Economic Perspectives on Peace and Conflict

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1 Introduction

It is probably a sign of the times that the same year this Handbook is going to press the World Bank's World Development Report is on the topic of Conflict and Development (World Bank, 2011). Although interest in the relationship between Conflict and Peace on the one hand and the Economy on the other has waxed and waned over the decades, it should be evident that this topic is important for both empirical and theoretical reasons. Indeed, current interest in this relationship by academic scholars as well as policymakers appears to be high, at least relative to recent history.

Increased attention to the importance of conflict for the economy in recent years has been partly sparked by an earlier World Bank initiative to analyze civil wars as an important contributor to poverty and underdevelopment (see the report by Collier et al, 2003). The Iraq and Afghanistan wars have also prompted some economists to estimate their cost (for the Iraq war, see Stiglitz and Bilmes, 2008) as well as to conduct benefit-cost analyses of such wars, as was done for the Iraq war by Davis et al (2009).

Although this interest might be considered new or even novel, economists have long been concerned about matters of peace and war. Following World War I, Keynes (1920) warned about the possible deleterious effects of the Versailles peace agreement. While the United States was against the part of the agreement that forced Germany to pay the large reparations to the UK and France, the UK and France supported the reparations partly as a way to pay back the loans that they had contracted from the US to finance their wartime expenses and that the US had no intention of even partially forgiving. The immense reparations assessed on Germany led to its severe economic problems during the Weimar period without appreciably helping the economies of the UK and France. One could argue, in fact, that the Versailles peace agreement created the seeds of, or at least was one of the contributors to, the Great Depression (see, for example, Ahamed, 2009).

During the first half of the twentieth century, other prominent economists too were concerned about the economics of war and peace. Pigou (1921, revised in 1939) wrote an insightful little tome on the political economy of war, including some early arguments about possible economic causes of war (Ch. II, especially pp. 25-26). Hirschman (1945, expanded edition in 1980) analyzed how large countries can use foreign trade as an instrument of national power and referred to the example of Nazi Germany in its attempt to secure resources and trade from Eastern European countries before World War II.[1]

However, despite the obvious prevalence of conflict and its empirical significance for the economy, the emphasis that the economics discipline has placed on the win-win aspects of exchange and the gains from trade would seem to suggest that conflict has no place in traditional economic theory. Indeed, with such an emphasis, economists have largely neglected environments in which property rights are imperfectly specified and enforced—precisely the sort of setting in which conflict typically arises. This is not to say that neoclassical theory, which assumes that agents are self-interested, is useless for understanding the possible emergence of conflict. To the contrary, conflict emerges naturally when a critical, usually hidden, assumption is relaxed. In particular, self-interested agents can make a living not only by producing or by trading; they can also engage in appropriation, taking the production of others or defending what they themselves have produced.

To our knowledge, Haavelmo (1954) was the first economist to model the basic choice between production and appropriation, and did so in a general equilibrium setting. Haavelmo was interested in incorporating appropriation into economic modeling because he thought it was important for understanding economic development. Yet, it seems that other scholars in economics at the time did not share his vision. For his work in this area, in sharp contrast to his research in econometrics, has had no discernible impact.

Economists have shown, however, intermittent interest in modeling conflict and peace per se (instead of interest in conflict for its effects on the economy). Brito and Intriligator (1985) provided an early game-theoretic model of the onset of war resulting from asymmetric information. Contributions in the first volume of The Handbook of Defense Economics (Hartley and Sandler, 1995) provide an overview of related research.

Moreover, in the past two decades or so, there has been a growing effort to introduce conflict and appropriation into economic models and derive their implications for the economy. Jack Hirshleifer and Herschel Grossman provided an early impetus to that effort (notable examples include Hirshleifer (1988, 1994, 1995), Grossman (1991, 1994) and Grossman and Kim (1995)). Because we have provided an overview of that literature along with our perspective on the economics of peace and conflict in some detail elsewhere (see, for example,

[1] Also see Robbins (1940).

Garfinkel and Skaperdas, 2007), we will attempt to avoid repeating ourselves too much here.[2] Instead, we will be brief in this introduction and devote it to a short summary of the different parts of this Handbook along with some indications for future research directions.

