Risk and Prevention</td>
<td>210</td>
</tr>
<tr>
<td>11.4</td>
<td>Empirical Studies of Interstate Conflict Risk and Prevention</td>
<td>214</td>
</tr>
<tr>
<td>11.5</td>
<td>Economic Consequences of Interstate Conflicts</td>
<td>223</td>
</tr>
<tr>
<td>11.6</td>
<td>Bibliographic Notes</td>
<td>227</td>
</tr>
<tr>
<td>12</td>
<td>Civil Wars</td>
<td>229</td>
</tr>
<tr>
<td>12.1</td>
<td>Definitions</td>
<td>229</td>
</tr>
<tr>
<td>12.2</td>
<td>Patterns of Armed Civil Conflict</td>
<td>230</td>
</tr>
<tr>
<td>12.3</td>
<td>Theories of Civil War Risk and Prevention</td>
<td>234</td>
</tr>
<tr>
<td>12.4</td>
<td>Empirical Studies of Civil War Risk and Prevention</td>
<td>241</td>
</tr>
<tr>
<td>12.5</td>
<td>Economic Consequences of Civil Wars</td>
<td>246</td>
</tr>
<tr>
<td>12.6</td>
<td>Bibliographic Notes</td>
<td>251</td>
</tr>
<tr>
<td>13</td>
<td>Terrorism</td>
<td>253</td>
</tr>
<tr>
<td>13.1</td>
<td>Definition</td>
<td>253</td>
</tr>
<tr>
<td>13.2</td>
<td>Patterns of Terrorism</td>
<td>254</td>
</tr>
<tr>
<td>13.3</td>
<td>Theories of Terrorism Risk and Prevention</td>
<td>258</td>
</tr>
<tr>
<td>13.4</td>
<td>Empirical Studies of Terrorism Risk and Prevention</td>
<td>275</td>
</tr>
<tr>
<td>13.5</td>
<td>Economic Consequences of Terrorism</td>
<td>281</td>
</tr>
<tr>
<td>13.6</td>
<td>Bibliographic Notes</td>
<td>282</td>
</tr>
<tr>
<td>14</td>
<td>Genocides and Other Mass Atrocities</td>
<td>284</td>
</tr>
<tr>
<td>14.1</td>
<td>Definitions</td>
<td>284</td>
</tr>
<tr>
<td>14.2</td>
<td>Patterns of Mass Atrocity and Low-Level Violence against Civilians</td>
<td>286</td>
</tr>
<tr>
<td>14.3</td>
<td>Key Actors in Mass Atrocities: Perspectives from Genocide Studies</td>
<td>290</td>
</tr>
</tbody>
</table>
## Contents

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>14.4</td>
<td>Rational Choice Models of Mass Atrocity Risk and Prevention</td>
<td>294</td>
</tr>
<tr>
<td>14.5</td>
<td>Game Theory Models of Mass Atrocity Risk and Prevention</td>
<td>299</td>
</tr>
<tr>
<td>14.6</td>
<td>Network Models of Genocide Propagation and Prevention</td>
<td>308</td>
</tr>
<tr>
<td>14.7</td>
<td>Empirical Studies of Mass Atrocity Risk and Prevention</td>
<td>313</td>
</tr>
<tr>
<td>14.8</td>
<td>Economic Consequences of Mass Atrocity</td>
<td>316</td>
</tr>
<tr>
<td>14.9</td>
<td>Bibliographic Notes</td>
<td>318</td>
</tr>
</tbody>
</table>