Before doing so, it might be helpful to provide a definition of what we consider *conflict* to be from an economic viewpoint. In particular, a *conflictual* situation is one in which two or more actors engage in the choice of costly inputs that (i) are *adversarially* combined against one another and (ii) generate no positive external effects for third parties. Condition (i) stands in contrast to how costly inputs are combined collaboratively or cooperatively in economics through production functions. Arming by two contending parties is the clearest example of the adversarial combination of costly inputs that we have in mind, but not the only one. The hiring of lawyers by litigants or the expenditures on lobbying and rent-seeking by political adversaries are also examples of such adversarial combinations of inputs with economic significance. We include condition (ii) in the definition to exclude situations in which the adversarial combination of costly inputs, contrary to the case of warfare, is clearly socially productive. Examples that satisfy condition (i) but not condition (ii) include sporting events and employee tournaments within organizations. In sports, athletes and teams exert effort against one another, but the level of effort affects the quality of the game or match for the enjoyment of the sports audience, which is external to athletes and teams. Similarly, for the case of employee tournaments, one employee's higher level of effort might increase that employee's probability of successful promotion and lower the probability of promotion of other employees, but that effort is usually productive from the organization's point of view.

This definition obviously allows for civil and interstate wars. It also accommodates any situation in which there is arming but no active warfare. Furthermore, environments that involve adversarial activities like litigation or lobbying and do not have significant positive externalities on third parties could also be studied as conflictual from an economic viewpoint. While it is important to keep in mind that such environments have characteristics in common with warfare and some of the chapters of this volume do apply to such environments, the orientation of the Handbook is primarily towards applications of settings in which there is arming and at least the potential for warfare.

The chapters of this Handbook are not meant to be comprehensive surveys of particular areas or topics, but instead have a narrower focus and scope. While the authors have been urged to take account of the literature in their areas, they have also been encouraged to present their own perspectives and viewpoints even if possibly deemed controversial.

The Handbook is divided into five parts. In the remainder of this introduction we briefly

[2]See also Anderton and Carter (2007) and Brauer and Van Tuyll (2008) for other recent economic perspectives.

summarize the contents of each part and in some cases discuss future research directions that we could identify and that none of the authors happened to note in the individual chapters.

2 Correlates of Peace and Conflict

The first part of this Handbook (II) explores some correlates of peace and conflict. We use the term "correlates" to indicate our limited understanding of what brings about conflict and of the factors that may induce enduring peace. Given the uncertainty, destruction and other costs that surround conflict, understanding why conflicts occur at all is not easy from an economic perspective.

A set of factors that has been widely explored within economics and rational-choice social science as causing conflict falls under the rubric of incomplete or asymmetric information. Potential adversaries typically have incomplete information about one another's preferences, strengths, capabilities, and other characteristics. Depending on the configuration of the adversaries' true characteristics, war might very well be an equilibrium outcome. The three chapters by Warneryd, Sanchez-Pages, and Baliga and Sjorstrom explore different aspects of the nexus of information and conflict, all using a traditional Bayesian game-theoretic approach. The Warneryd chapter analyzes informational issues that emerge in a contest model of conflict (that is, a model in which the outcome of open conflict depends on the relative military capabilities of the adversaries). The chapter provides an introduction to the topic along with insights into how conflict can emerge in settings with informational asymmetries.

One question that emerges in such settings is the following: what prevents the interested parties from revealing the private information they have to avoid suboptimal outcomes? The problem, of course, is that, due to the conflictual relation between the parties, each has an incentive to lie and deceive the other; this incentive, in turn, calls into question the credibility of communication between the two. With this issue in mind, the Baliga and Sjostrom chapter focuses primarily on the strategic transmission of information. Baliga and Sjostrom use a two-by-two game with strategic complementarities to illustrate how the costless, though imprecise, transmission of information ("cheap talk") can be used to deceive or possibly enlighten, and induce either peace or conflict. The Sanchez-Pages chapter similarly considers the strategic transmission of information, though in a variety of ways, including not only costly signaling through actions to convey information, but also engaging in limited war as a means to learn about the opponent's strength. Sanchez-Pages also provides a useful review of the mechanism design approach to the problem.