### Part IV Security and Peace

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>Arms Rivalry, Proliferation, and Arms Control</td>
<td>323</td>
</tr>
<tr>
<td>15.1</td>
<td>Definitions</td>
<td>323</td>
</tr>
<tr>
<td>15.2</td>
<td>Patterns of Military Spending, Arms Rivalry, Proliferation, and Arms Control</td>
<td>324</td>
</tr>
<tr>
<td>15.3</td>
<td>Richardson Arms Race Model</td>
<td>335</td>
</tr>
<tr>
<td>15.4</td>
<td>Intriligator-Brito Model</td>
<td>338</td>
</tr>
<tr>
<td>15.5</td>
<td>Economic Choice Model of Arms Rivalry</td>
<td>345</td>
</tr>
<tr>
<td>15.6</td>
<td>Empirical Studies</td>
<td>352</td>
</tr>
<tr>
<td>15.7</td>
<td>Bibliographic Notes</td>
<td>355</td>
</tr>
<tr>
<td>16</td>
<td>Security Alliances</td>
<td>357</td>
</tr>
<tr>
<td>16.1</td>
<td>Definitions and Examples</td>
<td>357</td>
</tr>
<tr>
<td>16.2</td>
<td>Patterns of Interstate Alliances</td>
<td>359</td>
</tr>
<tr>
<td>16.3</td>
<td>Pure Public Good Model of Alliances</td>
<td>361</td>
</tr>
<tr>
<td>16.4</td>
<td>Joint Product Model of Alliances</td>
<td>369</td>
</tr>
<tr>
<td>16.5</td>
<td>Empirical Studies</td>
<td>372</td>
</tr>
<tr>
<td>16.6</td>
<td>Applications of Alliance Theory to Global Challenges</td>
<td>377</td>
</tr>
<tr>
<td>16.7</td>
<td>Bibliographic Notes</td>
<td>379</td>
</tr>
<tr>
<td>17</td>
<td>Peace</td>
<td>381</td>
</tr>
<tr>
<td>17.1</td>
<td>Definitions</td>
<td>381</td>
</tr>
<tr>
<td>17.2</td>
<td>Patterns of Peace</td>
<td>383</td>
</tr>
<tr>
<td>17.3</td>
<td>Economic Models and Peace Creation</td>
<td>389</td>
</tr>
<tr>
<td>17.4</td>
<td>Economic Aspects of Postwar Reconstruction</td>
<td>397</td>
</tr>
<tr>
<td>17.5</td>
<td>Empirical Studies of Conflict Prevention and Peace</td>
<td>402</td>
</tr>
<tr>
<td>17.6</td>
<td>Economic Consequences of Peace</td>
<td>409</td>
</tr>
<tr>
<td>17.7</td>
<td>Bibliographic Notes</td>
<td>411</td>
</tr>
</tbody>
</table>

**Appendix A Brief Primer on Weapons Technologies**

<table>
<thead>
<tr>
<th>Section</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>A.1</td>
<td>Small Arms and Light Weapons (SALW)</td>
<td>412</td>
</tr>
<tr>
<td>A.2</td>
<td>Major Conventional Weapons (MCW)</td>
<td>413</td>
</tr>
</tbody>
</table>

© in this web service Cambridge University Press www.cambridge.org
Contents

A.3 Weapons of Mass Destruction (WMD) 415
A.4 Cyberwar Technologies 416
A.5 Emerging Military Technologies 417

Appendix B Formal Bargaining Model of War and Peace 418
B.1 Basic Model of Resource Conflict 418
B.2 Selected Sources of Violence 421

Appendix C Matrix Algebra Methods for Solving Network Models 424
C.1 Equilibrium Actions for Figure 7.5 Network 424
C.2 Equilibrium Actions for Top Tentacle of Figure 14.8 Network 426
C.3 Equilibrium Actions for Figure 17.1 Network of Conflict Resolution Organizations 426

Appendix D Conflict and Peace Datasets 428
D.1 Interstate Conflicts (Chapter 11) 428
D.2 Intrastate Conflicts (Chapter 12) 429
D.3 Terrorism (Chapter 13) 430
D.4 Mass Atrocities (Chapter 14) 431
D.5 Military Spending, Armaments, and Armed Forces Personnel (Chapter 15) 433
D.6 Interstate Alliances (Chapter 16) 434
D.7 Peace (Chapter 17) 435