The chapter by Powell considers another cause of conflict, one that has received much

less attention than informational problems—namely, *commitment* problems. Such problems essentially derive from the inability of parties to write binding long-term contracts on arming or anything else. Fearon (1995) first brought attention to such problems and argued for their high empirical relevance, whereas Garfinkel and Skaperdas (2000) examined a model that illustrates how conflict can ensue in multi-period settings and does so when discounting of the future is sufficiently low. Commitment problems can lead to conflict primarily because negotiated outcomes and conflict often imply different future strengths for the adversaries. For example, a negotiated outcome can keep the adversaries' relative future strengths intact but the winner of a war can have, in addition to getting loot or other immediate benefits, a permanent future strategic advantage over his or her opponent. These added "benefits" of war can induce adversaries to fight instead of negotiating. The focus of the chapter by Powell is on cases in which commitment problems come about as power shifts against one of the adversaries in favor of the other over time. The side that is expected to lose power might then decide to fight, instead of negotiate, as a way of forestalling its decline. Powell also discusses how similar commitment problems extend to cases of domestic politics.

Many of the wars that have ever taken place have done so across religious divides, although not necessarily because of religion. Clearly, though, whether religion can be considered an ultimate cause or an epiphenomenon of more fundamental differences, religion and conflict appear to be correlated. On the other side, religion also serves as a source of cooperation and peace within religious communities. The chapter by McBride and Richardson reflects on this dual nature of religion—as a possible source of both conflict and cooperation. In thinking about religion as a source of conflict, McBride and Richardson explore not only the relation between religion and violent conflict but also that between religion and non-violent conflict within individual countries between different religious groups for a variety of privileges and rights.

One would suspect that higher levels of inequality within a country tend to be associated with an increased likelihood of conflict. However, as reported in the Montalvo and Reynal-Querol chapter, there does not appear to be a clear correlation—let alone a causal relationship—between measures of inequality and conflict. More promising appears to be a relationship between conflict and measures of polarization, concepts first introduced into economics and axiomatized by Esteban and Ray (1994). The Esteban and Ray chapter reviews and compares different measures of polarization within a unifying framework. A country can be highly unequal in income and wealth, but it might not be highly polarized in economic terms. Conversely, a country can be considered economically equal, but nonetheless highly polarized if there are two distinct, though not too distant, income groups facing one another. Similar comments apply to other ethnic or religious measures of fragmentation. The Montalvo and Reynal-Querol chapter reviews some basic theory and empirics

that show the relationship between measures of polarization and conflict.

Over the post-WWII period, civil wars have become more common than international wars, affecting more than 70 countries. As most of the affected countries could be considered poor, the hypothesis of a self-reinforcing spiral between poverty and war would sound reasonable. The Hoeffler chapter provides an overview of the theory and empirics of the causes and correlates of civil war. Although there is already a considerable body of empirical research on the topic, much of which has been done in recent years, Hoeffler argues that little has been settled and suggests useful directions that research might take. The Azam chapter reflects on the civil wars in Africa, the continent with the greatest problem. Azam concentrates on the importance of governments' ability to commit to transfers to avoid war, and the role that international organizations, domestic institutions, and even individual leaders can play in enhancing that ability to commit.

Disentangling the relationship between poverty and civil war is not a simple matter—either theoretically or empirically. Miguel et al (2004) have found, using rainfall data as an instrument for economic growth, that higher incomes reduce conflict, at least for the case of Africa. But, why this might be the case is not theoretically clear. One possibility is that higher levels of income are associated with better institutions and state capacity (McBride et al, 2011). Another, possibly complementary reason particularly in the case that the conflict is resource-driven has to do with the labor intensity of the production of resources over which conflict takes place. Dube and Vargas (2007) show that, in Colombia, increases in the price of coffee do not increase conflict but increases in the price of oil do. The primary reason for the different effects appears to be the relative labor intensity of coffee production and the relative capital intensity of oil production, implying distinct effects of shocks to the prices of coffee and oil on wages in the (segmented) local labor markets. To be more specific, in locations specializing largely in the production of coffee, shocks to coffee prices push wages higher and therefore make it more difficult to recruit fighters. The opposite is true in locations specializing in the production and transportation of oil. The link between income and civil wars is only one of the many important topics that have yet to be resolved and are being researched. For a recent overview of the study of civil wars from the economic perspective that is complementary to the approaches taken in this Handbook, the interested reader is referred to Blattman and Miguel (2010).

Since achieving peace is the mirror-image problem of the emergence of conflict, some topics in this part of the Handbook are closely related to those of part VI, "Pathways to Peace." We will postpone our discussion of these issues until that part. However, for now, we briefly mention some topics that have not been covered here and deserve more attention in future research.

Especially for cases of ethnic and religious conflict, though not only those cases, feelings

and emotions such as hate or revenge might have an effect on the instigation and propagation of conflict. Although journalistic and sometimes scholarly sources have emphasized feelings and emotions as significant factors in conflict and wars, economists have made very little contribution to the debate. Yet, we believe that an economic perspective can contribute to such debates first by conceptualizing such feelings as interpersonal externalities in the preferences of adversaries. Recently, Amegashie and Runkel (2008) have shown how the motive for revenge as a factor in conflict can actually reduce conflict because of its deterrent effect. By contrast, Kumar's (2010) examination of how hate and revenge matter in the choice between negotiated settlements and conflict suggests that such emotions can undermine the possibility of peaceful settlement.

To our knowledge, however, there is no systematic attempt to examine the role of such interpersonal externalities as a factor in specific wars and their significance relative to other factors. Was the reported joy with which some Europeans went to war against each other in August 1914 a relevant driving force behind the violence that followed or was is simply a reflection of some other more deeply rooted factors? To what extent do such feelings interact with or detract from others in groups and countries entering into conflict with one another? These are some big questions that an economic, rational-choice approach could inform both theoretically and empirically.

The game-theoretic models of conflict examined in this Handbook and in the field are orthodox ones in terms of the informational assumptions made: (i) all the possible outcomes are knowable and known by the players; (ii) the probability distributions over all the possible outcomes are also knowable and known; and (iii) all of this information, in addition to the other details of the game, is common knowledge held by the participating players. These assumptions are quite strong, with limitations and strengths that have been debated in game theory and economics (see, for example, Samuelson, 2004). What is of particular interest for the study of peace and conflict is how relaxing of any of these assumptions impinges on the likelihood that, within the particular models examined, peace and conflict will occur and how arming and other outcomes would vary. Relaxing assumptions (i) or (ii) could also be thought of as a way of thinking about the proverbial "fog of war" and potentially clarify what the term might mean. Relaxation of (i) might proceed by supposing there exist some outcomes that one or more players are unaware of and then seeing the resulting equilibrium outcomes.[3] Relaxation of (ii) would involve what is considered under the term of Knightian uncertainty (as opposed to risk) or involve "ambiguity" in the assessment of probabilities. Clearly, these are directions that could benefit the study of peace and conflict from an economic perspective.

[3] Games with "unawareness" and appropriate accompanying solution concepts have been examined by, among others, Ozbay (2006).

3 Consequences and Costs of Conflict

Conflict is obviously costly and has economic consequence; therefore, it should have always been of at least some interest to economists. Nevertheless, interest in the costs of conflict as a mainstream policy concern and as an issue worthy of study by economists has been rather recent. With the exception of a literature relating military expenditures to economic growth (for an overview, see Ram, 1995), virtually all research on the consequences and costs of conflict has been published over the past decade. Even in this short period, the literature has grown considerably and the pace of research is gaining momentum. The chapters in this part of the Handbook reflect the dynamism of this research.

The chapters by Gardeazabal and by de Groot, Brueck, and Bozzoli focus on methodologies of measuring the costs of conflict. Gardeazabal provides a review of primarily econometric methods for cost measurement using models as guides to counterfactual scenarios. While similarly paying attention to counterfactual scenarios, de Groot, Brueck, and Bozzoli also explore "bottom-up" methods that attempt to add up identified components of costs.

The chapter by Stiglitz and Bilmes is similarly methodological, but it also provides updated estimates to Stiglitz and Bilmes (2008) of the costs of the Iraq war and, in addition, the costs of the Afghanistan wars. With all the caveats that one can apply, their current estimate of the cost of the two wars falls between 4 and 6 trillion dollars.