Appendix E Regression Methods 438

References 441

Author Index 482

Subject Index 493
Figures

1.1 War onsets per decade by war type, 1820–2017. page 6
1.2 International and domestic terrorist incidents combined, 1970–2016. 7
1.3 State-perpetrated mass atrocities (1900–2017) and low-level attacks against civilians (1995–2016). 8
1.4 Lund’s conflict and peace life cycle. 15
1.5 Interdependencies between economics and conflict. 17
1.6 Real military spending in selected nations. 19
1.7 USA’s real merchandise trade with Germany and Japan. 20
2.1 Production possibilities frontier (PPF). 34
2.2 Specialized production and trade. 36
2.3 Economic diversion, destruction and displacement, and disruption from violent conflict. 38
2.4 Channels by which military spending can impact economic growth. 40
3.1 Market demand, supply, and equilibrium. 48
3.2 Market response to an increase in supply. 50
3.3 Small arms control. 52
3.4 Market conditions for AK-47 assault rifles in Mexico. 54
3.5 Trade and the liberal peace hypothesis. 55
4.1 Indifference curves for two goods. 61
4.2 Comparatively steeper indifference curves. 63
4.3 Consumer’s budget line. 64
4.4 Consumption optimum. 65
4.5 Price response and the law of demand. 66
4.6 Income response. 68
4.7 Terrorist targeting choices in the rational choice model. 70
List of Figures

9.4 Offensive technological innovation by player A. 164
9.5 Installation of military base. 165
9.6 Effect of a buffer zone. 166
9.7 Strategic depth. 168
9.8 Pyramid model of spatial distribution of military power. 170
9.9 Rebel concentration of military power and conquest of the state. 171
9.10 Lanchester attack/defend model. 174
10.1 Estimated economic costs of World War I. 180
10.2 Bargaining model with peaceful settlement. 183
10.3 Inconsistent expectations with fighting. 184
10.4 Two-person commitment problem. 186
10.5 Commitment problem and preemptive war. 187
10.6 Commitment problem and preventive war. 188
10.7 Commitment problem and indivisibilities. 190
10.8 Possible fighting when player B is subject to political bias. 193
10.9 Malevolent preferences with fighting. 197
10.10 Third-party economic intervention. 199
10.11 Third-party mediation or military intervention. 199
10.12 Third-party intervention favoring player A. 200
11.1 MID Onsets, MIDs-Use-Force, and MIDs-to-War, 1816–2010. 208
11.2 Incomplete information with outcome of peace or war dependent on economic conditions. 211
11.3 Austria-Hungary’s guns vs. butter tradeoffs during World War I. 226
12.1 Stock of armed civil conflicts, 1946–2017. 231
12.2 Net revenue model of rebellion. 238
12.3 Sources of civil war in the bargaining model. 240
12.4 Syria’s lost real GDP during civil war, 2011–14. 250
13.1 Terrorism incidents per year worldwide, 1970–2016. 254
13.2 Terrorism fatalities per year worldwide 1970–2016. 255
13.3 Terrorists’ optimal choice of terrorist activity and composite good. 259
13.4 Deterrence and benevolence price policies. 261
13.5 Metal detectors, reduced hijackings, and increases in other high-profile attacks. 263
13.6 Terrorists’ use of social media to alter individuals’ preferences. 265
13.7 Hostage game. 268
13.8 Offensive counterterrorism games between governments. 271
List of Figures