Analyses of the costs and consequences of conflict usually focus on either civil wars or interstate conflict. The 9/11 attacks, however, have heightened interest regarding the costs of terrorism, a specific form of conflict in which violence is directed towards noncombatants or civilians who generally are not related to the political target of the perpetrating group. While terrorism can be seen as a specific tactic employed in internal and external conflicts, the effects of such violence have been studied separately. The chapter by Enders and Olson surveys specifically the existing evidence of the costs of those terrorist acts that are perpetrated by non-state parties or subnational groups. Enders and Olson also discuss the various methodological issues involved.

All the chapters of this part of the Handbook we have discussed thus far consider various costs of conflict in monetary terms. The estimated costs partly depend on estimated effects of war like injuries and deaths, effects that are not easy to quantify. The chapter by Spagat provides a review of sample survey methods for estimating the number of war-related deaths. (Similar survey methods can be used for estimates of injuries.) That different surveys using seemingly similar methodologies have produced widely differing estimates of Iraq war deaths has made this method somewhat controversial. What is more difficult to estimate are mental health effects of the trauma of war. The Do and Iyer chapter examines the many measurement and inferential issues associated with assessing mental health following wars.

They also illustrate how these issues can be handled in a case study of post-conflict Bosnia-Herzegovina, and report their surprising results indicating that there are small differences in mental health among people with different exposures to the conflict in that country.

The earlier literature regarding the effects of military expenditures on economic growth, mentioned above and surveyed by Ram (1995), had initially shown a positive relationship between the two variables. The chapter by d'Agostino, Dunne, and Pieroni revisits this topic, taking account of more recent models of growth. The estimation of more sophisticated models indicates, contrary to the early studies, that the effect military expenditures on growth is negative.

In light of the existing evidence on the costs and consequences of conflict, one might naturally be surprised by Miguel and Roland's (2010) recent finding that districts of Vietnam, which were heavily bombed during the war in the 1960s and early 1970s, have not experienced any long-run negative economic consequences; if anything, such areas have done relatively better. However, Miguel and Roland report, in addition, evidence that the Vietnamese government heavily favored the most war-afflicted areas with investment and other transfers, and that is a likely explanation of their main empirical result. Moreover, the finding does not imply that Vietnam as a whole was unharmed by the war, since the diversion of resources to reconstruction following the war could have only reduced the country's aggregate income and the average material welfare of its people.

The last chapter of this part of the Handbook, by Blomberg and Hess, takes a macroeconomic perspective, looking at a cross-section of nations over time, to provide further evidence on the costs of conflict, both internal and external. Adapting a model of Lucas (1987) intended to measure the costs of business cycles, Blomberg and Hess assess the impact of conflict viewed as an aggregate "shock" to national consumption and welfare. Their estimates of the permanent welfare loss resulting from war, under conservative scenarios, are remarkably large and much higher than the estimated costs of business cycles.

Research on the costs and consequences of conflict has grown extremely fast over the past decade, and there is no sign that this research effort will abate any time soon. Of course, one might argue that at least some of the costs of war and violence are necessary, particularly in the "enforcement of property rights" by states or other organized interests. Some military expenditures and other security costs, even possibly the very destruction that ensues from the outbreak of wars, could be considered a necessary input into an output called "security." Therefore, from a social welfare perspective, such costs cannot be considered avoidable (without incurring other costs at some future point). Should they not, then, be netted out of the analysis of the costs of conflict?

A very short response to this sort of reasoning would first point out, as we mentioned

earlier in defining conflictual activities, that the inputs to conflict and violence are combined in an adversarial fashion, not cooperatively as are inputs to ordinary production.[4] Secondly, increases in military expenditures by one party that are met with similar increases by another party would increase the costs of security to both parties without necessarily changing the security of either party, however the latter is measured. Even worse, the military build-up could make war more likely, and consequently decrease the security of both parties. Thus, while the response of states and other organized groups could indeed be considered individually rational in the short term, the resulting state of affairs need not be socially rational. This reasoning is reminiscent of the prisoners' dilemma: if each side could commit to their actions, they could achieve a better outcome for both. Finally, we note that, in other settings, economists routinely compare actual policies with ideals ones, and on that basis calculate the costs of socially suboptimal actions (such as those of trade protection). Likewise, then, we can think of the costs of conflict as due to deviations of actual security policies from those in an ideal world with no conflict. Of course, given that the costs of providing security can possibly increase dramatically while the benefits derived from it are drastically reduced, as is the case in wars that escalate beyond the original expectations of their participants, such an approach might understate the costs of conflict.

4 On the Mechanics of Conflict

Increasing interest in modeling conflict and peace over the past two decades can be attributed, at least in part, to the revival of interest in noncooperative game theory and its application to different fields of economics during the 1980s. The most widely used type of game, but not the only one, for the study of conflict is the contest, in which players make costly efforts to increase their respective probabilities of winning a prize (for an overview, see Konrad, 2009). This part of the Handbook includes contributions aimed at modeling and empirically examining different aspects of peace and conflict.

The chapter by Jia and Skaperdas explores the basic technical ingredient in modeling conflict as a contest, sometimes called the contest success function; but as applied to conflict situations, the authors follow Jack Hirshleifer in referring to this ingredient as the technology of conflict. Jia and Skaperdas review stochastic and axiomatic theoretical foundations of different classes of technologies of conflict, and discuss a number of issues that emerge in empirical estimation and model comparison.

A central issue that arises when there are more than two rivals, within the international system or within a single state, is that of the formation of alliances. What determines

[4] For additional treatments of this issue, see the overview of Garfinkel and Skaperdas (2007) and the discussion in Skaperdas (2011).

whether or not alliances form and, in the event alliances do form, which groups are likely to do so? The chapter by Bloch draws on several strands of the game theory literature, including but not limited to those on coalition formation and contests, to provide answers to such questions. Bloch points out regularities that have emerged in the existing literature and the many puzzles and open questions that exist. One area of interest here concerns the choice of solution concept to ensure the stability of alliances. There are usually a number of reasonable such concepts from which to choose, and the theoretical predictions can be sensitive to the modeler's choice. The sharing rule for the spoils of war among alliance members is another modeling choice to which theoretical predictions are sensitive but also empirically important.

France built the Maginot line in the time between the two World Wars, thinking that it was the only possible war front against Germany. Germany, however, identified another option: to bypass the Maginot line by attacking France through Belgium. Regardless of whether France's military establishment was atypical in its lack of imagination, typically there are multiple fronts or battlefields on which adversaries could confront one another. The chapter by Kovenock and Roberson explores this rather classic problem of "multiple battlefields," where adversaries allocate resources across different contests. One of the first games ever formulated, the Colonel Blotto game by Borel in 1921, is an example of such a multi-item contest. Only recently has research on such games been revived, and Kovenock and Roberson provide an up-to-date perspective on the topic. It is a technically demanding topic, with many different ways of modeling and thinking about the problem, and since research is far from being mature in this area, there is much opportunity for providing new illuminating contributions.

The final chapter in this part of the Handbook, by Abbink, reviews the recent experimental literature on conflict. Although the literature is recent and small, it has already examined a great variety of topics—from the effects of anarchy to factors that contribute to peace and conflict. Laboratory experiments provide a good first test of theories and are especially valuable when field experiments are difficult to come by, as in the case of peace and conflict. The literature is expanding fast as we go to press, and there is hope that experiments will add to genuine knowledge in understanding the factors that contribute to peace and conflict.

Besides the promise of experimental research, all other topics covered in this part of the Handbook leave us with many unanswered questions and issues that hold high promise as future research topics. Technologies of conflict have hardly been empirically estimated. The study of alliances and multiple battlefields can be expected to generate large literatures in the future. Given that the approaches to these topics are game-theoretic, similar comments made towards the end of section 2 above apply here as well: modeling and thinking about

issues like "the fog of war" and "ambiguity" are important for a more nuanced and deeper understanding of the mechanics of peace and conflict. For the case of alliance formation, especially but not exclusively, the role of prior experience and history in the dealings of possible allies and adversaries is potentially important to take into account. For, the element of trust is relevant in all alliances, and prior experience can enhance trust as well as destroy it. Incorporating such forces in thinking about alliances would invite approaches like the analytic narrative one (for example, Bates, Greig, Levi, Rosenthal, and Weingast, 1998), in which game-theoretic modeling is combined with case studies.