13.9 Terrorist network structures. 273
14.1 Mass atrocities perpetrated by states and nonstate groups over time. 286
14.2 Mass atrocity actors’ triangle. 291
14.3 Leader’s allocation of resources to contesting rebels and attacking civilians. 295
14.4 Effects of propaganda on individuals’ preferences. 298
14.5 Strategic incentives for violence against civilians in civil war. 300
14.6 Stage game for the social evolution of peace and aggression. 303
14.7 Fitness equations and the social evolution of peace and aggression. 306
14.8 Stylized model of network tentacles of Nazi persecution. 310
14.9 Genocide contagion in a networked neighborhood. 312
15.1 World real military spending, 1988–2017. 325
15.2 Real military spending patterns in selected interstate arms rivalries. 327
15.3 Richardson arms race model. 338
15.4 Intriligator-Brito model. 340
15.5 Emergent nuclear state in the Intriligator-Brito model. 342
15.6 One-sided antiballistic missile defense in the Intriligator-Brito model. 343
15.7 Inherent propensity toward war with high attack effectiveness. 345
15.8 Player A’s optimal allocation of resources to civilian and military goods. 347
15.9 Arms rivalry equilibrium in the economic choice model. 348
15.10 Effect of economic growth in A on arms rivalry equilibrium. 349
15.11 Arms control in the economic choice model. 351
16.1 Number of interstate alliances as reported by ATOP and COW. 360
16.2 Number of interstate alliances with defense pacts and with three or more members. 360
16.3 Ally A’s optimal allocation of resources to civilian and military goods. 362
16.4 Reaction functions and alliance equilibrium. 364
16.5 Free riding by ally B. 365
16.6 Alliance suboptimality. 366
16.7 Disproportionate burden for wealthier ally B. 368
16.8 Reaction functions for a pure versus impure public good. 371
17.1 Network of conflict resolution organizations. 390
List of Figures

17.2 Third-party promotion of negative peace in the bargaining model. 393
17.3 Positive peace in the bargaining model. 394
17.4 Dynamic transitions from peace to war and from war to peace. 395
17.5 Stable war and stable peace. 397
Tables

1.1 Selected gangs and organized crime groups. \hspace{1cm} page 10
1.2 Identity theft in the USA, 2008–17. \hspace{1cm} 11
1.3 Multilateral peace missions by intergovernmental organizations, 2007–16. \hspace{1cm} 12
1.4 Selected NGOs and INGOs promoting peace in Afghanistan, Iraq, and Syria, 2017. \hspace{1cm} 13
1.5 Destruction of human and physical assets during World War II. \hspace{1cm} 20
1.6 Number of refugees and IDPs at the beginning of 2017 for selected nations (in millions). \hspace{1cm} 21
1.7 Selected journals that focus on economic aspects of conflict and peace. \hspace{1cm} 27
2.1 Economic and military data for North Korea, South Korea, and USA, 2016. \hspace{1cm} 42
3.1 Taxonomy of goods with examples. \hspace{1cm} 57
4.1 Utilities assigned by the function $U = xy$. \hspace{1cm} 62
6.1 Gain and loss frames in De Martino et al. (2006) experiment. \hspace{1cm} 97
7.1 Calculation of actor A’s betweenness centrality based on Figure 7.2. \hspace{1cm} 118
7.2 Determination of Key Player Negative in Figure 7.5. \hspace{1cm} 129
7.3 Changes in benefit, cost, and link parameters in Figure 7.5. \hspace{1cm} 130
8.1 Numerical example of resource conflict model. \hspace{1cm} 141
10.1 Reference dependence, loss aversion, and preventive war. \hspace{1cm} 195
11.1 Interstate war onsets, duration, severity, and intensity, 1816–2016. \hspace{1cm} 209
11.2 Effects of interstate war on trade. \hspace{1cm} 225
12.1 Geographic distribution of armed civil conflicts, 1975–2015. \hspace{1cm} 232
List of Tables