5 Conflict and Peace in Economic Context

As amply demonstrated by the contributions in part III, the economic consequences of conflict are quantitatively very important, certainly much more sizable than the estimated deadweight costs of taxation or trade protection that have drawn much attention from social scientists and policymakers. Part V of the Handbook includes contributions that develop connections between, on the one hand, conflict or peace and, on the other hand, economic performance. Costless peace can be considered close to the ideal, "Nirvana" neoclassical model in which property rights on all endowments are perfectly and costlessly enforced. In the absence of such conditions, conflict can be expected to affect economic performance negatively through a number of channels including the cost of arming, destruction, or distortions in allocation and incentives. In turn, low economic performance appears to increase the chance of conflict (see Miguel et al, 2004), thus possibly leading to a vicious cycle of war and poverty.

The chapter by Findlay and O'Rourke builds on the authors' sweeping perspective of the past millennium in the book *Power and Plenty* (Findlay and O'Rourke, 2007). Going back and forth between history and theory—specifically, an economic model of the empire and one of trade in the presence of insecurity,—they illustrate the central role played by power and conflict and suggest that trade cannot be separated from power considerations.

The Garfinkel, Skaperdas, and Syropoulos chapter explores settings in which international trade takes place in insecure environments or, alternatively, in the shadow of power. The first setting focuses on the case of two countries, when trade between them is itself insecure. There, the authors find the country that produces the more highly valued good (and thus would command a greater share of total output by both countries in a "Nirvana" world), tends to have a comparative disadvantage in arming, less power, and thus lower income. In a setting in which there is an insecure input, the authors show that countries might prefer autarky to free trade and that comparative advantage can be distorted relative to what would prevail in the absence of insecurity.

The Dal Bo and Dal Bo chapter similarly examines general equilibrium effects of conflict using a standard trade model, but with a focus on the effects of domestic conflict. Conflict introduces distortions in an economy that are typically different than other distortions examined by economists. Tax or subsidy schemes on consumption and production, trade policies, and technology policies can then be optimal responses to the presence of conflict. The Dal Bo's show how the different policy instruments can reduce conflict and how they rank relative to one another in terms of welfare.

The chapter by Gonzalez brings conflict theory into the equilibrium analysis of the production and distribution of output. Starting with a static framework and then moving on to a dynamic one, Gonzalez shows that the absence of centralized enforcement of property rights influences (i) the allocation of resources among productive and unproductive activities (or "decentralized use of coercion," including both predation and the protection of property by individuals) and (ii) economic growth. In doing so, he shows that the decentralized use of coercion in society is central to economic backwardness and development.

The Justino chapter surveys the existing empirical evidence on the inter-linkages between civil war and poverty. As suggested above, conflict can impair economic performance and poor economic performance provides fertile ground for the outbreak of war within nations. Justino's survey highlights these inter-linkages, focusing on the decision-making of individuals and households. Considering at the same time how social norms and forms of institutional organization change during civil wars and how such changes imply different constraints on individual decision-making, her survey also sheds light on the various factors that influence the duration of civil conflict.

The chapter by Mehlum and Moene explores the tendency for poverty and conflict, as well as for prosperity and peace, to reinforce one another. The authors identify and examine two specific sets of factors. One is the type of rents that adversaries may contest, as rents can differ in terms of the vulnerability of their value to conflict; more vulnerable rents tend to induce more peace, whereas less vulnerable rents have the opposite effect. The second factor concerns the relationship between the elites and the entrepreneurs in their respective groups—specifically, the extent to which the elites care about their entrepreneurs. While these two sets of factors can predispose countries to either virtuous or vicious circles, multiple equilibria are also possible.

The largely theoretical contributions in this part of the Handbook along with the empirical contributions of Part III demonstrate, with the highest degree of confidence that can possibly be demonstrated in the social sciences, that conflict has a large impact on the economy. Thinking of markets in isolation of the enforcement of property rights on the endowments that produce tradable goods or on the tradable goods themselves cannot be thought of as an innocent "as if" assumption, which can simply be disregarded in theory or

in reality. To reduce all the costs of conflict, governance and property rights enforcement becomes crucially important for economic activity and prosperity.

6 Pathways to Peace

As suggested earlier, our understanding of what causes conflict and what induces lasting peace is limited. Yet, there is a long-standing literature that has examined how international trade itself might induce cooperation and peace among states potentially in conflict. In particular, despite some disagreements between leaders of different states, these leaders could be induced to maintain peace if war implies a disruption of trade and such trade is essential to the performance of each state's economy. Mutual economic interdependence, then, could induce peaceful relations. The chapter by Polachek, Seiglie, and Xiang take this line of reasoning one step further, to consider both theoretically and empirically the positive influence of international capital flows on peace between nations.

Recent and ongoing research on institutions and economic growth as well as on group formation suggests that that governance plays a critical role in the emergence of conflict and peace. Historically, intervention by third parties has facilitated governance: the village elders in traditional communities; and, the police, the courts, and the halls of politics of modern states. With such governance, conflict in the battlefield can be transformed into the more "civilized" and usually less socially wasteful forms of conflict of litigation and political contests. The remaining chapters of this part of the Handbook explore the relation between conflicts at different levels, as a starting point to understand this transformation.

The chapter by Spolaore analyzes the formation of states to provide public goods including but not limited to security. The analysis views national borders as arising endogenously, with the decision makers balancing a tradeoff between (i) the benefits of economies to scale in the provision of defense against external threats and (ii) the costs arising from greater heterogeneity in preferences across citizens of the nation regarding the provision of other public goods. Spolaore develops a simple model that highlights this tradeoff, and discusses a number of issues related to peace and conflict. He also touches on a number of possible directions for future research.

The Garfinkel chapter similarly considers the importance of disagreement between citizens within the nation over the provision of public goods, aside from security against external threats. But, this chapter focuses specifically on how democratic political institutions matter in the emergence of interstate war versus peace. The analysis highlights, where there is disagreement within a nation, the influence of electoral uncertainty to increase the extent to which the nation's leaders discount the future, including the future benefits of arming and initiating war or entering into a peaceful settlement. At the same time, the analysis

highlights the effects of checks and balances, associated with democratic institutions, to enhance the ability of leaders to mobilize resources. Although the democratic peace is a possibility, it does not necessarily follow.

Clearly, the state is important in providing security from external threats; but the state is also important in promoting peaceful relations amongst the state's citizens. As suggested earlier, the state's ability to define and enforce property rights helps to establish and maintain order that is conducive for a well-functioning economy. Yet, the provision of security generally involves the exercise of power—the use of force or at least the threat thereof; and, the state's exercise of power need not be beneficial for the citizens, particularly where the state has predatory tendencies (see, for example, Robinson, 2001; Moselle and Polak, 2001; Konrad and Skaperdas, 2010). What prevents the state, which holds this power, from expropriating the wealth of the state's citizens? Furthermore, given the opportunities of holding such power, what prevents other groups from rising and banishing the current rulers?

The chapter by Keefer focuses on internal conflict and the role of collective action in the interactions between the leader(s) of a group (representing the current ruling class or potential insurgents) and the other members of the group. Keefer argues that collective action by a group's members is critical to support commitments by the group's leaders and thus the group's cohesiveness that is important for defending the group's leadership position or for establishing a more offensive stance to expel the current ruling group. But, leaders also need to limit collective action to protect themselves against expulsion by their own group members. How the leaders balance the costs and benefits of allowing collective action by the group's members has important implications for, among other things, the influence of income shocks in cultivating conflict.

While the chapter by Keefer and work by others would seem to suggest that the state and its governance are not sufficient to promote peaceful interactions within the nation's borders, the Leeson and Coyne chapter suggests that the state and its governance are not necessary either. This chapter explores the emergence of norms as institutions that promote cooperation and limit conflict in settings where the state cannot or does not. The authors argue that it is precisely in such settings where the potential benefits from developing such norms are the greatest and, thus, are more likely to emerge.

How peace, less costly conflicts, and better governance come about are topics that we know less than other areas and are also more important for economics as well as billions of human beings. It is therefore an open area of extremely important research.

7 Concluding Remarks

In compiling this Handbook, we have sought to bring different viewpoints, perspectives, and methods to the study of peace and conflict. We have not covered all the topics that could be deemed important or all perspectives that could be considered relevant. We do hope, however, that the range of contributions is sufficiently wide and the coverage is sufficiently deep to interest a large numbers of scholars and students in economics and beyond. Moreover, it should be clear from the Handbook's overall content that the study of peace and conflict is important from an economic perspective, but not simply because it provides another area for applying the discipline's methods. Instead, the study of peace and conflict is integral to understanding how economies actually function. Power considerations cannot be realistically separated from markets.

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