12.2 Persistence of civil conflict and enduring intrastate rivalries in selected countries, 1987–2016. 233
12.3 Range of cumulative battle-related deaths from armed civil conflicts, 1989–2016. 234
13.1 Terrorism by region, 1980–2016. 256
13.2 Terrorist attack modes, 1970–2016. 256
13.3 Number of suicide terrorist attacks and fatalities worldwide, 1970–2016. 257
13.4 Terrorism attacks and fatalities by terrorist organization, 2012–16. 258
13.5 International terrorist hijackings, 1968–77. 262
13.6 Optimal terrorism network when secure and when vulnerable. 274
14.1 Estimated civilian fatalities for selected state and nonstate-group mass atrocities. 288
14.2 Comparative measures of seriousness for mass atrocities, wars, and terrorism. 289
14.3 “Low-level” violence against civilians worldwide, various years. 290
15.1 Weapons of mass destruction for selected nations and ISIS, 2017. 329
15.2 Estimated effects of large-scale weapons of mass destruction attacks. 331
15.3 Selected USA/Russia (USSR) arms control treaties. 332
15.4 Selected nonproliferation treaties and programs. 333
15.5 Selected SALW control organizations and protocols. 334
16.1 Selected military alliances. 358
16.2 Burden sharing in NATO, 1964, 1971, and 2015. 373
17.1 Regional global peace index (GPI) scores, 2014–18. 384
17.2 Ten most and least peaceful countries based on GPI, 2018. 385
17.3 Ten most and least peaceful countries based on PPI, 2017. 386
17.4 Intergovernmental organization (IGO) peace missions worldwide, 2016. 387
17.5 Number of peacebuilding organizations in selected conflict areas, 2018. 388
17.6 Brauer and Dunne’s 12 principles for designing peace. 403
A.1 Small arms and light weapons categories and subcategories. 413
A.2 Major conventional weapons (MCW) categories. 414
E.1 Regression results for military spending as a function of democracy and income. 439
Preface and Acknowledgments

Now the earth was corrupt in God's sight and was full of violence.
Genesis 6:11

Throughout history, violent conflict has been a conspicuous aspect of the human experience. In recent decades, terrorism, civil strife, nation-state warfare, genocide, and the proliferation of weapons of mass destruction have dominated the headlines. At first blush it might appear that economics has little to say about such realms of conflict. After all, most economics textbooks restrict their attention to the behavior of consumers, producers, and governments operating peacefully in secure environments. Fortunately, however, the field of conflict economics can contribute greatly to an understanding of conflict and peace in two important ways. First, conflict economics applies the concepts, principles, and methods of economics to the study of diverse conflict and peace activities. Second, conflict economics treats the coercive appropriation of goods and resources as a fundamental economic activity, revealing how conflict both shapes and is shaped by the traditional economic activities of production and trade.

This book provides the reader with an accessible overview of the basic principles and major themes of conflict economics. Following an introduction to the field in Chapter 1, Chapters 2 through 8 survey many of the economic concepts and methods applied in subsequent chapters. These chapters provide numerous applications to conflict and peace topics and will be useful to readers who either have no formal training in economics or would like to review economic principles with a focus on conflict and peace. Chapters 9 through 17 explore major topics in conflict economics including the geography and technology of conflict; the bargaining theory of war and peace; conflict between states; civil war; terrorism; genocide and other mass atrocities; arms rivalry, proliferation, and arms control; alliance behavior; and peace.
These chapters provide a balanced mix of applications, theoretical models, and empirical content. Bibliographic notes are provided at the ends of chapters to help readers who want to pursue topics in greater depth. Five appendixes are also available: a brief primer on weapons technologies, a formal bargaining model of war and peace, matrix algebra methods for solving network models with Excel, an overview of conflict and peace datasets, and a primer on regression analysis.

The book’s chapters can be combined in various ways to focus on historically important topics in conflict economics and peace research more generally. For example, following the introductory chapter and coverage of standard production, supply and demand, rational choice, and game theory tools (Chapters 2–5), one could emphasize economic aspects of interstate conflict by including the geography and technology of conflict, the bargaining theory of war and peace, and conflict between states (Chapters 9–11). If one wished to focus upon civil wars, terrorism, or genocide, the same chapters could be followed but with civil wars (Chapter 12), terrorism (Chapter 13), or genocides and other mass atrocities (Chapter 14) substituting for interstate conflict (Chapter 11). A similar approach could be followed if one wished to emphasize security economics in the form of arms rivalry, proliferation, and arms control (Chapter 15) and security alliances (Chapter 16). Across all of these possibilities, one could selectively include new perspectives on conflict and peace available in behavioral economics and the economics of identity (Chapter 6), network economics (Chapter 7), and the integration of conflict and trade at the core of economic analysis (Chapter 8). Moreover, peace (Chapter 17) serves as a valuable capstone to any of these modules.

Given our training and background, the book concentrates on economic aspects of conflict and peace. While we incorporate contributions from various disciplines, especially political science, psychology, and sociology, we defer to specialists in other fields to convey those contributions more thoroughly. Our emphasis on economic aspects of conflict and peace can be valuable to both economists and non-economists. For economists, the book shows numerous ways in which economic methods can be applied to conflict and peace issues. Moreover, the book’s treatment of appropriative conflict as a fundamental category of economic activity will help economists reduce the gap that now exists between textbook models of peaceful production and exchange and real economies subject to potential or actual violence. The book should also appeal to those with backgrounds in fields other than economics. Non-economists are naturally drawn to incorporate economic variables in their studies of conflict and peace, and our book offers accessible coverage of such variables from the perspective of the economist. Also, many
models and methods central to conflict economics (for example, rational choice theory, game theory, and econometrics) are of growing importance in disciplines other than economics.

Much of the academic work in conflict economics is theoretical and abstract, but we take steps to increase the accessibility of the text. In addition to the overview of economic fundamentals in Chapters 2 through 8, the book contains extensive coverage of conflict and peace data, intuitive narratives, relatively simple algebra and graphs, and summaries of empirical evidence on conflict and peace phenomena. The book should be useful to scholars, policymakers, and practitioners from a variety of disciplines and backgrounds, including economics, political science, international relations, social psychology, peace studies, military sciences, and public policy. It should likewise be suitable in undergraduate or beginning level graduate courses on the economics of war and peace at universities and military service schools and in training programs on violence prevention, conflict management, postconflict reconstruction, and peacebuilding in government agencies and nonprofit organizations.

The social science literature on conflict is massive. Hence, we are selective in the topics covered, theories emphasized, empirical articles reviewed, and bibliographic notes provided. Most of the empirical articles that we review are selected because they are relatively recent and highlight the importance of economic variables in the analysis of conflict and peace. Thus, we do not necessarily choose seminal empirical studies for review, nor do our summaries of results necessarily reflect ongoing empirical controversies within topic areas. Finally, although the book covers issues pertinent to many contemporary conflicts such as Afghanistan and Syria, we do not attempt to focus the book on current events and policy debates. Instead, our goal is to emphasize principles of conflict economics that will be as useful in exploring conflicts and peaceful outcomes yet to emerge as they are in studying historical and contemporary events.

Over the years, many scholars have shaped our thinking about conflict economics and encouraged our attempts to contribute to the field. We regret that we can mention only a few, but they include Jurgen Brauer, Keith Hartley, Jack Hirshleifer, Michael Intriligator, Walter Isard, and Todd Sandler. We also wish to acknowledge our former students, especially those in experimental microeconomics, economics of war and peace, and topics in conflict economics, from the Department of Economics and Accounting at the College of the Holy Cross. Their questions and comments have contributed greatly to our understanding of pedagogy in general and conflict economics in particular.
Preface and Acknowledgments

We are indebted to Karen Maloney at Cambridge University Press for her steadfast support and advice over the course of the project and to Rachel Blaifeder for her outstanding production work; to several anonymous reviewers for valuable comments on various drafts; to Roxane Anderton for help with citations; to Holy Cross for timely research leaves; and to Katherine Kiel for a generous letter of support. We also benefitted from the insightful comments of Atin Basuchoudhary, Liam Clegg, Patrick Franco, Edward Ryan, and Shikha Silwal on chapter drafts, and from the support and encouragement of our colleagues in the Department of Economics and Accounting at Holy Cross. We also wish to recognize the extraordinary support we received from our friend and colleague, Jurgen Brauer, who read numerous drafts of work in progress and provided many valuable comments. Finally, we are especially grateful to our wives Roxane Anderton and Gloria Carter for their love and understanding, without which this book would not have been possible.